PUBLIC NOTICE
WILLIAMSBURG CITY COUNCIL

The Williamsburg City Council will hold a public hearing on Thursday, February 8, 2018, 3:30 P.M. in the Council Chambers of the Stryker Center, 412 North Boundary Street, to consider the following:

PCR#18-003: Request of BSV Colonial Owner LLC to amend the special use permit and Master Plan for Midtown Row to redevelop the shopping center into a mixed-use development project. The applicant proposes amendments to the existing special use permit and master plan for modifications to the design of project for Building 7, the plaza, parking and street alignments as shown on the revised master plan. The properties are located at 1222 and 1234 Richmond Road and are zoned Urban Business District B-3.

Additional information is available at www.williamsburgva.gov/publicnotice or at the Planning Department (757) 220-6130, 401 Lafayette Street. Interested citizens are invited to attend this hearing and present their comments to City Council.

If you are disabled and need accommodation in order to participate in the public hearings, please call the Planning Department at (757) 220-6130, (TTY) 220-6108, no later than 12:00 noon, Thursday, February 1, 2018.

Andrew Trivette
Clerk of Council

CITY OF WILLIAMSBURG
MEMORANDUM

DATE: **January 19, 2018**

SUBJECT: **PCR#18-003**
Request of BSV Colonial Owner LLC to amend the special use permit and Master Plans for Midtown Row to redevelop the shopping center into a mixed-use development project. The properties are located at 1222 and 1234 Richmond Road and zoned Urban Business District B-3.

APPLICANT'S REQUEST

BSV Colonial Owner LLC, the owner of the property received approval from City Council in October to redevelop the shopping center into a new mixed-use development project named Midtown Row. The applicant proposes amendments to the existing special use permit and master plan to modify the design of Building 1 and 7, the plaza, parking and street alignments as outlined further in my memo. The properties are located at 1222 and 1234 Richmond Road and are zoned Urban Business District B-3. The applicant also requested to increase the number of units from 240 to 245 but has withdrawn the unit increase portion of the request.

The shopping center is situated on 19.44 acres at the intersection of Richmond Road and Monticello Avenue and is currently zoned Urban Business District B-3.

APPROVED MASTER PLAN

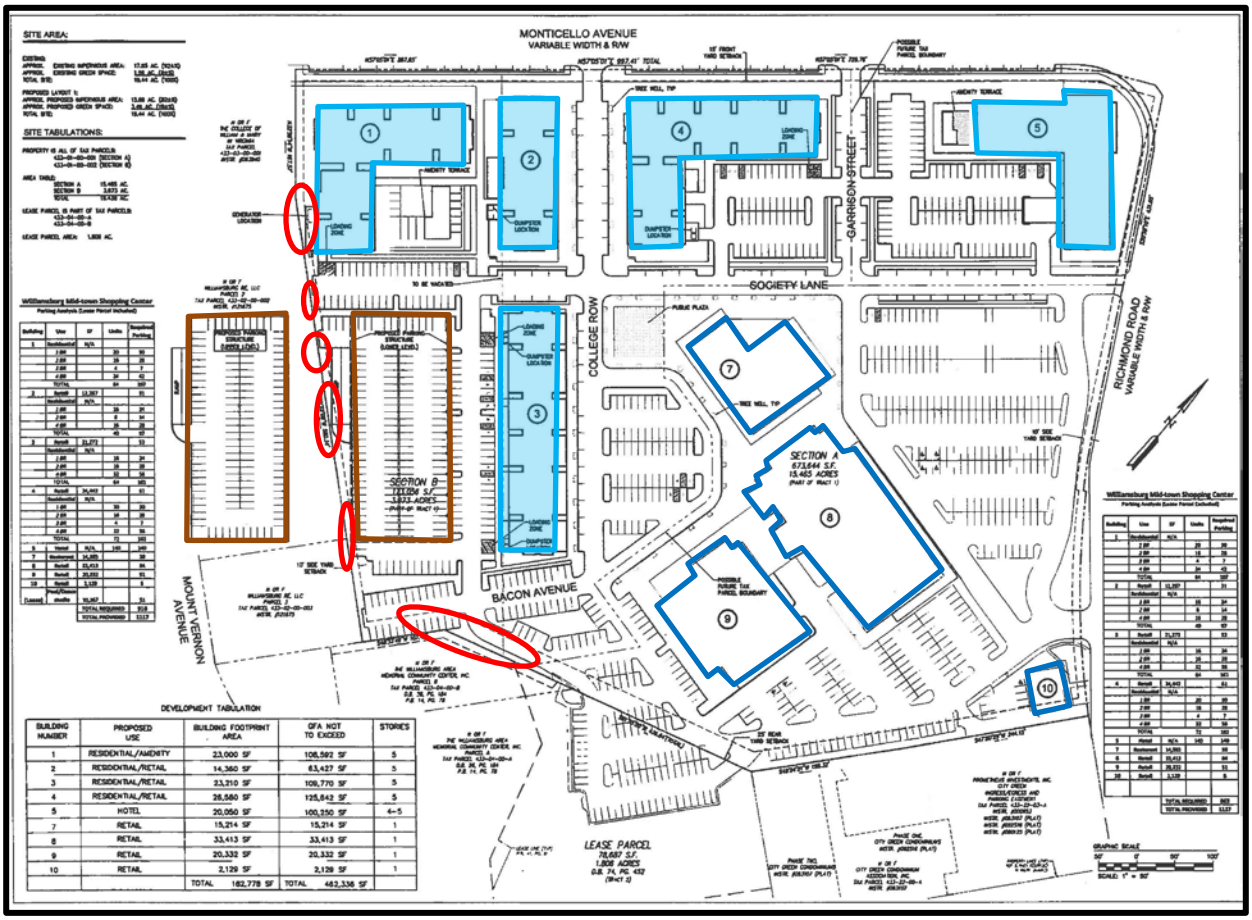
Master Plan Layout Option 1

In Option 1 of the approved Master Plan, Midtown Row contained four new five-story mixed-use buildings totaling approximately 320,000 square feet of residential and amenity space with over 60,000 square feet of new ground floor retail/restaurant space. A new 140 room hotel (Building 5) was approved at the intersection of Richmond Road and Monticello Avenue. Building 7 contained approximately 15,000 square feet retained Sal's by Victor, the ABC store and a smaller retail space. The existing Food Lion (Building 8) with approximately 33,413 square feet remained along with the existing ACE Hardware (Building 9) containing approximately 20,332 square feet being refurbished and converted into food and entertainment use.

Option 1 contained 240 residential units (624 beds) with approximately 127,990 square feet of retail/restaurant space. A two level parking structure was approved containing 239 parking spaces.

The height limit was increased from 45 feet to not more than 66 feet. The gross floor area of any new buildings on any lot that may be devoted to multifamily use was increased to 80 percent. Approval was granted to encroach into the 10 foot side yard requirement in five areas along the western property line adjoining the College and Envoy Nursing Home. An encroachment into the 25 foot rear yard setback for driveway and parking adjacent to pool property was also approved.

APPROVED MASTER PLAN OPTION 1 (with hotel)



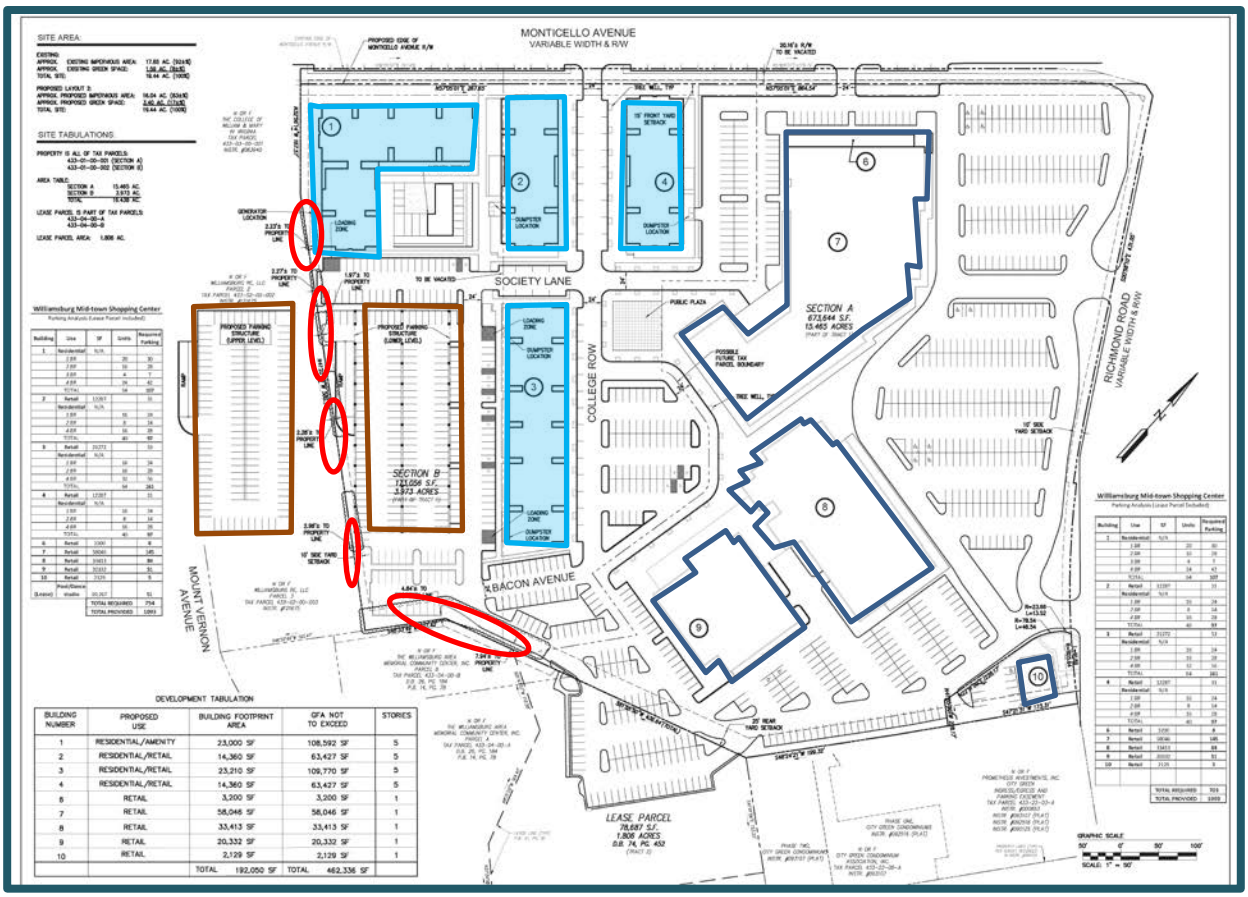
Master Plan Layout Option 2

Option 2 contained four new five-story mixed-use buildings. However, Building 4 was smaller in size and contained less residential units (40 instead of 72 in Option 1). This option did not contain the hotel (Building 5) and retained a larger portion of the existing Building 7 along Richmond Road. A portion of Building 7 was removed to allow for parking and driveway connection to other portions of the development.

This option contained 208 residential units (528 beds) with approximately 162,696 square feet of retail/restaurant space. A two level parking structure was approved containing 239 parking spaces.

The height limit was increased from 45 feet to not more than 66 feet. The gross floor area of any new buildings on any lot that may be devoted to multifamily use was increased to 80 percent. Approval was granted to encroach into the 10 foot side yard requirement in five areas along the western property line adjoining the College and Envoy Nursing Home. An encroachment into the 25 rear yard setback for driveway and parking adjacent to pool property was also approved.

APPROVED MASTER PLAN OPTION 2 (without hotel)



REVISED MASTER PLAN

The applicant proposes the following revisions to the approved master plan:

Overall Site Changes:

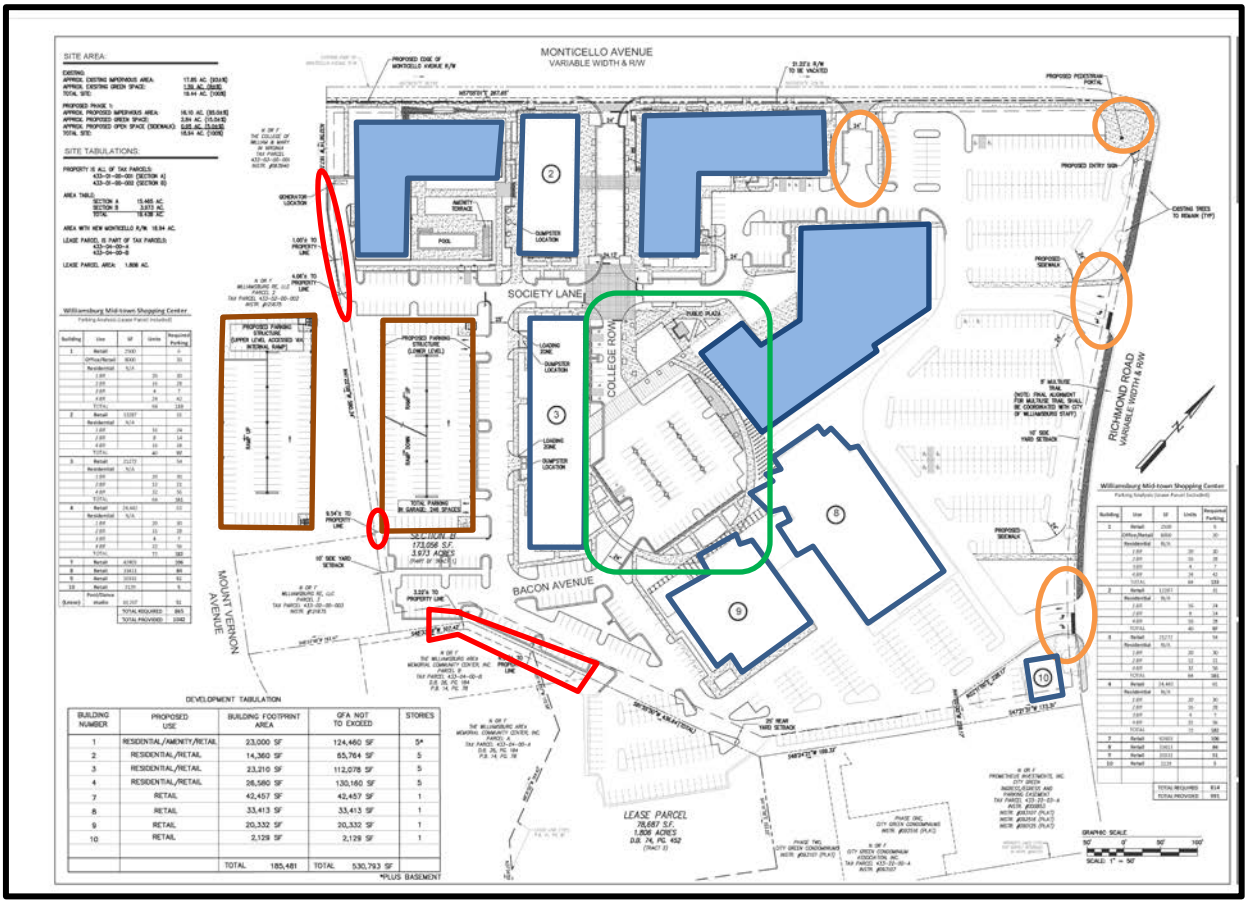
- Layout in Option 1 is now referred to as Phase 2 (with hotel).
- Layout in Option 2 is now referred to as Phase 1 (without hotel).

- The parking terrace will be constructed in Phase 1. It contains 246 parking spaces and has been updated from an external ramp structure to internal ramp structure.
- Central parking configuration for the plaza area (between buildings 3 and buildings 7/8) has been updated to include more parking spaces and to create a more pedestrian friendly environment.
- Entrances along Monticello Avenue have been updated to comply with fire truck turning radii and shifted to align with entrances for the shopping center across the road.
- Phase 1 Building 4 has been updated to the same footprint as Phase 2 Building 4 and contains 72 units.
- A multi-use trail is proposed along Richmond Road
- Existing entrances along Richmond Road have been revised to allow for proper traffic queuing resulting in improved driveway connections inside the shopping center resulting in more open space along Richmond Road.
- A pedestrian portal has been proposed for the corner of Monticello Avenue and Richmond Road.
- Building 1 for both phases includes a loading zone for basement access and an updated pool configuration. Building 1 also has been updated to include a basement which accounts for the additional square footage.
- Building 6 has been removed from Phase 1.
- Building 7 configuration has been updated to include space for Marshall's relocation.
- Setback encroachments have been reduced from five areas along the College and Envoy Nursing Home properties to two due to the parking terrace being moved further from the property line. The rear encroachment is larger in the revised plan for the parking spaces and the landscaped area adjacent to the community pool property.

Phase 1 Building Changes (previously Option 2)			
Building 1			
Approved Master Plan		**Revised Master Plan**	
Square Footage	Units	Square Footage	Units
Footprint: 23,000 GFA: 108,592	64	Footprint: 23,000 GFA: 124,460	64
Building 2			
Square Footage	Units	Square Footage	Units
Footprint: 14,360 GFA: 63,427	40	Footprint: 14,360 GFA: 65,764	40
Building 3			
Square Footage	Units	Square Footage	Units
Footprint: 23,210 GFA: 109,770	64	Footprint: 23,210 GFA: 112,078	64
Building 4			
Square Footage	Units	Square Footage	Units
Footprint: 14,360 GFA: 63,427	40	Footprint: 26,580 GFA: 130,160	72
Building 7			
Square Footage	Units	Square Footage	Units
Footprint: 58,046 GFA: 58,046	N/A	Footprint: 42,457 GFA: 42,457	N/A

*Note buildings 8, 9 and 10 are existing and do not change for either phase

PROPOSED MASTER PLAN PHASE 1 (WITHOUT HOTEL)



Parking

Parking has changed slightly from the approved master plan as noted below:

Phase 1 Parking Changes (excluding lease parcel) (previously Option 2)			
Approved Master Plan		**Revised Master Plan**	
Required Spaces	Provided Spaces	Required Spaces	Provided Spaces
703	1115	814	991

Landscaped Open Space

The applicant will meet the landscaped open space requirement of 20% since a reduction was not approved by City Council in the original application.

Phase 2 will contain a new 140 room hotel (Building 5) at the intersection of Richmond Road and Monticello Avenue.

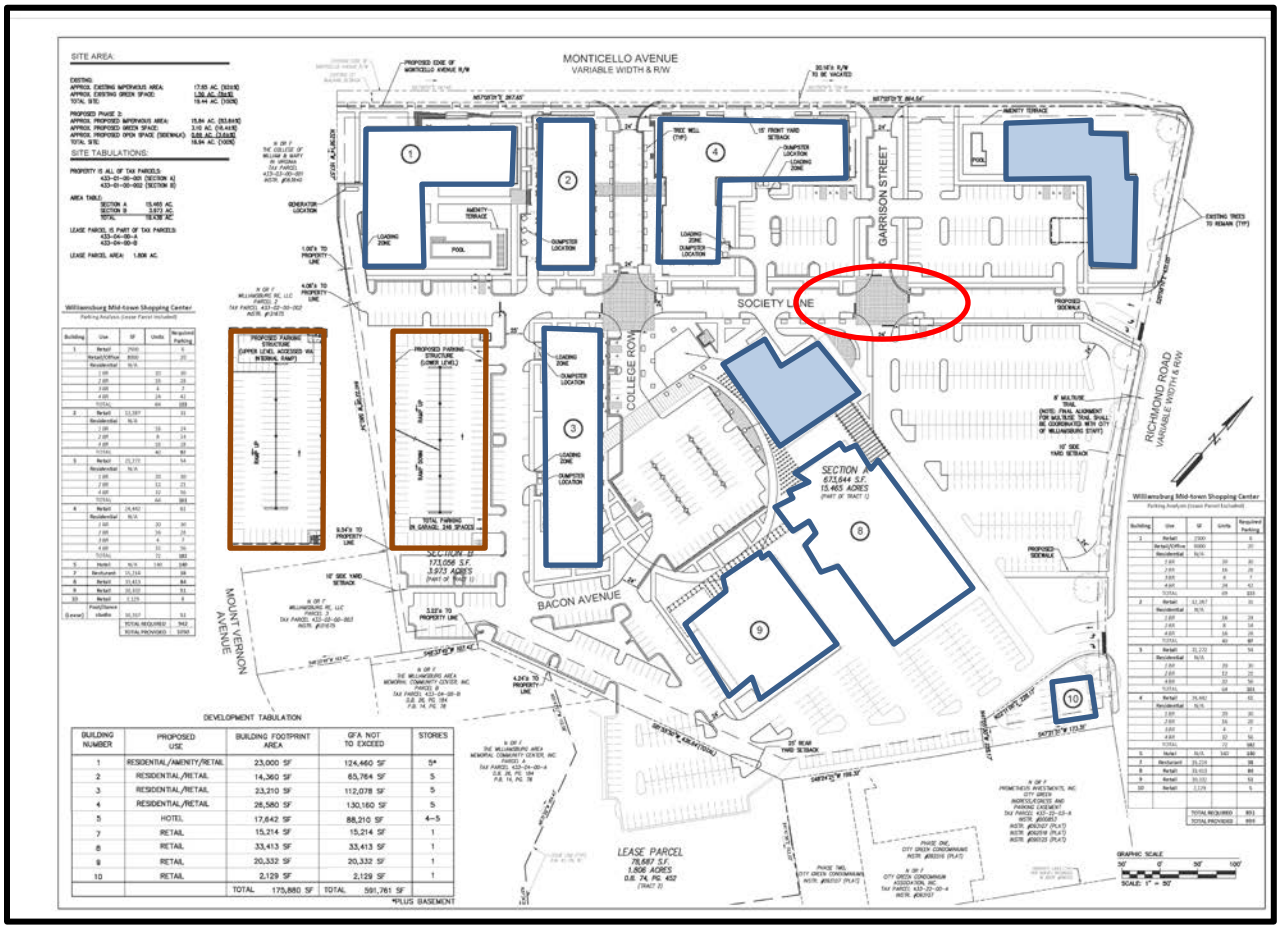
Phase 2 Building Changes (previously Option 1)			
Building 1			
Approved Master Plan		**Revised Master Plan**	
Square Footage	Units	Square Footage	Units
Footprint: 23,000 GFA: 108,592	64	Footprint: 23,000 GFA: 124,460	64
Building 2			
Square Footage	Units	Square Footage	Units
Footprint: 14,360 GFA: 63,427	40	Footprint: 14,360 GFA: 65,764	40
Building 3			
Square Footage	Units	Square Footage	Units
Footprint: 23,210 GFA: 109,770	64	Footprint: 23,210 GFA: 112,078	64
Building 4			
Square Footage	Units	Square Footage	Units
Footprint: 26,580 GFA: 125,642	40	Footprint: 26,580 GFA: 130,160	72
Building 5			
Square Footage	Units	Square Footage	Units
Footprint: 20,050 GFA: 100,250	140	Footprint: 17,642 GFA: 88,210	140
Building 7			
Square Footage	Units	Square Footage	Units
Footprint: 15,214 GFA: 15,214	N/A	Footprint: 15,214 GFA: 15,214	N/A

Parking

Parking has changed slightly from the approved master plan as noted below:

Phase 2 Parking Changes (excluding lease parcel) (previously Option 1)			
Approved Master Plan		**Revised Master Plan**	
Required Spaces	Provided Spaces	Required Spaces	Provided Spaces
865	1117	891	999

PROPOSED MASTER PLAN – PHASE 2 (WITH HOTEL)



CURRENT REGULATIONS

COMPREHENSIVE PLAN

The 2013 Comprehensive Plan designates this parcel as Urban Commercial land use, which is defined by the Plan as follows:

> Urban Commercial designates the City's most urban commercial corridor along Richmond Road between Monticello Avenue and ByPass Road, and along Monticello Avenue from Richmond Road to Treyburn Drive. The City's two oldest shopping centers are located in this area, which includes a mix of retail, office and service businesses, as well as hotels and timeshares and a small number of apartments. Because the Urban Commercial area is located close to downtown and the College of William and Mary, it has much potential for future major redevelopment as a mixed use area with housing for both college students and senior citizens. Maintaining a strong commercial component is essential, and an appropriate mix of retail space

needs to be retained to serve the needs of the downtown area, including basic uses like grocery, hardware and drug stores.

Residential uses in the Urban Commercial area are allowed only as multifamily combined with non-residential uses in a mixed-use format. To encourage mixed use redevelopment, the base residential density should remain 14 dwelling units/net acre, but additional density should be allowed with a special use permit. The primary consideration for the approval of increased density should be how the scale and character of the proposed project relates to its immediate surroundings and to the Midtown Planning Area as a whole. Residential use is limited to no more than 67% of the floor area on an individual lot to ensure that valuable commercial land is not completely used for residential purposes, and a special use permit is required so that impacts to the surrounding commercial area can be considered. Student dwelling units should be added as special use permit use with a permitted dwelling unit occupancy of two unrelated persons in an efficiency or one bedroom unit, and four unrelated persons in a two or more bedroom dwelling unit. Building height should remain at 45 feet. This category is implemented by the B-3 zoning district, with modifications.

Surrounding areas are designated Urban Commercial, Mixed Land Use, Low-Density Single-Family Detached Residential, Medium-Density Single-Family Detached Residential, William and Mary and Sensitive Environmental Area and Chesapeake Bay Preservation Area land uses.

The City's Comprehensive Plan is a policy document that is designed to guide the physical and economic development of Williamsburg by offering a distinctive vision for both its natural and built environment. For zoning changes and special use permits this document provides goals, objectives and policies in evaluating applications.

Chapter 7 Land Use Categories

The amount of available and developed commercial and mixed-use land use is located on pages 7-1 and 7-2 which states:

"There are 337 acres (6%) developed as commercial and office use, located in the downtown area and along the major commercial entrance corridors. Unlike most similarly-sized communities, the majority of this commercial land area is tourism-oriented, and developed as hotels, restaurants and retail establishments serving Williamsburg's visitors."

Of the vacant land available 67 acres of commercial and 193 acres of mixed use are available for a total of 260 acres or an additional 4.5% of commercial land available. The combination of 597 acres of commercial and mixed use land available land in the City equals 10.5%.

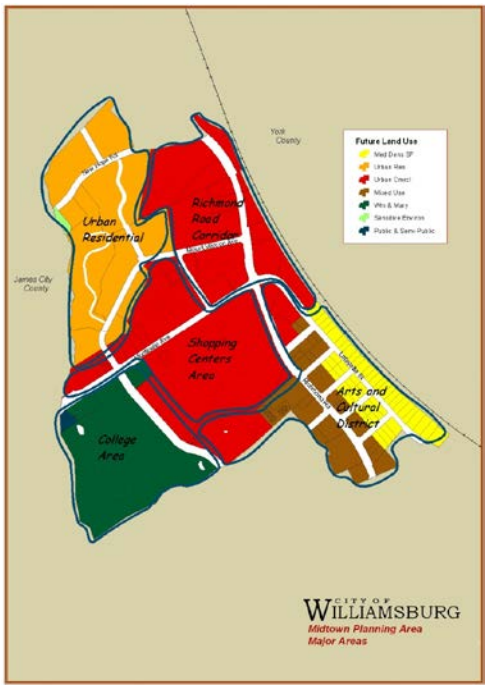
Chapter 8 Neighborhoods and Housing – Housing Plan (Page 8-10)

The 2013 Comprehensive Plan's Housing Plan is detailed in the following sections of this chapter, and is summarized below:

1. "Preserve and protect the City's single-family neighborhoods. Neighborhood preservation should be promoted by enforcement of various City regulations, such as the Property Maintenance Code, Rental Inspection Program, Zoning Ordinance, Residential Permit Parking Program, Noise and Nuisance Ordinances and Animal Control Ordinances. Continuous improvements to streets, parks and other public infrastructure should be made. Regulations should be periodically reviewed to assess their effectiveness in protecting the character of these neighborhoods."
3. "Build new mixed use neighborhoods. New residential uses should be integrated with or nearby office, commercial and other non-residential uses in master planned mixed use developments. High Street and Quarterpath at Williamsburg are examples of this type of new development, and the Midtown Planning Area has the potential to redevelop into a mixed use neighborhood with an emphasis on student housing."
6. "Develop alternatives for college student housing. The College should provide additional student housing on the campus, as demonstrated by the construction of the Jamestown Dormitories in 2006 and the new Fraternity Complex to be completed in 2013. City regulations should encourage student oriented housing in suitable off-campus locations to supplement the housing provided by the College, as demonstrated by the PDC Planned Development College District that allowed the development of Tribe Square, and the PDU Planned Development Urban District that allowed the conversion of an older hotel to the City Lofts apartments. Public/private partnerships that facilitate the construction of student houses should be encouraged."

Chapter 8 Neighborhood and Housing – Midtown Planning Area Map (Page 8-16)

This proposal is located in the Midtown Planning Area as demonstrated on the map below.



Chapter 8 Neighborhood and Housing - Encourage Affordable Housing – Page 8-32

The 2013 Comprehensive Plan recommends five new initiatives that could increase the affordable housing supply. Two initiatives pertain to the Midtown Planning Area. They are:

- "Allowing residential density to be increased with a special use permit in the Downtown Planning Area (*Downtown Commercial* and *Mixed Use* land use) and in the Midtown Planning Area (*Urban Commercial* and *Urban Residential* land use) provided that its scale and character properly relates to the surrounding areas and neighborhoods."
- "Positioning the Midtown Planning Area as a location for new student housing. Through the redevelopment of existing shopping centers and apartments in this area over time, there could be a potential for 300 or more new dwelling units with an emphasis on student housing. This could free up affordable housing in existing neighborhoods if students move from existing single family housing into new apartments that are designed to address student needs. Providing more student housing is important, particularly since the *Housing Needs Assessment* noted that college students help to drive up housing costs."

Chapter 9 Institutions - Planning Issues (Page 9-3)

The Planning Issues section of the Comprehensive Plan contains the following section on student housing. It states:

"There is a great demand for student housing on campus and in the area surrounding the College, which has an impact on the largely single family neighborhoods adjacent to the College along Richmond Road and Jamestown Road. It is the responsibility of the College to provide an appropriate amount of student housing on the campus. Additionally, City regulations should be developed to encourage appropriate student-oriented housing off-campus to supplement the housing provided by the College. To implement these two goals, the Planning Department worked closely with the College in the planning for the Tribe Square project, which was completed in 2011 and provides 56 student beds in 14 four-bedroom apartments. The City also worked with the developer of the Prince George Commons project at 521 Prince George Street, which received site plan approval in 2011 and will provide seven one-bedroom apartments on the second floor; and with the developer of the City Lofts project at 1406 Richmond Roads which was approved in 2012 and will provide 143 student beds in 94 one-bedroom apartments. In addition to these projects, there are other options that can help meet the need for student housing:

- Construction of additional student housing on the main campus.
- Construction of new multifamily units in the Midtown Planning Area. City Lofts was approved in 2012, and provides 94 one-bedroom apartments to house 143 students. Other future opportunities include adding student apartments as a part of a redevelopment of the Williamsburg Shopping Center, and redeveloping all or a portion of the Lawson Apartments on Mount Vernon Avenue for higher density

student apartments. See *Chapter 10 – Commercial and Economic Development* for more detailed information on the Midtown Planning Area.

- Construction of new multifamily units planned for High Street Williamsburg, Quarterpath at Williamsburg, and in the Downtown area. While these are not planned specifically as student housing, these new units will give students wishing to live off-campus additional options outside of the traditional close-in City neighborhoods. See *Chapter 10 – Commercial and Economic Development* for more detailed information on these areas.
- Using the Dillard Complex for student housing or student apartments. The existing buildings could be either renovated or demolished and redeveloped. This area is connected to the main campus by Treyburn Drive, and is located next to the mixed-use High Street Williamsburg development. It is also served by Williamsburg Area Transport bus service, including the Williamsburg Trolley."

Chapter 10 Commercial and Economic Development - Page 10-1

"While recent commercial development and retail growth in the neighboring counties have outpaced that in Williamsburg, the City is still a major player in the regional marketplace. But with limited land available for commercial expansion, the major mixed use developments of Quarterpath at Williamsburg and High Street, as well as redevelopment opportunities throughout the City, remain key to the City's economic vitality. Great care needs to be taken by the City to recognize and stay on top of the ever-changing dynamics of the market and to respond to them in an appropriate manner (i.e. find and fill market niche opportunities). The City must commit itself to doing this in order to maintain its status as the economic hub of the region and a trendsetter among successful tourism-supported communities in the country."

Chapter 10 Commercial and Economic Development - Page 10-2

Item 3 of the 2013 Comprehensive Plan's Commercial and Economic Development Plan recommends:

> "Promote the Midtown Planning Area as a major redevelopment area. The Midtown Planning Area has the potential to become a multifaceted urban mixed use neighborhood. Its location close to the downtown area and to the College of William and Mary should support specialty commercial uses, and there is potential for the redevelopment of the two existing shopping centers. Increasing the residential component of this area is important, and it is well positioned to become an important location for college student housing. The Arts and Cultural District is well positioned to support the City's creative economy, and is also a transition area between automobile-oriented commercial to the west and residential uses to the east."

Chapter 10 Midtown Planning Area – Page 10-12

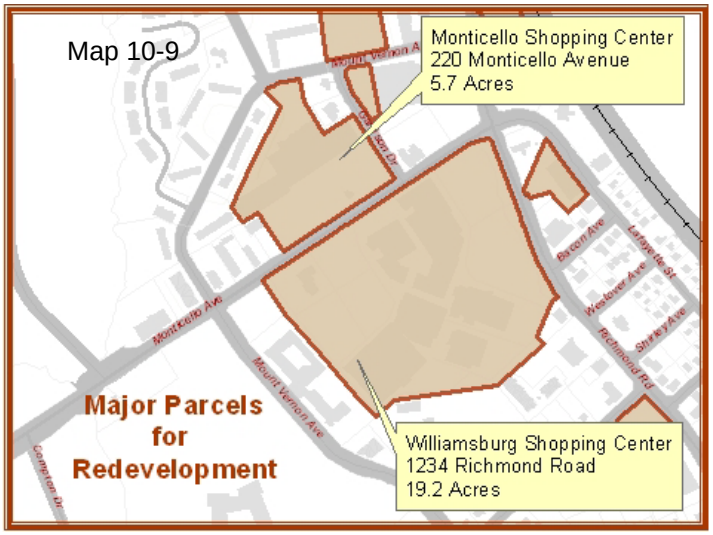
A discussion of the major commercial and institutional areas in the Midtown Planning Area discusses the Shopping Centers Area. It states:

- "The *Shopping Centers Area* is anchored by two neighborhood shopping centers. Williamsburg Shopping Center fronts on Richmond Road and Monticello Avenue, and was built by the Colonial Williamsburg Foundation in the 1950s to provide

space for commercial growth in the area, and has been expanded several times. This 255,968 square foot shopping center contains two department stores, the City's only centrally located grocery store, a hardware store, bookstore, several restaurants and assorted retail and service uses. The 78,396 square foot Monticello Shopping Center, contains a variety of retail, service and restaurant uses, and a movie theater has been converted to a church. West of the shopping centers along Monticello Avenue are four medical office buildings, a small apartment building and two retail stores.

The 19.2 acre Williamsburg Shopping Center has potential for a major redevelopment as a mixed use project. However, any redevelopment should retain an appropriate mix of retail space to serve the needs of the downtown area. These neighborhood commercial uses, particularly the grocery store and the hardware store, make an important contribution to the livability of the downtown area. To encourage mixed use redevelopment, the base residential density should remain 14 dwelling units/net acre, but additional density should be allowed with a special use permit. The primary consideration for the approval of increased density should be how the scale and character of the proposed project relates to its immediate surroundings and to the Midtown Planning Area as a whole. Multifamily dwellings should continue to be allowed with a special use permit so that impacts to the surrounding commercial areas can be considered.

The location of the Williamsburg The proximity of the Williamsburg Shopping Center to the College and its location on existing bus routes make it a desirable location for student housing. The Tribe Square model with commercial on the first floor and student apartments on the upper floors is an example of what could be done with a portion of this property. Student dwellings should be added to the B-3 District as a special use permit use, with a permitted dwelling unit occupancy of two unrelated persons in an efficiency or one bedroom dwelling unit, and four unrelated persons in a two or more bedroom dwelling unit. Senior housing is another possibility for similar reasons, and should be allowed with reduced parking requirements with a special use permit.



> Improvements may be needed to Monticello Avenue with redevelopment – the Hampton Roads Transportation Planning Organization's Comprehensive Transportation Study (Appendix A2) shows that Monticello Avenue adjacent to the Williamsburg Shopping Center currently has moderate congestion (LOS D) and is projected to have severe congestion in 2034 (LOS E or F). Special use permits should be required for any major redevelopment so that traffic and other impacts can be properly evaluated."

Surrounding areas are designated Urban Commercial, Mixed Land Use, Low-Density Single-Family Detached Residential, Medium-Density Single-Family Detached Residential, William and Mary and Sensitive Environmental Area and Chesapeake Bay Preservation Area land uses.

ZONING

This property is located in the Urban Business B-3 zoning district.

The statement of intent for the Urban Business B-3 zoning district reads:

> *This district is established to allow high quality mixed-use development in the Midtown Planning Area for areas designated as Urban Commercial land use. This area is more urban in character than the corridor business district B-2, and is therefore suitable for a mix of commercial, office and residential uses. Because this area is served by transit, and has a wide variety of commercial services within walking distance, it is a good location for multifamily housing, and particularly housing for college students and senior citizens. Residential uses and higher intensity commercial uses such as offices and retail sales establishments in buildings exceeding 50,000 square feet may be allowed with a special use permit to ensure that the use is compatible with the district and surrounding neighborhoods.*

Land to the north is zoned Urban Business District B-3. Lands to the east are zoned Urban Business District B-3 and Limited Business Neighborhood District LB-2, lands to the south are zoned Limited Business District LB-2 and Urban Business District B-3 with lands to the west designated William and Mary and Urban Business District B-3.

SPECIAL USE PERMIT

The special use permit section of the Zoning Ordinance (Sec. 21-42) establishes the following criteria for special use permits:

(a) *The proposed use shall be:*
  (1) *In harmony with the adopted comprehensive plan;*
  (2) *In harmony with the intent and purpose of the zoning district in which the use is proposed to be located;*

(3) *In harmony with the character of adjacent properties and the surrounding neighborhoods, and with existing and proposed development.*

(b) *The proposed use shall be adequately served by essential public services such as streets, drainage facilities, fire protection and public water and sewer facilities.*

(c) *The proposed use shall not result in the destruction, loss or damage of any feature determined to be of significant ecological, scenic or historic importance.*

(d) *The proposed use shall be designed, sited and landscaped so that the use will not hinder or discourage the appropriate development or use of adjacent properties and surrounding neighborhoods.*

Additional reasonable standards as deemed necessary to protect the public interest and welfare may be imposed, including: more restrictive sign standards; additional open space, landscaping or screening requirements; additional yard requirements; special lighting requirements; limitation on hours of operation; and additional off-street parking and loading requirements.

The Planning Director or Planning Commission may require the following additional information:

(1) A traffic impact analysis, showing the effect of traffic generated by this project on surrounding streets and neighborhoods.

(2) A public utility analysis, showing the effect of this project on public water, sewer and/or storm drainage facilities.

(3) A fiscal impact analysis. The Planning Director or the Planning Commission may request the City Council to provide funds for the preparation of this study by the City.

Fiscal Impact Analysis

A fiscal impact analysis was prepared by Ted Figura Consulting and was provided with the original submittal in October. A copy has been included with your packet. Based on the analysis, the project will have a positive fiscal impact to the City over the ten-year analysis period.

Traffic Impact Analysis

A traffic impact analysis was prepared by Kimley Horn and was provided with the original submittal in October. The traffic study recommended improvements to Monticello Avenue, improvement/upgrades to existing traffic signals and associated equipment, and a second left-turn lane and full-width exclusive right-turn lane for the eastbound approach of Monticello Avenue at the Richmond Road intersection. With the improvements as noted in the traffic study the anticipated future impacts are anticipated to be minimal with operational conditions at the study area intersections expected to be maintained at levels

comparable to those experienced today. A copy of the study has been included with your packet.

Public Utilities

Public water service is provided to the project through City water mains located along Richmond Road and Monticello Avenue. The developer may need to install new water mains in the development to service proposed buildings. Each building will be sprinkled for fire protection.

Public sewer is provided to the site. The applicant proposes to use the existing gravity sewer systems. Additional gravity sewer systems will be constructed to serve the new retail, residential and hotel building as necessary. Building 1 will discharge into the existing sanitary system flowing down Monticello Avenue. The remaining portion of the development will discharge into the existing sanitary system flowing to the southeast corner of the site.

The applicant proposes to utilize an existing detention pond, located off-site at the southern end of the development for pollutant removal. They propose to purchase either water quality access credits from the Skipwith Regional BMP Facility or construct Focalpoint Bioretention facilities onsite in lieu of credit purchase from the City. Stormwater regulations require a 20% reduction in phosphorus for a redevelopment site greater than one acre.

STAFF ANALYSIS

The site currently consists of an outdated and underperforming 1959 shopping center on 19.438 acres with 8% open space. Redevelopment of the area into a new mixed-use student oriented development project that has both commercial and residential uses will benefit not only this area of the City but the City as a whole.

The Comprehensive Plan recommends the Midtown Planning Area as a location for new student housing. It also states that locating student housing in this area has the potential to free up affordable housing in existing neighborhoods. The proposed redevelopment of the shopping center would have the potential to prevent additional houses in City neighborhoods from being converted to rentals and for the relocation of some students in existing neighborhoods into a more vibrant area with student amenities.

The Zoning Ordinance establishes criteria for special use permits. This project is in harmony with the adopted comprehensive plan, it is located in a zoning district that allows a mixture of office, commercial and residential uses, it is adequately served by public services, it does not result in the destruction, loss or damage of significant ecological, scenic or historic features, and the proposal is designed, sited and landscaped to not hinder or discourage development on adjacent properties and surrounding neighborhoods.

The proposal is supported by the policies and recommendations set forth in the 2013 Comprehensive Plan as noted in my memo.

STAFF RECOMMENDATION

Staff supports the request and recommends that Planning Commission recommend to City Council approval of the amendments to the special use permit and master plan for Midtown Row subject to the following:

1. The developer shall dedicate to the City the right-of-way necessary to construct the improvements to Monticello Avenue and Richmond Road as outlined in the traffic study.
2. The developer shall coordinate with the City and provide an easement or right-of-way along Richmond Road for a new multi-use path along the frontage of the shopping center along Richmond Road to connect to the new cycle track and sidewalk on Monticello Avenue.
3. The developer shall provide bike racks within the development which must be approved by Planning Commission as part of the site plan.

PLANNING COMMISSION RECOMMENDATION

Planning Commission held a public hearing on January 17. Other than the applicant's attorney, no one spoke at the hearing. Planning Commission recommended to City Council by a vote of 7-0, that the special use permit and master plan amendment be approved with the following conditions:

1. The developer shall dedicate to the City the right-of-way necessary to construct the improvements to Monticello Avenue and Richmond Road as outlined in the traffic study.
2. The developer shall coordinate with the City and provide an easement or right-of-way along Richmond Road for a new multi-use path along the frontage of the shopping center along Richmond Road to connect to the new cycle track and sidewalk on Monticello Avenue.
3. The developer shall provide bike racks within the development which must be approved by Planning Commission as part of the site plan.

CITY COUNCIL PUBLIC HEARING

A City Council public hearing is scheduled for Thursday, February 8 at 2:00 p.m. in the Council Chambers of the Stryker Center, 412 North Boundary Street.

Carolyn A. Murphy

Carolyn A. Murphy, AICP
Planning and Codes Compliance Director

[PC\PCR\2017\17-027MEMO4]

Master Plan Narrative

for

Special Use Permit
Midtown Row

Prepared For

Broad Street Realty, LLC

Mr. Aras Holden
7250 Woodmont Avenue, Suite 358
Bethesda, MD 20814

July 24, 2017 *(Revised: December 21st, 2017)*

AES Project Number: W09042-05

Prepared by:

AES CONSULTING ENGINEERS

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APPENDIX
- VRRM Summary

I. INTRODUCTION

On behalf of Broad Street Realty, LLC, we are requesting a Special Use Permit and Zoning Ordinance Text Change to redevelop and construct commercial, residential and hotel buildings in a new mixed used development at the existing Williamsburg Shopping Center. This shopping center is situated on 19.44 acres at the intersection of Richmond Road (Route 60) and Monticello Avenue, in the City of Williamsburg and is currently zoned (B-3) Urban Business District. A Special Use Permit is being sought to allow for student-targeted multifamily residential units. Additionally, a parking structure is proposed to accommodate the development and also requires a Special Use Permit per City ordinance. The proposed buildings are planned to have retail uses on the first floor with multiple residential floors above. This proposed development will replace more than half of the existing shopping center while leaving intact the Sal's by Victor Restaurant, Food Lion, and the building currently occupied by Ace Hardware. The Master Plan for Special Use Permit includes two phased layouts for the development. Two phases are provided with this SUP submittal. The first phase shows the four proposed building and the reduction of the commercial space for Building 7. The second phase includes the Hotel on the corner of Richmond Road and Monticello Avenue.

The purpose of this report is to summarize and organize the planning efforts of the project team into a cohesive package for Staff review, which addresses the pertinent planning issues affecting the property.

II. THE PROJECT TEAM

The Williamsburg Shopping Center was acquired by a joint venture formed by Broad Street Realty LLC ("Broad Street") of Bethesda, Maryland and Lamont Street Partners, ("LSP") also of Bethesda Maryland. At this time, the Monticello Shopping Center is also under contract to Broad Street and LSP. The new mixed use residential/retail portions of the new Midtown Row is a joint venture of Broad Street, LSP and Bridger Corp. of Jackson Wyoming. Broad Street and LSP are highly experienced owners, developers and managers of retail, multifamily, office and industrial real estate throughout the United States controlling more than 5,000,000 square feet of primarily retail and multifamily assets. Bridger Corp is a highly experienced developer and manager of multifamily real estate geared toward students and young professionals with successful projects completed at Clemson University, West Virginia

University, Shippensburg University, Virginia Tech and the University of South Carolina. Architecture provided by Bonstra Haresign of Washington DC. Civil Engineering by AES Consulting Engineers of Williamsburg, Virginia. Construction Consulting by Henderson Construction of Williamsburg, Virginia and Zoning Counsel provided by Vernon Geddy III of Geddy, Harris, Franck & Hickman of Williamsburg, Virginia.

III. PROJECT DESCRIPTION AND PLANNING CONSIDERATIONS

A. PROJECT DESCRIPTION

Midtown Row will be a new and unique, mixed use development in Williamsburg Virginia. Joint Venture Partners, Broad Street Realty, Bridger Corp & Lamont Street Partners with the cooperation of the City Of Williamsburg intend to create a new retail, residential and entertainment district in the heart of Williamsburg. Midtown Row is located at the gateway entrance to the City of Williamsburg and all that makes Williamsburg wonderful. Williamsburg is a College Town, a Historic Town and has been recognized as one of the Nation's best modest sized communities to live and work.

Midtown Row begins at the intersection of Richmond Road and Monticello Avenue. Richmond Road is a primary artery providing ingress and egress to the Nation's largest living museum Colonial Williamsburg, the College of William and Mary and "Downtown" Williamsburg. Monticello Avenue is a major crosstown route leading to New Town Williamsburg and the Route 199 interchange.

At the heart of Midtown Row will be four (4) new mixed use buildings totaling approximately 320,000 square feet of residential and amenity space over 60,000 feet of new ground floor retail space. These new mixed use buildings will line a well-landscaped new road system with extra wide sidewalks to encourage a pedestrian friendly experience as well as alfresco dining at its new retail establishments. The primary new road from Monticello Avenue opens to a landscaped public plaza designed for neighbors, students and visitors to meet, stay and relax. Beyond the Public Plaza will be a retail crescent formed by a refurbished 15,000 square foot retail building retaining one of Williamsburg's most popular Italian eateries, Sal's by Victor with its own new al fresco dining area as well as the Virginia ABC store and space for another small shop retailer. The last piece of the retail crescent area will be a refurbished 27,000 square foot retail building, where Marshall's will be relocated. New parking fields providing ample parking are sprinkled throughout Midtown

Row and a partially structured parking area will be provided for the residential portions of the Project. It is anticipated that a professional sign package program will be instituted project wide. The new and extended roads are designed to align with the current and future public road network vision of the City of Williamsburg.

At the Richmond Road and Monticello corner of Midtown Row, the development team hopes to attract a hotel developer to build an approximately 140 key mid-priced boutique or select service hotel. This will be the only hotel within walking distance to the heart of the College of William and Mary. Facing Richmond Road, the existing Food Lion Grocery Store will remain with a refurbished storefront. There will be improvements to the landscaping and parking area's fronting Richmond Road.

Broad Street is coordinating its development of Midtown Row with the City of Williamsburg plan to re-imagine Monticello Avenue. The City's plan may include traffic circles, sidewalks, new stop lights, bike lanes and parking along Monticello Avenue to be installed simultaneously with the development of Midtown Row.

A breakdown of the proposed residential units and site density for both layout phases is provided below. See sheets 3 and 4 of the SUP plan for a more detailed breakdown of units per building for each layout phase:

<u>Layout Phase 1</u>

- Total Residential Units = 245 units
- Total Site Density = 245 units/18.94 AC = 12.94 units/AC
- Total Retail Space Provided = 158,778 square feet

<u>Layout Phase 2</u>

- Total Residential Units = 245 units
- Total Site Density = 245 units/18.94 AC = 12.94 units/AC
- Total Retail Space Provided = 131,589 square feet

B. PLANNING CONSIDERATIONS

The Williamsburg Shopping Center parcel is zoned B-3, Urban Business District and is in the Midtown Planning Area. The specific intent of this district is to allow high quality mixed-use development in the Midtown Planning Area for a suitable mix of commercial, office, and residential uses. The site is designated Urban Commercial in the City's 2013 Comprehensive Plan. The Neighborhoods and Housing section of the Comprehensive Plan in numerous places describes this site as a good location for multifamily housing, and particularly housing for college students in a mixed us development. The Commercial and Economic Development section of the Plan states that the City should promote the Midtown Planning Area as a major redevelopment area. The Midtown Planning Area has the potential to become a multifaceted

urban mixed use neighborhood. Its location close to the downtown area and to the College of William and Mary should support specialty commercial uses, and there is potential for the redevelopment of the two existing shopping centers. Increasing the residential component of this area is important, and it is well positioned to become an important location for college student housing. This proposal is consistent with the 2013 Comprehensive Plan.

This project is proposing only uses that are called for in the Comprehensive Plan and are currently permitted in the B-3 district, either by right or with a special use permit. These uses, including restaurant, retail, residential, and hotel are compatible with surrounding land uses and zoning districts. Plans for the site are being pursued with the knowledge that water and sewer services currently serve the site and with certain design upgrades, there is ample capacity in these systems to support the project.

Preliminary parking tabulations have been taken from both proposed layouts and surpass the total required spaces per City Ordinance. An on-site on-level parking garage is being utilized, in part, to meet this need. This development falls within the Expanded Midtown Parking District as of December 13, 2012 per Sec. 21-711 of the City Zoning Ordinance. Refer to the 'Parking Analysis' (Section C.) below and Master Plan Layout Phases on Sheets 2-4 for tabulations.

C. PARKING ANALYSIS

This development falls within the Expanded Midtown Parking District as of December 13, 2012 per Sec. 21-711 of the City Zoning Ordinance. Parking will be shared across the development and both layout phases meet the required parking spaces per ordinance with and without the adjacent southern Lease Parcel included. A proposed parking garage, located on the western edge of the site, will be utilized to meet this need. Accommodating bike racks will also be placed around the site. Refer to Master Plan Layout Sheets 3-4 for further parking tabulations.

<u>Layout Phase 1</u>

- Parking required = 853 spaces (Lease Parcel included)
- Parking provided = 1042 spaces (Lease Parcel included)
- Parking required = 802 spaces (Lease Parcel excluded)
- Parking provided = 991 spaces (Lease parcel excluded)

Layout Phase 2

- Parking required = 931 spaces (Lease Parcel included)
- Parking provided = 1050 spaces (Lease Parcel included)
- Parking required = 880 spaces (Lease Parcel excluded)
- Parking provided = 999 spaces (Lease Parcel excluded)

IV. ANALYSIS OF EXISTING AND PUBLIC UTILITIES

A. PUBLIC WATER FACILITIES

Public water service is currently provided to the site through City of Williamsburg water mains located along Richmond Road and Monticello Avenue. The existing services to the shopping center are provided from a private 8" water loop connecting Richmond Road to Monticello Avenue. The intent of the development is to reduce the overall length of pipe, reduce the number of connections into existing mains, and reduce the use of old pipes as much as possible. Existing water mains may be necessary to maintain the continuity of the loop as well as serve the existing buildings at the eastern end of the site. Each building will be sprinkled for fire protection and provided metered domestic water. Buildings 2, 3, and 4 will be served with dual water meters, one for residential use and one for retail use. Due to the presence of low flows in the existing water system, it is anticipated that each building will have two booster pumps; one for fire and one for domestic water service.

B. PUBLIC SEWER FACILITIES

For this site, public sewer service is currently provided through multiple gravity pipe systems. One system runs through the middle of the shopping center at rear of the interior buildings and ultimately discharges to a gravity main along Richmond Road. Additionally, a gravity sewer lateral serves the vacant bank building at the western corner of the site and discharges to a gravity main along Monticello Avenue. The intent of the proposed development is to utilize the existing gravity sewer systems to the greatest extent possible, particularly serving the main commercial buildings at the center of the site. Additional gravity sewer mains and laterals are proposed to serve the new retail, residential, and hotel buildings where necessary. Building 1 will discharge into the existing sanitary system flowing southwest down Monticello Avenue. All the other proposed buildings will discharge into the existing sanitary system flowing to the southeast corner of the site.

V. ENVIRONMENTAL INVENTORY

A. SUMMARY OF EXISTING CONDITIONS

As stated in the project description, the existing developed site is approximately 92% impervious and comprised of multiple commercial buildings, surrounding parking and access ways. The only vegetation on site exists in the form of a tree line along the southwestern boundary, some landscaping of roadways and parking lot islands. A portion of the site lies within the Chesapeake Bay Resource Management Area which is offset 500 feet from nearby off-site wetlands.

B. TOPOGRAPHY

The site is relatively gently sloped with elevations ranging from about 97 above mean sea level at the center of the development to a low of 80 at the western corner of the site adjacent to Monticello Avenue. Sheet 2 of the Master Plan illustrates the location of a few steep slopes around the site perimeter.

C. SOILS

The Soil Survey of James City County, York County, and Williamsburg Virginia (USDA 1985) maps a few different soil types on this site prior to development. For the purposes of analyzing this application the existing soil classification should be considered Urban (#37).

D. SURFACE WATER

This site is within the subwatershed of College Creek of the James River Basin. There is one detention facility at the southern corner of the site located adjacent to the Ace Hardware Store Building.

E. WETLANDS AND FLOODPLAINS

According to Flood Insurance Rate Map (FIRM) 51095C0138D, for Williamsburg, Virginia, there are no floodplains or associated wetlands located on this site.

F. VEGETATION

There is no significant vegetation on the site apart from a few mature trees within perimeter buffers.

VI. ANALYSIS OF STORMWATER MANAGEMENT

A brief needs-analysis for stormwater management, meeting the general criteria of the Commonwealth of Virginia and the City of Williamsburg's stormwater requirements, was completed as a component of the planning for the proposed project. Please refer to Sheet 6 of the Special Use Permit Plans, Stormwater Management Master Plan. The goal of the stormwater management plan is to adhere to local and state stormwater requirements. Preliminary site observations and mapping identify the following unique site characteristics to be considered in stormwater management planning:

- The project is situated within the College Creek subwatershed of the James River Basin.
- The property is currently fully developed at 92% impervious cover. As such this property is being classified as a redevelopment site and adhering to the Virginia DEQ rules controlling such sites.

Per the Virginia Runoff Reduction Method, this redeveloped site has a proposed disturbance of greater than 1 acre and is thusly required to have a phosphorus load reduction of at least 20% below its predevelopment load. Per preliminary analysis, this required phosphorus reduction is approximately 5 lbs/year. Due to challenges with space and

implementation of potential stormwater management facilities, it is the owner's intent to purchase water quality access credits from the City of Williamsburg from the downstream Skipwith Regional BMP Facility.

Channel protection and flood protection requirements, per Virginia Erosion and Sediment Control regulations, will be met by utilization of Underground Detention Chambers placed on site where necessary to attenuate flows below predevelopment levels and meet Energy Balance requirements.

VII. TRAFFIC IMPACT ANALYSIS

Traffic Impact Analysis to be provided under separate cover.

VIII. FISCAL IMPACT ANALYSIS

Fiscal Impact Analysis to be provided under separate cover.

IX. ZONING ORDINANCE TEXT AMENDMENTS

In order to create Midtown Row as a vibrant, mixed use, urban development, Broad Street is applying to amend several provisions of the B-3 Zoning District to give it needed flexibility. The approach is to allow flexibility in the requirements discussed below with the approval of City Council in the special use permit process. The language for these text amendments is submitted herewith. A brief description of these text amendments are listed below:

- Sec. 21-351.1. – Permitted dwelling unit occupancy.

  Currently, no more than three unrelated persons shall be permitted in the same unit. This will be changed to four unrelated persons.

- Sec. 21-354 – Uses with special use permit.

  Currently, multifamily dwellings are allowed with a special use permit provided that no more than 67 percent of the gross floor area of any new buildings is devoted to multifamily use. This will be changed to 80 percent.

- Sec. 21-357. - Yards.

  In both layout phases there are some locations where the landscape buffer

requirements are not met. A section will be added to the ordinance indicated that for redevelopment projects, the yard and transitional screening requirements of this Section may be reduced to the widths shown on a master plan approved by a special use permit approved by the city council in accordance with article II, division 4. It should be noted that the existing site layout is currently in violation of the required landscape setbacks and that both proposed layout phases greatly increase the amount of landscape setback area provided on site.

- Sec. 21-358. – Height.

Currently, the maximum building height allowed is 45 feet from grade. This will be revised to 66 feet as approved by a special use permit approved by the City Council in accordance with Article II, Division 4.

X. CONCLUSION

In summary, this proposed development is complimentary to surrounding land uses and zoning and in conformance with the 2013 Comprehensive Plan. Both site layout phases provide more parking than is required per ordinance. Public utilities on this site, Richmond Road, and Monticello Avenue are adequate to service the proposed Midtown Row project.

Stormwater management will be in full practice and accounted for in both terms of water quantity and quality. Regional BMP credits will be purchased for water quality credit and the existing downstream Detention Pond will serve as a quantity control, complemented by on-site Underground Storage Chambers.

MASTER PLAN FOR SPECIAL USE PERMIT

FOR

MIDTOWN ROW MIXED USE DEVELOPMENT

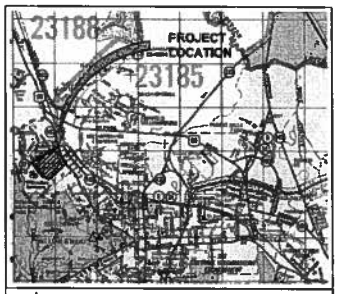
CITY OF WILLIAMSBURG VIRGINIA

GENERAL NOTES

1. PARCEL IDENTIFICATION NUMBERS: 433-01-03-001
   433-01-03-002

   ADDRESS: 1234 RICHMOND ROAD
   WILLIAMSBURG, VA 23185

3. SITE IS ZONED URBAN BUSINESS DISTRICT (B3).
4. SITE IS SITUATED IN THE COLLEGE CREEK SUBWATERSHED OF THE JAMES RIVER BASIN.
5. BASED ON THE FEMA FLOOD INSURANCE RATE MAP FOR WILLIAMSBURG, VIRGINIA (MAP PANEL [illegible]) NO PORTIONS OF THE PROPERTY FALL WITHIN THE 100-YEAR FLOODPLAIN.
6. SITE AREA = 10.41 AC. ± (453,[illegible] S.F.±)



VICINITY MAP
(APPROXIMATE SCALE: 1"=2000')
COPYRIGHT AEC THE MAP PROFILE PERMITTED USE NUMBER [illegible]

AES PROJECT NO.: 9024-05
ORIGINAL SUBMITTAL DATE: 7/24/2017

INDEX OF SHEETS

SHEET NO.	SHEET DESCRIPTION
1	COVER SHEET
2	EXISTING CONDITIONS
3	MASTER PLAN LAYOUT OPTION 1
4	MASTER PLAN LAYOUT OPTION 2
5	UTILITY MASTER PLAN
6	STORMWATER MANAGEMENT MASTER PLAN

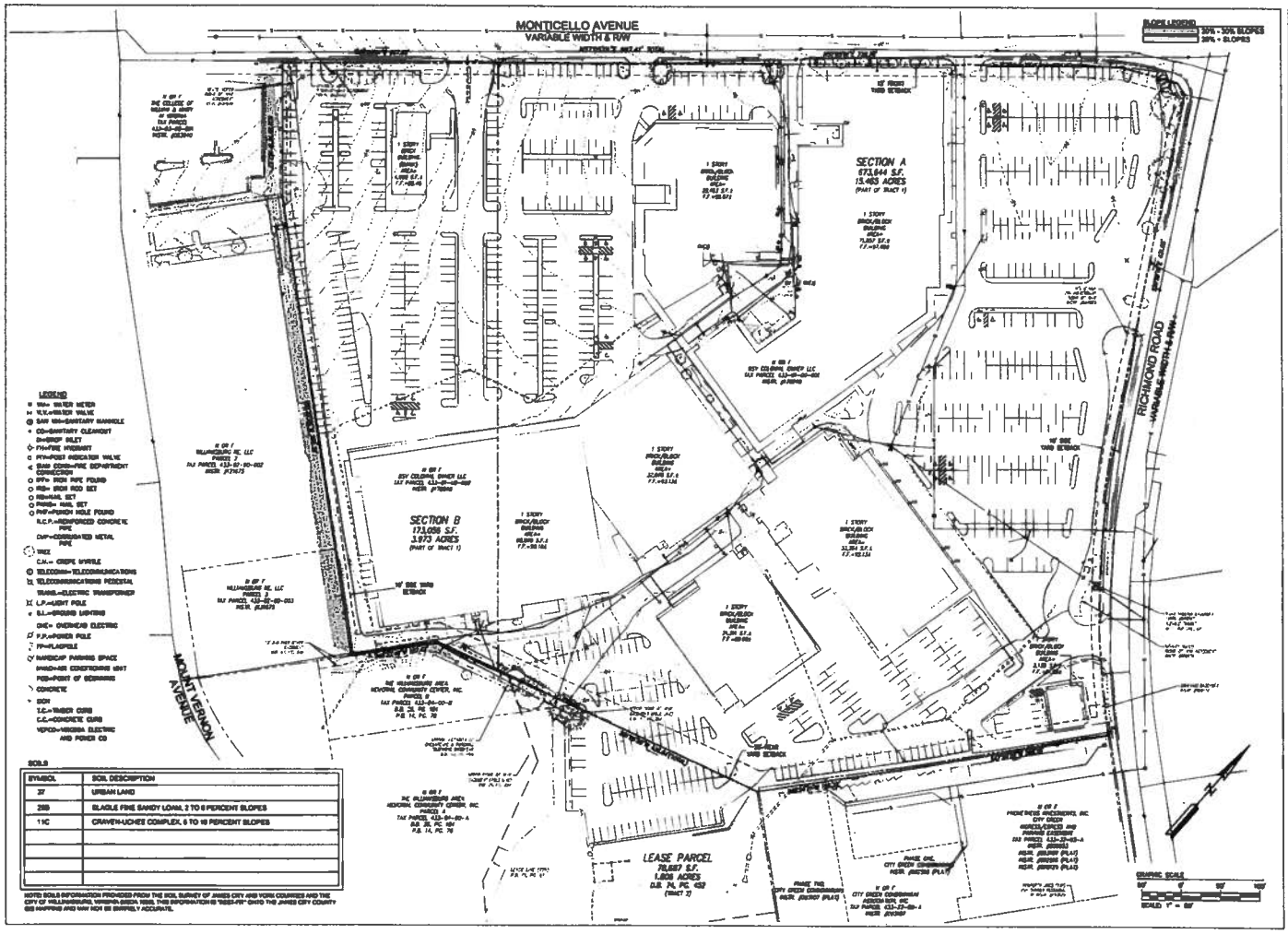
OWNER / DEVELOPER INFORMATION

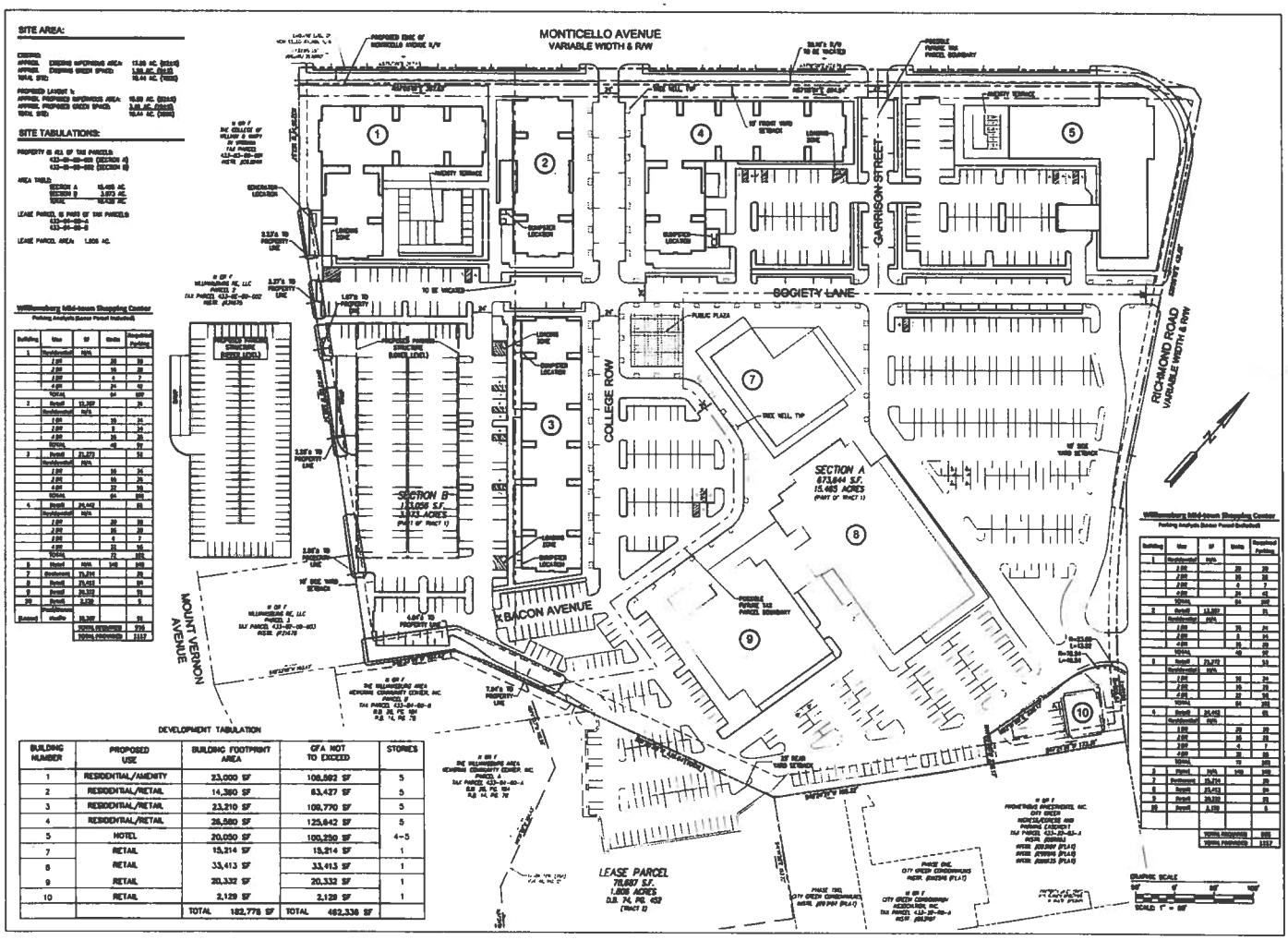
GROVE STREET REALTY LLC.
7500 WOODMONT AVENUE, SUITE 200
BETHESDA, MD 20814
CONTACT: ARNIE HOLDEN
PHONE NO.: (301) 635-4235
FAX NO.: (301)[illegible]

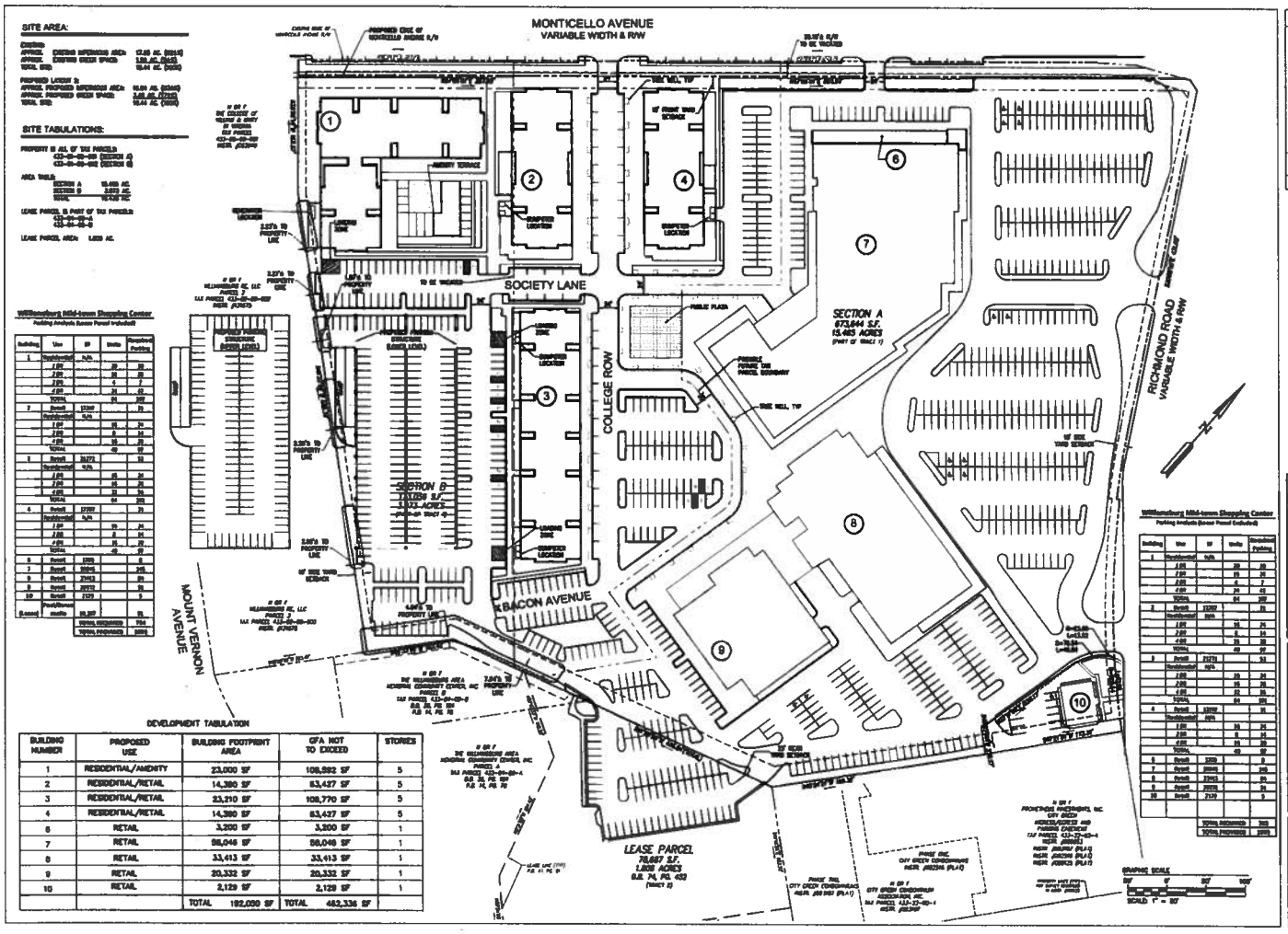
AES
CONSULTING ENGINEERS
[illegible]

MASTER PLAN FOR
MIDTOWN ROW MIXED USE DEVELOPMENT
SPECIAL USE PERMIT
CITY OF WILLIAMSBURG

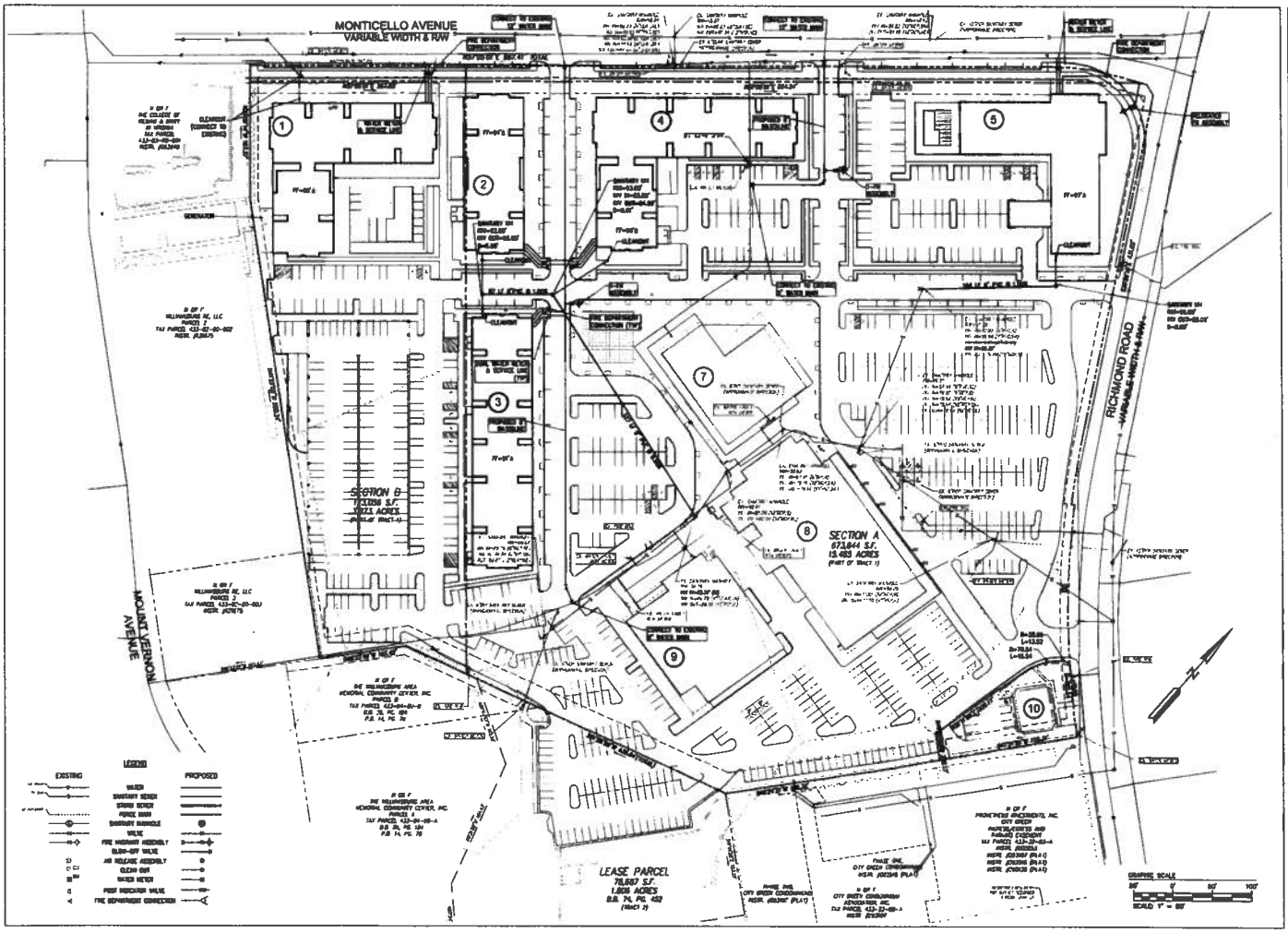
Project Engineer: [illegible]
Project Number: [illegible]
Scale: AS NOTED
Date: [illegible]
Sheet Title: COVER SHEET
Sheet Number: 1


MONTICELLO AVENUE
VARIABLE WIDTH & R/W
MOUNT VERNON AVENUE
RICHMOND ROAD
VARIABLE WIDTH R/W
SECTION A
15.463 ACRES
(PART OF TRACT 1)
SECTION B
3.973 ACRES
(PART OF TRACT 1)
LEASE PARCEL
1.809 ACRES
(TRACT 2)
LEGEND
SOILS
SYMBOL
SOIL DESCRIPTION
27
URBAN LAND
28B
ELKSLE FINE SANDY LOAM, 2 TO 6 PERCENT SLOPES
11C
CRAVEN-UCHEE COMPLEX, 6 TO 10 PERCENT SLOPES
NOTE: SOILS INFORMATION PROVIDED FROM THE SOIL SURVEY OF JAMES CITY AND YORK COUNTIES AND THE CITY OF WILLIAMSBURG, VIRGINIA AREA 1992. THIS INFORMATION IS "BEST-FIT" OVER THE JAMES CITY COUNTY GIS MAPPING AND MAY NOT BE ENTIRELY ACCURATE.
GRAPHIC SCALE
SCALE 1" = 50'
AES
MASTER PLAN
FOR
MIDTOWN ROW MIXED USE
DEVELOPMENT
SPECIAL USE PERMIT
CITY OF WILLIAMSBURG
EXISTING
CONDITIONS
2


SITE AREA:
SITE TABULATIONS:
MONTICELLO AVENUE
VARIABLE WIDTH & R/W
GARRISON STREET
SOCIETY LANE
COLLEGE ROW
RICHMOND ROAD
VARIABLE WIDTH & R/W
MOUNT VERNON AVENUE
BACON AVENUE
SECTION A
673,644 S.F.
15.465 ACRES
SECTION B
LEASE PARCEL
70,687 S.F.
1.609 ACRES
GRAPHIC SCALE
SCALE: 1" = 60'
DEVELOPMENT TABULATION
BUILDING NUMBER
PROPOSED USE
BUILDING FOOTPRINT AREA
GFA NOT TO EXCEED
STORIES
1 RESIDENTIAL/AMENITY 23,000 SF 108,562 SF 5
2 RESIDENTIAL/RETAIL 14,380 SF 63,427 SF 5
3 RESIDENTIAL/RETAIL 23,210 SF 108,770 SF 5
4 RESIDENTIAL/RETAIL 26,560 SF 125,642 SF 5
5 HOTEL 20,050 SF 100,250 SF 4-5
7 RETAIL 15,214 SF 15,214 SF 1
8 RETAIL 33,413 SF 33,413 SF 1
9 RETAIL 20,332 SF 20,332 SF 1
10 RETAIL 2,129 SF 2,129 SF 1
TOTAL 182,778 SF TOTAL 462,336 SF
MIDTOWN ROW MIXED USE DEVELOPMENT
SPECIAL USE PERMIT
MASTER PLAN
LAYOUT OPTION 1
3



BUILDING NUMBER	PROPOSED USE	BUILDING FOOTPRINT AREA	GFA NOT TO EXCEED	STORIES
1	RESIDENTIAL/AMENITY	23,000 SF	108,992 SF	5
2	RESIDENTIAL/RETAIL	14,390 SF	83,427 SF	5
3	RESIDENTIAL/RETAIL	23,210 SF	108,770 SF	5
4	RESIDENTIAL/RETAIL	14,390 SF	83,427 SF	5
5	RETAIL	3,200 SF	3,200 SF	1
7	RETAIL	56,046 SF	56,046 SF	1
8	RETAIL	33,413 SF	33,413 SF	1
9	RETAIL	20,332 SF	20,332 SF	1
10	RETAIL	2,129 SF	2,129 SF	1
		TOTAL 192,030 SF	TOTAL 482,336 SF	

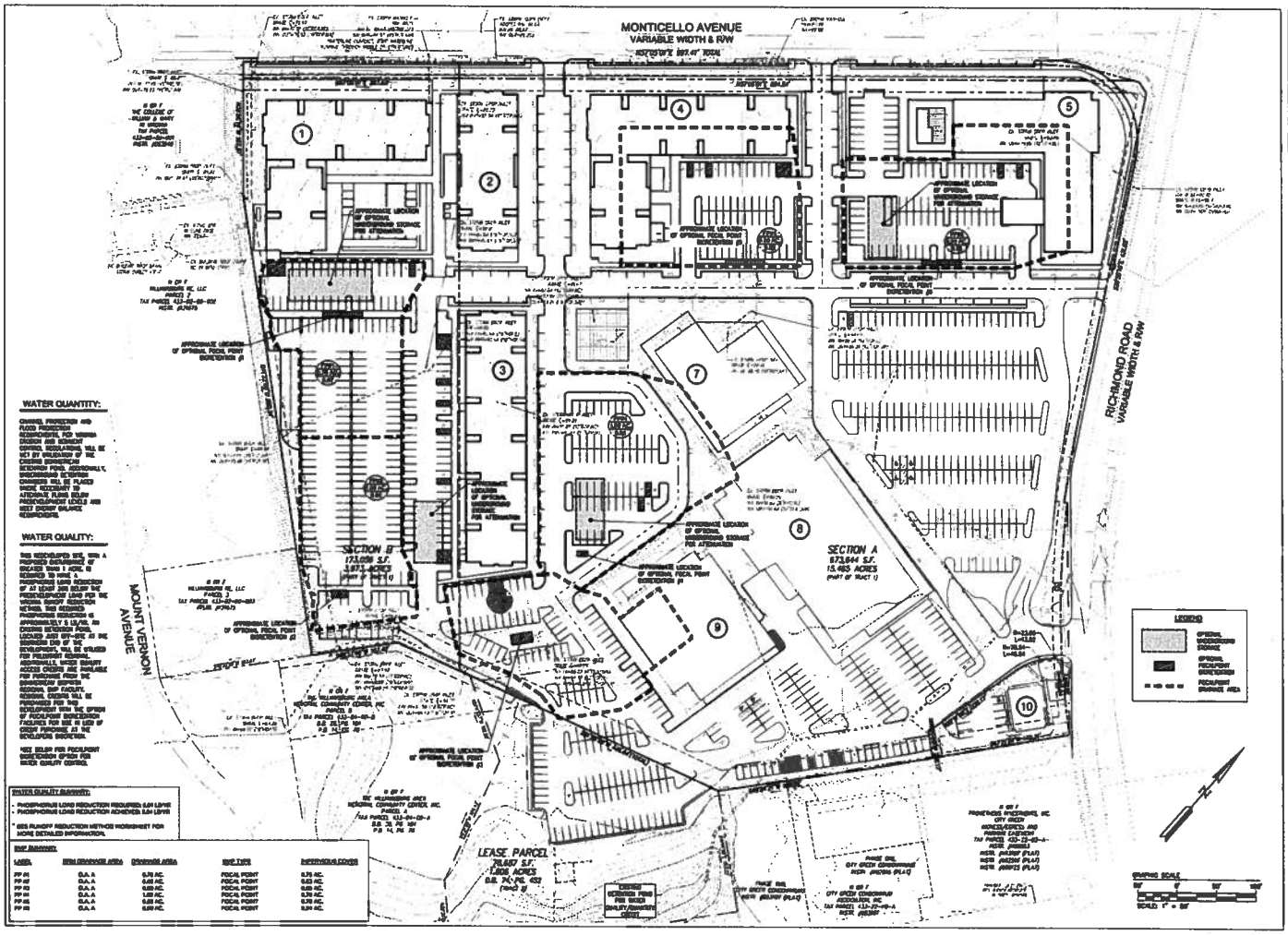


AES
CONSULTING ENGINEERS

MASTER PLAN
FOR
MIDTOWN ROW MIXED USE DEVELOPMENT
SPECIAL USE PERMIT

UTILITY MASTER PLAN

5


MONTICELLO AVENUE
VARIABLE WIDTH & R/W
RICHMOND ROAD
VARIABLE WIDTH & R/W
MOUNT VERNON AVENUE
SECTION B
SECTION A
LEGEND
WATER QUANTITY:
WATER QUALITY:
LEASE PARCEL
MIDTOWN ROW MIXED USE DEVELOPMENT
SPECIAL USE PERMIT
STORMWATER MANAGEMENT MASTER PLAN
6

SITE AREA:

EXISTING:
APPROX. EXISTING IMPERVIOUS AREA: 17.85 AC. (93±%)
APPROX. EXISTING GREEN SPACE: 1.39 AC. (7±%)
TOTAL SITE: 19.44 AC. (100%)

PROPOSED PHASE I:
APPROX. PROPOSED IMPERVIOUS AREA: 16.10 AC. (85.0±%)
APPROX. PROPOSED GREEN SPACE: 2.84 AC. (15.0±%)
APPROX. PROPOSED OPEN SPACE (SIDEWALK): 0.01 AC. (0.0±%)
TOTAL SITE: 18.94 AC. (100%)

SITE TABULATIONS:

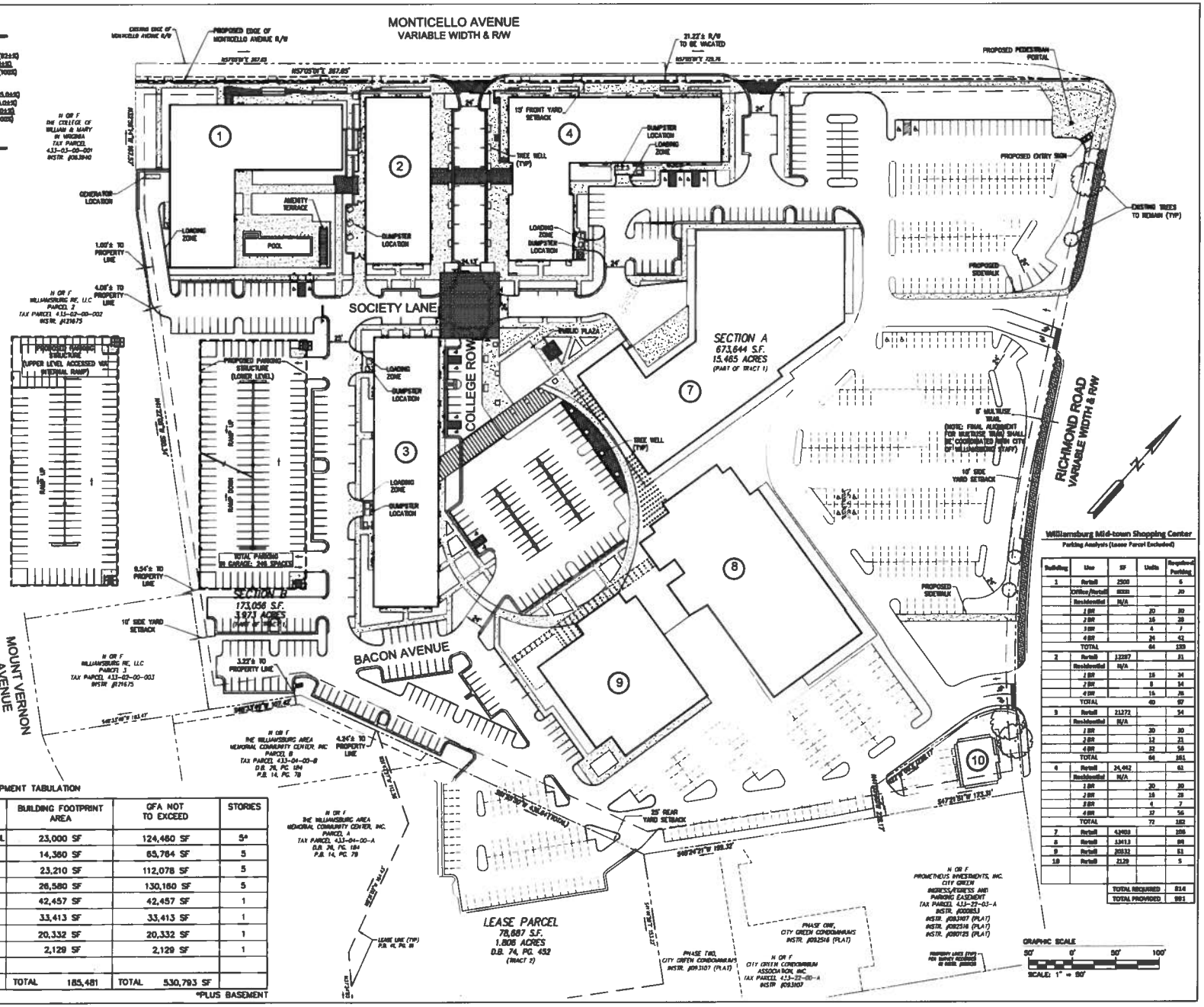
PROPERTY IS ALL OF TAX PARCELS:
433-01-00-001 (SECTION A)
433-01-00-002 (SECTION B)

AREA TABLE:
SECTION A 15.485 AC.
SECTION B 3.973 AC.
TOTAL 19.438 AC.

AREA WITH NEW MONTICELLO R/W: 18.94 AC.

LEASE PARCEL IS PART OF TAX PARCELS:
433-04-00-A
433-04-00-B

LEASE PARCEL AREA: 1.806 AC.



Williamsburg Mid-town Shopping Center

Parking Analysis (Lease Parcel Included)

Building	Use	SF	Units	Required Parking
1	Retail	2500		6
	Office/Retail	8000		20
	Residential	N/A		
	1 BR		20	30
	2 BR		16	28
	3 BR		4	7
	4 BR		24	42
	TOTAL		64	133
2	Retail	12287		31
	Residential	N/A		
	1 BR		16	24
	2 BR		8	14
	4 BR		16	28
	TOTAL		40	97
3	Retail	21272		54
	Residential	N/A		
	1 BR		20	30
	2 BR		12	21
	4 BR		32	56
	TOTAL		64	161
4	Retail	24,442		61
	Residential	N/A		
	1 BR		20	30
	2 BR		16	28
	3 BR		4	7
	4 BR		32	56
	TOTAL		72	182
7	Retail	42402		106
8	Retail	33413		84
9	Retail	20332		51
10	Retail	2129		5
(Lease)	Pool/Dance studio	10,267		51
			TOTAL REQUIRED	865
			TOTAL PROVIDED	1042

DEVELOPMENT TABULATION

BUILDING NUMBER	PROPOSED USE	BUILDING FOOTPRINT AREA	GFA NOT TO EXCEED	STORIES
1	RESIDENTIAL/AMENITY/RETAIL	23,000 SF	124,480 SF	5*
2	RESIDENTIAL/RETAIL	14,360 SF	65,764 SF	5
3	RESIDENTIAL/RETAIL	23,210 SF	112,078 SF	5
4	RESIDENTIAL/RETAIL	26,580 SF	130,160 SF	5
7	RETAIL	42,457 SF	42,457 SF	1
8	RETAIL	33,413 SF	33,413 SF	1
9	RETAIL	20,332 SF	20,332 SF	1
10	RETAIL	2,129 SF	2,129 SF	1
		TOTAL 185,481	TOTAL 530,793 SF	

*PLUS BASEMENT

Williamsburg Mid-town Shopping Center

Parking Analysis (Lease Parcel Excluded)

Building	Use	SF	Units	Required Parking
1	Retail	2500		6
	Office/Retail	8000		20
	Residential	N/A		
	1 BR		20	30
	2 BR		16	28
	3 BR		4	7
	4 BR		24	42
	TOTAL		64	133
2	Retail	12287		31
	Residential	N/A		
	1 BR		16	24
	2 BR		8	14
	4 BR		16	28
	TOTAL		40	97
3	Retail	21272		54
	Residential	N/A		
	1 BR		20	30
	2 BR		12	21
	4 BR		32	56
	TOTAL		64	161
4	Retail	24,442		61
	Residential	N/A		
	1 BR		20	30
	2 BR		16	28
	3 BR		4	7
	4 BR		32	56
	TOTAL		72	182
7	Retail	42402		106
8	Retail	33413		84
9	Retail	20332		51
10	Retail	2129		5
			TOTAL REQUIRED	814
			TOTAL PROVIDED	991

4	12/01/17	REVISED PER CITY COMMENTS DATED NOVEMBER 2017	GKC
3	11/13/17	REVISED PER CITY COMMENTS DATED NOVEMBER 2017	GKC
2	8/22/17	ADDENDUM #1	GKC
1	5/26/17	REVISED PER CITY COMMENTS DATED JANUARY 2017	GKC
No.	Date	Revisions	By

AES CONSULTING ENGINEERS
5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
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MASTER PLAN FOR
MIDTOWN ROW MIXED USE DEVELOPMENT
SPECIAL USE PERMIT
CITY OF WILLIAMSBURG, VIRGINIA

Project Contact: GKC, AAE
Project Number: 0963-03
Date: 6/30/2017
Scale: 1"=50'
Sheet Title: MASTER PLAN LAYOUT PHASE 1
Sheet Number: 3

SITE AREA:

EXISTING:
APPROX. EXISTING IMPERVIOUS AREA: 17.85 AC. (92±%)
APPROX. EXISTING GREEN SPACE: 1.59 AC. (8±%)
TOTAL SITE: 19.44 AC. (100%)

PROPOSED PHASE 2:
APPROX. PROPOSED IMPERVIOUS AREA: 15.04 AC. (83.8±%)
APPROX. PROPOSED GREEN SPACE: 3.40 AC. (16.4±%)
APPROX. PROPOSED OPEN SPACE (SIDEWALK): 0.69 AC. (3.8±%)
TOTAL SITE: 18.94 AC. (100%)

SITE TABULATIONS:

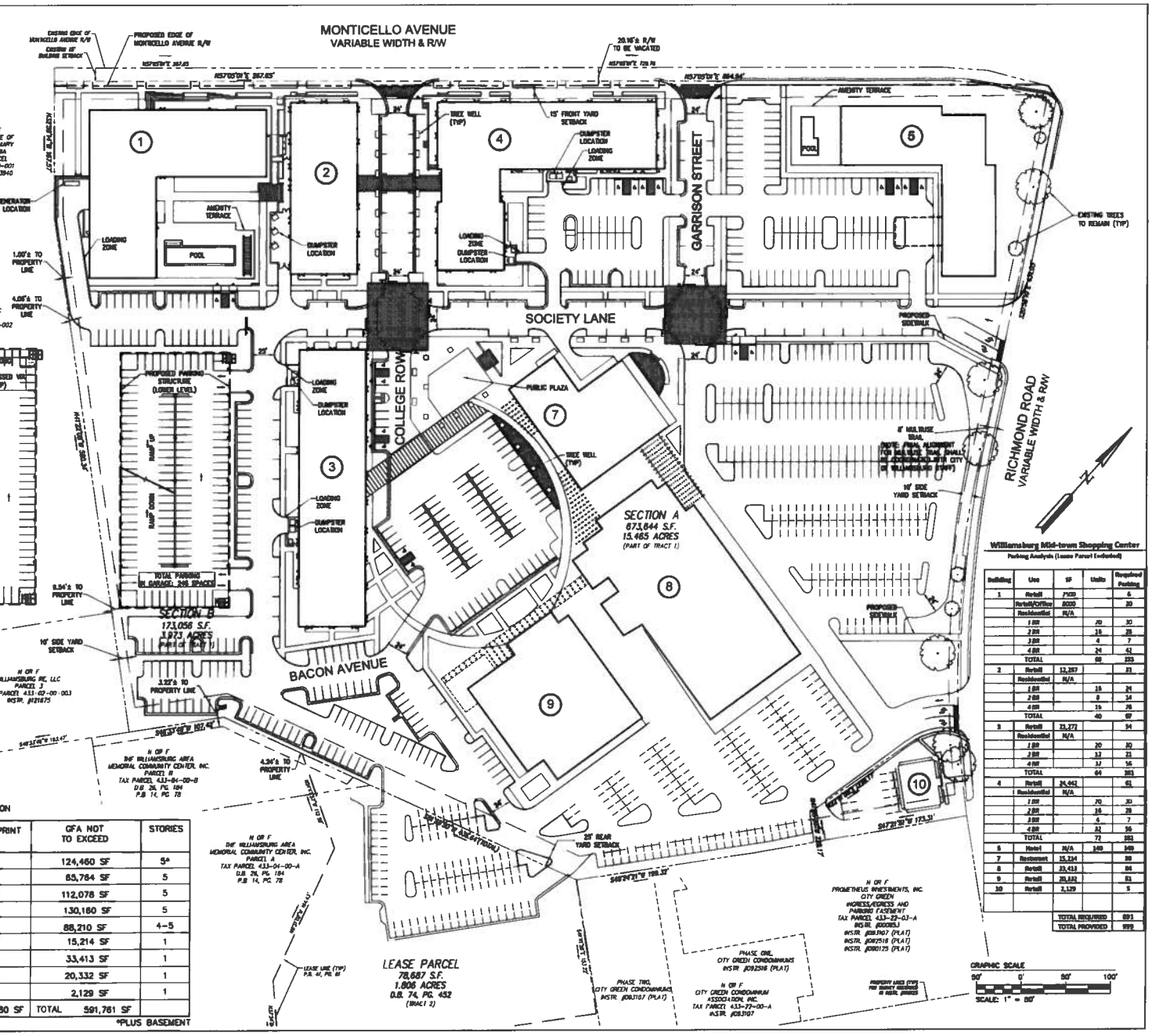
PROPERTY IS ALL OF TAX PARCELS:
433-01-00-001 (SECTION A)
433-01-00-002 (SECTION B)

AREA TABLE:

SECTION A	15.465 AC.
SECTION B	3.973 AC.
TOTAL	19.438 AC.

LEASE PARCEL IS PART OF TAX PARCELS:
433-04-00-A
433-04-00-B

LEASE PARCEL AREA: 1.806 AC.



Williamsburg Mid-town Shopping Center
Parking Analysis (Lease Parcel Included)

Building	Use	SF	Units	Required Parking
1	Retail	7500		6
	Retail/Office	8000		20
	Residential	N/A		
	1 BR		20	30
	2 BR		16	28
	3 BR		4	7
	4 BR		24	42
	TOTAL		64	133
2	Retail	12,287		21
	Residential	N/A		
	1 BR		16	24
	2 BR		8	14
	4 BR		16	28
	TOTAL		40	87
3	Retail	21,272		54
	Residential	N/A		
	1 BR		20	30
	2 BR		12	21
	4 BR		12	56
	TOTAL		64	161
4	Retail	24,442		61
	Residential	N/A		
	1 BR		20	30
	2 BR		16	28
	3 BR		4	7
	4 BR		32	56
	TOTAL		72	182
5	Hotel	N/A	149	149
7	Restaurant	15,214		38
8	Retail	33,413		84
9	Retail	20,332		51
10	Retail	2,129		5
(Lease)	Pool/Dance studio	10,267		51
			TOTAL REQUIRED	942
			TOTAL PROVIDED	1050

Williamsburg Mid-town Shopping Center
Parking Analysis (Lease Parcel Included)

Building	Use	SF	Units	Required Parking
1	Retail	7500		6
	Retail/Office	8000		20
	Residential	N/A		
	1 BR		20	30
	2 BR		16	28
	3 BR		4	7
	4 BR		24	42
	TOTAL		64	133
2	Retail	12,287		21
	Residential	N/A		
	1 BR		16	24
	2 BR		8	14
	4 BR		16	28
	TOTAL		40	87
3	Retail	21,272		54
	Residential	N/A		
	1 BR		20	30
	2 BR		12	21
	4 BR		12	56
	TOTAL		64	161
4	Retail	24,442		61
	Residential	N/A		
	1 BR		20	30
	2 BR		16	28
	3 BR		4	7
	4 BR		32	56
	TOTAL		72	182
5	Hotel	N/A	149	149
7	Restaurant	15,214		38
8	Retail	33,413		84
9	Retail	20,332		51
10	Retail	2,129		5
			TOTAL REQUIRED	891
			TOTAL PROVIDED	1050

DEVELOPMENT TABULATION

BUILDING NUMBER	PROPOSED USE	BUILDING FOOTPRINT AREA	GFA NOT TO EXCEED	STORIES
1	RESIDENTIAL/AMENITY/RETAIL	23,000 SF	124,460 SF	5*
2	RESIDENTIAL/RETAIL	14,360 SF	65,764 SF	5
3	RESIDENTIAL/RETAIL	23,210 SF	112,078 SF	5
4	RESIDENTIAL/RETAIL	26,580 SF	130,160 SF	5
5	HOTEL	17,642 SF	88,210 SF	4-5
7	RETAIL	15,214 SF	15,214 SF	1
8	RETAIL	33,413 SF	33,413 SF	1
9	RETAIL	20,332 SF	20,332 SF	1
10	RETAIL	2,129 SF	2,129 SF	1
		TOTAL 175,880 SF	TOTAL 591,761 SF	

*PLUS BASEMENT

#	Date	Description	Drawn
4	10/9/17	REVISED PER CITY COMMENTS ON SITE PLAN REVIEW	DKC
3	11/13/17	REVISED PER CITY COMMENTS ON SITE PLAN REVIEW	DKC
2	11/27/17	REVISED PER CITY COMMENTS ON SITE PLAN REVIEW	DKC
1	2/20/17	REVISED PER CITY COMMENTS ON SUP AND REZONING	DKC

AES CONSULTING ENGINEERS
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MASTER PLAN FOR
MIDTOWN ROW MIXED USE DEVELOPMENT
SPECIAL USE PERMIT
CITY OF WILLIAMSBURG, VIRGINIA

Project Contact: GDC, CLGS
Project Number: 1042-03
Scale: 1"=50'
Date: 02/24/2017
Sheet Title: MASTER PLAN LAYOUT PHASE 2
Sheet Number: 4

TRAFFIC IMPACT ANALYSIS

Midtown Row

Williamsburg, Virginia

August 2017

Kimley»Horn

Traffic Impact Analysis
for
Midtown Row
Williamsburg, Virginia

Prepared for:
Broad Street Realty, LLC

Prepared by:
Kimley-Horn and Associates, Inc.
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11815 Fountain Way
Newport News, VA 23606
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117087000
August 2017

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1 EXECUTIVE SUMMARY

Broad Street Realty, LLC is proposing the construction of the Midtown Row development located in Williamsburg, Virginia, and is bounded by Monticello Avenue to the north and Richmond Road to the east. The purpose of this report is to satisfy the traffic impact analysis (TIA) requirements of a Special Use Permit (SUP) application as required by Section 21-44(c)(3) of the City of Williamsburg Code.

The proposed Midtown Row development will be constructed on the site of the existing Williamsburg Shopping Center (WSC) in Williamsburg, Virginia. The existing site is bounded by Monticello Avenue to the north, a mixture of residential and commercial developments to the south, Richmond Road to the east, and a medical care facility to the west.

Three (3) development options for the proposed Midtown Row development project are being considered, as described below:

- By-Right Redevelopment – existing building footprint/square footage fully built out under current zoning standards
- Option 1 – approximately 362,000 square feet (sf) of student housing space, 23,000 sf of amenity space, approximately 115,000 sf of retail space, and 122,700 sf (i.e., 140 rooms) of hotel space
- Option 2 – approximately 311,000 sf of student housing space, approximately 23,000 sf of amenity space, and 148,000 sf of retail space

It is anticipated that one of the proposed development options will be completed and operational for business by 2020. The total amount of traffic generated under the three (3) scenarios and using the site driveways is expected to consist of the following:

- By-Right Redevelopment – 9,720 daily trips, 470 AM peak hour trips, and 760 PM peak hour trips
- Option 1 – 4,180 daily trips, 470 AM peak hour trips, and 300 PM peak hour trips
- Option 2 – 4,120 daily trips, 490 AM peak hour trips, and 265 PM peak hour trips

In addition to the traffic generation associated with the proposed development scenarios, natural background growth in the area was also accounted for in the future traffic volume projections and analyzed as a part of this study.

Based on the analysis provided in this traffic study, the following recommendations were identified and are summarized below:

Monticello Avenue

Improve the existing 3-lane roadway such that the enhanced Monticello Avenue typical section consists of two travel lanes (i.e., one travel lane in each direction), a shared center TWLTL (with delineated exclusive left-turn lanes at key or signalized intersections), on-street parallel parking between the WSC/Monticello Shopping Center signalized intersection and the Garrison Drive intersection, a two-way separated “bike-track”, and concrete sidewalks ranging in width from 6 feet to 8 feet.

With the proposed improvements, it is anticipated that new traffic signals will be installed or existing traffic signals will need to be upgraded/modified to accommodate the roadway and intersection widening that results from the introduction of on-street parallel parking, bike and pedestrian accommodations, and exclusive turn-lanes.

Additionally, the following traffic signal coordination recommendations are proposed:

- Install interconnect (fiber or wireless) and coordinate all signalized intersections between the Monticello Avenue/Treyburn Drive intersection to the west and Monticello Avenue/Richmond Road intersection to the east.
- Update/implement coordinated signal timing plans to accommodate vehicle demands during the AM, Midday, PM, Off, and Weekend peak hours as needed.
- Coordinated signal timing optimization should occur following construction and occupancy of the Midtown Row development to account for the expected change in traffic volumes and travel patterns.

Richmond Road (VDOT)

- Continue to monitor and implement new timing and coordination plans as part of regular VDOT operations and maintenance

Monticello Avenue at Richmond Road

- Modify the traffic signal at this intersection to accommodate additional lane configuration/capacity improvements (i.e., dual left-turn movement, improved full-width exclusive right-turn lane, and roadway widening)
    - Signal coordination improvements should facilitate the progression of traffic along Richmond Road.
    - Coordinated signal timing optimization should occur following construction and occupancy of the Midtown Row development to account for the expected change in traffic volumes and patterns.
- Richmond Road (northbound)
    - Maintain one exclusive left-turn lane
    - Maintain one exclusive through lane
    - Maintain one shared through/right-turn lane
- Richmond Road (southbound)
    - Maintain one exclusive left-turn lane
    - Maintain one exclusive through lane
    - Maintain one exclusive right-turn lane
    - With traffic signal modification implement southbound right-turn overlap phase to operate concurrently with the westbound dual left-turn movement.
- Monticello Avenue (eastbound)
    - Construct dual exclusive left-turn lanes
    - Construct/maintain one exclusive through lane
    - Construct one exclusive right-turn lane
- Lafayette Avenue (westbound)
    - Maintain one exclusive left-turn lane
    - Maintain one exclusive through lane
    - Maintain one exclusive right-turn lane

Monticello Avenue at Williamsburg Shopping Center Driveway (College Row)

- Construct/install a new traffic signal at this intersection to accommodate the associated roadway/intersection widening.
    - Signal coordination improvements should facilitate the progression of traffic along Monticello Avenue.
    - Coordinated signal timing optimization should occur following construction and occupancy of the Midtown Row development to account for the expected change in traffic volumes and patterns.
- Williamsburg Shopping Center Driveway (College Row - northbound)
    - Construct one shared left/through/right-turn lane
- Monticello Shopping Center Driveway (southbound)
    - Maintain one shared left/through/right-turn lane
- Monticello Avenue (eastbound)
    - Construct/delineate one exclusive left-turn lane
    - Construct/maintain one shared through/right-turn lane
- Monticello Avenue (westbound)
    - Construct/delineate one exclusive left-turn lane
    - Construct/maintain one shared through/right-turn lane

Monticello Avenue at Garrison Drive (Option 1 Scenario)

- Existing WSC Access Driveway #1 (northbound)
    - Install STOP sign for traffic control at approach
    - Relocate WSC Access Drive #1 to align with Garrison Drive and become fourth leg of intersection
    - Construct one shared left/through/right-turn lane
- Garrison Drive (southbound)
    - Maintain STOP sign for traffic control at approach
    - Construct one shared left/through/right-turn lane
- Monticello Avenue (eastbound)
    - Construct/delineate one exclusive left-turn lane
    - Construct one shared through/right-turn lane
- Monticello Avenue (westbound)
    - Construct/delineate one exclusive left-turn lane
    - Construct/maintain one shared through/right-turn lane

Monticello Avenue at Garrison Drive (Option 2 Scenario)

- Garrison Drive (southbound)
  - Install STOP sign for traffic control at approach
  - Maintain one shared left and right-turn lane
- Monticello Avenue (eastbound)
  - Construct/delineate one exclusive left-turn lane
  - Construct/maintain one exclusive through lane
- Monticello Avenue (westbound)
  - Construct/maintain one shared through/right-turn lane

Monticello Avenue at WSC Access Driveway #1 (Option 1 Scenario)

- Existing WSC Access Driveway #1 (northbound)
  - Site access driveway is closed to accommodate site development and relocated to become fourth leg of Monticello Avenue/Garrison Drive intersection.

Monticello Avenue at WSC Access Driveway #1 (Option 2 Scenario)

- Existing WSC Access Driveway #1 (northbound)
  - Maintain STOP sign for traffic control at approach
  - Maintain one shared left and right-turn lane
- Monticello Avenue (eastbound)
  - Construct/maintain one shared through/right-turn lane
- Monticello Avenue (westbound)
  - Construct/delineate one exclusive left-turn lane
  - Construct/maintain one exclusive through lane

Richmond Road at Bypass Road

- Richmond Road (northbound)
  - Maintain two exclusive through lanes
  - Maintain one exclusive right-turn lane
- Richmond Road (southbound)
  - Maintain dual exclusive left-turn lanes
  - Maintain one exclusive through lane
- Bypass Road (westbound)
  - Maintain one exclusive left-turn lane
  - Maintain one exclusive right-turn lane

Richmond Road at Mount Vernon Avenue

- Richmond Road (northbound)
  - Maintain prohibited left-turn movement and associated signage
  - Maintain one exclusive through lane
  - Maintain one shared through/right-turn lane

- Richmond Road (southbound)
    - Maintain one exclusive left-turn lane
    - Maintain one exclusive through lane
    - Maintain one shared through/right-turn lane
- Mount Vernon Avenue (eastbound)
    - Maintain one shared left-turn/through lane
    - Maintain one exclusive right-turn lane
- Walgreens Driveway (westbound)
    - Maintain one shared left-turn/through lane
    - Maintain one exclusive right-turn lane

Richmond Road at Existing WSC Access Driveway # 2

- Richmond Road (northbound)
    - Maintain left-turn movement from shared TWLTL
    - Maintain one exclusive through lane
- Richmond Road (southbound)
    - Maintain one shared through/right-turn lane
- Existing WSC Access Driveway #2 (eastbound)
    - Maintain STOP sign for traffic control at approach
    - Maintain one exclusive left-turn lane
    - Maintain one exclusive right-turn lane

Richmond Road at Bacon Avenue

- Richmond Road (northbound)
    - Maintain one shared through/right-turn lane
- Richmond Road (southbound)
    - Maintain shared TWLTL
    - Maintain one exclusive through lane
- Bacon Avenue (westbound)
    - Maintain STOP sign for traffic control at approach
    - Maintain one shared left and right-turn lane

Richmond Road at Existing WSC Access Driveway # 3

- Richmond Road (northbound)
    - Maintain one shared left-turn/through lane
- Richmond Road (southbound)
    - Maintain one shared through/right-turn lane
- Existing WSC Access Driveway #3 (eastbound)
    - Maintain STOP sign for traffic control at approach
    - Maintain one shared left and right-turn lane

2 INTRODUCTION

Broad Street Realty, LLC is proposing the construction of the Midtown Row development located in Williamsburg, Virginia, and bounded by Monticello Avenue to the north and Richmond Road to the east. The purpose of this report is to satisfy the traffic impact analysis (TIA) requirements of a Special Use Permit (SUP) application as required by Section 21-44(c)(3) of the City of Williamsburg Code.

The proposed Midtown Row development will be constructed on the site of the existing Williamsburg Shopping Center (WSC) in Williamsburg, Virginia. The existing site is bounded by Monticello Avenue to the north, a mixture of residential and commercial developments to the south, Richmond Road to the east, and a medical care facility to the west. **Figure 1** illustrates the proposed development's location.

Three (3) development options for the proposed Midtown Row development project are being considered, as described below:

- By-Right Redevelopment – existing building footprint/square footage fully built out under current zoning standards
- Option 1 – approximately 362,000 square feet (sf) of student housing space, 23,000 sf of amenity space, approximately 115,000 sf of retail space, and 122,700 sf (i.e., 140 rooms) of hotel space
- Option 2 – approximately 311,000 sf of student housing space, approximately 23,000 sf of amenity space, and 148,000 sf of retail space

It is anticipated that one of the proposed development options will be completed and operational for business by 2020. Conceptual site plans are provided in **Figure 2** and **Figure 3** for Option 1 and Option 2, respectively. Option 1 is anticipated to utilize three (3) of the existing WSC driveway access points and realign/rebuild one (1) access driveway such that it aligns and serves as the fourth (i.e., south) leg of Monticello Avenue/Garrison Drive intersection while Option 2 is anticipated to utilize the four (4) existing WSC driveway access points.

Kimley-Horn has been retained to perform a TIA for the proposed development of the site as a part of the Midtown Row SUP application. This report has been prepared for submittal to the City of Williamsburg to evaluate existing conditions as well as future traffic conditions that include development related traffic volumes. Assumptions regarding the study area, access, annualized growth rate, and traffic analysis scenarios were discussed with and approved by City of Williamsburg staff prior to the completion of this analysis. The assumptions document is provided in **Appendix A**.

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3 PROJECT BACKGROUND

3.1 STUDY AREA

The study area for this analysis, as illustrated in **Figure 1**, includes the following existing intersections:

- Monticello Avenue at Treyburn Drive (signalized)
- Monticello Avenue at Mount Vernon Avenue (unsignalized)
- Monticello Avenue at Williamsburg Shopping Center (WSC) Driveway (signalized)
- Monticello Avenue at Garrison Drive (unsignalized)
- Richmond Road at Monticello Avenue/Lafayette Street (signalized)
- Richmond Road at Mount Vernon Avenue (signalized)
- Richmond Road at Bacon Avenue (unsignalized)
- Richmond Road at Bypass Road (signalized)

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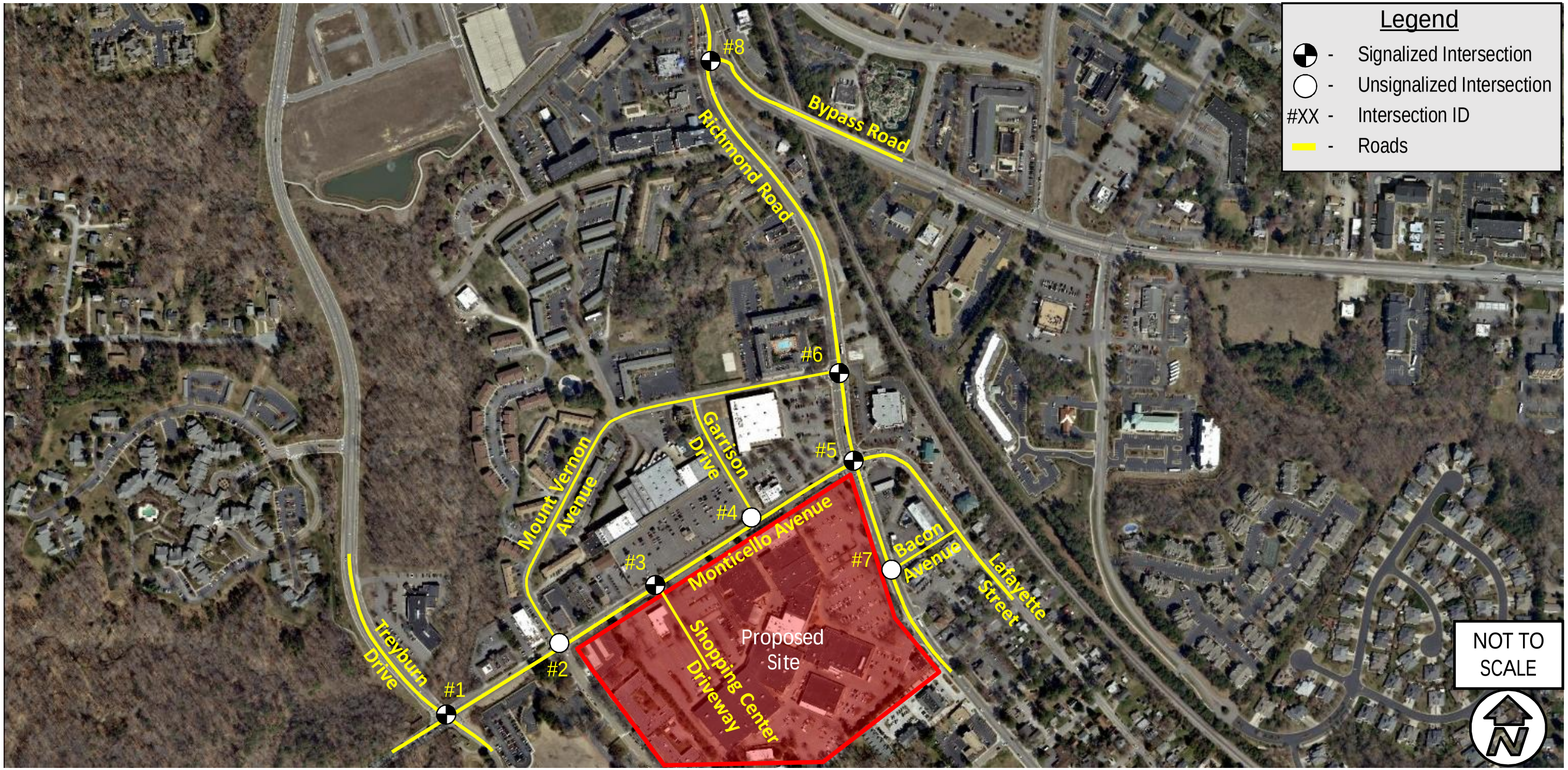

Kimley»Horn	Midtown Row TIA City of Williamsburg, Virginia	Study Area	Figure 1

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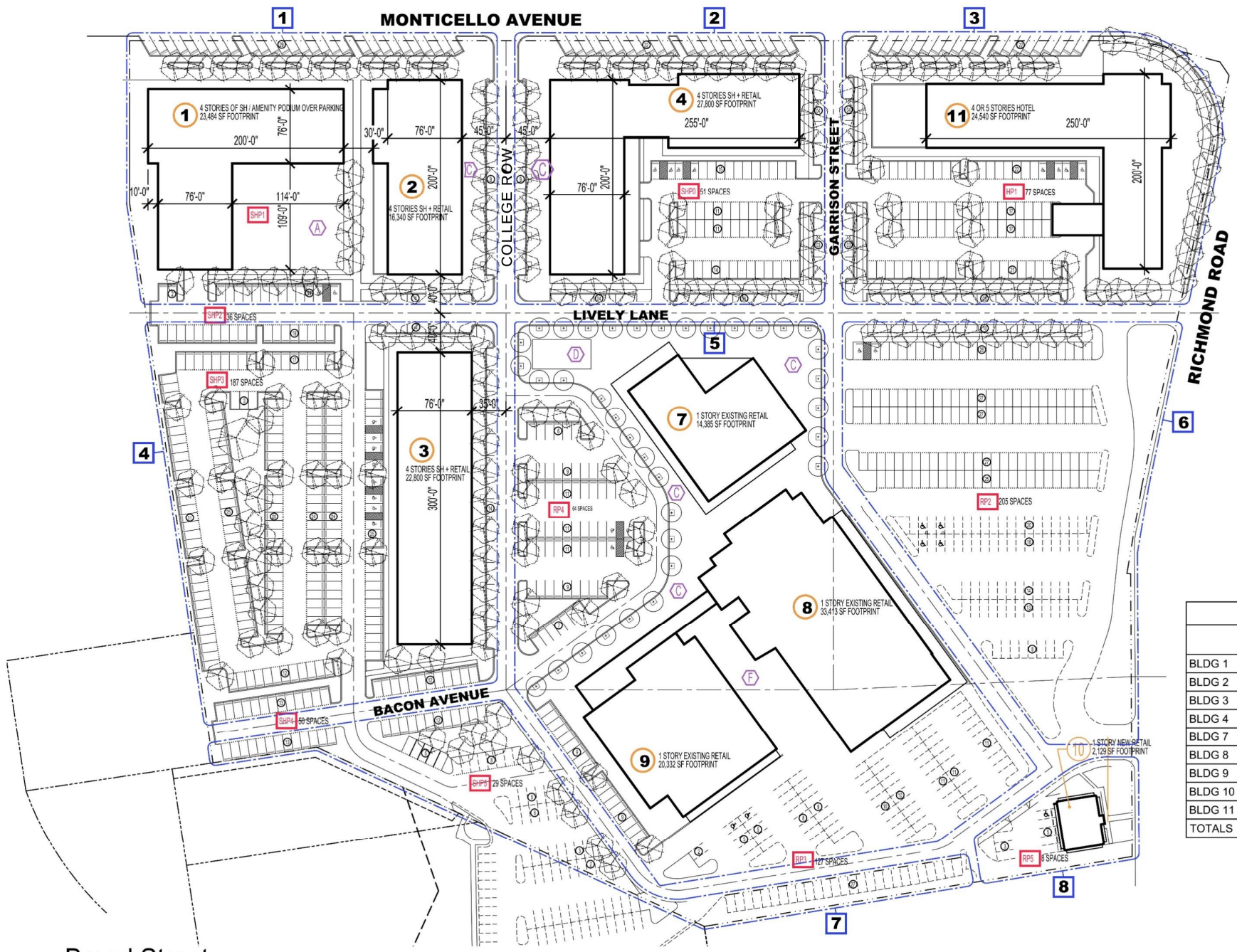

PARKING CALCULATIONS			
	STUDENT HOUSING	RETAIL	HOTEL
SHP0	51		
SHP1	110		
SHP2	36		
SHP3	187		
SHP4	50		
SHP5	29		
RP0		76	
RP1		0	
RP2		205	
RP3		127	
RP4		64	
RP5		8	
HP1			77
STREET		146	
TOTALS	463	626	77

BUILDING AREA CALCULATIONS					
	STUDENT HOUSING	AMENITY	RETAIL	HOTEL	BEDS
BLDG 1	93,936 SF	23,484 SF			
BLDG 2	65,360 SF		1,889 SF		
BLDG 3	91,200 SF		19,380 SF		
BLDG 4	111,200 SF		23,630 SF		
BLDG 7			14,385 SF		
BLDG 8			33,413 SF		
BLDG 9			20,332 SF		
BLDG 10			2,129 SF		
BLDG 11				122,700 SF	
TOTALS	361,696 SF	23,484 SF	115,158 SF	122,700 SF	

PROPOSED OVERALL SITE PLAN - SCHEME 2

1" = 100'

MAY 1, 2017

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MIDTOWN DEVELOPMENT

Bonstra | Haresign ARCHITECTS

NOT TO SCALE

Kimley»Horn

Midtown Row TIA
City of Williamsburg, Virginia

Option 1 Proposed Site Plan

Figure 2

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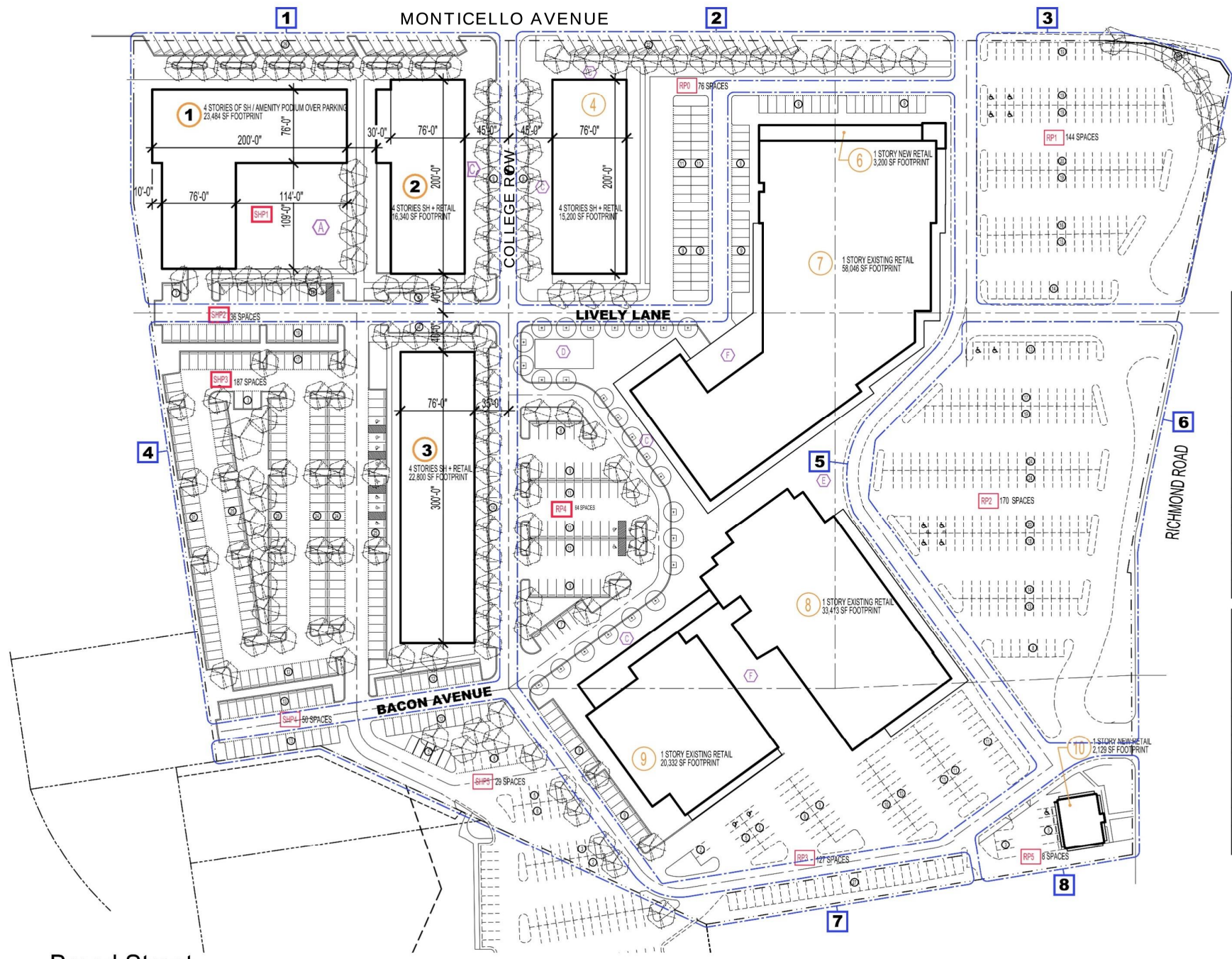

PARKING CALCULATIONS		
	STUDENT HOUSING	RETAIL
SHP1	110	
SHP2	36	
SHP3	187	
SHP4	50	
SHP5	29	
RP0		76
RP1		144
RP2		170
RP3		127
RP4		64
RP5		8
STREET		91
TOTALS	412	680

BUILDING AREA CALCULATIONS (SF)				
	STUDENT HOUSING	AMENITY	RETAIL	BEDS
BLDG 1	93,936 SF	23,484 SF		
BLDG 2	65,360 SF		1,889 SF	
BLDG 3	91,200 SF		19,380 SF	
BLDG 4	60,800 SF		12,920 SF	
BLDG 6			3,200 SF	
BLDG 7			54,846 SF	
BLDG 8			33,413 SF	
BLDG 9			20,332 SF	
BLDG 10			2,129 SF	
TOTALS	311,296 SF	311,296 SF	148,109 SF	

NOT TO SCALE

PROPOSED OVERALL SITE PLAN - SCHEME 1

1" = 100'

MAY 1, 2017

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MIDTOWN DEVELOPMENT

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Kimley»Horn

Midtown Row TIA
City of Williamsburg, Virginia

Option 2 Proposed Site Plan

Figure 3

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3.2 EXISTING ZONING

The proposed Midtown Row development will be located on the existing Williamsburg Shopping Center (WSC) site. This parcel is currently occupied by specialty retail shops, services, and restaurants and is zoned as General Business District (B-3). **Figure 4** illustrates the existing zoning near the site. Existing zoning around and adjacent to the WSC site consist primarily of the following zoning districts: William and Mary District (WM), Multifamily Dwelling District (RM-2), and Limited Business Neighborhood District (LB-2). The Monticello Shopping Center, located to the north of the proposed Midtown Row development, contains specialty retail shops, services, and restaurants and is also zoned as General Business District (B-3). To the south of the proposed site are restaurants, services, the Williamsburg Community Pool, and residential neighborhoods. The College of William & Mary School of Education and the William & Mary Professional Development Center are located to the west of the site.

3.3 EXISTING CONDITIONS

Richmond Road is the primary north-south thoroughfare within the study area, providing connections to Monticello Avenue, Bypass Road, and downtown Williamsburg. **Figure 5** depicts existing roadway lane conditions for study area roadways and intersections. The following provides a brief description of existing roadway characteristics for each facility:

Richmond Road is oriented in an approximate north/south direction through the City of Williamsburg. Within the study area, it is a three-lane, undivided minor arterial from Bacon Avenue to the Monticello Avenue/Lafayette Street intersection with two travel lanes (one travel lane in each direction) and a shared two-way left-turn lane (TWLTL), The roadway is a five-lane undivided minor arterial from the Monticello Avenue/Lafayette Street intersection to the Bypass Road intersection and consists of four travel lanes (i.e., two travel lanes in each direction) and a center TWLTL, with exclusive left-turn lanes delineated at signalized or key access driveway locations. Average weekday traffic counts (AWDT) were collected over a continuous 72-hour period on Richmond Road between the New Hope Road and Mount Vernon Avenue in July 2017. This data indicated that this segment of Richmond Road carries approximately 19,200 vehicles per day (vpd). The posted speed limit along this portion of the roadway is 25 miles per hour (mph).

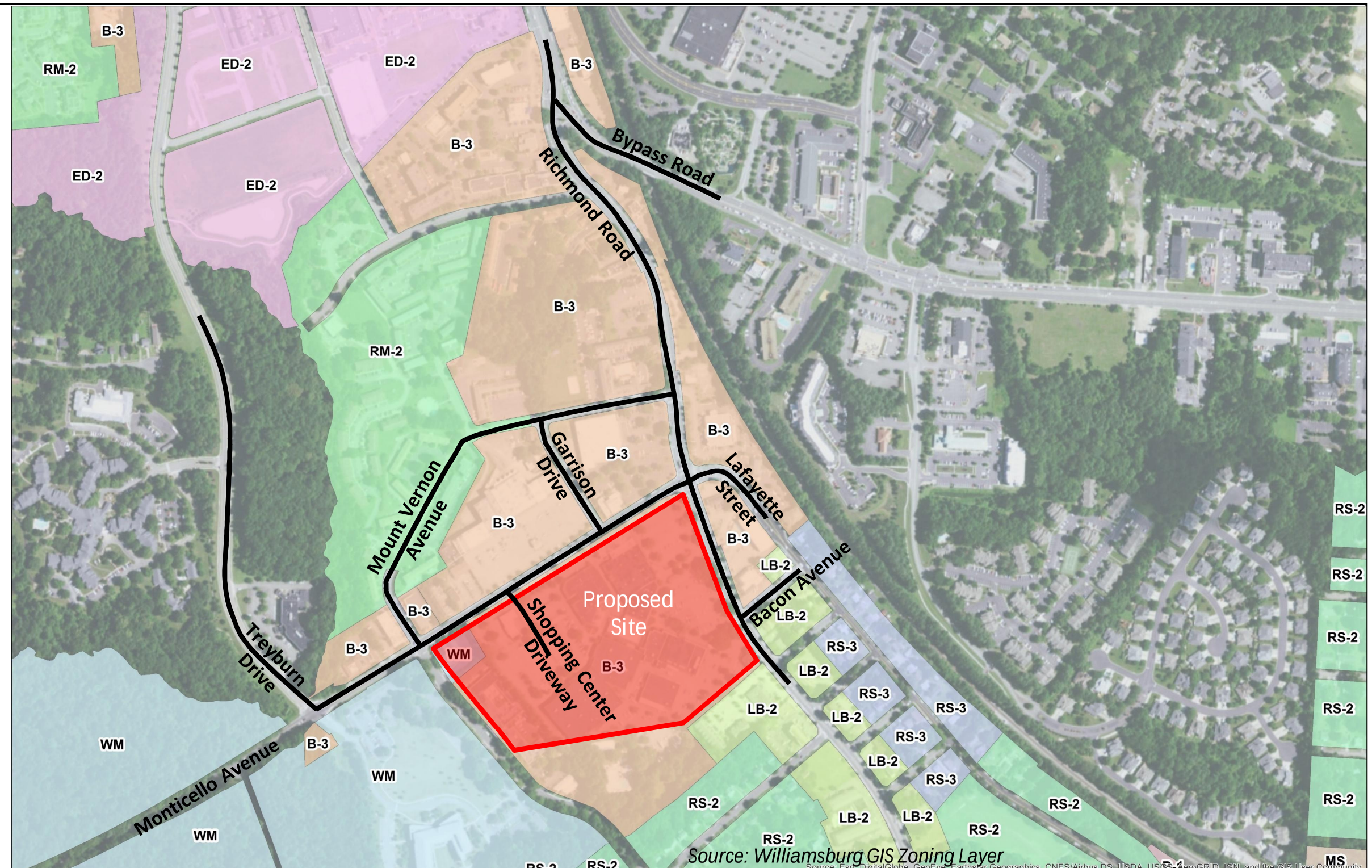
Monticello Avenue (State Route 321) is an undivided minor arterial in the City of Williamsburg. Monticello Avenue is oriented in an approximate east/west direction, in the vicinity of where it intersects with Richmond Road. It is an undivided, three-lane typical section with one travel lane in each direction and designated exclusive left-turn lanes at primary intersections or site access driveways from Treyburn Drive to Garrison Drive. There is a short segment between the Garrison Drive and Richmond Road intersections that includes a TWLTL to accommodate left-turn movements to/from several closely spaced and offset site access driveways. AWDT counts, vehicle classification, and speeds were collected for a continuous 72-hour period on Monticello Avenue between the Williamsburg Shopping Center Driveway and Garrison Drive in July 2017. The data collected indicated that this segment of Monticello Avenue carries approximately 15,100 vpd with 3% of heavy vehicles. Although, the posted speed limit is 25 mph, approximately 40% of vehicles are traveling between 30 and 35 mph on this section of roadway.

Bypass Road (U.S. Route 60) is a four-lane, divided principal arterial (in the immediate vicinity of Richmond Road) that is oriented in an approximate east/west direction and extends from the Richmond Road intersection in the west, to the Capitol Landing intersection to the east. Traffic counts collected by VDOT in 2016 indicate that this segment of Bypass Road carries approximately 25,000 vpd. The posted speed limit is 45 mph within the study area.

Legend

Zoning

- Downtown Business District (B-1)
- Corridor Business District (B-2)
- General Business District (B-3)
- Colonial Williamsburg District (CW)
- Economic Development District (ED)
- Economic Development District (ED-2)
- Limited Industrial District (I)
- Limited Business Downtown District (LB-1)
- Limited Business Neighborhood District (LB-2)
- Limited Business Mixed-Use District (LB-3)
- Limited Business Corridor District (LB-4)
- Museum Support District (MS)
- Planned Development College District (PDC)
- Planned Unit Development (PUD)
- Downtown Residential District (RDT)
- Multifamily Dwelling District (RM-1)
- Multifamily Dwelling District (RM-2)
- Single Family Dwelling District (RS-1)
- Single Family Dwelling District (RS-2)
- Single Family Dwelling District (RS-3)
- William and Mary District (WM)



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City of Williamsburg, Virginia

Existing Zoning

Figure 4

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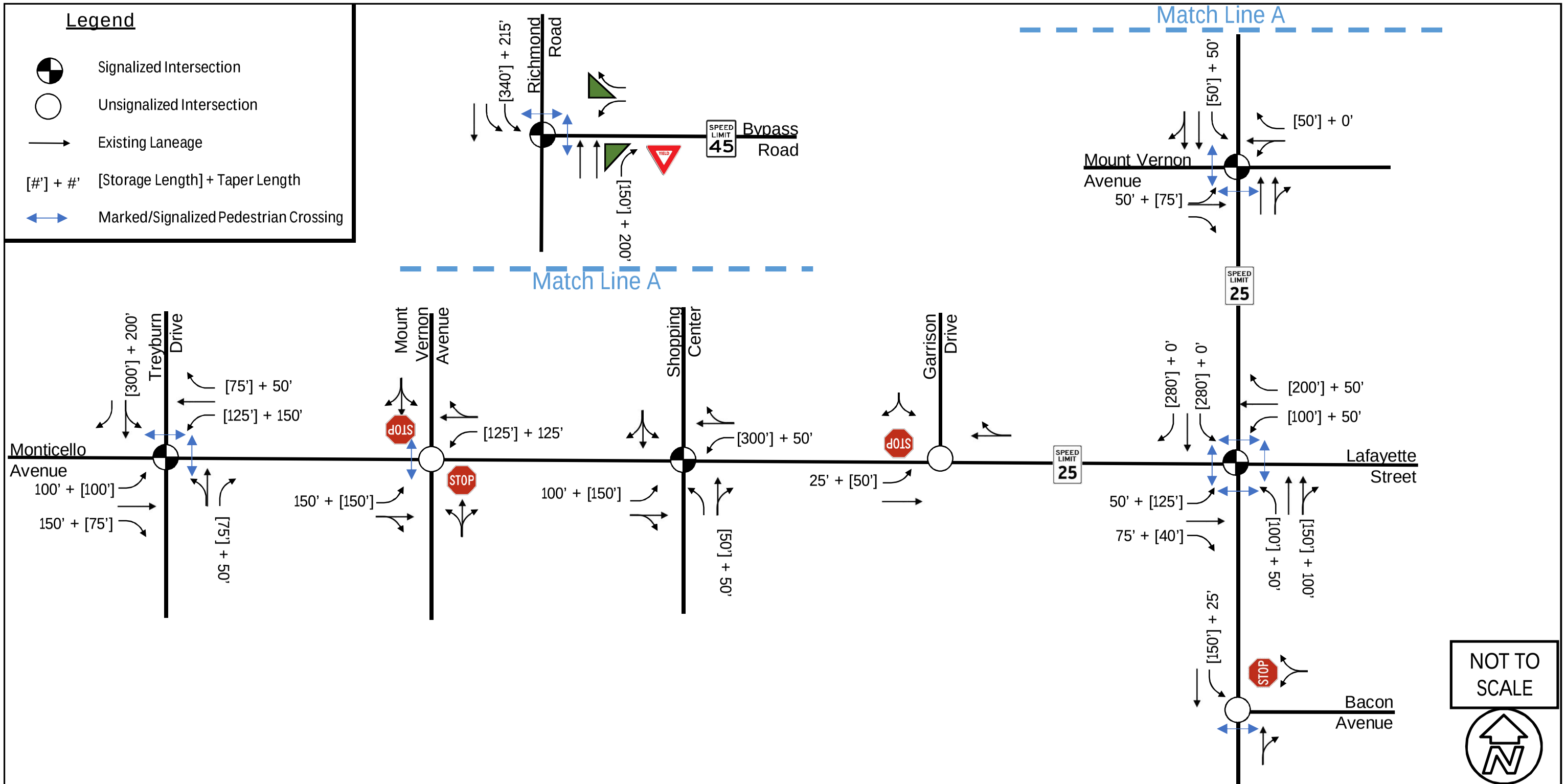

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Existing Roadway Conditions

Figure 5

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3.4 EXISTING PEDESTRIAN AND BICYCLE ACCOMMODATIONS

Existing pedestrian accommodations include signalized crossings on the following locations:

- Monticello Avenue at Treyburn Drive – westbound and southbound approaches
- Richmond Road at Monticello Avenue/Lafayette Street – all approaches
- Richmond Road at Mount Vernon Avenue – eastbound and northbound approaches
- Richmond Road at Bypass Road – westbound and southbound approaches

Marked and/or signalized crossings at the study area intersections are illustrated in **Figure 5**. Additional pedestrian accommodations in the study area include sidewalks (i.e., along both the northern and southern sides of Monticello Avenue and both the eastern and western sides of Richmond Road) and Americans with Disabilities Act (ADA) compliant pedestrian ramps. Sidewalks located on the south side of Monticello Avenue are provided from Treyburn Drive up to a WSC site driveway located immediately west of the Garrison Drive. No sidewalk is provided along the south side of Monticello Avenue from this location to the Richmond Road intersection. Unsignalized crosswalks are located on Richmond Road at Bacon Avenue (westbound approach) and on Monticello Avenue at Mount Vernon Avenue (southbound approach).

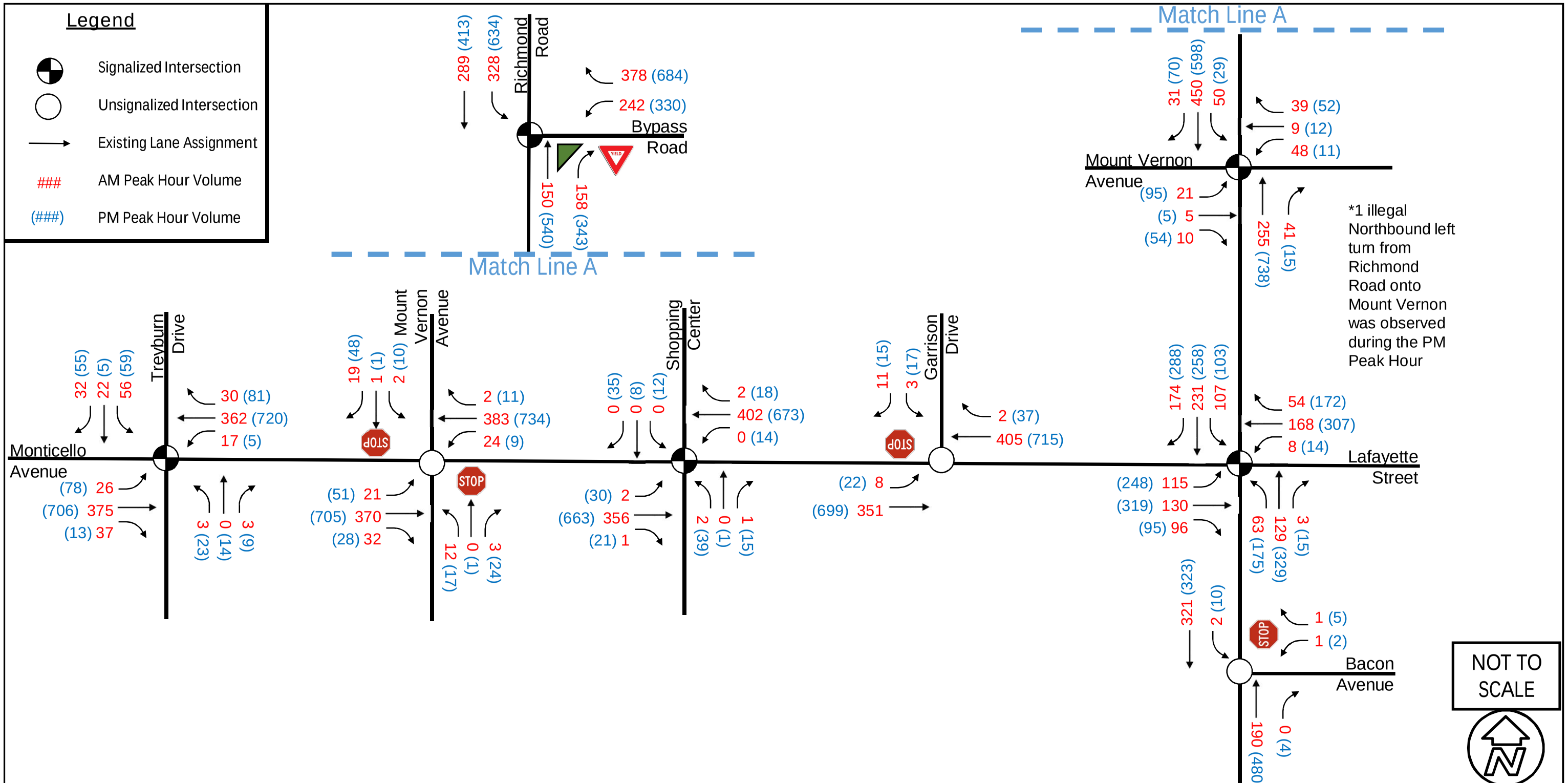
3.5 EXISTING TRAFFIC

Based on initial discussions with the City of Williamsburg, AM and PM peak hour conditions were analyzed to evaluate potential impacts of the proposed development. To coincide with these times, turning movement counts (TMC) were collected for the study area intersections.

AM and PM vehicular TMC data were collected at the following study area intersections on July 11, 2017:

- Monticello Avenue at Treyburn Drive (signalized)
- Monticello Avenue at Mount Vernon Avenue (unsignalized)
- Monticello Avenue at Future Midtown Row development Site Access Driveway (signalized)
- Monticello Avenue at Garrison Drive (unsignalized)
- Richmond Road at Monticello Avenue/Lafayette Street (signalized)
- Richmond Road at Mount Vernon Avenue (signalized)
- Richmond Road at Bacon Avenue (unsignalized)
- Richmond Road at Bypass Road (signalized)

The uniform peak periods for these intersections were found to be 7:30 AM to 8:30 AM and 4:45 PM to 5:45 PM for the AM and PM peak hours, respectively. Since these counts were performed during the summer session, the volumes at the intersection of Monticello Avenue and Treyburn Drive were compared to traffic volume data collected on May 9, 2017 when school was in session. From this comparison, it was determined that the July traffic volumes were between approximately 8% and 10% lower than the May traffic volumes. Therefore, the existing July AM and PM traffic volumes were increased by a 1.08 factor to account for the missing school/College traffic. The resulting AM and PM peak hour turning movement volumes from the abovementioned data sources are shown in **Figure 6**. Detailed count data is also provided in **Appendix B**.



Kimley»Horn	Midtown Row TIA City of Williamsburg, Virginia	2017 Existing AM and PM Peak Hour Traffic Volumes	Figure 6

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4 TRIP GENERATION

For the TIA and as a part the proposed Midtown Row development SUP application, three (3) redevelopment scenarios were analyzed: By-Right redevelopment, Option 1, and Option 2 (described below). Trip generation estimates (found in **Table 1**) were developed for these scenarios using the following intensities:

- By-Right Redevelopment – existing building footprints redeveloped/fully built out using current zoning standards
- Midtown Row development Option 1 – approximately 362,000 square feet (sf) of student housing space, 23,000 of amenity space, approximately 115,000 sf of retail space, and a 122,700-sf (i.e., 140 rooms) hotel
- Midtown Row development Option 2 – approximately 311,000 sf of student housing space, approximately 23,000 sf of amenity space, and 148,000 sf of retail space

The following sections describe the assumptions that were used in developing future traffic volumes for the site under each of these analysis scenarios.

4.1 BY-RIGHT REDEVELOPMENT SCENARIO

The *ITE Trip Generation 9th Edition* (2012) Trip Generation Rates and relevant Land Use Codes were used to develop the trip generation estimates for the By-Right Redevelopment scenario which contains retail and commercial land uses. **Table 1** summarizes the trip generation estimates for the By-Right redevelopment scenario.

Due to the commercial and retail nature of this scenario, an internal capture and pass-by reduction was applied to the trips generated. Internal capture is amount of traffic utilizing the site without traversing the external street network. Based on engineering judgement, characteristics of the development, and standards of practice, 15% of all the trips generated are expected to remain internal to the site. Pass-by trips are defined as an intermediate stop on the way to the primary trip destination. A 30% pass-by reduction was applied to the commercial and retail land uses of the By-Right scenario based on pass-by rates of similar land uses in the ITE Trip General Manual. The By-Right scenario is anticipated to generate approximately 9,700 trips per day, with approximately 500 trips during the AM peak hour, and approximately 800 trips during the PM peak hour.

4.2 OPTION 1 AND OPTION 2 SCENARIOS

Due to the specialized nature of the proposed off-campus student housing component included in Option 1 and Option 2, no compatible land uses in the ITE Trip Generation Manual were identified. Therefore, additional research was conducted to determine the trip generation potential for the student housing.

As part of this analysis, several other previously conducted studies were referenced and considered to help determine the trip generation potential of student housing based on existing student housing complexes throughout the Unites States. The studies listed below were used to identify the student housing trip generation potential:

- Trip Generation Study – Private Student Housing Apartments (Spack Consulting, 2012)
- Trip Generation: Characteristics of Large Gas Stations/Convenience Stores and Student Apartments (Florida Department of Transportation, 2012)

- Traffic Impact Study for University of California, San Diego Mesa Housing (Linscott, Law & Greenspan, Engineers, 2015)
- TripGeneration.org (Spack Consulting, 2012)

A summary of the trip generation information from the aforementioned studies is included in **Appendix C**. The trip generation potential was calculated based on the number of dwelling units, number of bedrooms, number of persons, and number of parking stalls. A general conclusion from these studies states that student housing generates approximately one-third of the vehicle trips generated by a typical apartment complex of similar size.

For the purpose of this redevelopment study, the trip generation rates, per the number of bedrooms, was used from the Trip Generation Study – Private Student Housing Apartments (Spack Consulting, 2012) for Option 1 and Option 2. This trip generation rate was chosen due to the similar student housing breakdown for each of the buildings proposed in Option 1 and Option 2, as well as the availability of daily, AM peak hour, and PM peak hour data. Trip generation rates were used instead of the equations due to the potential for negative values using the equations. **Table 2** and **Table 3** display the resulting trip generation estimates using this rate for Option 1 and Option 2, respectively. It should be noted that the amenity space associated with the student housing was not anticipated to generate additional trips since this space will be used by students living in the adjacent housing complex.

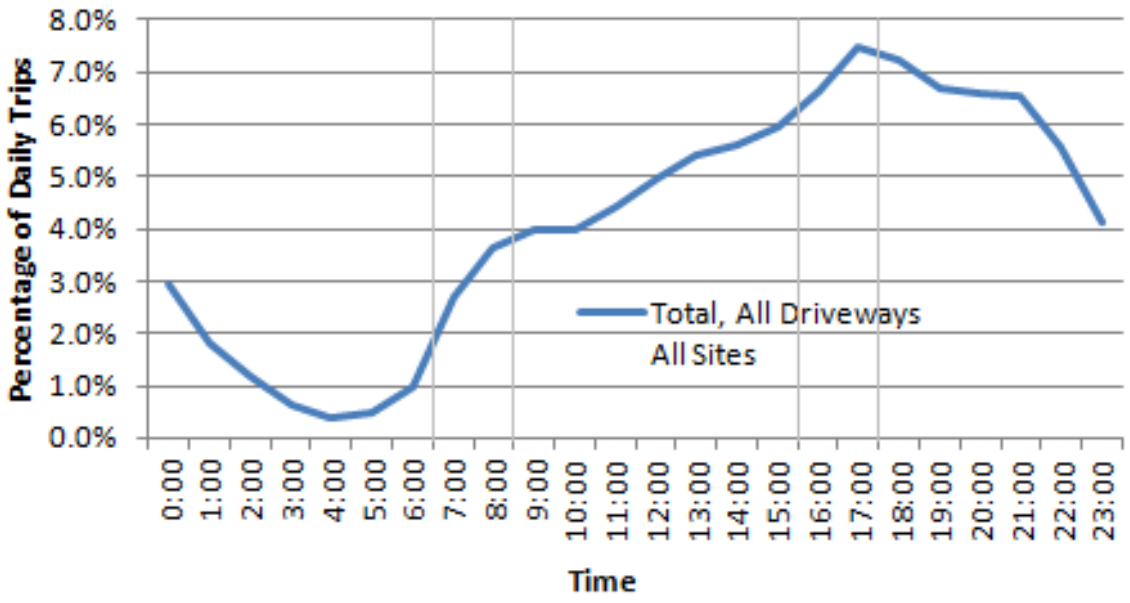
Based on the calculated trip generation estimates for the student housing complexes, the AM and PM peak hour estimates appeared to generate a relatively low number of vehicle trips due to the proximity of the student housing to the College of William & Mary, which allows for a higher percentage of alternative mode trips (i.e., bicycle and pedestrian). However, the trip generation was based on the peak hours of the adjacent street network instead of the peaking characteristics of student housing. **Figure 7** illustrates the hourly distribution of trips associated with student housing over 24 hours. Approximately 3% to 4% of the student housing trips occurred during the adjacent street AM peak hour and approximately 6% to 7.5% during the adjacent street PM peak hour. From **Table 2** and **Table 3**, the Option 1 and Option 2 trip generation resulted in the following percentages:

- Option 1
    - 41 AM trips / 863 daily trips = 5%
    - 80 PM trips / 863 daily trips = 9%
- Option 2
    - 35 AM trips / 750 daily trips = 5%
    - 68 PM trips / 750 daily trips = 9%

Therefore, the Option 1 and Option 2 student housing trip generation estimates were higher than the average student housing complex estimates and should be appropriate for use in this study. Similar to the By-Right redevelopment scenario, internal capture and pass-by reductions of 15% and 30% were applied, respectively. As previously mentioned, the pass-by reduction only applies to the retail land uses.

Option 1 is anticipated to generate approximately 4,200 trips per day, approximately 470 trips during the AM peak hour, and approximately 300 trips during the PM peak hour. Option 2 is anticipated to generate approximately 4,100 trips per day, approximately 490 trips during the AM peak hour and, approximately 265 trips during the PM peak hour.

Figure 7: Percentage of Daily Trips per Hour for Student Apartments



Source: Trip Generation: Characteristics of Large Gas Stations/Convenience Stores and Student Apartments (Florida Department of Transportation)

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Table 1: By-Right Redevelopment Scenario Trip Generation

Land Use	Description	ITE Code	Density		Trips						
					Daily	AM			PM		
						Total	Entering	Exiting	Total	Entering	Exiting
Retail	Shopping Center	820	190,898	SF	10,339	231	143	88	924	444	480
Restaurant	High-Turnover Restaurant	932	6,677	SF	849	72	40	32	66	40	26
Restaurant	High-Turnover Restaurant	932	4,032	SF	513	44	24	20	40	24	16
Restaurant	High-Turnover Restaurant	932	3,429	SF	436	37	20	17	34	20	14
Restaurant	High-Turnover Restaurant	932	2,584	SF	329	28	15	13	25	15	10
Restaurant	High-Turnover Restaurant	932	3,945	SF	502	43	24	19	39	23	16
Restaurant	Fast-Food Restaurant without Drive-Through Window	933	1,540	SF	1,103	68	41	27	40	20	20
Restaurant	Fast-Food Restaurant without Drive-Through Window	933	1,725	SF	1,235	76	46	30	45	23	22
Restaurant	Fast-Food Restaurant without Drive-Through Window	933	1,647	SF	1,179	72	43	29	43	22	21
Service	Specialty Retail Center	826	5,261	SF	263	141	68	73	34	15	19
Health Club	Health and Fitness Club	492	28,157	SF	927	40	20	20	100	57	43
				Subtotal	17,675	852	484	368	1,390	703	687
				Internal Capture (15%)	2,651	128	73	55	209	105	103
				Pass-By Reduction (30%)	5,303	256	145	110	417	211	206
				Total By-Right Redevelopment Trips (rounded)	9,720	470	270	200	760	390	380

Table 2: Option 1 Scenario Trip Generation

Land Use	Description	ITE Code	Density		Trips						
					Daily	AM			PM		
						Total	Entering	Exiting	Total	Entering	Exiting
Student Housing	Student Housing Apartments										
	Building # 1	Beds	Units								
Unit Type	1 BR, 1 BA	20	20	Bedrooms	28	1	0	1	3	2	1
	2 BR, 1 BA	16	16	Bedrooms	23	1	0	1	2	1	1
	3 BR, 2 BA	12	4	Bedrooms	17	1	0	1	2	1	1
	4 BR, 2 BA	96	24	Bedrooms	136	7	3	4	12	6	6
Amenity*											
	Building # 2										
Unit Type	1 BR, 1 BA	16	16	Bedrooms	23	1	0	1	2	1	1
	2 BR, 1 BA	16	8	Bedrooms	23	1	0	1	2	1	1
	3 BR, 2 BA	0	0	Bedrooms	0	0	0	0	0	0	0
	4 BR, 2 BA	64	16	Bedrooms	91	4	2	2	8	4	4
	Building # 3										
Unit Type	1 BR, 1 BA	16	16	Bedrooms	23	1	0	1	2	1	1
	2 BR, 1 BA	32	16	Bedrooms	45	2	1	1	4	2	2
	3 BR, 2 BA	0	0	Bedrooms	0	0	0	0	0	0	0
	4 BR, 2 BA	128	32	Bedrooms	182	9	4	5	17	9	8
	Building # 4										
Unit Type	1 BR, 1 BA	20	20	Bedrooms	28	1	0	1	3	2	1
	2 BR, 1 BA	32	16	Bedrooms	45	2	1	1	4	2	2
	3 BR, 2 BA	12	4	Bedrooms	17	1	0	1	2	1	1
	4 BR, 2 BA	128	32	Bedrooms	182	9	4	5	17	9	8
	Total	608	240								
Retail	Specialty Retail Center	826	115,000	SF	4,957	680	326	354	297	131	166
Hotel	Hotel	310	140	Rooms	880	74	44	30	84	43	41
				Residential Subtotal	*863*	*41*	*15*	*26*	*80*	*42*	*38*
				Retail Subtotal	*4,957*	*680*	*326*	*354*	*297*	*131*	*166*
				Hotel Subtotal	*880*	*74*	*44*	*30*	*84*	*43*	*41*
				Subtotal	6,700	795	385	410	461	216	245
				Internal Capture (15%)	1,005	119	58	62	69	32	37
				Pass-By Reduction (30%)	1,487	204	98	106	89	39	50
				Mode Split (3%)	26	1	0	1	2	1	1
				Total Option 1 Trips (rounded)	4,180	470	230	240	300	140	160

Table 3: Option 2 Scenario Trip Generation

Land Use	Description	ITE Code	Density		Trips						
					Daily	AM			PM		
						Total	Entering	Exiting	Total	Entering	Exiting
Student Housing	Student Housing Apartments										
	Building # 1	Beds	Units								
Unit Type	1 BR, 1 BA	20	20	Bedrooms	28	1	0	1	3	2	1
	2 BR, 1 BA	32	16	Bedrooms	45	2	1	1	4	2	2
	3 BR, 2 BA	12	4	Bedrooms	17	1	0	1	2	1	1
	4 BR, 2 BA	96	24	Bedrooms	136	7	3	4	12	6	6
Amenity*											
	Building # 2										
Unit Type	1 BR, 1 BA	16	16	Bedrooms	23	1	0	1	2	1	1
	2 BR, 1 BA	16	8	Bedrooms	23	1	0	1	2	1	1
	3 BR, 2 BA	0	0	Bedrooms	0	0	0	0	0	0	0
	4 BR, 2 BA	64	16	Bedrooms	91	4	2	2	8	4	4
	Building # 3										
Unit Type	1 BR, 1 BA	16	16	Bedrooms	23	1	0	1	2	1	1
	2 BR, 1 BA	32	16	Bedrooms	45	2	1	1	4	2	2
	3 BR, 2 BA	0	0	Bedrooms	0	0	0	0	0	0	0
	4 BR, 2 BA	128	32	Bedrooms	182	9	4	5	17	9	8
	Building # 4										
Unit Type	1 BR, 1 BA	16	16	Bedrooms	23	1	0	1	2	1	1
	2 BR, 1 BA	16	8	Bedrooms	23	1	0	1	2	1	1
	3 BR, 2 BA	0	0	Bedrooms	0	0	0	0	0	0	0
	4 BR, 2 BA	64	16	Bedrooms	91	4	2	2	8	4	4
Retail	Specialty Retail Center	826	148,000	SF	6,369	842	404	438	377	166	211
				Residential Subtotal	*750*	*35*	*13*	*22*	*68*	*35*	*33*
				Retail Subtotal	*6,369*	*842*	*404*	*438*	*377*	*166*	*211*
				Subtotal	7,119	877	417	460	445	201	244
				Internal Capture (15%)	1,068	132	63	69	67	30	37
				Pass-By Reduction (30%)	1,911	253	121	131	113	50	63
				Mode Split (3%)	23	1	0	1	2	1	1
				Total Option 2 Trips (rounded)	4,120	490	235	260	265	120	145

5 TRAFFIC DISTRIBUTION AND ASSIGNMENT

The directional distribution and assignment of trips generated by the proposed development site were identified by scenario (i.e., By-Right, Option 1, Option 2) and specific use (i.e., commercial/retail and student housing). The directional distribution and assignment of trips were determined by reviewing existing travel patterns, proposed site access, population densities, and proximity to/from College of William & Mary facilities. From this review, the following traffic distributions were derived and applied to the analysis of the study area:

By-Right Scenario

*Commercial/Retail Land Uses (**Figure 8**)*

- 25% of the trips generated will travel to/from the north on Richmond Road
- 20% of the trips generated will travel to/from the east on Bypass Road
- 25% of the trips generated will travel to/from the south on Richmond Road
- 5% of the trips generated will travel to/from the east on Lafayette Street
- 5% of the trips generated will travel to/from the north on Treyburn Drive
- 20% of the trips generated will travel to/from the west on Monticello Avenue

Option 1 and Option 2 Scenarios

*Commercial/Retail Land Uses (**Figure 9** and **Figure 11**)*

- 25% of the trips generated will travel to/from the north on Richmond Road
- 20% of the trips generated will travel to/from the east on Bypass Road
- 25% of the trips generated will travel to/from the south on Richmond Road
- 5% of the trips generated will travel to/from the east on Lafayette Street
- 5% of the trips generated will travel to/from the north on Treyburn Drive
- 20% of the trips generated will travel to/from the west on Monticello Avenue

Student Housing Land Uses (***Figure 10*** *and* ***Figure 12***)

- 15% of the trips generated will travel to/from the north on Richmond Road
- 10% of the trips generated will travel to/from the east on Bypass Road
- 40% of the trips generated will travel to/from the south on Richmond Road
- 5% of the trips generated will travel to/from the east on Lafayette Street
- 5% of the trips generated will travel to/from the north on Treyburn Drive
- 25% of the trips generated will travel to/from the west on Monticello Avenue

Access to/from the site varied per scenario and used a combination of existing and/or new driveways. For the By-Right and Option 2 scenarios, it was assumed that no modifications would be made to the existing site driveway locations. For the purposes of this study, all new traffic as part of the By-Right redevelopment would be assigned to the following driveways:

- Monticello Avenue at Existing Williamsburg Shopping Center (WSC) Driveway
- Monticello Avenue at Existing Access #1 (located approximately 130 feet east of Garrison Drive)
- Richmond Road at Existing Access #2 (located approximately 300 feet south of Monticello Avenue)
- Richmond Road at Existing Access #3 (located approximately 100 feet south of Bacon Avenue)

Under the Option 1 scenario, proposed site traffic would access the development using the following driveways:

- Monticello Avenue at Existing Williamsburg Shopping Center (WSC) Driveway
- Monticello Avenue at Garrison Drive (Existing Access #1 would be closed and realigned with Garrison Drive to the north
- Richmond Road at Existing Access #2 (located approximately 300 feet south of Monticello Avenue)
- Richmond Road at Existing Access #3 (located approximately 100 feet south of Bacon Avenue)

All other driveways to the proposed development currently located along Monticello Avenue would also be closed as part of Option 1 and Option 2 scenarios.

Detailed trip distribution and trip assignment are shown for each scenario and land use type in **Figure 8** through **Figure 12**.

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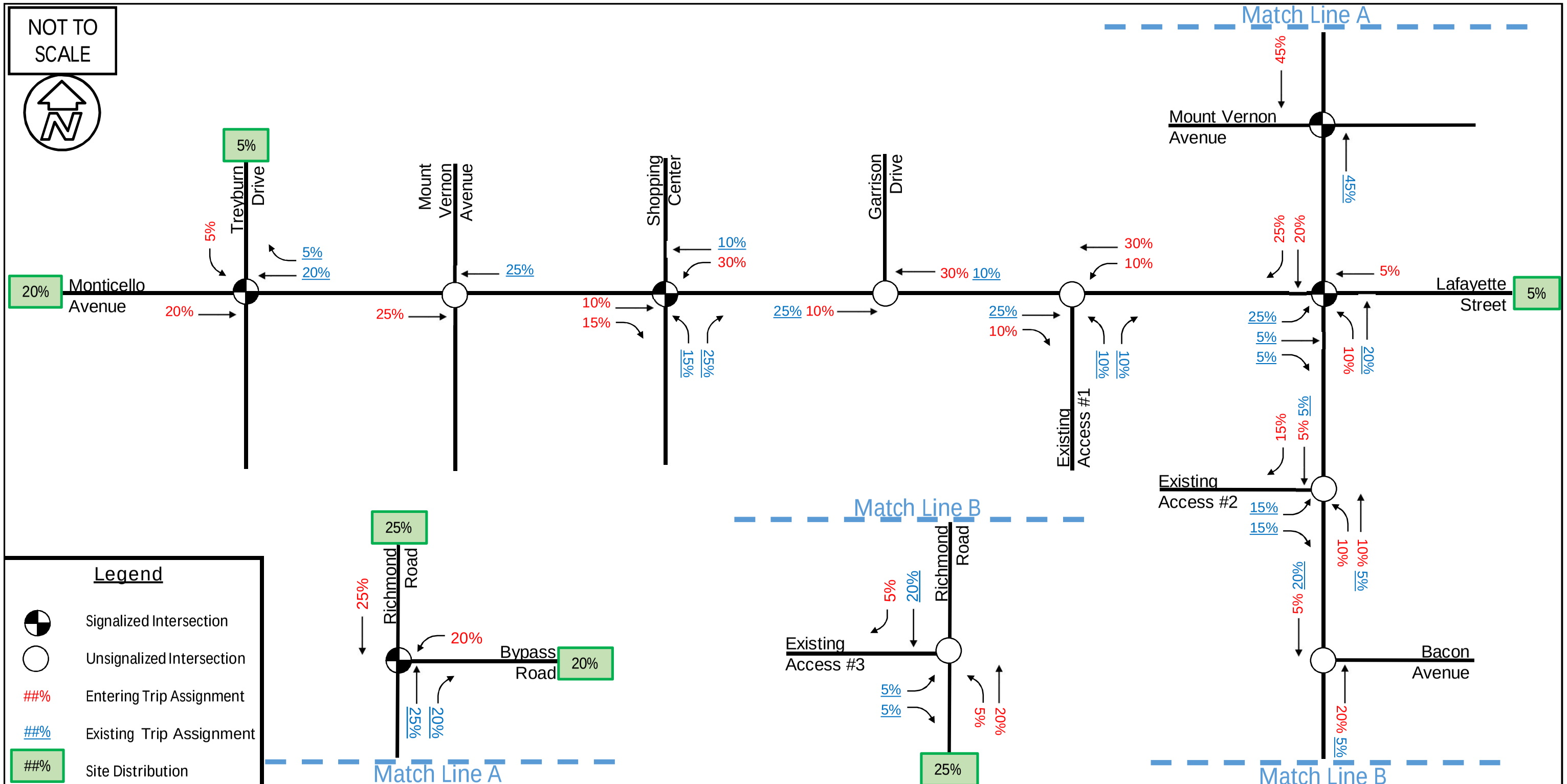

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By-Right
Traffic Distribution

Figure
8

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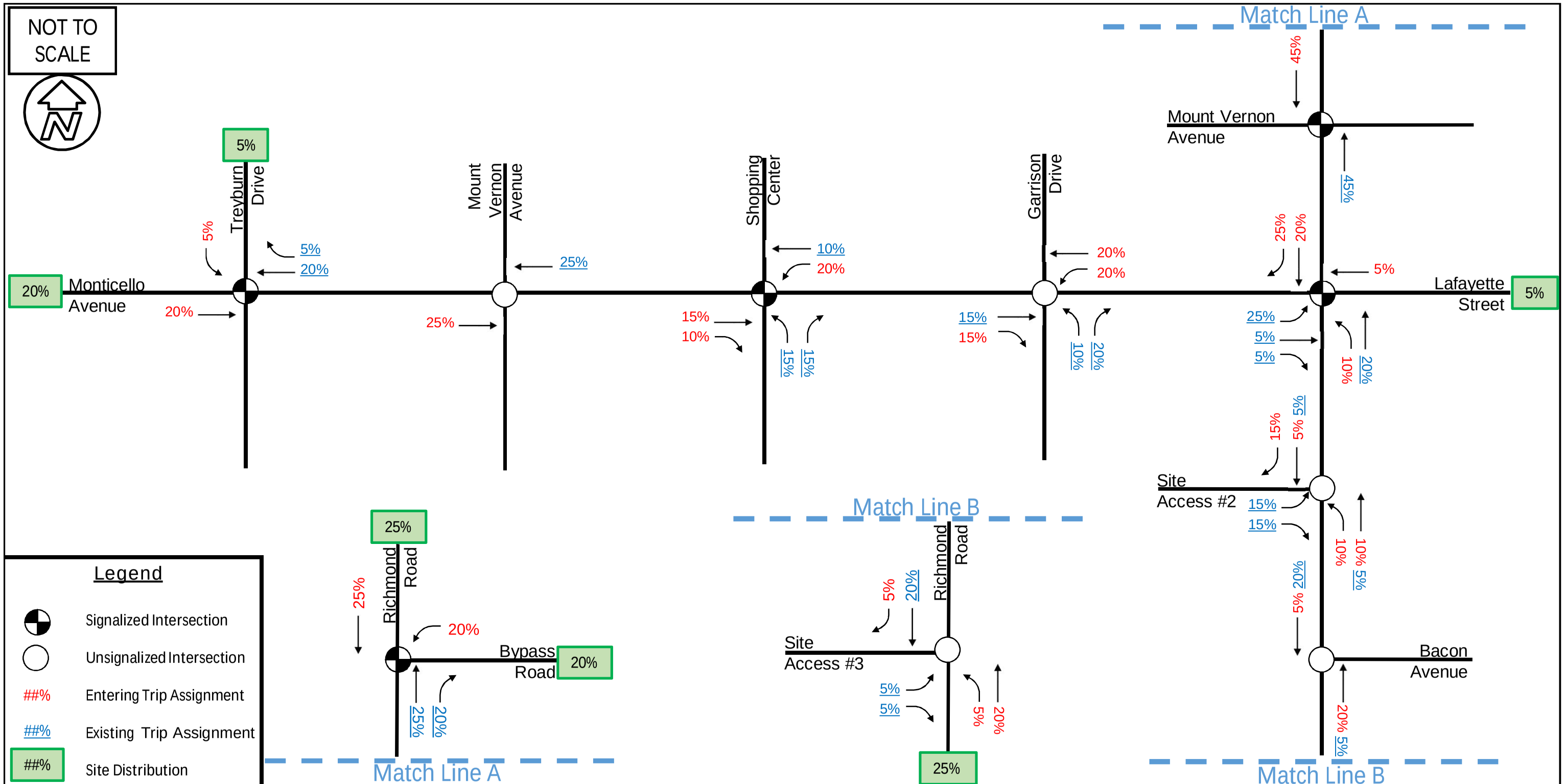

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Midtown Row TIA
City of Williamsburg, Virginia

Option 1
Retail
Traffic Distribution

Figure
9

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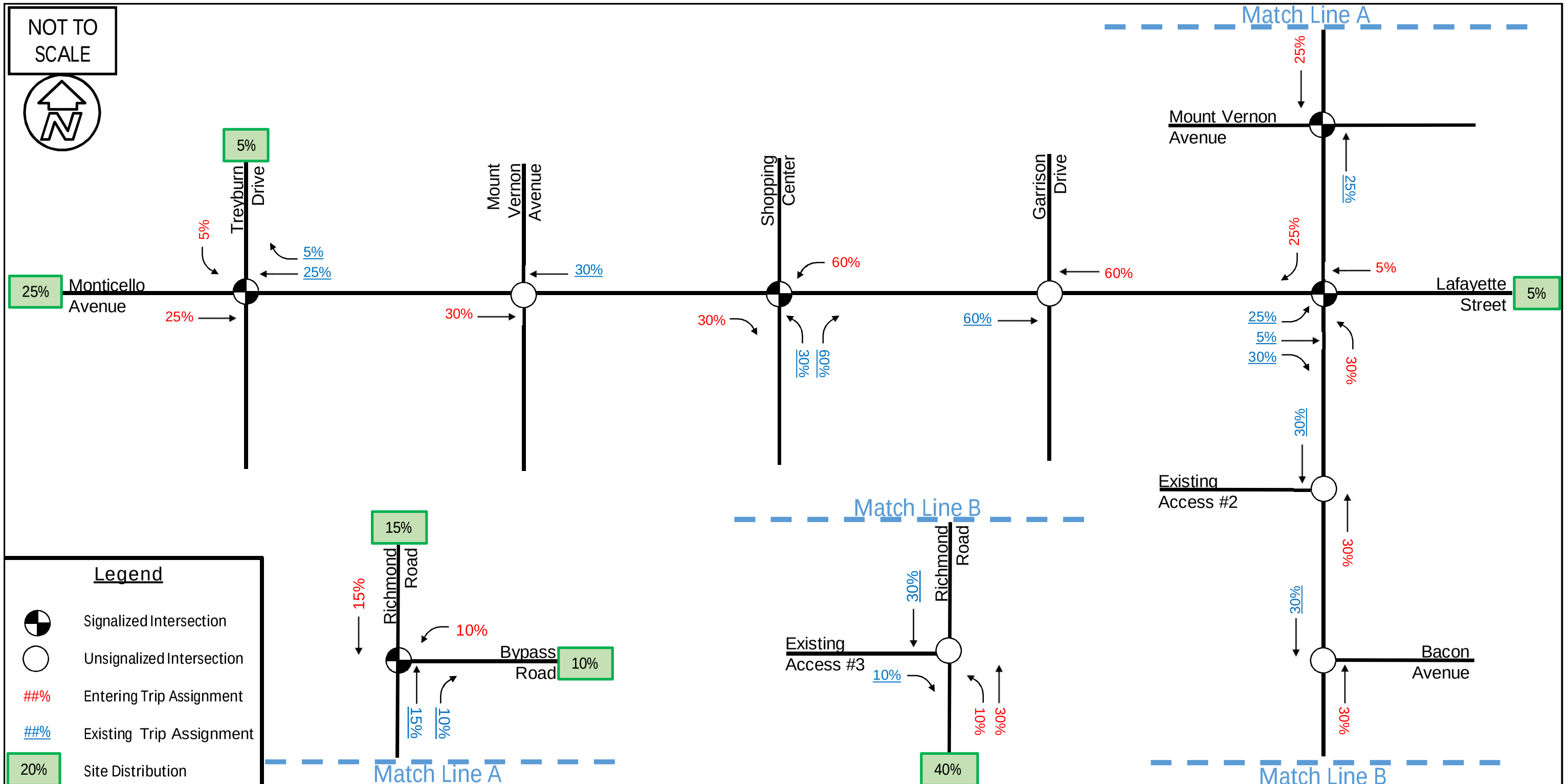

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Midtown Row TIA
City of Williamsburg, Virginia

Option 1
Student Housing
Traffic Distribution

Figure 10

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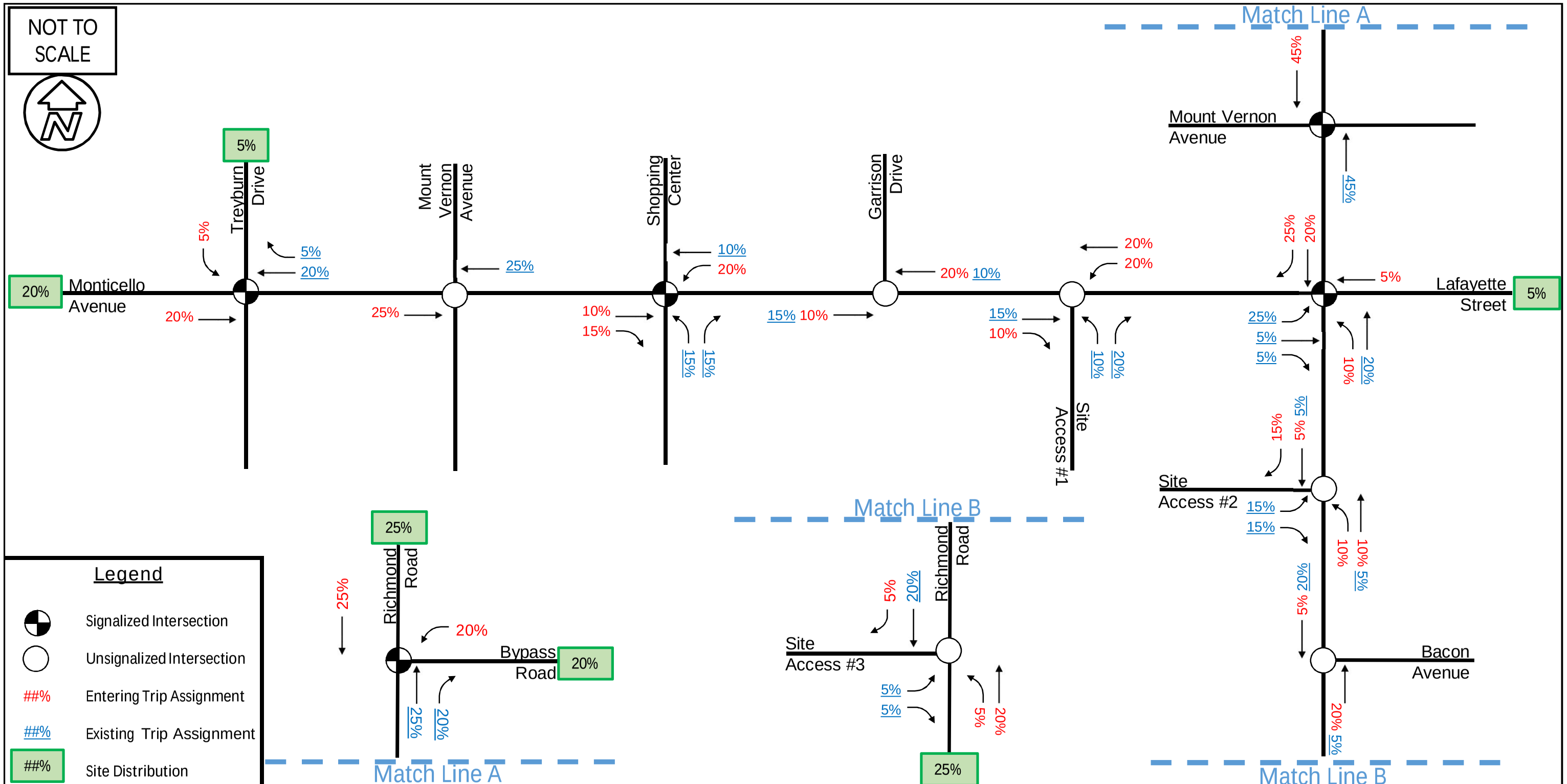

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Midtown Row TIA
City of Williamsburg, Virginia

Option 2
Retail
Traffic Distribution

Figure
11

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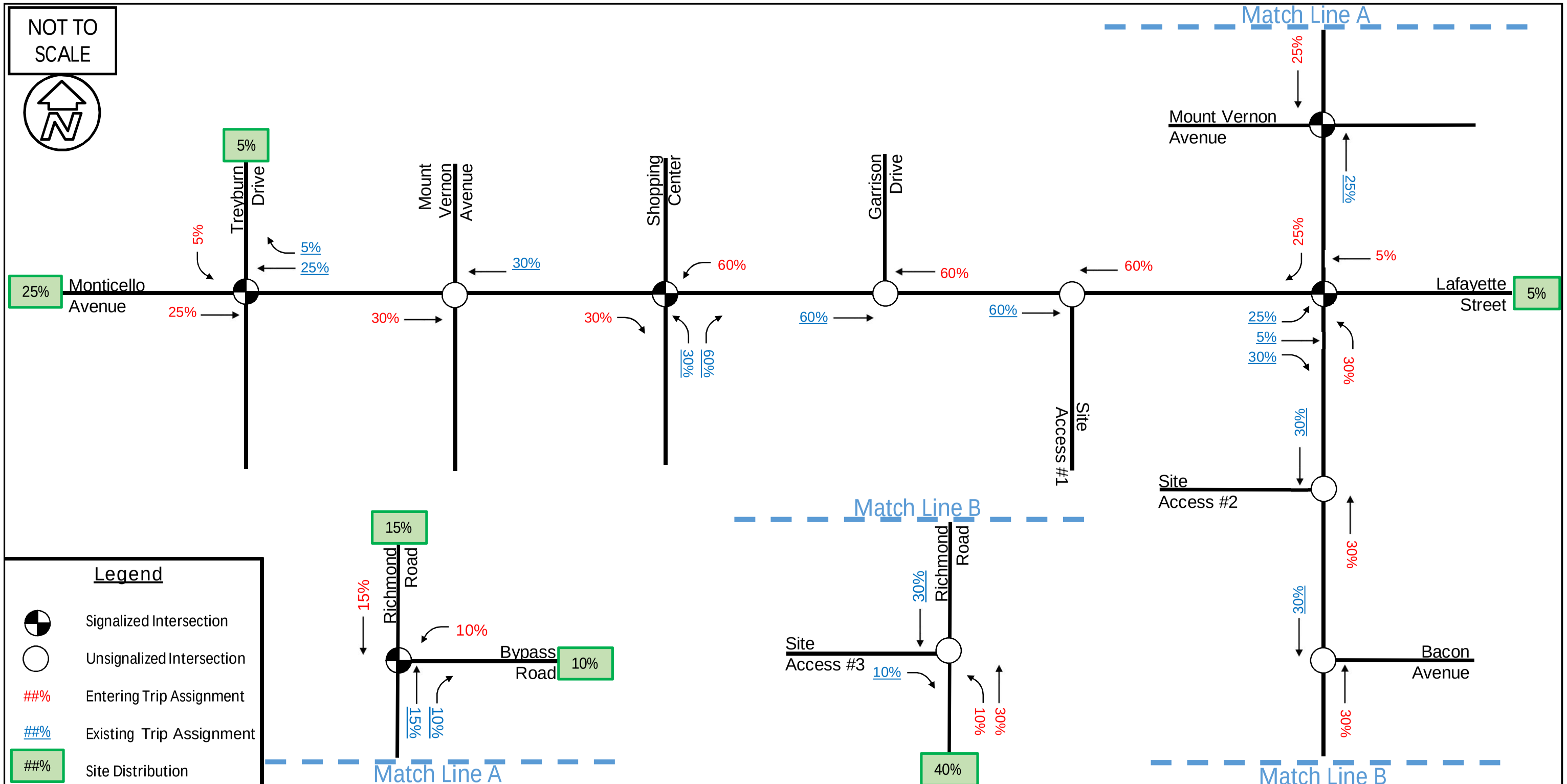

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Midtown Row TIA
City of Williamsburg, Virginia

Option 2
Student Housing
Traffic Distribution

Figure 12

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6 PROJECTED TRAFFIC VOLUMES

Based on discussions with the City of Williamsburg, the following horizon years were analyzed to determine future impacts of the proposed development based on the anticipated schedule for construction and opening:

- Scenario 1 – 2020 By-Right Redevelopment
- Scenario 2 – 2020 Option 1
- Scenario 3 – 2020 Option 2
- Scenario 4 – 2026 By-Right Redevelopment
- Scenario 5 – 2026 Option 1
- Scenario 6 – 2026 Option 2

6.1 BACKGROUND TRAFFIC GROWTH

Background traffic growth rates were determined using historical traffic volume trends from the past six years (2011 to 2016) from the Virginia Department of Transportation (VDOT) data. The following growth rates were used to project background traffic volumes for the study area roadways:

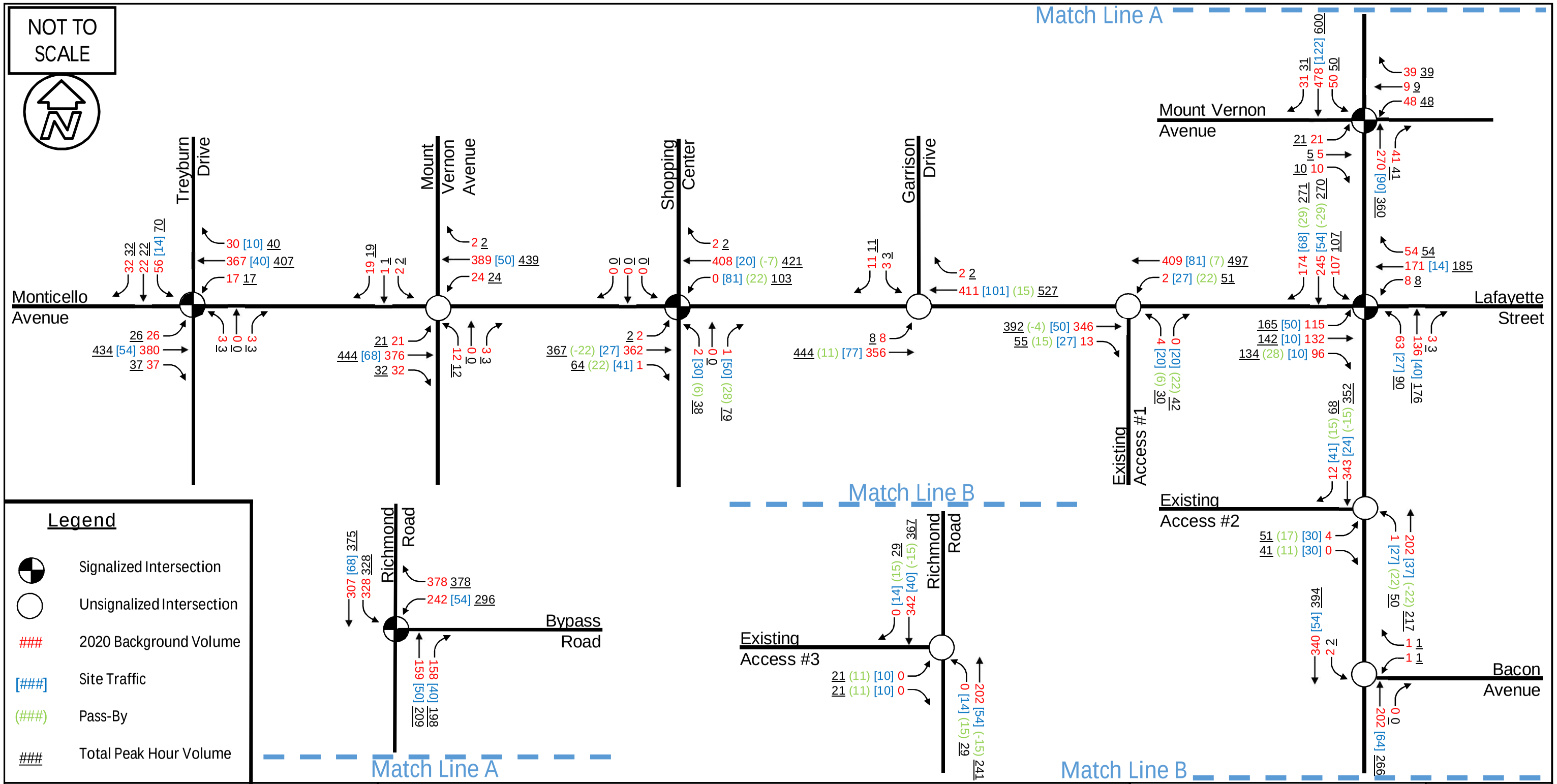
- Monticello Avenue – 0.5% per year
- Richmond Road – 2.0% per year

6.2 TOTAL TRAFFIC

Traffic associated with the proposed development was added to the future background traffic volumes to develop the total traffic volumes for the 2020 and 2026 future conditions. **Figure 13** through **Figure 24** illustrate the peak hour traffic volumes used in the analysis of future conditions. Worksheets detailing the volumes for the study area intersections are provided in **Appendix D**.

7 FUTURE ROADWAY GEOMETRY

As a result of the proposed redevelopment of the Williamsburg Shopping Center (WSC) site, the City of Williamsburg is currently in the process of evaluating conceptual designs/enhanced typical sections for improvements to Monticello Avenue. The improvements to Monticello Avenue are anticipated to be between Treyburn Drive and Richmond Road. These improvements could consist of adding exclusive on-street parallel parking between the WSC driveway and Garrison Drive, a two-way separated bike-track, concrete sidewalks ranging in width from 6’ to 8’, curb and gutter, and potential signalization of the Monticello Avenue/Garrison Drive intersection, as illustrated in **Figure 25**. These improvements are anticipated to be constructed and in place by 2020; therefore, the By-Right, Option 1, and Option 2 scenarios include the proposed roadway geometry/laneage as a part of this study.



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Midtown Row TIA
City of Williamsburg, Virginia

2020 By-Right
AM Peak Hour
Traffic Volumes

Figure
13

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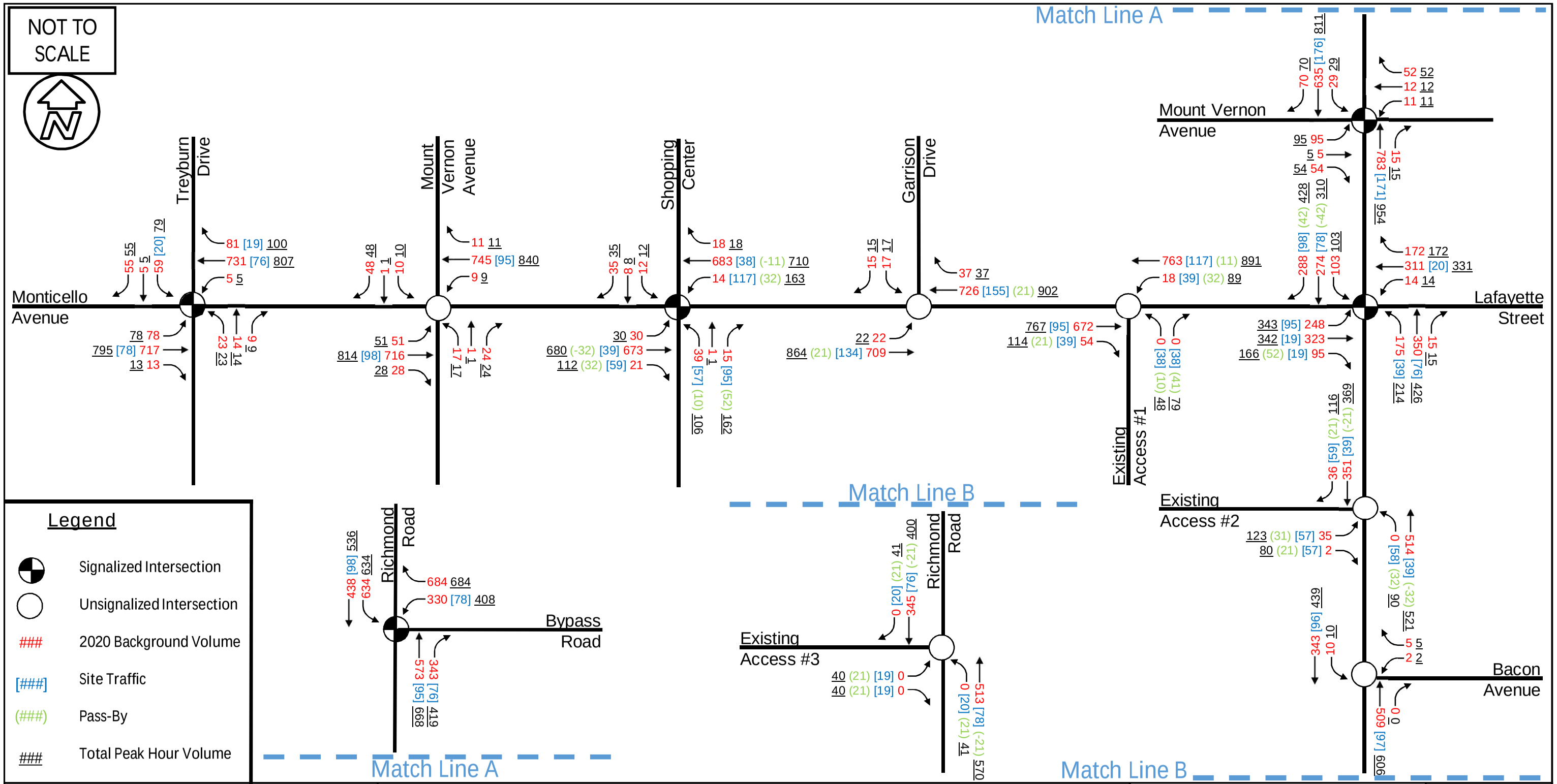

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Midtown Row TIA
City of Williamsburg, Virginia

2020 By-Right
PM Peak Hour
Traffic Volumes

Figure
14

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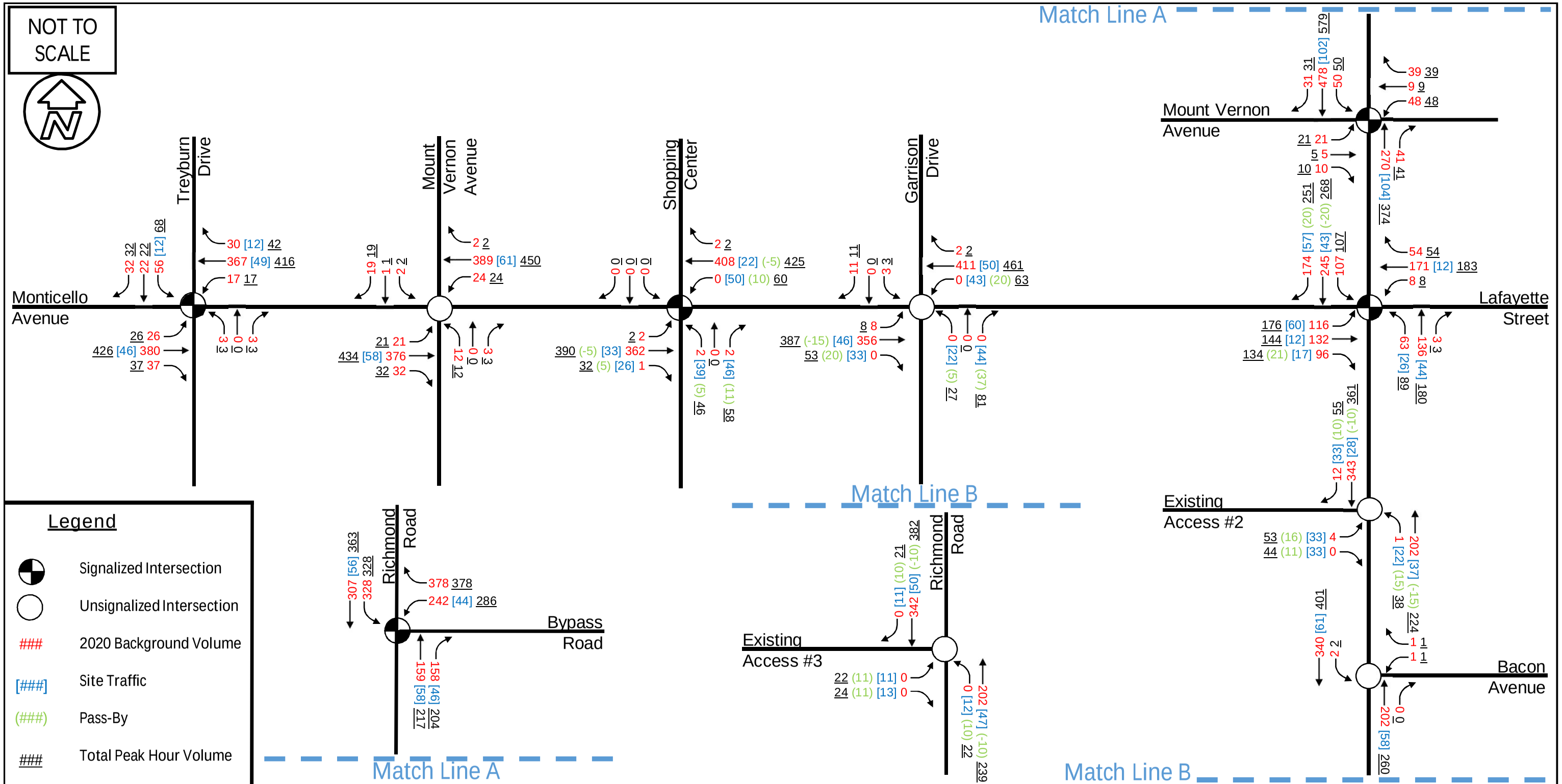

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Midtown Row TIA
City of Williamsburg, Virginia

2020 Option 1
AM Peak Hour
Traffic Volumes

Figure 15

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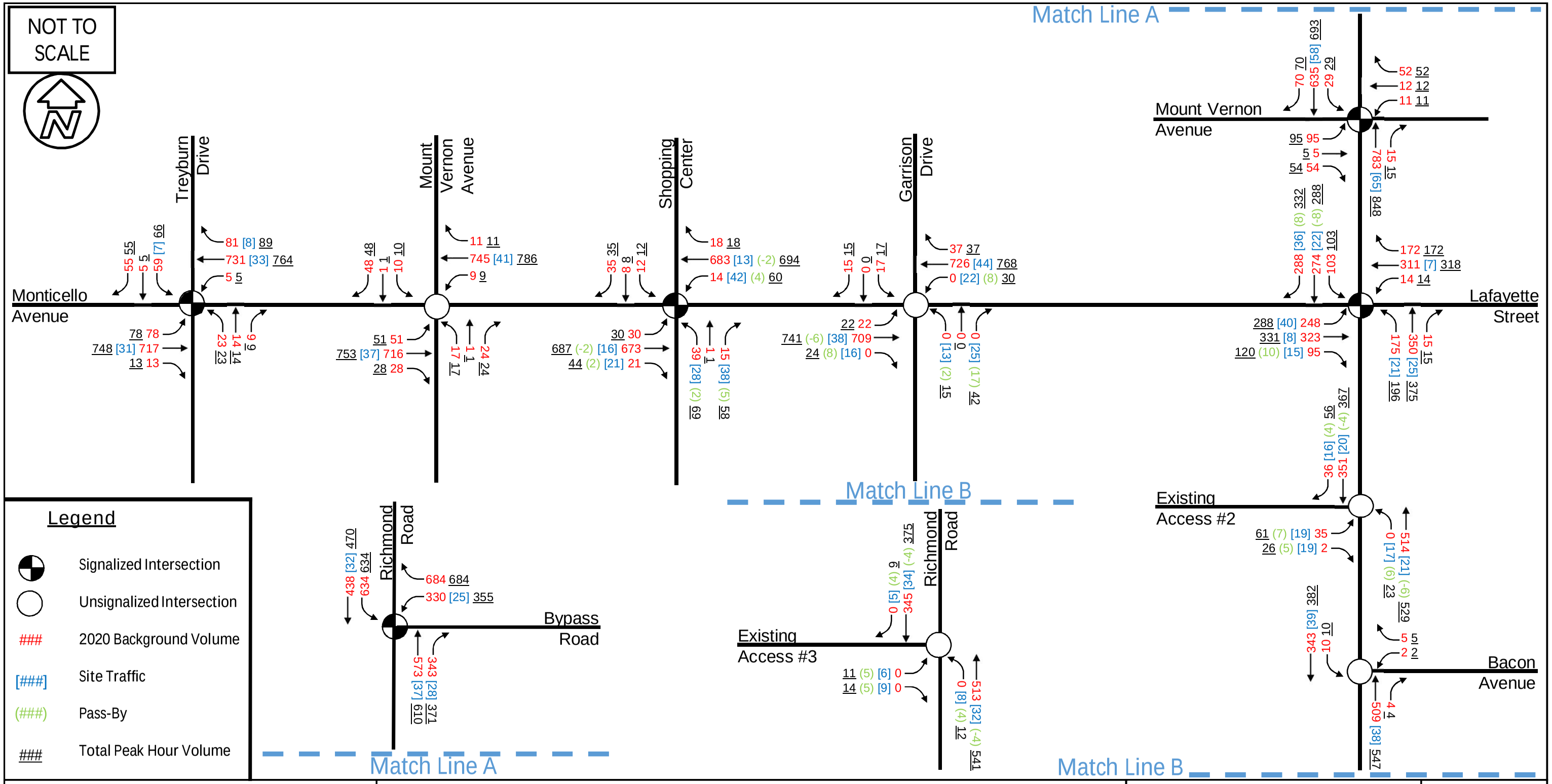

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Midtown Row TIA
City of Williamsburg, Virginia

2020 Option 1
PM Peak Hour
Traffic Volumes

Figure
16

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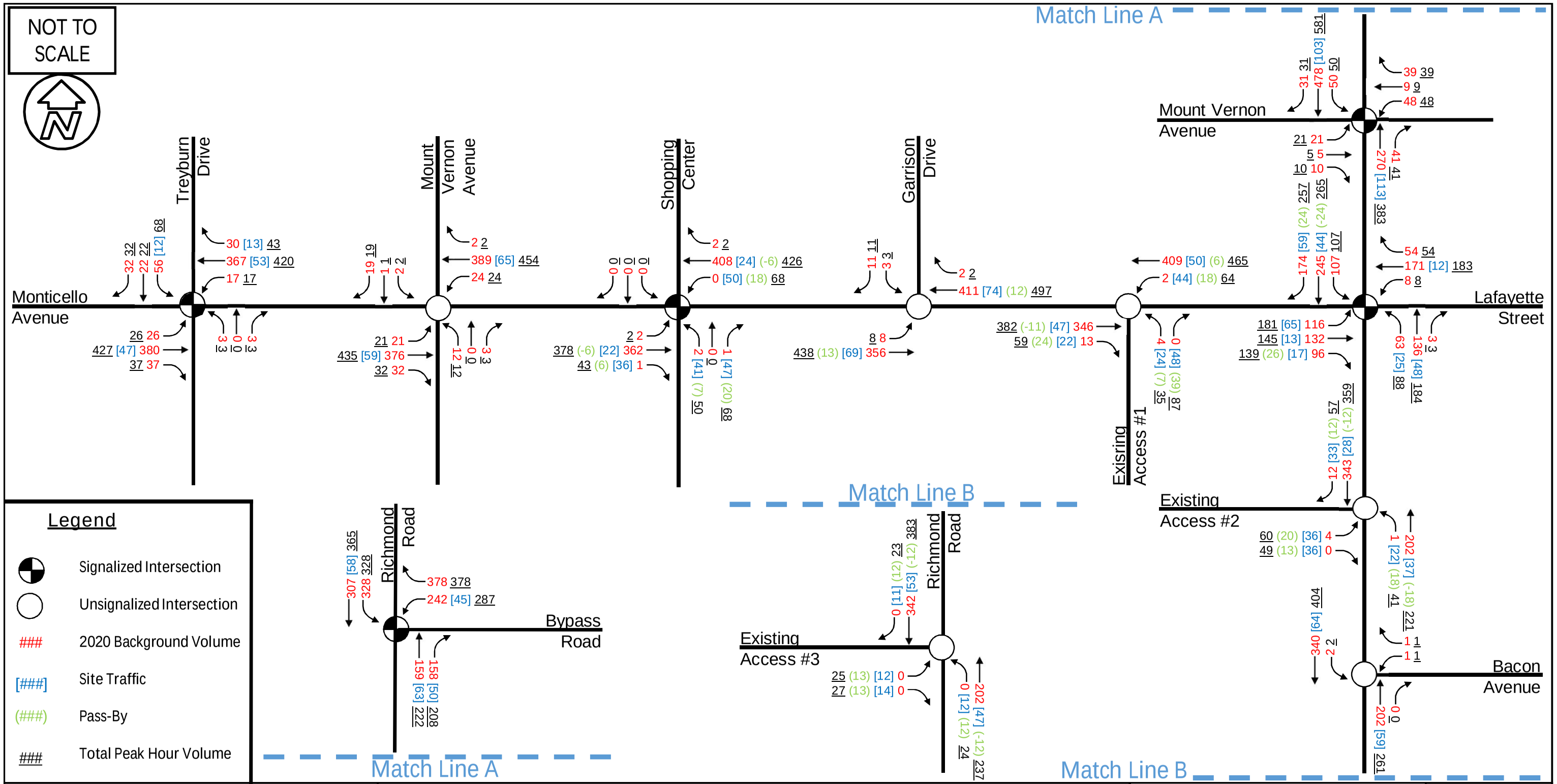

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Midtown Row TIA
City of Williamsburg, Virginia

2020 Option 2
AM Peak Hour
Traffic Volumes

Figure
17

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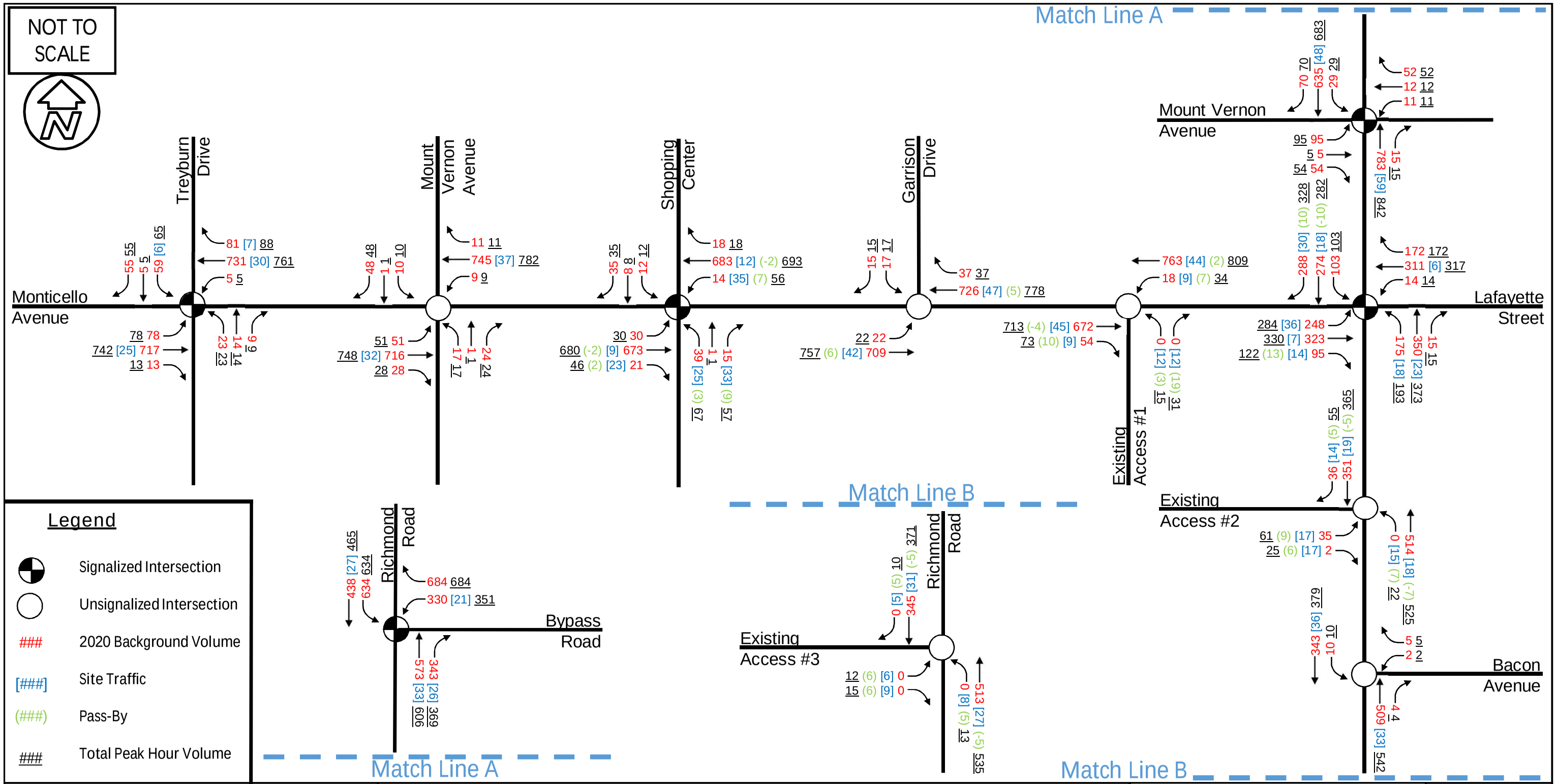

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Midtown Row TIA
City of Williamsburg, Virginia

2020 Option 2
PM Peak Hour
Traffic Volumes

Figure 18

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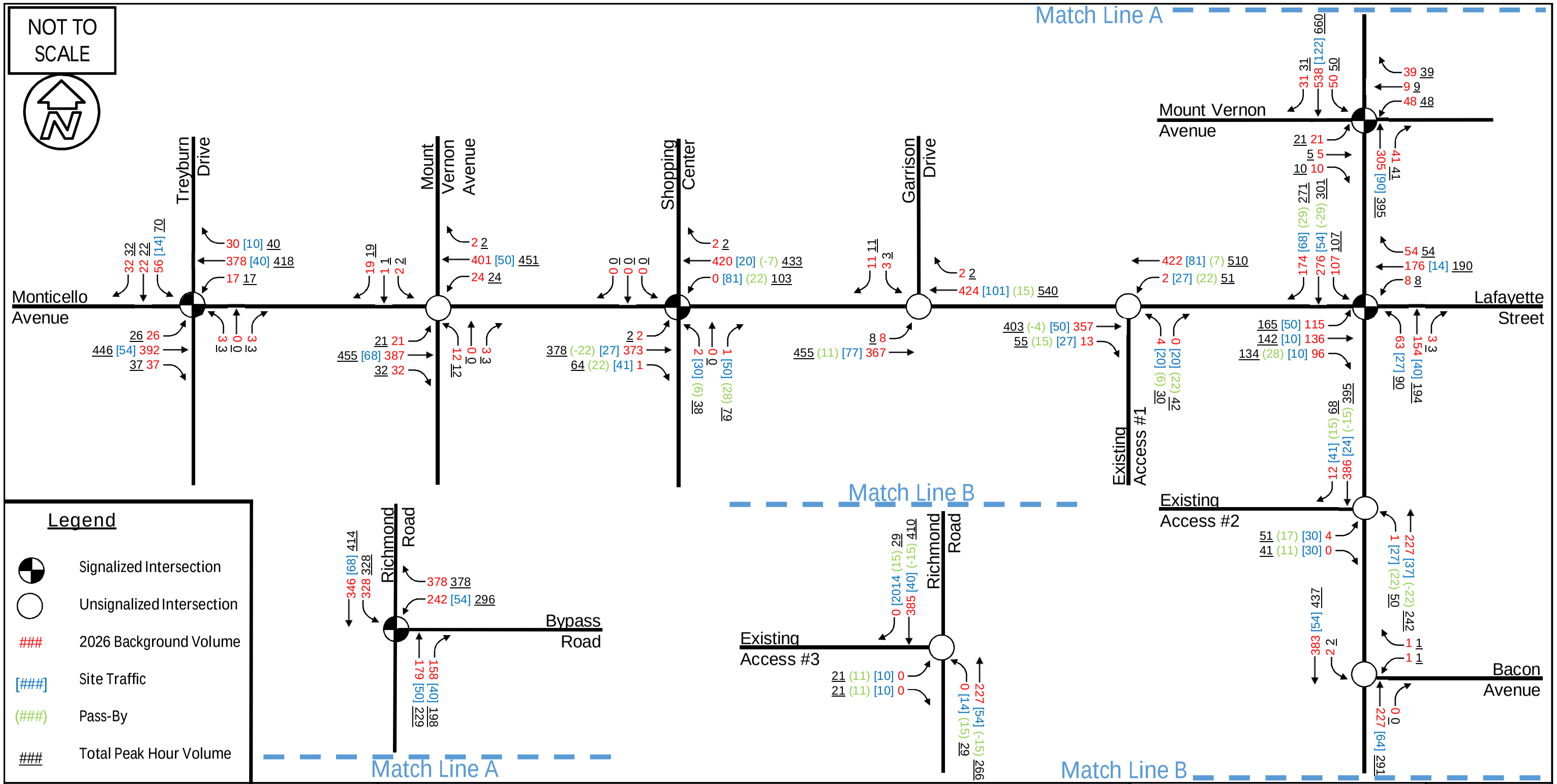

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Midtown Row TIA
City of Williamsburg, Virginia

2026 By-Right
AM Peak Hour
Traffic Volumes

Figure
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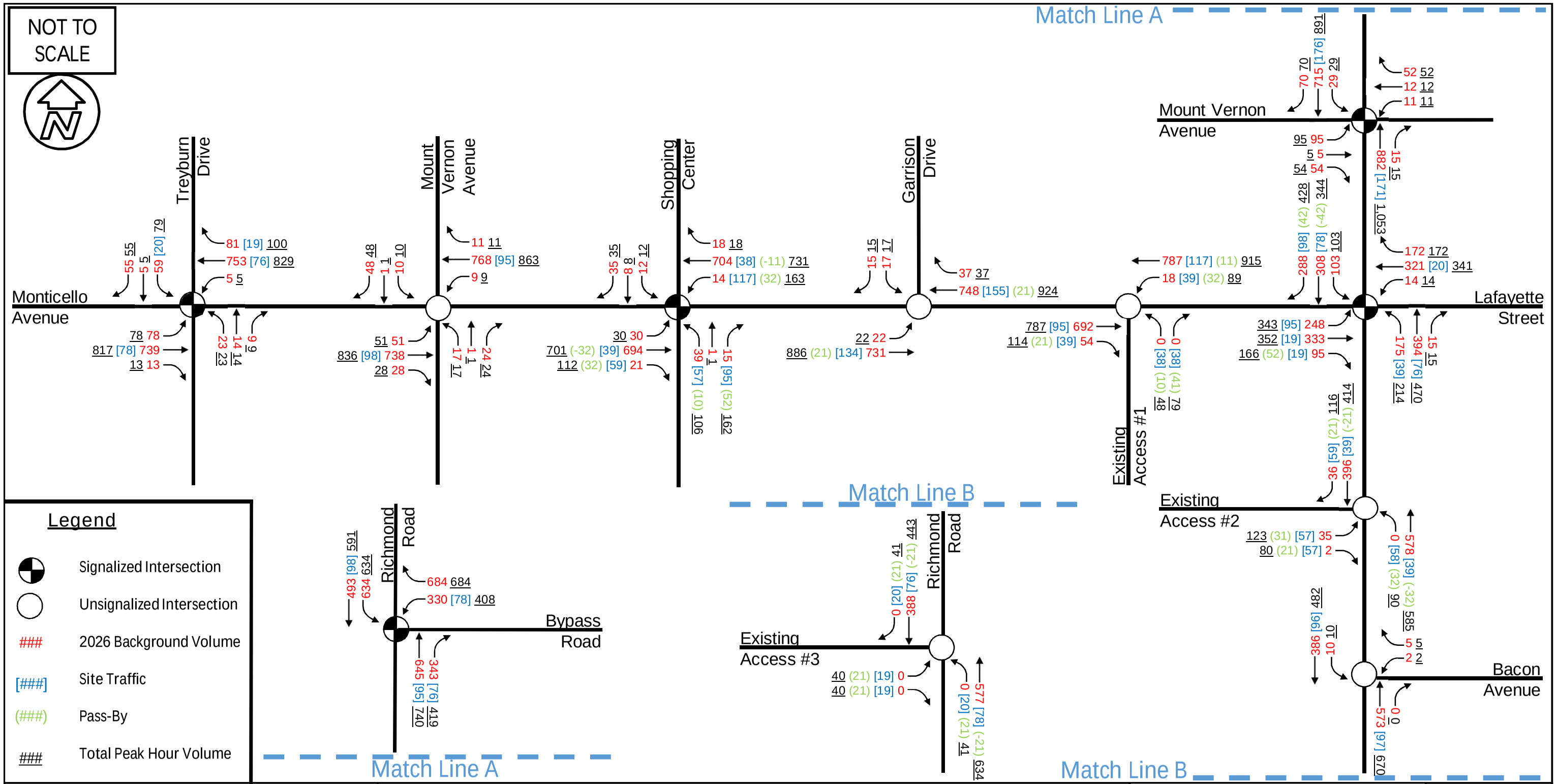

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Midtown Row TIA
City of Williamsburg, Virginia

2026 By-Right
PM Peak Hour
Traffic Volumes

Figure
20

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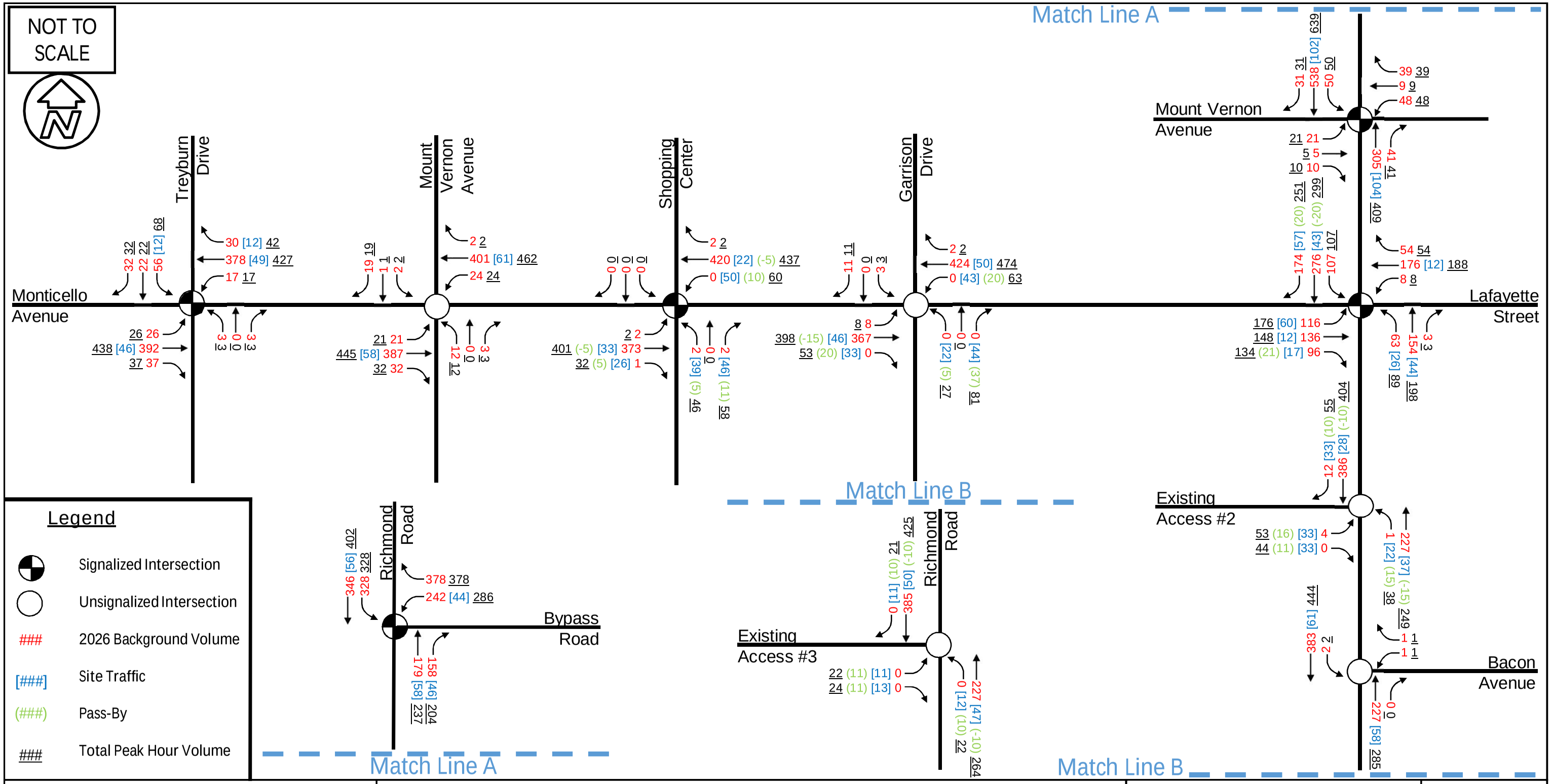

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Midtown Row TIA
City of Williamsburg, Virginia

2026 Option 1
AM Peak Hour
Traffic Volumes

Figure
21

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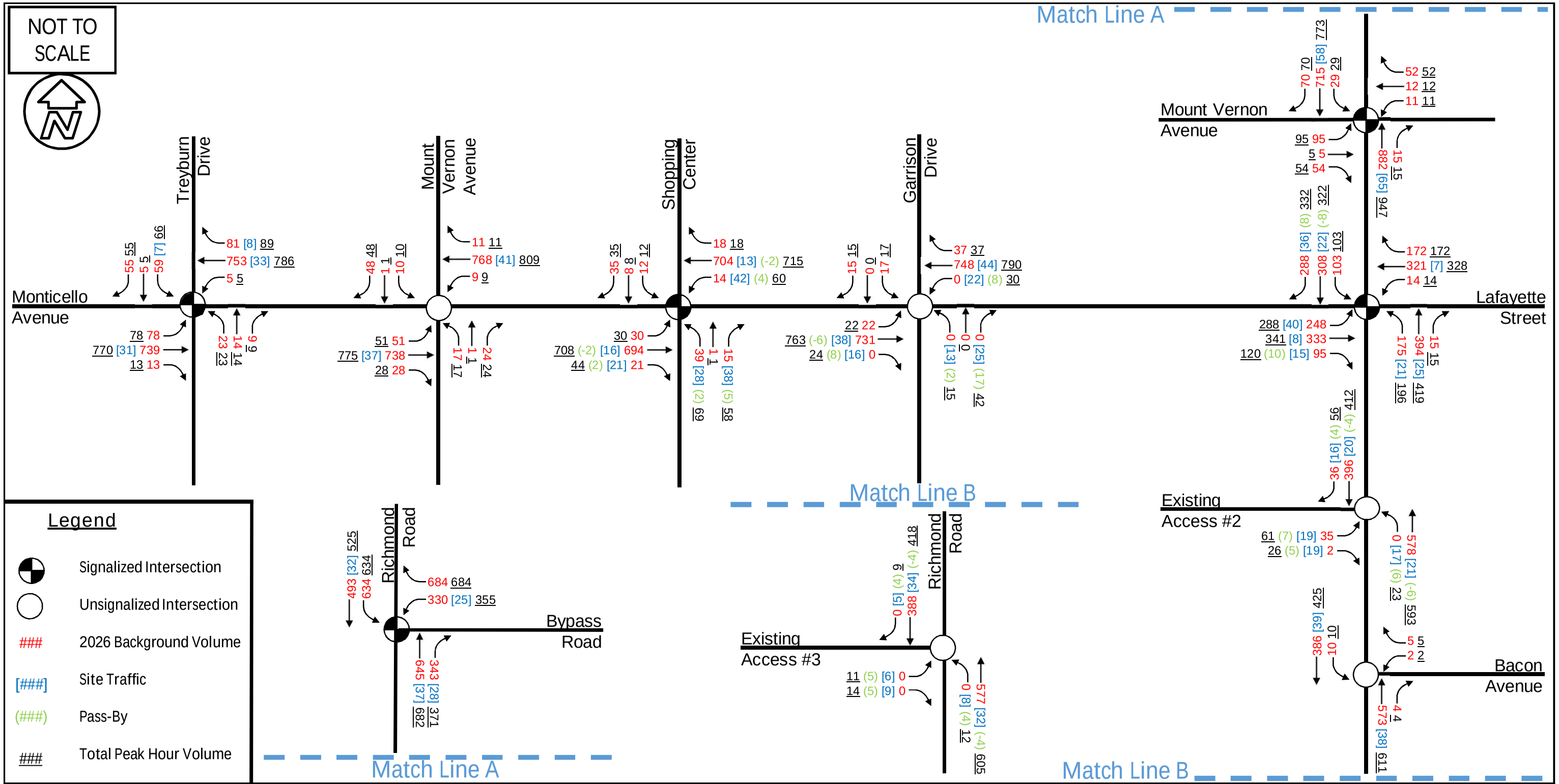

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Midtown Row TIA
City of Williamsburg, Virginia

2026 Option 1
PM Peak Hour
Traffic Volumes

Figure
22

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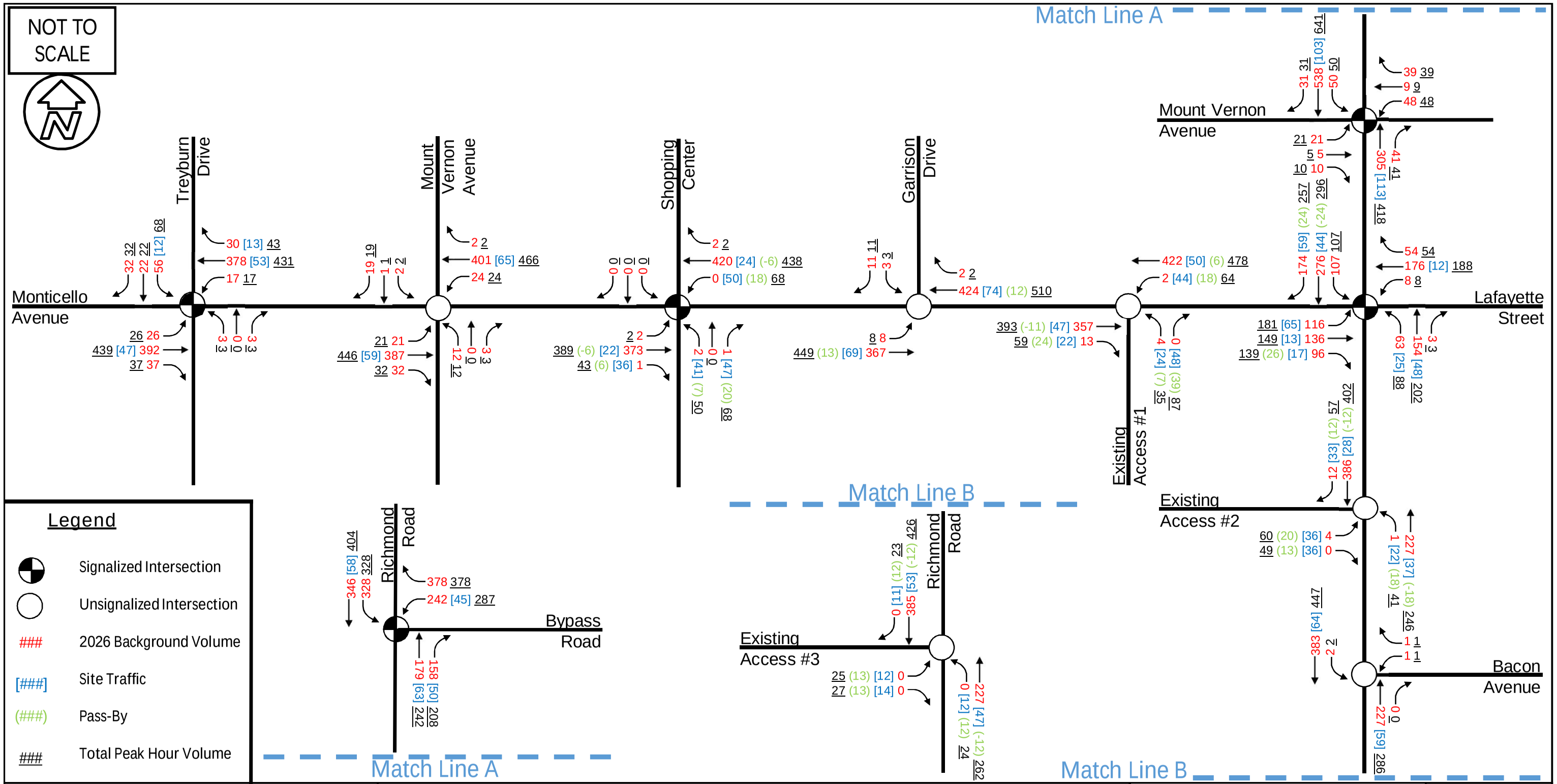

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Midtown Row TIA
City of Williamsburg, Virginia

2026 Option 2
AM Peak Hour
Traffic Volumes

Figure
23

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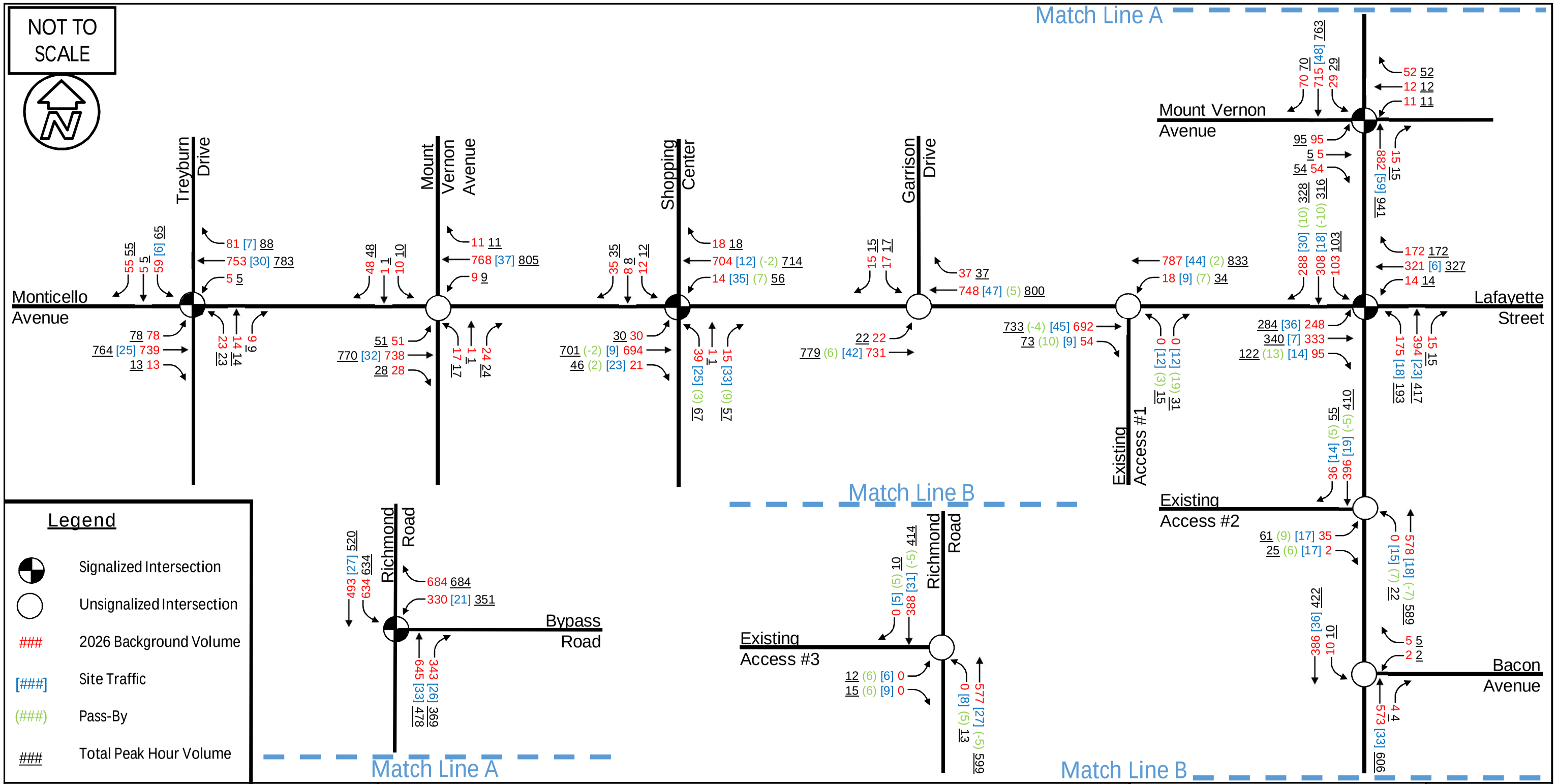

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Midtown Row TIA
City of Williamsburg, Virginia

2026 Option 2
PM Peak Hour
Traffic Volumes

Figure
24

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Kimley»Horn	Midtown Row TIA City of Williamsburg, Virginia	Monticello Avenue Improvements	Figure 25

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8 TRAFFIC ANALYSIS

The traffic analysis for the proposed Midtown Row development consisted of analyzing intersection operations (i.e., delay and queuing). Analyses for study area intersections for AM and PM peak hours were performed for the following scenarios:

- Scenario 1 – 2020 By-Right Redevelopment
- Scenario 2 – 2020 Option 1
- Scenario 3 – 2020 Option 2
- Scenario 4 – 2026 By-Right Redevelopment
- Scenario 5 – 2026 Option 1
- Scenario 6 – 2026 Option 2

The following sections summarize the results for each analysis.

8.1 INTERSECTION OPERATIONAL ANALYSIS

Operational analyses were conducted for the study area intersections for the AM and PM peak hours under the existing and future scenarios. The existing signal timings, including cycle lengths, clearance intervals, and splits, were provided by the City of Williamsburg and VDOT. It should be noted that the signalized intersections along Richmond Road and Monticello Avenue are currently not functioning together as a coordinated signal system. Therefore, it was assumed that Monticello Avenue and Richmond Road would function as a coordinated system under 2020 and 2026 conditions. Additionally, all cycle lengths, signal timings, coordination offsets, and phasing were optimized to account for future traffic volumes associated with the proposed site development.

Analyses were completed to determine the operating characteristics of the study area intersections using *Synchro Professional 9.1* modeling software, which uses methodologies contained in the 2010 Highway Capacity Manual (HCM) [TRB Special Report 209, 2000]. The intersection operational analysis inputs and analysis methodologies were consistent with VDOT's Traffic Operations and Safety Analysis Manual (TOSAM). Intersection turning movement counts were used with information about the number of lanes, current traffic control, and signal timings to determine the operational conditions of each study area intersection. Level of service (LOS) was reported for the study area intersections.

LOS describes the amount of traffic congestion at an intersection or on a roadway and ranges from A to F (A indicating a condition of little to no congestion and F a condition with severe congestion, unstable traffic flow, and stop-and-go conditions). LOS is based on the average delay experienced by all traffic using the intersection during the busiest (peak) 15-minute period. Generally, LOS A through LOS D are considered acceptable. Delay and associated LOS for both signalized and unsignalized intersections are reported from the Synchro analysis. In the LOS/delay tables for each of the study area intersections, values highlighted in "bold" represent movements operating at LOS E or worse. **Table 4** shows the corresponding thresholds in delay for unsignalized and signalized intersections.

The queuing results represent the maximum simulated queues for each movement as they compare to the effective storage lengths. Effective storage lengths represent the amount of distance available to vehicles to queue without generally impacting the adjacent lanes and consist of the full width storage, plus half of the taper distance. By using the effective storage, vehicles that can use the taper length as additional room for storage can be accounted for. All traffic models were developed and analyzed with the effective storage lengths coded into the network.

Values highlighted as “bold” represent queue lengths that exceed the available storage lengths/spill back to an upstream intersection. As part of the queuing analysis, “percent blocking” was noted in instances where queues impact adjacent turn- and/or through-lanes. This percentage represents the approximate amount of time during the peak hour when a lane was observed to be blocked (e.g., “10% blocking” indicates that during the peak hour, the turn-lane storage was exceeded and impacted 10 percent of the adjacent lane volume). The results are presented in the following summaries and supporting calculations are presented in **Appendix E**.

Table 4: LOS Control Delay Thresholds

LOS	Signalized Intersections Control Delay Per Vehicle [sec/veh]	Unsignalized Intersections Average Control Delay [sec/veh]	Relative Delay
A	≤ 10	≤ 10	Short Delays
	Free-flow traffic operations at average travel speeds. Vehicles completely unimpeded in ability to maneuver. Minimal delay at signalized intersections.		
B	> 10 – 20	> 10 – 15	
	Reasonably unimpeded traffic operations at average travel speeds. Vehicle maneuverability slightly restricted. Low traffic delays.		
C	> 20 – 35	> 15 – 25	
	Stable traffic operations. Lane changes becoming more restricted. Travel speeds reduced to half of average free flow travel speeds. Longer intersection delays.		
D	>35 – 55	> 25 – 35	Moderate Delays
	Small increases in traffic flow can cause increased delays. Delays likely attributable to increase traffic, reduced signal progression and adverse timing.		
E	>55 – 80	> 35 – 50	
	Significant delays. Travel speeds reduced to one third of average free flow travel speed.		
F	> 80	> 50	Long Delays
	Extremely low speeds. Intersection congestion. Long delays. Extensive traffic queues at intersections.		

Source: Highway Capacity Manual, Transportation Research Board, Washington, D.C., 2010

The following sections summarizes each study area intersection’s operations as it relates to vehicle traffic for the analysis scenarios. Results are presented in **Table 5** through **Table 26**.

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8.1.1 MONTICELLO AVENUE AT TREYBURN DRIVE

This signalized intersection consisted of the following geometry for the existing and future (i.e., By-Right, Option 1, and Option 2) scenarios:

- Treyburn Drive (northbound)
  - One shared left-turn/through lane
  - One exclusive right-turn lane
- Treyburn Drive (southbound)
  - One shared left-turn/through lane
  - One exclusive right-turn lane
- Monticello Avenue (eastbound)
  - One exclusive left-turn lane
  - One exclusive through lane
  - One exclusive right-turn lane
- Monticello Avenue (westbound)
  - One exclusive left-turn lane
  - One exclusive through lane
  - One exclusive right-turn lane

Results of the capacity and queuing analysis for this signalized intersection are shown in **Table 5** and **Table 6**, respectively. Under existing conditions, where this intersection runs uncoordinated, the AM peak hour experienced an overall LOS C with movements of LOS C or better. However, the PM peak hour experienced an overall LOS F with movements of LOS F; specifically, the eastbound and westbound through movements.

Under future conditions, the assumed signal retiming and coordination along the Monticello Avenue helped improve overall intersection operations and the progression of traffic, which also helps decrease the expected delay for these movements in the AM and PM peak hours. For the AM and PM peak hours, this intersection is anticipated to operate with an overall LOS C or better and with movements of LOS D or better.

Queuing results indicated that the intersection experienced queuing beyond the provided storage length or distance to the upstream intersection during the existing AM and PM peak hours. For the existing AM peak hour, the westbound right-turn lane was blocked by the westbound through queue. Under the existing PM peak hour conditions, the eastbound left-turn and westbound right-turn lane were blocked by the eastbound and westbound queues. Eastbound and westbound approaches experienced queues extending through the upstream intersection.

While the results in **Table 6** show that the westbound right-turn movement is exceeding its available storage length during the AM and PM peak hour conditions, this is attributed to the traffic in the adjacent through-lane stacking up and blocking access to this turn lane, and not due to the capacity of the subject turn-lane. It has been observed with the SimTraffic software, that maximum queues cannot be recorded when vehicles are blocked from being able to enter a turn lane, because as soon as a vehicle is able to enter the turn lane, it meets the speed thresholds that the software uses to record maximum queue, which always happens at the back of the turn lane (i.e., 100 feet in this case).

For the future conditions, the westbound right-turn lane is anticipated to be blocked by the westbound through queue in all scenarios with the exception of the 2020 and 2026 Option 1 AM peak hour and 2026 Option 2 during the AM and PM peak hours. However, the westbound through lane is not anticipated to queue to the upstream intersection during the AM peak hour but does queue upstream in the 2020 Option 1 and 2026 By-Right PM peak hours.

Table 5: Monticello Avenue at Treyburn Drive Intersection Level of Service

Scenario	Traffic Control	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour														
2017 Existing	Signal	C (29.4)	B (16.9)	C (28.1)	B (16.3)	B (17.8)	C (34.8)	B (17.3)	B (18.7)		B (18.6)	C (30.1)		C (26.9)
			C (26.4)			C (32.8)			B (18.7)			C (29.1)		
2020 By-Right	Signal	C (31.5)	B (19.9)	C (33.1)	B (19.7)	B (16.9)	C (30.6)	B (19.9)	C (22.6)		C (22.6)	D (42.3)		D (36.7)
			C (31.4)			C (29.2)			C (22.6)			D (40.9)		
2020 Option 1	Signal	B (18.8)	A (9.6)	B (14.9)	B (10.4)	B (12.7)	B (16.9)	B (11.3)	D (39.0)		D (38.8)	D (48.1)		D (41.3)
			B (14.3)			B (16.2)			D (38.9)			D (46.3)		
2020 Option 2	Signal	B (17.2)	B (10.6)	B (15.1)	B (11.3)	A (8.0)	B (12.4)	B (12.3)	D (37.2)		D (37.1)	D (48.1)		D (41.3)
			B (14.5)			B (12.2)			D (37.2)			D (46.3)		
2026 By-Right	Signal	C (32.2)	C (20.0)	C (34.1)	B (19.7)	B (16.9)	C (31.5)	B (19.9)	C (22.6)		C (22.6)	D (42.3)		D (36.7)
			C (32.3)			C (30.0)			C (22.6)			D (40.9)		
2026 Option 1	Signal	B (18.9)	A (9.7)	B (15.1)	B (10.4)	B (12.9)	B (17.0)	B (11.3)	D (39.0)		D (38.8)	D (48.1)		D (41.3)
			B (14.5)			B (16.3)			D (38.9)			D (46.3)		
2026 Option 2	Signal	B (17.8)	B (10.7)	B (16.5)	B (11.3)	A (8.8)	B (12.7)	B (12.3)	D (37.2)		D (37.1)	D (48.1)		D (41.3)
			B (15.8)			B (12.5)			D (37.2)			D (46.3)		
PM Peak Hour														
2017 Existing	Signal	F (108.2)	B (17.7)	F (87.7)	B (14.9)	B (18.8)	F (168.9)	B (17.6)	C (21.1)		C (20.3)	C (31.9)		C (29.3)
			E (79.9)			F (152.7)			C (20.9)			C (30.7)		
2020 By-Right	Signal	C (27.1)	C (22.4)	C (21.3)	A (8.6)	C (31.9)	C (27.2)	D (43.9)	D (44.1)		D (40.6)	D (48.7)		D (41.8)
			C (21.2)			C (29.1)			D (43.4)			D (46.0)		
2020 Option 1	Signal	C (23.6)	B (18.0)	C (21.0)	A (9.2)	B (14.7)	C (22.9)	B (19.4)	D (41.6)		D (39.0)	D (46.5)		D (42.2)
			C (20.5)			C (22.5)			D (41.1)			D (44.6)		
2020 Option 2	Signal	C (21.6)	B (15.9)	B (18.6)	A (8.3)	B (13.6)	C (20.2)	C (21.3)	D (43.7)		D (40.3)	D (48.0)		D (42.7)
			B (18.2)			C (20.3)			D (43.0)			D (45.7)		
2026 By-Right	Signal	C (28.8)	C (23.2)	C (22.4)	A (8.6)	D (36.1)	C (29.7)	D (49.7)	D (44.1)		D (40.6)	D (48.7)		D (41.8)
			C (22.3)			C (31.9)			D (43.4)			D (46.0)		
2026 Option 1	Signal	C (24.6)	B (19.4)	C (22.0)	A (9.2)	B (16.0)	C (24.5)	B (19.5)	D (41.6)		D (39.0)	D (46.5)		D (42.2)
			C (21.5)			C (24.0)			D (41.1)			D (44.6)		
2026 Option 2	Signal	C (22.6)	B (17.1)	B (19.4)	A (8.3)	B (14.5)	C (21.5)	C (24.8)	D (43.7)		D (40.3)	D (48.0)		D (42.7)
			B (19.0)			C (21.8)			D (43.0)			D (45.7)		

Table 6: Monticello Avenue at Treyburn Drive Maximum Queuing

Scenario	Maximum Queue Length by Movement (feet)											
	Eastbound			Westbound			Northbound			Sounthbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Effective Storage Length (Feet)												
Existing By-Right Option 2 Option 1	150	Cont.	150	200	450*	100	Cont.		100	400		Cont.
AM Peak Hour												
2017 Existing	118	322	140	86	264	100	29		27	97		37
2020 By-Right	130	365	150	173	338	100	24		27	121		48
2020 Option 1	80	310	122	30	194	83	31		30	136		51
2020 Option 2	109	246	92	69	243	100	31		27	143		51
2026 By-Right	149	394	149	126	344	100	26		27	136		47
2026 Option 1	90	237	88	52	230	91	26		27	142		45
2026 Option 2	107	312	126	83	293	91	28		27	144		50
PM Peak Hour												
2017 Existing	150	787	126	183	467	100	61		36	94		57
2020 By-Right	149	581	68	104	442	100	76		40	137		79
2020 Option 1	149	445	136	54	453	100	84		40	114		76
2020 Option 2	149	393	98	43	442	100	80		50	130		77
2026 By-Right	149	510	115	89	462	100	83		48	131		84
2026 Option 1	149	500	98	59	444	100	74		37	126		70
2026 Option 2	149	444	111	111	446	100	98		54	122		68

*Notes: Results displayed are the average results across 10 microsimulation runs | * distance to upstream intersection*

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8.1.2 MONTICELLO AVENUE AT MOUNT VERNON AVENUE

This two-way stop-controlled (TWSC) intersection consisted of the following geometry for the existing and future (i.e., By-Right, Option 1, and Option 2) scenarios:

- Mount Vernon Avenue (northbound)
  - One shared left/through/right-turn lane
- Mount Vernon Avenue (southbound)
  - One shared left/through/right-turn lane
- Monticello Avenue (eastbound)
  - One exclusive left-turn lane
  - One shared through/right-turn lane
- Monticello Avenue (westbound)
  - One exclusive left-turn lane
  - One shared through/right-turn lane

Results of the capacity and queuing analysis for this unsignalized intersection are shown in **Table 7** and **Table 8**, respectively. Under existing conditions, the AM peak hour experienced an overall LOS A with movements of LOS C or better and PM peak hour experienced an overall LOS A with movements of LOS D or better.

Under future conditions, the AM peak hour is anticipated to experience similar operations as current conditions with an overall LOS A and movements of LOS C or better. However, under future conditions, the PM peak hour is anticipated to experience an overall LOS A but the northbound approach is anticipated to experience LOS E. This degradation in operations on the northbound approach can be attributed to the emphasis on the progression and steady flow of traffic (i.e., fewer gaps) along Monticello Avenue.

Queuing results indicate that the intersection currently experiences queuing or blocking during the PM peak hour for the westbound shared through and right-turn movement as well as the northbound and southbound approaches. The westbound through movement blocked the upstream intersection by 34% of the volume of this movement. However, under the future conditions, the queuing and blocking are anticipated to decreased due to optimized signal timings of the adjacent intersections.

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Table 7: Monticello Avenue at Mount Vernon Avenue Intersection Level of Service

Scenario	Traffic Control	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour														
2017 Existing	TWSC	A (1.1)	A (8.3)	A (0.0)		A (8.4)	A (0.0)		C (19.0)			B (12.1)		
			A (0.4)			A (0.5)			C (19.0)			B (12.1)		
2020 By-Right	TWSC	A (0.9)	A (8.4)	A (0.0)		A (8.5)	A (0.0)		C (19.7)			B (12.3)		
			A (0.4)			A (0.4)			C (19.7)			B (12.3)		
2020 Option 1	TWSC	A (1.0)	A (8.4)	A (0.0)		A (8.5)	A (0.0)		C (20.0)			B (12.4)		
			A (0.4)			A (0.4)			C (20.0)			B (12.4)		
2020 Option 2	TWSC	A (0.9)	A (8.4)	A (0.0)		A (8.5)	A (0.0)		C (20.1)			B (12.5)		
			A (0.4)			A (0.4)			C (20.1)			B (12.5)		
2026 By-Right	TWSC	A (0.9)	A (8.4)	A (0.0)		A (8.6)	A (0.0)		C (20.2)			B (12.4)		
			A (0.4)			A (0.4)			C (20.2)			B (12.4)		
2026 Option 1	TWSC	A (0.9)	A (8.5)	A (0.0)		A (8.5)	A (0.0)		C (20.5)			B (12.6)		
			A (0.4)			A (0.4)			C (20.5)			B (12.6)		
2026 Option 2	TWSC	A (0.9)	A (8.5)	A (0.0)		A (8.6)	A (0.0)		C (20.5)			B (12.6)		
			A (0.4)			A (0.4)			C (20.5)			B (12.6)		
PM Peak Hour														
2017 Existing	TWSC	A (1.7)	A (10.0)	A (0.0)		A (9.7)	A (0.0)		D (25.3)			C (19.1)		
			A (0.6)			A (0.1)			D (25.3)			C (19.1)		
2020 By-Right	TWSC	A (2.1)	B (11.1)	A (0.0)		B (10.8)	A (0.0)		E (39.0)			D (26.5)		
			A (0.6)			A (0.1)			E (39.0)			D (26.5)		
2020 Option 1	TWSC	A (2.2)	B (10.5)	A (0.0)		B (10.2)	A (0.0)		E (39.3)			D (25.7)		
			A (0.6)			A (0.1)			E (39.3)			D (25.7)		
2020 Option 2	TWSC	A (2.1)	B (10.4)	A (0.0)		B (10.2)	A (0.0)		E (38.2)			D (25.2)		
			A (0.6)			A (0.1)			E (38.2)			D (25.2)		
2026 By-Right	TWSC	A (2.1)	B (11.3)	A (0.0)		B (11.0)	A (0.0)		E (41.5)			D (27.9)		
			A (0.6)			A (0.1)			E (41.5)			D (27.9)		
2026 Option 1	TWSC	A (2.2)	B (10.7)	A (0.0)		B (10.4)	A (0.0)		E (42.1)			D (27.1)		
			A (0.6)			A (0.1)			E (42.1)			D (27.1)		
2026 Option 2	TWSC	A (2.2)	B (10.6)	A (0.0)		B (10.4)	A (0.0)		E (40.9)			D (26.6)		
			A (0.6)			A (0.1)			E (40.9)			D (26.6)		

Table 8: Monticello Avenue at Mount Vernon Avenue Maximum Queuing

Scenario	Maximum Queue Length by Movement (feet)											
	Eastbound			Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Effective Storage Length (Feet)												
Existing	225	450*		190	400*		Cont.			Cont.		
By-Right												
Option 2												
Option 1												
AM Peak Hour												
2017 Existing	39	2		40	0		47			38		
2020 By-Right	37	4		38	5		56			41		
2020 Option 1	35	2		37	0		56			41		
2020 Option 2	33	0		37	0		50			37		
2026 By-Right	31	8		40	0		60			42		
2026 Option 1	38	2		39	0		56			43		
2026 Option 2	37	2		45	3		48			48		
PM Peak Hour												
2017 Existing	72	0		190	424		323			435		
2020 By-Right	64	86		45	144		102			86		
2020 Option 1	70	8		33	174		102			92		
2020 Option 2	62	0		35	72		95			90		
2026 By-Right	70	99		49	211		107			97		
2026 Option 1	63	7		46	132		104			84		
2026 Option 2	62	0		33	126		109			97		

*Notes: Results displayed are the average results across 10 microsimulation runs | * distance to upstream intersection*

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8.1.3 MONTICELLO AVENUE AT WILLIAMSBURG SHOPPING CENTER DRIVEWAY

This signalized intersection consisted of the following geometry for the existing and future (i.e., By-Right, Option 1, and Option 2) scenarios:

- Williamsburg Shopping Center (WSC) Driveway (northbound)
  - One shared left/through/right-turn lane
- Monticello Shopping Center Driveway (southbound)
  - One shared left/through/right-turn lane
- Monticello Avenue (eastbound)
  - One exclusive left-turn lane
  - One shared through/right-turn lane
- Monticello Avenue (westbound)
  - One exclusive left-turn lane
  - One shared through/right-turn lane

Results of the capacity and queuing analysis for this signalized intersection are shown in **Table 9** and **Table 10,** respectively. Under existing conditions, where this intersection runs uncoordinated, the AM and PM peak hours experienced an overall LOS C with movements of LOS C or better.

Under future conditions, the assumed signal retiming and coordination along the Monticello Avenue helped improve overall intersection operations and the progression of traffic, which also helps decrease the expected delay for eastbound and westbound movements in the AM and PM peak hours. For the AM and PM peak hours, this intersection is anticipated to operate with an overall LOS B or better with movements of LOS D or better. The degradation in operations on the northbound and southbound approaches during the AM and PM peak hours can be attributed to the emphasis on the progression and steady flow of traffic (i.e., fewer gaps) along Monticello Avenue.

Queuing results indicate that the intersection currently experienced queuing or blocking during the PM peak hour for the westbound shared through and right-turn movement. The westbound through movement blocked the upstream intersection by 34% of the volume of this movement. However, under the future conditions, the queuing and blocking are anticipated to decreased due to optimized signal timings.

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Table 9: Monticello Avenue at Williamsburg Shopping Center Driveway Intersection Level of Service

Scenario	Traffic Control	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour														
2017 Existing	Signal	A (2.6)	A (1.1)	A (1.5)		A (0.0)	A (3.4)		C (33.9)	C (32.8)		A (0.0)		
			A (1.5)			A (3.4)			C (33.6)			A (0.0)		
2020 By-Right	Signal	A (5.8)	A (0.1)	A (1.2)		A (1.5)	A (2.4)		D (41.5)	D (38.6)		A (0.0)		
			A (1.2)			A (2.2)			D (39.5)			A (0.0)		
2020 Option 1	Signal	A (7.2)	A (3.1)	A (2.9)		A (1.7)	A (3.1)		D (46.9)	D (42.8)		A (0.0)		
			A (2.9)			A (2.9)			D (44.6)			A (0.0)		
2020 Option 2	Signal	A (8.2)	A (3.0)	A (4.1)		A (1.5)	A (3.4)		D (46.8)	D (42.5)		A (0.0)		
			A (4.1)			A (3.1)			D (44.3)			A (0.0)		
2026 By-Right	Signal	A (5.8)	A (0.1)	A (1.2)		A (1.6)	A (2.5)		D (41.5)	D (38.6)		A (0.0)		
			A (1.2)			A (2.3)			D (39.5)			A (0.0)		
2026 Option 1	Signal	A (7.1)	A (2.9)	A (2.9)		A (1.7)	A (3.1)		D (46.9)	D (42.8)		A (0.0)		
			A (2.9)			A (2.9)			D (44.6)			A (0.0)		
2026 Option 2	Signal	A (8.2)	A (2.9)	A (4.1)		A (1.7)	A (3.6)		D (46.8)	D (42.5)		A (0.0)		
			A (4.1)			A (3.4)			D (44.3)			A (0.0)		
PM Peak Hour														
2017 Existing	Signal	A (8.9)	A (3.8)	A (7.2)		A (3.9)	A (7.9)		C (29.0)	C (26.8)		C (27.9)		
			A (7.0)			A (7.8)			C (28.4)			C (27.9)		
2020 By-Right	Signal	B (15.2)	A (3.8)	A (7.0)		B (14.6)	B (13.3)		D (45.2)	D (38.6)		D (38.8)		
			A (6.9)			B (13.5)			D (41.2)			D (38.8)		
2020 Option 1	Signal	A (10.0)	A (4.8)	A (6.6)		A (2.5)	A (5.4)		D (48.6)	D (41.9)		D (42.9)		
			A (6.5)			A (5.2)			D (45.5)			D (42.9)		
2020 Option 2	Signal	A (9.9)	A (4.7)	A (6.3)		A (2.5)	A (5.6)		D (47.6)	D (41.8)		D (42.8)		
			A (6.3)			A (5.4)			D (44.9)			D (42.8)		
2026 By-Right	Signal	B (15.5)	A (3.9)	A (7.3)		B (16.6)	B (13.7)		D (45.2)	D (38.6)		D (38.8)		
			A (7.2)			B (14.2)			D (41.2)			D (38.8)		
2026 Option 1	Signal	A (10.0)	A (5.0)	A (6.6)		A (2.7)	A (5.6)		D (48.6)	D (41.9)		D (42.9)		
			A (6.6)			A (5.4)			D (45.5)			D (42.9)		
2026 Option 2	Signal	A (9.9)	A (5.0)	A (6.5)		A (2.6)	A (5.7)		D (47.6)	D (41.8)		D (42.8)		
			A (6.5)			A (5.5)			D (44.9)			D (42.8)		

Table 10: Monticello Avenue at Williamsburg Shopping Center Driveway Maximum Queuing

Scenario	Maximum Queue Length by Movement (feet)											
	Eastbound			Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Effective Storage Length (Feet)												
Existing	200	400*		345	430*		Cont.	75		Cont.		
By-Right				200								
Option 2												
Option 1												
AM Peak Hour												
2017 Existing	10	47		0	82		20	20		0		
2020 By-Right	13	54		83	107		101	72		0		
2020 Option 1	11	96		52	121		125	75		0		
2020 Option 2	11	144		52	108		123	74		0		
2026 By-Right	13	49		88	112		95	73		0		
2026 Option 1	17	100		54	122		131	74		0		
2026 Option 2	20	131		52	119		130	74		0		
PM Peak Hour												
2017 Existing	144	277		344	447		118	64		79		
2020 By-Right	116	341		193	291		283	75		95		
2020 Option 1	61	237		74	188		170	75		89		
2020 Option 2	93	223		64	218		151	75		80		
2026 By-Right	101	380		188	292		257	75		91		
2026 Option 1	110	239		75	219		149	75		83		
2026 Option 2	56	261		74	212		132	74		82		

*Notes: Results displayed are the average results across 10 microsimulation runs | * distance to upstream intersection*

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8.1.4 MONTICELLO AVENUE AT GARRISON DRIVE

This TWSC intersection consisted the following geometry for the existing, By-Right, and Option 2 scenarios:

- Garrison Drive (southbound)
  - One shared left-turn/right-turn lane
- Monticello Avenue (eastbound)
  - One shared TWLTL
  - One exclusive through lane
- Monticello Avenue (westbound)
  - One shared through/right-turn lane

For Option 1, the Existing Access Driveway #1 was realigned with Garrison Drive as part of the Monticello Avenue Improvements project. Therefore, the following geometry was proposed for the Option 1 scenarios:

- Garrison Drive (northbound)
  - One shared left/through/right-turn lane
- Garrison Drive (southbound)
  - One shared left/through/right-turn lane
- Monticello Avenue (eastbound)
  - One exclusive left-turn lane
  - One shared through/right-turn lane
- Monticello Avenue (westbound)
  - One exclusive left-turn lane
  - One shared through/right-turn lane

Results of the capacity and queuing analysis for this unsignalized intersection are shown in **Table 11** and **Table 12**, respectively. Under existing conditions, the AM and PM peak hours experienced an overall LOS A with movements of LOS C or better.

Under By-Right and Option 2 conditions, the AM peak hour is anticipated to experience similar operations as current conditions with an overall LOS A with movements of LOS C or better. Under these scenarios, the PM peak hour is anticipated to experience an overall LOS A, however the southbound approach is anticipated to experience LOS C or worse. During the 2026 By-Right PM peak hour scenario, the southbound approach is anticipated to experience LOS E due to the increased site traffic using this approach.

For the Option 1 conditions, the intersection is anticipated to experience an overall LOS A with movements of LOS D or better during the AM and PM peak hours with the exception of the southbound approach for the 2026 Option 1 PM peak hour conditions. This degradation to the southbound approach is due to the increased volumes on Monticello Avenue.

Queuing results indicate that the intersection currently experiences queuing or blocking during the PM peak hour for the westbound shared through and right-turn movement. The westbound through movement blocked the upstream intersection by 20% of the volume of this movement. However, under the future conditions, the queuing and blocking are anticipated to decrease due to optimized signal timings of the adjacent intersections.

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Table 11: Monticello Avenue at Garrison Drive Intersection Level of Service

Scenario	Traffic Control	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)							
			Eastbound		Westbound			Northbound	Southbound	
			LT	TH	LT	TH	RT	LT/TH/RT	LT	RT
AM Peak Hour										
2017 Existing	TWSC	A (0.3)	A (8.3)	A (0.0)	- (-)	A (0.0)		- (-)	B (11.1)	
			A (0.2)		-	A (0.0)		-	B (11.1)	
2020 By-Right	TWSC	A (0.3)	A (8.7)	A (0.0)	- (-)	A (0.0)		- (-)	B (13.0)	
			A (0.2)		-	A (0.0)		-	B (13.0)	
2020 Option 1	TWSC	A (2.3)	A (8.4)	A (0.0)	A (8.6)	A (0.0)		C (16.2)	B (14.2)	
			A (0.2)		A (1.0)			C (16.2)	B (14.2)	
2020 Option 2	TWSC	A (0.3)	A (8.5)	A (0.0)	- (-)	A (0.0)		- (-)	B (12.6)	
			A (0.2)		-	A (0.0)		-	B (12.6)	
2026 By-Right	TWSC	A (0.2)	A (8.7)	A (0.0)	- (-)	A (0.0)		- (-)	B (13.2)	
			A (0.2)		-	A (0.0)		-	B (13.2)	
2026 Option 1	TWSC	A (2.3)	A (8.5)	A (0.0)	A (8.6)	A (0.0)		C (16.6)	B (14.4)	
			A (0.2)		A (1.0)			C (16.6)	B (14.4)	
2026 Option 2	TWSC	A (0.3)	A (8.6)	A (0.0)	- (-)	A (0.0)		- (-)	B (12.8)	
			A (0.2)		-	A (0.0)		-	B (12.8)	
PM Peak Hour										
2017 Existing	TWSC	A (0.5)	A (9.7)	A (0.0)	- (-)	A (0.0)		- (-)	C (15.2)	
			A (0.3)		-	A (0.0)		-	C (15.2)	
2020 By-Right	TWSC	A (0.7)	B (11.3)	A (0.0)	- (-)	A (0.0)		- (-)	D (32.8)	
			A (0.3)		-	A (0.0)		-	D (32.8)	
2020 Option 1	TWSC	A (1.8)	B (10.3)	A (0.0)	B (10.1)	A (0.0)		C (24.6)	D (34.4)	
			A (0.3)		A (0.4)			C (24.6)	D (34.4)	
2020 Option 2	TWSC	A (0.6)	B (10.4)	A (0.0)	- (-)	A (0.0)		- (-)	C (23.3)	
			A (0.3)		-	A (0.0)		-	C (23.3)	
2026 By-Right	TWSC	A (0.7)	B (11.5)	A (0.0)	- (-)	A (0.0)		- (-)	E (35.3)	
			A (0.3)		-	A (0.0)		-	E (35.3)	
2026 Option 1	TWSC	A (1.8)	B (10.5)	A (0.0)	B (10.3)	A (0.0)		D (25.6)	E (35.9)	
			A (0.3)		A (0.4)			C (25.6)	E (35.9)	
2026 Option 2	TWSC	A (0.6)	B (10.5)	A (0.0)	- (-)	A (0.0)		- (-)	C (24.0)	
			A (0.3)		-	A (0.0)		-	C (24.0)	

Table 12: Monticello Avenue at Garrison Drive Maximum Queuing

Scenario	Maximum Queue Length by Movement (feet)										
	Eastbound			Westbound			Northbound			Southbound	
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	RT
Effective Storage Length (Feet)											
Existing	65	430*	NA	NA	70*		NA			Cont.	
By-Right	200										
Option 2											
Option 1		430*		200	370*		Cont.				
AM Peak Hour											
2017 Existing	30	0	-	-	0		-			38	
2020 By-Right	33	0	-	-	2		-			34	
2020 Option 1	30	14		60	0		96			35	
2020 Option 2	33	0	-	-	8		-			34	
2026 By-Right	33	0	-	-	7		-			34	
2026 Option 1	30	17		59	0		118			30	
2026 Option 2	30	7	-	-	3		-			36	
PM Peak Hour											
2017 Existing	43	106	-	-	386		-			233	
2020 By-Right	62	251	-	-	52		-			100	
2020 Option 1	41	104		51	9		107			67	
2020 Option 2	76	250	-	-	32		-			73	
2026 By-Right	66	303	-	-	34		-			91	
2026 Option 1	39	50		45	6		98			63	
2026 Option 2	42	123	-	-	24		-			57	

*Notes: Results displayed are the average results across 10 microsimulation runs | * distance to upstream intersection*

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8.1.5 RICHMOND ROAD AT MONTICELLO AVENUE/LAFAYETTE STREET

This signalized intersection consisted of the following geometry for the existing scenario:

- Richmond Road (northbound)
  - One exclusive left-turn lane
  - One exclusive through lane
  - One shared through/right-turn lane
- Richmond Road (southbound)
  - One exclusive left-turn lane
  - One exclusive through lane
  - One exclusive right-turn lane
- Monticello Avenue (eastbound)
  - One exclusive left-turn lane
  - One exclusive through lane
  - One exclusive right-turn lane
- Lafayette Avenue (westbound)
  - One exclusive left-turn lane
  - One exclusive through lane
  - One exclusive right-turn lane

As part of the Monticello Avenue Improvements project, the By-Right, Option 1, and Option 2 scenarios consisted of the following proposed intersection geometry:

- Richmond Road (northbound)
  - One exclusive left-turn lane
  - One exclusive through lane
  - One shared through/right-turn lane
- Richmond Road (southbound)
  - One exclusive left-turn lane
  - One exclusive through lane
  - One exclusive right-turn lane
- Monticello Avenue (eastbound)
  - Dual exclusive left-turn lanes
  - One exclusive through lane
  - One exclusive right-turn lane
- Lafayette Avenue (westbound)
  - One exclusive left-turn lane
  - One exclusive through lane
  - One exclusive right-turn lane

Results of the capacity and queuing analysis for this signalized intersection are shown in **Table 13** and **Table 14**, respectively. Under existing conditions, the AM and PM peak hours experienced an overall LOS C with movements of LOS D or better. This intersection is anticipated to operate at an overall LOS C or better with movements of LOS D or better for the By-Right and Option 2 conditions.

For the Option 1 conditions, where the traffic signal is coordinated, the intersection is anticipated to experience an overall LOS C or better with movements of LOS D or better during the AM and PM peak hours. The improvement in operations can be attributed to the intersection signalization and emphasis on traffic progression along Monticello Avenue.

Queuing results indicate that the intersection currently experiences queuing or blocking during the PM peak hour for the eastbound approach, westbound right-turn movement, and northbound approach. The westbound through movement blocked the upstream intersection by 55% of the volume of this movement. However, under the future conditions, the queuing and blocking are anticipated to decreased due to optimized signal timings of the adjacent intersections with the exception of the westbound right-turn movement, northbound approach, and 2026 PM peak hour conditions.

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Table 13: Richmond Road at Monticello Avenue/Lafayette Street Intersection Level of Service

Scenario	Traffic Control	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
AM Peak Hour														
2017 Existing	Signal	C (23.6)	C (22.4)	C (27.1)	C (25.4)	C (30.5)	D (36.0)	C (31.7)	B (16.1)	C (20.3)		B (13.8)	C (21.9)	B (19.0)
			C (25.0)			C (34.8)			B (18.9)			B (19.2)		
2020 By-Right	Signal	C (21.7)	B (17.0)	B (17.5)	C (34.2)	C (27.7)	C (31.8)	C (27.7)	B (15.7)	B (19.8)		A (4.5)	B (13.8)	C (30.1)
			C (22.4)			C (30.8)			B (18.4)			B (19.1)		
2020 Option 1	Signal	C (22.4)	C (23.8)	C (29.0)	D (42.2)	C (30.4)	D (36.5)	C (31.7)	B (16.3)	C (20.8)		B (12.6)	B (17.3)	A (7.5)
			C (30.9)			D (35.3)			B (19.3)			B (12.6)		
2020 Option 2	Signal	B (18.7)	B (15.0)	B (19.7)	C (20.4)	C (30.3)	D (36.4)	C (31.7)	B (16.3)	C (20.9)		B (12.9)	B (17.5)	A (6.9)
			B (18.1)			D (35.1)			B (19.4)			B (12.4)		
2026 By-Right	Signal	C (21.9)	B (16.6)	B (17.2)	C (34.8)	C (27.5)	C (31.8)	C (27.6)	B (16.0)	C (20.2)		A (4.4)	B (14.9)	C (31.0)
			C (22.3)			C (30.7)			B (18.8)			B (19.7)		
2026 Option 1	Signal	C (22.6)	C (23.7)	C (28.9)	D (42.6)	C (30.1)	D (36.4)	C (31.5)	B (16.5)	C (21.1)		B (12.9)	B (18.3)	A (7.5)
			C (30.9)			D (35.1)			B (19.7)			B (13.3)		
2026 Option 2	Signal	B (18.9)	B (14.7)	B (19.4)	C (20.1)	C (30.1)	D (36.4)	C (31.5)	B (16.5)	C (21.1)		B (13.2)	B (18.4)	A (7.3)
			B (17.8)			D (35.1)			B (19.7)			B (13.3)		
PM Peak Hour														
2017 Existing	Signal	C (30.4)	D (36.8)	C (31.2)	C (25.3)	C (29.3)	D (43.4)	C (32.2)	B (18.6)	C (25.9)		B (19.8)	C (30.9)	C (26.7)
			C (32.4)			D (39.1)			C (23.4)			C (27.2)		
2020 By-Right	Signal	C (26.8)	B (18.5)	C (23.5)	B (19.0)	C (23.9)	D (35.6)	C (26.7)	D (41.3)	C (27.8)		C (30.3)	D (39.1)	B (14.2)
			C (20.6)			C (32.3)			C (32.2)			C (25.4)		
2020 Option 1	Signal	C (20.8)	B (13.2)	C (20.1)	C (23.8)	C (24.6)	D (36.3)	C (27.4)	B (19.6)	C (26.5)		B (11.5)	B (19.1)	A (6.9)
			B (18.0)			C (32.9)			C (24.2)			B (12.4)		
2020 Option 2	Signal	C (20.9)	B (13.4)	C (20.6)	C (24.2)	C (24.6)	D (36.2)	C (27.4)	B (19.3)	C (26.3)		B (11.8)	B (19.2)	A (7.0)
			B (18.4)			C (32.9)			C (24.0)			B (12.5)		
2026 By-Right	Signal	C (25.7)	B (18.5)	C (23.5)	B (18.9)	C (23.7)	D (35.7)	C (26.4)	D (42.6)	C (28.9)		B (18.1)	C (31.5)	B (13.0)
			C (20.6)			C (32.4)			C (33.1)			C (20.9)		
2026 Option 1	Signal	C (21.6)	B (12.8)	B (19.7)	C (22.8)	C (24.1)	D (35.9)	C (26.9)	C (21.5)	C (27.6)		B (11.2)	C (21.0)	A (6.3)
			B (17.5)			C (32.6)			C (25.7)			B (13.2)		
2026 Option 2	Signal	C (21.2)	B (13.0)	C (20.3)	C (23.9)	C (24.2)	D (35.9)	C (27.0)	C (20.9)	C (27.5)		B (11.3)	C (20.7)	A (6.3)
			B (18.1)			C (32.6)			C (25.5)			B (13.1)		

Table 14: Richmond Road at Monticello Avenue/Lafayette Street Maximum Queuing

Scenario	Maximum Queue Length by Movement (feet)											
	Eastbound			Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	TH/RT	LT	TH	RT
Effective Storage Length (Feet)												
Existing	150	250*	80	125	Cont.	225	150	225*	200	225	290*	290*
By-Right			250*									
Option 2												
Option 1		350*	350*									
AM Peak Hour												
2017 Existing	141	222	80	55	187	83	103	88	81	114	200	90
2020 By-Right	135	166	98	72	218	78	111	96	89	114	201	190
2020 Option 1	146	182	109	67	225	78	112	116	99	114	204	143
2020 Option 2	146	163	91	77	229	147	100	115	95	84	192	138
2026 By-Right	145	174	98	73	247	138	118	117	102	160	238	193
2026 Option 1	147	198	98	88	264	94	107	140	122	149	223	132
2026 Option 2	144	186	86	81	249	140	117	117	114	101	205	141
PM Peak Hour												
2017 Existing	150	377	80	116	452	225	150	581	200	197	264	281
2020 By-Right	149	256	104	17	413	225	160	252	200	204	287	286
2020 Option 1	150	355	76	124	363	225	159	234	186	192	263	254
2020 Option 2	149	249	103	124	410	225	158	238	199	183	257	241
2026 By-Right	150	256	111	116	420	225	161	250	200	224	299	292
2026 Option 1	149	343	94	109	402	225	154	246	200	224	296	251
2026 Option 2	149	254	86	117	393	225	156	246	200	194	290	247

*Notes: Results displayed are the average results across 10 microsimulation runs | * distance to upstream intersection*

8.1.6 RICHMOND ROAD AT MOUNT VERNON AVENUE

This signalized intersection consisted of the following geometry for the existing and future scenarios (I.e., By-Right, Option 1, and Option 2):

- Richmond Road (northbound)
  - Left-Turn Prohibited
  - One exclusive through lane
  - One shared through/right-turn lane
- Richmond Road (southbound)
  - One exclusive left-turn lane
  - One exclusive through lane
  - One shared through/right-turn lane
- Mount Vernon Avenue (eastbound)
  - One shared left-turn/through lane
  - One exclusive right-turn lane
- Walgreens Driveway (westbound)
  - One shared left-turn/through lane
  - One exclusive right-turn lane

Results of the capacity and queuing analysis for this signalized intersection are shown in **Table 15** and **Table 16**, respectively. Under existing conditions, this intersection experienced an overall LOS B with movements of LOS D or better during the AM peak hour. The existing PM peak hour experience an overall LOS D with movements of LOS D or better with the exception of the eastbound shared left-turn and through lane, which experienced LOS F.

Under future conditions, the assumed signal retiming and coordination along the Monticello Avenue helped improve overall intersection operations and the progression of traffic, which also helps decrease the expected delay for these movements in the AM and PM peak hours. For the AM and PM peak hours, this intersection is anticipated to operate with an overall LOS B or better and with movements of LOS D or better.

Queuing results also indicate that the intersection does not currently, nor is it projected to, experience significant queuing or blocking issues with the exception of the westbound right-turn movement (i.e., Walgreens access driveway). However, queuing results indicate that the intersection currently experiences queuing or blocking during the AM and PM peak hours for the westbound right-turn movement. The westbound through movement blocked the right-turn movement in several cases from accessing the intersection. Under the future conditions, the queuing and blocking are anticipated to be similar to the conditions experienced today even with the optimized signal timings.

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Table 15: Richmond Road at Mount Vernon Avenue Intersection Level of Service

Scenario	Traffic Control	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)										
			Eastbound			Westbound			Northbound		Southbound		
			LT	TH	RT	LT	TH	RT	TH	RT	LT	TH	RT
AM Peak Hour													
2017 Existing	Signal	B (12.1)	D (43.9)		D (39.3)	D (44.6)		D (39.3)	A (7.0)		A (6.8)	A (7.5)	
			D (42.6)			D (42.5)			A (7.0)		A (7.5)		
2020 By-Right	Signal	B (10.7)	D (41.5)		D (37.2)	D (41.8)		D (37.3)	A (7.3)		A (6.7)	A (7.1)	
			D (40.3)			D (40.0)			A (7.3)		A (7.1)		
2020 Option 1	Signal	A (8.7)	D (47.1)		D (41.8)	D (47.3)		D (41.9)	A (4.1)		A (3.9)	A (4.3)	
			D (45.6)			D (45.2)			A (4.1)		A (4.3)		
2020 Option 2	Signal	A (8.9)	D (47.1)		D (41.8)	D (47.3)		D (41.9)	A (4.6)		A (3.9)	A (4.4)	
			D (45.6)			D (45.2)			A (4.6)		A (4.3)		
2026 By-Right	Signal	B (10.9)	D (41.5)		D (37.2)	D (41.8)		D (37.3)	A (7.4)		A (7.2)	A (7.8)	
			D (40.3)			D (40.0)			A (7.4)		A (7.8)		
2026 Option 1	Signal	A (8.7)	D (47.1)		D (41.8)	D (47.3)		D (41.9)	A (4.1)		A (4.4)	A (5.0)	
			D (45.6)			D (45.2)			A (4.1)		A (4.9)		
2026 Option 2	Signal	A (8.8)	D (47.1)		D (41.8)	D (47.3)		D (41.9)	A (4.6)		A (4.3)	A (4.9)	
			D (45.6)			D (45.2)			A (4.6)		A (4.9)		
PM Peak Hour													
2017 Existing	Signal	D (35.9)	F (331.1)		C (30.4)	D (49.1)		D (46.7)	B (15.5)		B (12.9)	B (15.0)	
			F (226.0)			D (47.4)			B (15.5)		B (14.9)		
2020 By-Right	Signal	B (14.8)	D (47.5)		D (38.2)	D (48.6)		D (41.5)	B (12.8)		A (9.0)	A (9.7)	
			D (44.2)			D (43.7)			B (12.8)		A (9.7)		
2020 Option 1	Signal	B (16.0)	D (46.8)		D (38.0)	D (48.6)		D (41.5)	B (12.2)		B (11.2)	B (12.2)	
			D (43.7)			D (43.7)			B (12.2)		B (12.1)		
2020 Option 2	Signal	B (16.0)	D (46.8)		D (38.0)	D (48.6)		D (41.5)	B (12.2)		B (11.0)	B (12.0)	
			D (43.7)			D (43.7)			B (12.2)		B (12.0)		
2026 By-Right	Signal	B (14.0)	D (46.0)		D (37.8)	D (52.5)		D (46.4)	B (10.2)		A (9.9)	B (10.9)	
			D (43.1)			D (48.2)			B (10.2)		B (10.9)		
2026 Option 1	Signal	B (16.0)	D (46.8)		D (38.0)	D (48.6)		D (41.5)	B (12.0)		B (12.0)	B (13.2)	
			D (43.7)			D (43.7)			B (12.0)		B (13.2)		
2026 Option 2	Signal	B (16.0)	D (46.8)		D (38.0)	D (48.6)		D (41.5)	B (12.1)		B (11.7)	B (13.0)	
			D (43.7)			D (43.7)			B (12.1)		B (13.0)		

Table 16: Richmond Road at Mount Vernon Avenue Queuing

Scenario	Maximum Queue Length by Movement (feet)										
	Eastbound			Westbound			Northbound		Southbound		
	LT	TH	RT	LT	TH	RT	TH	TH/RT	LT	TH	TH/RT
Effective Storage Length (Feet)											
Existing	100		530*	430*		50	290*	290*	75	1,300*	1,300*
By-Right											
Option 2											
Option 1											
AM Peak Hour											
2017 Existing	65		37	86		50	66	92	68	197	121
2020 By-Right	64		34	86		50	72	113	74	180	153
2020 Option 1	69		32	86		50	80	126	72	152	129
2020 Option 2	68		40	86		50	99	140	65	134	102
2026 By-Right	62		32	86		50	77	100	69	180	156
2026 Option 1	74		33	86		50	102	135	70	175	132
2026 Option 2	67		31	86		50	99	130	67	156	125
PM Peak Hour											
2017 Existing	98		137	81		50	175	192	72	206	189
2020 By-Right	98		145	77		50	210	236	71	168	194
2020 Option 1	98		139	83		50	183	204	74	229	221
2020 Option 2	97		156	79		50	181	192	74	214	216
2026 By-Right	98		153	80		50	185	210	74	251	274
2026 Option 1	98		163	77		50	178	186	72	248	235
2026 Option 2	98		158	84		50	184	206	74	235	225

*Notes: Results displayed are the average results across 10 microsimulation runs | *distance to upstream intersection*

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8.1.7 RICHMOND ROAD AT BACON AVENUE

This TWSC intersection consisted of the following geometry for the existing and future (i.e., By-Right, Option 1, and Option 2) scenarios:

- Richmond Road (northbound)
  - One shared through/right-turn lane
- Richmond Road (southbound)
  - One shared TWLTL
  - One exclusive through lane
- Bacon Avenue (westbound)
  - One shared left-turn/right-turn lane

Results of the capacity and queuing analysis for this unsignalized intersection are shown in **Table 17** and **Table 18**, respectively. Under existing and future conditions, the AM and PM peak hours are anticipated to experience an overall LOS A with movements of LOS B or better. Queuing results also indicate that the intersection does not currently, nor is it projected to, experience significant queuing or blocking issues with the exception of the northbound approach. The northbound approach is anticipated to experience queues to the upstream intersection during the PM peak hour due to the close proximity of these intersections.

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Table 17: Richmond Road at Bacon Avenue Intersection Level of Service

Scenario	Traffic Control	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)					
			Westbound		Northbound		Southbound	
			LT	RT	TH	RT	LT	TH
AM Peak Hour								
2017 Existing	TWSC	A (0.1)	A (9.9)		A (0.0)		A (7.6)	A (0.0)
			A (9.9)		A (0.0)		A (0.0)	
2020 By-Right	TWSC	A (0.1)	B (10.5)		A (0.0)		A (7.8)	A (0.0)
			B (10.5)		A (0.0)		A (0.0)	
2020 Option 1	TWSC	A (0.1)	B (10.4)		A (0.0)		A (7.8)	A (0.0)
			B (10.4)		A (0.0)		A (0.0)	
2020 Option 2	TWSC	A (0.1)	B (10.5)		A (0.0)		A (7.8)	A (0.0)
			B (10.5)		A (0.0)		A (0.0)	
2026 By-Right	TWSC	A (0.0)	B (10.7)		A (0.0)		A (7.9)	A (0.0)
			B (10.7)		A (0.0)		A (0.0)	
2026 Option 1	TWSC	A (0.0)	B (10.7)		A (0.0)		A (7.9)	A (0.0)
			B (10.7)		A (0.0)		A (0.0)	
2026 Option 2	TWSC	A (0.0)	B (10.7)		A (0.0)		A (7.9)	A (0.0)
			B (10.7)		A (0.0)		A (0.0)	
PM Peak Hour								
2017 Existing	TWSC	A (0.2)	B (12.0)		A (0.0)		A (8.6)	A (0.0)
			B (12.0)		A (0.0)		A (0.2)	
2020 By-Right	TWSC	A (0.2)	B (13.0)		A (0.0)		A (8.9)	A (0.0)
			B (13.0)		A (0.0)		A (0.2)	
2020 Option 1	TWSC	A (0.2)	B (12.4)		A (0.0)		A (8.7)	A (0.0)
			B (12.4)		A (0.0)		A (0.2)	
2020 Option 2	TWSC	A (0.2)	B (12.3)		A (0.0)		A (8.7)	A (0.0)
			B (12.3)		A (0.0)		A (0.2)	
2026 By-Right	TWSC	A (0.2)	B (13.8)		A (0.0)		A (9.1)	A (0.0)
			B (13.8)		A (0.0)		A (0.2)	
2026 Option 1	TWSC	A (0.2)	B (13.1)		A (0.0)		A (8.9)	A (0.0)
			B (13.1)		A (0.0)		A (0.2)	
2026 Option 2	TWSC	A (0.2)	B (13.0)		A (0.0)		A (8.9)	A (0.0)
			B (13.0)		A (0.0)		A (0.2)	

Table 18: Richmond Road at Bacon Avenue Maximum Queuing

Scenario	Maximum Queue Length by Movement (feet)					
	Westbound		Northbound		Southbound	
	LT	RT	TH	RT	LT	TH
Effective Storage Length (Feet)						
Existing	290		60*		100	260*
By-Right						
Option 2						
Option 1						
AM Peak Hour						
2017 Existing	23		0		20	0
2020 By-Right	27		31		8	0
2020 Option 1	22		14		15	0
2020 Option 2	28		14		4	0
2026 By-Right	25		22		8	0
2026 Option 1	25		25		6	0
2026 Option 2	28		23		21	0
PM Peak Hour						
2017 Existing	30		296		36	0
2020 By-Right	30		86		33	0
2020 Option 1	28		75		33	0
2020 Option 2	30		78		35	2
2026 By-Right	28		84		35	4
2026 Option 1	30		81		31	0
2026 Option 2	28		79		33	0

*Notes: Results displayed are the average results across 10 microsimulation runs | *Distance to upstream intersection*

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8.1.8 RICHMOND ROAD AT BYPASS ROAD

This signalized intersection consists of the following geometry for the existing and future (I.e., By-Right, Option 1, and Option 2) scenarios:

- Richmond Road (northbound)
  - Two exclusive through lanes
  - One exclusive right-turn lane
- Richmond Road (southbound)
  - Dual exclusive left-turn lanes
  - One exclusive through lane
- Bypass Road (westbound)
  - One exclusive left-turn lane
  - One exclusive right-turn lane

Results of the capacity and queuing analysis for this signalized intersection are shown in **Table 19** and **Table 20**, respectively. Under existing and future conditions, the AM and PM peak hours are anticipated to experience an overall LOS D or better with movements of LOS D or better.

Queuing results also indicate that the intersection does not currently, nor is it projected to, experience significant queuing or blocking issues with the exception of the northbound right-turn lane under future PM peak hour conditions. The northbound right-turn movement is anticipated to experience blocking in the future PM peak hour scenarios due to the queue associated with northbound through movement.

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Table 19: Richmond Road at Bypass Road Intersection Level of Service

Scenario	Traffic Control	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)					
			Westbound		Northbound		Southbound	
			LT	RT	TH	RT	LT	TH
AM Peak Hour								
2017 Existing	Signal	C (21.4)	C (31.4)	C (24.7)	B (14.3)	B (14.4)	C (30.4)	A (6.2)
			C (27.3)		B (14.3)		B (19.1)	
2020 By-Right	Signal	C (24.8)	D (38.3)	C (27.8)	B (12.4)	C (22.5)	D (37.7)	A (8.1)
			C (32.4)		B (17.3)		C (21.9)	
2020 Option 1	Signal	C (26.6)	D (43.1)	C (31.6)	B (12.5)	B (15.9)	D (43.0)	A (7.8)
			D (36.6)		B (14.1)		C (24.5)	
2020 Option 2	Signal	C (26.6)	D (43.0)	C (31.6)	B (12.6)	B (17.2)	D (43.0)	A (7.8)
			D (36.5)		B (14.8)		C (24.5)	
2026 By-Right	Signal	C (24.6)	D (38.3)	C (27.8)	B (13.3)	C (23.0)	D (37.7)	A (8.4)
			C (32.4)		B (17.8)		C (21.4)	
2026 Option 1	Signal	C (25.9)	D (43.1)	C (31.6)	B (12.5)	B (14.0)	D (43.0)	A (8.1)
			D (36.6)		B (13.2)		C (23.8)	
2026 Option 2	Signal	C (26.0)	D (43.0)	C (31.6)	B (12.9)	B (15.2)	D (43.0)	A (8.1)
			D (36.5)		B (13.9)		C (23.8)	
PM Peak Hour								
2017 Existing	Signal	C (29.0)	D (41.1)	D (37.8)	C (23.1)	C (21.0)	D (36.4)	A (7.9)
			D (38.9)		C (22.3)		C (25.1)	
2020 By-Right	Signal	D (35.7)	D (45.4)	D (43.2)	C (25.7)	D (40.7)	D (47.6)	B (13.1)
			D (44.0)		C (31.5)		C (31.8)	
2020 Option 1	Signal	C (30.5)	D (39.3)	D (42.4)	B (18.9)	B (14.9)	D (47.1)	B (11.5)
			D (41.3)		B (17.4)		C (32.0)	
2020 Option 2	Signal	C (30.3)	D (39.0)	D (42.6)	B (18.0)	B (14.2)	D (47.1)	B (11.4)
			D (41.4)		B (16.6)		C (32.0)	
2026 By-Right	Signal	C (31.8)	D (42.5)	D (45.4)	C (21.3)	B (16.1)	D (49.1)	B (14.6)
			D (44.3)		B (19.4)		C (32.4)	
2026 Option 1	Signal	C (31.1)	D (39.3)	D (43.3)	C (21.5)	B (17.4)	D (47.1)	B (12.3)
			D (41.9)		C (20.0)		C (31.3)	
2026 Option 2	Signal	C (30.8)	D (39.0)	D (43.4)	C (20.7)	B (16.2)	D (47.1)	B (12.2)
			D (41.9)		B (19.1)		C (31.4)	

Table 20: Richmond Road at Bypass Road Maximum Queuing

Scenario	Maximum Queue Length by Movement (feet)					
	Westbound		Northbound		Southbound	
	LT	RT	TH	RT	LT	TH
Effective Storage Length (Feet)						
Existing	Cont.	Cont.	1,300*	250	450	Cont.
By-Right						
Option 2						
Option 1						
AM Peak Hour						
2017 Existing	225	0	99	92	225	164
2020 By-Right	246	18	113	57	228	234
2020 Option 1	268	0	112	64	233	225
2020 Option 2	266	32	115	60	248	276
2026 By-Right	254	14	118	57	216	254
2026 Option 1	279	25	114	81	267	286
2026 Option 2	243	38	119	87	239	269
PM Peak Hour						
2017 Existing	280	422	223	221	352	246
2020 By-Right	450	594	339	249	373	301
2020 Option 1	395	574	310	250	397	290
2020 Option 2	321	489	297	250	387	292
2026 By-Right	483	691	374	250	456	369
2026 Option 1	420	570	410	250	397	319
2026 Option 2	400	686	436	250	378	312

*Notes: Results displayed are the average results across 10 microsimulation runs | *Distance to upstream intersection*

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8.1.9 MONTICELLO AVENUE AT EXISTING WSC ACCESS DRIVEWAY #1

It should be noted that this intersection was not analyzed under existing conditions. However, this unsignalized intersection (i.e., STOP controlled for the WSC Access Driveway # 1 approach) consisted of the following geometry for the future By-Right and Option 2 scenarios:

- Existing WSC Access Driveway #1 (northbound)
  - One shared left and right-turn lane
- Monticello Avenue (eastbound)
  - One shared through/right-turn lane
- Monticello Avenue (westbound)
  - One exclusive left-turn lane
  - One exclusive through lane

This unsignalized intersection was removed from the Monticello Avenue corridor under Option 1, since the conceptual site plan proposes the Existing Access Driveway #1 being realigned to become the fourth (i.e., southern) leg of the Monticello Avenue/Garrison Drive intersection.

Results of the capacity and queuing analysis for this unsignalized intersection are shown in **Table 21** and **Table 22,** respectively. Under future conditions, the AM and PM peak hours are anticipated to experience an overall LOS A or better with movements of LOS C or better with the exception of the northbound approach. The northbound approach is anticipated to experience LOS F for the 2020 and 2026 By-Right scenarios during the PM peak hour due to the increased traffic volumes along Monticello Avenue.

Queuing results indicate that the intersection is not projected to experience significant queuing or blocking issues. However, careful review of the queuing analysis results and understanding the short throat length along with the fact that the northbound approach queue is accommodated by the drive aisle in front of several businesses, the northbound queue has the potential to impact on-site traffic circulation under By-Right scenario (queues in excess of 250 feet or approximately ten (10) car lengths) during the PM peak hour.

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Table 21: Monticello Avenue at Existing Access Driveway #1 Intersection Level of Service

Scenario	Traffic Control	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)			
			Eastbound	Westbound		Northbound
			TH/RT	LT	TH	LT/RT
AM Peak Hour						
2020 By-Right	TWSC	A (1.5)	A (0.0)	A (8.6)	A (0.0)	C (16.1)
			A (0.0)	A (0.8)		C (16.1)
2020 Option 2	TWSC	A (2.3)	A (0.0)	A (8.6)	A (0.0)	C (16.0)
			A (0.0)	A (1.0)		C (16.0)
2026 By-Right	TWSC	A (1.5)	A (0.0)	A (8.6)	A (0.0)	C (16.4)
			A (0.0)	A (0.8)		C (16.4)
2026 Option 2	TWSC	A (2.3)	A (0.0)	A (8.6)	A (0.0)	C (16.3)
			A (0.0)	A (1.0)		C (16.3)
PM Peak Hour						
2020 By-Right	TWSC	A (5.4)	A (0.0)	B (11.9)	A (0.0)	F (75.9)
			A (0.0)	A (1.1)		F (75.9)
2020 Option 2	TWSC	A (0.8)	A (0.0)	B (10.3)	A (0.0)	C (21.4)
			A (0.0)	A (0.4)		C (21.4)
2026 By-Right	TWSC	A (6.3)	A (0.0)	B (12.2)	A (0.0)	F (91.7)
			A (0.0)	A (1.1)		F (91.7)
2026 Option 2	TWSC	A (0.8)	A (0.0)	B (10.4)	A (0.0)	C (22.0)
			A (0.0)	A (0.4)		C (22.0)

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Table 22: Monticello Avenue at Existing Access Driveway #1 Maximum Queuing

Scenario	Maximum Queue Length by Movement (feet)					
	Eastbound		Westbound		Northbound	
	TH	RT	LT	TH	LT	RT
Effective Storage Length (Feet)						
Existing	NA		NA	NA	NA	
By-Right	90		200	250*	Cont.	
Option 2						
Option 1				NA		
AM Peak Hour						
2017 Existing	-		-	-	-	
2020 By-Right	12		56	98	75	
2020 Option 1	-		-	-	-	
2020 Option 2	24		48	66	104	
2026 By-Right	17		55	56	70	
2026 Option 1	-		-	-	-	
2026 Option 2	25		54	85	118	
PM Peak Hour						
2017 Existing	-		-	-	-	
2020 By-Right	77		49	243	255	
2020 Option 1	-		-	-	-	
2020 Option 2	77		46	78	94	
2026 By-Right	81		87	72	270	
2026 Option 1	-		-	-	-	
2026 Option 2	78		48	117	114	

*Notes: Results displayed are the average results across 10 microsimulation runs | *Distance to upstream intersection*

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8.1.10 RICHMOND ROAD AT EXISTING ACCESS DRIVEWAY #2

It should be noted that this intersection was not analyzed under existing conditions. However, this TWSC intersection consisted of the following geometry for the future (i.e., By-Right, Option 1, and Option 2) scenarios:

- Richmond Road (northbound)
  - One shared TWLTL
  - One exclusive through lane
- Richmond Road (southbound)
  - One shared through/right-turn lane
- Existing Access Driveway #2 (eastbound)
  - One exclusive left-turn lane
  - One exclusive right-turn lane

Results of the capacity and queuing analysis for this unsignalized intersection are shown in **Table 23** and **Table 24,** respectively. Under future conditions, the AM and PM peak hours are anticipated to experience an overall LOS A or better with movements of LOS C or better. Queuing results also indicate that the intersection is not projected to experience significant queuing or blocking issues.

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Table 23: Richmond Road at Existing Access Driveway #2 Intersection Level of Service

Scenario	Traffic Control	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)				
			Eastbound		Northbound		Southbound
			LT	RT	LT/TH		TH/RT
AM Peak Hour							
2020 By-Right	TWSC	A (1.9)	B (12.1)	B (10.7)	A (8.5)	A (0.0)	A (0.0)
			B (11.5)		A (1.6)		A (0.0)
2020 Option 1	TWSC	A (1.8)	B (12.0)	B (10.8)	A (8.4)	A (0.0)	A (0.0)
			B (11.4)		A (1.2)		A (0.0)
2020 Option 2	TWSC	A (2.0)	B (12.1)	B (10.8)	A (8.4)	A (0.0)	A (0.0)
			B (11.5)		A (1.3)		A (0.0)
2026 By-Right	TWSC	A (1.8)	B (12.5)	B (11.0)	A (8.6)	A (0.0)	A (0.0)
			B (11.9)		A (1.5)		A (0.0)
2026 Option 1	TWSC	A (1.8)	B (12.4)	B (11.1)	A (8.6)	A (0.0)	A (0.0)
			B (11.8)		A (1.1)		A (0.0)
2026 Option 2	TWSC	A (1.9)	B (12.6)	B (11.2)	A (8.6)	A (0.0)	A (0.0)
			B (12.0)		A (1.2)		A (0.0)
PM Peak Hour							
2020 By-Right	TWSC	A (3.2)	C (20.0)	B (11.4)	A (8.9)	A (0.0)	A (0.0)
			C (16.6)		A (1.3)		A (0.0)
2020 Option 1	TWSC	A (1.3)	B (14.3)	B (10.7)	A (8.3)	A (0.0)	A (0.0)
			B (13.2)		A (0.3)		A (0.0)
2020 Option 2	TWSC	A (1.2)	B (14.2)	B (10.6)	A (8.3)	A (0.0)	A (0.0)
			B (13.2)		A (0.3)		A (0.0)
2026 By-Right	TWSC	A (3.2)	C (22.3)	B (11.9)	A (9.1)	A (0.0)	A (0.0)
			C (18.2)		A (1.2)		A (0.0)
2026 Option 1	TWSC	A (1.2)	C (15.3)	B (11.0)	A (8.5)	A (0.0)	A (0.0)
			B (14.0)		A (0.3)		A (0.0)
2026 Option 2	TWSC	A (1.2)	C (15.2)	B (11.0)	A (8.5)	A (0.0)	A (0.0)
			B (14.0)		A (0.3)		A (0.0)

Table 24: Richmond Road at Existing Access Driveway #2 Maximum Queuing

Scenario	Maximum Queue Length by Movement (feet)					
	Eastbound		Northbound		Southbound	
	LT	RT	LT	TH	TH	RT
Effective Storage Length (Feet)						
Existing	NA	NA	NA	NA	NA	
By-Right	Cont.	Cont.	100	260*	225*	
Option 2						
Option 1						
AM Peak Hour						
2017 Existing	-	-	-	-	-	
2020 By-Right	58	51	62	0	13	
2020 Option 1	67	53	50	0	6	
2020 Option 2	60	58	47	0	12	
2026 By-Right	58	49	51	0	10	
2026 Option 1	66	48	42	5	9	
2026 Option 2	69	54	49	0	18	
PM Peak Hour						
2017 Existing	-	-	-	-	-	
2020 By-Right	150	116	89	253	30	
2020 Option 1	92	64	35	80	4	
2020 Option 2	74	53	37	65	14	
2026 By-Right	148	121	91	205	28	
2026 Option 1	86	55	46	131	9	
2026 Option 2	87	66	42	155	7	

*Notes: Results displayed are the average results across 10 microsimulation runs | *Distance to upstream intersection*

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8.1.11 RICHMOND ROAD AT EXISTING WSC ACCESS DRIVEWAY #3

It should be noted that this intersection was not analyzed under existing conditions. However, this unsignalized intersection consisted of the following geometry for the future (i.e., By-Right, Option 1, and Option 2) scenarios:

- Richmond Road (northbound)
  - One shared left-turn/through lane
- Richmond Road (southbound)
  - One shared through/right-turn lane
- Existing WSC Access Driveway #3 (eastbound)
  - One shared left and right-turn lane

Results of the capacity and queuing analysis for this unsignalized intersection are shown in **Table 25** and **Table 26,** respectively. Under future conditions, the AM and PM peak hours are anticipated to experience an overall LOS A or better with movements of LOS C or better. Queuing results also indicate that the intersection is not projected to experience significant queuing or blocking issues.

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Table 25: Richmond Road at Existing Access Driveway #3 Intersection Level of Service

Scenario	Traffic Control	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)		
			Eastbound	Northbound	Southbound
			LT/RT	LT/TH	TH/RT
AM Peak Hour					
2020 By-Right	TWSC	A (1.2)	B (13.3)	A (1.1)	A (0.0)
			B (13.3)	A (1.1)	A (0.0)
2020 Option 1	TWSC	A (1.2)	B (13.2)	A (0.9)	A (0.0)
			B (13.2)	A (0.9)	A (0.0)
2020 Option 2	TWSC	A (1.3)	B (13.4)	A (1.0)	A (0.0)
			B (13.4)	A (1.0)	A (0.0)
2026 By-Right	TWSC	A (1.2)	B (14.1)	A (1.1)	A (0.0)
			B (14.1)	A (1.1)	A (0.0)
2026 Option 1	TWSC	A (1.1)	B (14.0)	A (0.9)	A (0.0)
			B (14.0)	A (0.9)	A (0.0)
2026 Option 2	TWSC	A (1.3)	B (14.3)	A (0.9)	A (0.0)
			B (14.3)	A (0.9)	A (0.0)
PM Peak Hour					
2020 By-Right	TWSC	A (2.1)	C (21.8)	A (1.1)	A (0.0)
			C (21.8)	A (1.1)	A (0.0)
2020 Option 1	TWSC	A (0.6)	C (15.0)	A (0.3)	A (0.0)
			C (15.0)	A (0.3)	A (0.0)
2020 Option 2	TWSC	A (0.6)	C (15.0)	A (0.3)	A (0.0)
			C (15.0)	A (0.3)	A (0.0)
2026 By-Right	TWSC	A (2.3)	D (26.4)	A (1.1)	A (0.0)
			D (26.4)	A (1.1)	A (0.0)
2026 Option 1	TWSC	A (0.6)	C (16.8)	A (0.3)	A (0.0)
			C (16.8)	A (0.3)	A (0.0)
2026 Option 2	TWSC	A (0.6)	C (16.8)	A (0.3)	A (0.0)
			C (16.8)	A (0.3)	A (0.0)

Table 26: Richmond Road at Existing Access Driveway #3 Maximum Queuing

Scenario	Maximum Queue Length by Movement (feet)					
	Eastbound		Northbound		Southbound	
	LT	RT	LT	TH	TH	RT
Effective Storage Length (Feet)						
Existing	NA		NA		NA	
By-Right	Cont.		Cont.		60*	
Option 2						
Option 1						
AM Peak Hour						
2017 Existing	-		-		-	
2020 By-Right	56		85		8	
2020 Option 1	52		65		10	
2020 Option 2	55		73		7	
2026 By-Right	56		110		11	
2026 Option 1	50		66		7	
2026 Option 2	54		76		5	
PM Peak Hour						
2017 Existing	-		-		-	
2020 By-Right	95		172		18	
2020 Option 1	39		79		15	
2020 Option 2	45		97		7	
2026 By-Right	102		188		22	
2026 Option 1	53		115		9	
2026 Option 2	56		136		20	

*Notes: Results displayed are the average results across 10 microsimulation runs | *Distance to upstream intersection*

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9 CONCLUSIONS AND RECOMMENDATIONS

This traffic study examined the potential impacts associated with the proposed Midtown Row development located along Monticello Avenue and Richmond Road in the City of Williamsburg, Virginia. Based on the results of the traffic analysis, the future impacts of vehicular traffic associated with the proposed development (i.e., Option 1 and Option 2) are anticipated to be minimal, with operational conditions at the study area intersections expected to be maintained at levels comparable to those experienced today. It is noted, that these findings are based on anticipated improvements/upgrades to existing traffic signals and the associated equipment, as well as the second left-turn lane and a full-width exclusive right-turn lane for the eastbound approach of Monticello Avenue at Richmond Road intersection.

Due to the future traffic volumes on Monticello Avenue and Richmond Road in the vicinity of the study area, it is important that the traffic signals are properly timed and coordinated in a manner that efficiently accommodates the actual traffic demand. With the installation of new traffic signals or upgrades to existing traffic signals and the associated controller equipment, it is also recommended that the City consider the implementation of Flashing Yellow Arrow (FYA) signal heads where possible to enhance safety and operational efficiency.

The City of Williamsburg should continue to monitor the operations of the existing signalized intersections using the currently implemented coordinated “time-of-day” plans. With the proposed Midtown Row development, additional development/redevelopment in the area, and the opportunity add a fourth leg to the Monticello Avenue/Garrison Drive intersection (i.e., per Option 1), the City should consider the signalization of the Garrison Drive intersection, if and when warranted in the future. However, in the meantime the operational results indicate that under Option 1 of the Midtown Row development, this intersection will experience acceptable conditions as unsignalized.

Based on the analysis provided in this traffic study, the following recommendations were identified or reflected in **Figure 25** and are summarized below:

Monticello Avenue

Improve the existing 3-lane roadway such that the enhanced Monticello Avenue typical section consists of two travel lanes (i.e., one travel lane in each direction), a shared center TWLTL (with delineated exclusive left-turn lanes at key or signalized intersections), on-street parallel parking between the WSC/Monticello Shopping Center signalized intersection and the Garrison Drive intersection, a two-way separated “bike-track”, and concrete sidewalks ranging in width from 6 feet to 8 feet.

With the proposed improvements, it is anticipated that new traffic signals will be installed or existing traffic signals will need to be upgraded/modified to accommodate the roadway and intersection widening that results from the introduction of on-street parallel parking, bike and pedestrian accommodations, and exclusive turn-lanes. Additionally, the following traffic signal coordination recommendations are proposed:

- Install interconnect (fiber or wireless) and coordinate all signalized intersections between the Monticello Avenue/Treyburn Drive intersection to the west and Monticello Avenue/Richmond Road intersection to the east.
- Update/implement coordinated signal timing plans to accommodate vehicle demands during the AM, Midday, PM, Off, and Weekend peak hours as needed.

- Coordinated signal timing optimization should occur following construction and occupancy of the Midtown Row development to account for the expected change in traffic volumes and travel patterns.

Richmond Road (VDOT)

- Continue to monitor and implement new timing and coordination plans as part of regular VDOT operations and maintenance

Monticello Avenue at Richmond Road

- Modify the traffic signal at this intersection to accommodate additional lane configuration/capacity improvements (i.e., dual left-turn movement, improved full-width exclusive right-turn lane, and roadway widening)
    - Signal coordination improvements should facilitate the progression of traffic along Richmond Road.
    - Coordinated signal timing optimization should occur following construction and occupancy of the Midtown Row development to account for the expected change in traffic volumes and patterns.
- Richmond Road (northbound)
    - Maintain one exclusive left-turn lane
    - Maintain one exclusive through lane
    - Maintain one shared through/right-turn lane
- Richmond Road (southbound)
    - Maintain one exclusive left-turn lane
    - Maintain one exclusive through lane
    - Maintain one exclusive right-turn lane
    - With traffic signal modification implement southbound right-turn overlap phase to operate concurrently with the westbound left-turn movement.
- Monticello Avenue (eastbound)
    - Construct dual exclusive left-turn lanes
    - Construct/maintain one exclusive through lane
    - Construct one exclusive right-turn lane
- Lafayette Avenue (westbound)
    - Maintain one exclusive left-turn lane
    - Maintain one exclusive through lane
    - Maintain one exclusive right-turn lane

Monticello Avenue at Williamsburg Shopping Center Driveway (College Row)

- Construct/install a new traffic signal at this intersection to accommodate the associated roadway/intersection widening.
    - Signal coordination improvements should facilitate the progression of traffic along Monticello Avenue.

    - Coordinated signal timing optimization should occur following construction and occupancy of the Midtown Row development to account for the expected change in traffic volumes and patterns.

- Williamsburg Shopping Center Driveway (College Row - northbound)
    - Construct one shared left/through/right-turn lane
- Monticello Shopping Center Driveway (southbound)
    - Maintain one shared left/through/right-turn lane
- Monticello Avenue (eastbound)
    - Construct/delineate one exclusive left-turn lane
    - Construct/maintain one shared through/right-turn lane
- Monticello Avenue (westbound)
    - Construct/delineate one exclusive left-turn lane
    - Construct/maintain one shared through/right-turn lane

Monticello Avenue at Garrison Drive (Option 1 Scenario)

- Existing WSC Access Driveway #1 (northbound)
    - Install STOP sign for traffic control at approach
    - Relocate WSC Access Drive #1 to align with Garrison Drive and become fourth leg of intersection
    - Construct one shared left/through/right-turn lane
- Garrison Drive (southbound)
    - Maintain STOP sign for traffic control at approach
    - Construct one shared left/through/right-turn lane
- Monticello Avenue (eastbound)
    - Construct/delineate one exclusive left-turn lane
    - Construct one shared through/right-turn lane
- Monticello Avenue (westbound)
    - Construct/delineate one exclusive left-turn lane
    - Construct/maintain one shared through/right-turn lane

Monticello Avenue at Garrison Drive (Option 2 Scenario)

- Garrison Drive (southbound)
    - Install STOP sign for traffic control at approach
    - Maintain one shared left and right-turn lane
- Monticello Avenue (eastbound)
    - Construct/delineate one exclusive left-turn lane
    - Construct/maintain one exclusive through lane
- Monticello Avenue (westbound)
    - Construct/maintain one shared through/right-turn lane

Monticello Avenue at WSC Access Driveway #1 (Option 1 Scenario)

- Existing WSC Access Driveway #1 (northbound)
    - Site access driveway is closed to accommodate site development and relocated to become fourth leg of Monticello Avenue/Garrison Drive intersection.

Monticello Avenue at WSC Access Driveway #1 (Option 2 Scenario)

- Existing WSC Access Driveway #1 (northbound)
    - Maintain STOP sign for traffic control at approach
    - Maintain one shared left and right-turn lane
- Monticello Avenue (eastbound)
    - Construct/maintain one shared through/right-turn lane
- Monticello Avenue (westbound)
    - Construct/delineate one exclusive left-turn lane
    - Construct/maintain one exclusive through lane

Richmond Road at Bypass Road

- Richmond Road (northbound)
    - Maintain two exclusive through lanes
    - Maintain one exclusive right-turn lane
- Richmond Road (southbound)
    - Maintain dual exclusive left-turn lanes
    - Maintain one exclusive through lane
- Bypass Road (westbound)
    - Maintain one exclusive left-turn lane
    - Maintain one exclusive right-turn lane

Richmond Road at Mount Vernon Avenue

- Richmond Road (northbound)
    - Maintain prohibited left-turn movement and associated signage
    - Maintain one exclusive through lane
    - Maintain one shared through/right-turn lane
- Richmond Road (southbound)
    - Maintain one exclusive left-turn lane
    - Maintain one exclusive through lane
    - Maintain one shared through/right-turn lane
- Mount Vernon Avenue (eastbound)
    - Maintain one shared left-turn/through lane
    - Maintain one exclusive right-turn lane
- Walgreens Driveway (westbound)
    - Maintain one shared left-turn/through lane
    - Maintain one exclusive right-turn lane

Richmond Road at Existing WSC Access Driveway # 2

- Richmond Road (northbound)
  - Maintain left-turn movement from shared TWLTL
  - Maintain one exclusive through lane
- Richmond Road (southbound)
  - Maintain one shared through/right-turn lane
- Existing WSC Access Driveway #2 (eastbound)
  - Maintain STOP sign for traffic control at approach
  - Maintain one exclusive left-turn lane
  - Maintain one exclusive right-turn lane

Richmond Road at Bacon Avenue

- Richmond Road (northbound)
  - Maintain one shared through/right-turn lane
- Richmond Road (southbound)
  - Maintain shared TWLTL
  - Maintain one exclusive through lane
- Bacon Avenue (westbound)
  - Maintain STOP sign for traffic control at approach
  - Maintain one shared left and right-turn lane

Richmond Road at Existing WSC Access Driveway # 3

- Richmond Road (northbound)
  - Maintain one shared left-turn/through lane
- Richmond Road (southbound)
  - Maintain one shared through/right-turn lane
- Existing WSC Access Driveway #3 (eastbound)
  - Maintain STOP sign for traffic control at approach
  - Maintain one shared left and right-turn lane

Appendix A

Assumptions Document

Appendix B

Traffic Count Data

Appendix C

Trip Generation Research Summary

Appendix D
Volume Worksheets

Appendix E

Synchro and SimTraffic Reports

TECHNICAL APPENDIX

Midtown Row

Williamsburg, Virginia

August 2017

Kimley»Horn

Appendix A
Assumptions Document

The following documentation outlines our traffic impact analysis (TIA) assumptions for the proposed Midtown Row Development, located in the City of Williamsburg. The site is currently occupied by the Williamsburg Shopping Center and is bounded by Monticello Avenue to the north, Mount Vernon Avenue to the west, a mixture of residential and commercial developments to the south, and Richmond Road to the east. As part of this analysis, existing traffic data will be collected and future traffic volumes developed to determine the potential roadway and intersection capacity improvements that may be necessary to support anticipated development/re related traffic. Recommendations for relevant improvements associated with the potential development will be described in the DRAFT and FINAL report.

Study Area

The study area for the TIA and the associated proposed development site consists of the following signalized and unsignalized intersections:

- Monticello Avenue at Treyburn Drive *(signalized)*
- Monticello Avenue at Mount Vernon Avenue *(unsignalized)*
- Monticello Avenue at Williamsburg Shopping Center Access Driveway *(signalized)*
- Monticello Avenue at Garrison Drive *(unsignalized)*
- Richmond Road at Monticello Avenue/Lafayette Street *(signalized)*
- Richmond Road at Mount Vernon Avenue *(signalized)*
- Richmond Road at Bacon Avenue *(unsignalized)*
- Richmond Road at Bypass Road *(signalized)*

Data Collection

Turning movement counts (TMC) will be collected at the study area intersections on Tuesday, Wednesday, or Thursday during the week of July 10, 2017 and will include vehicular, truck, and pedestrian volumes. Four-hour TMCs will be conducted during the AM and PM peak periods (6:30 AM to 8:30 AM and 4:00 PM to 6:00 PM) at all study area intersections.

Average weekday daily traffic counts (AWDT) will be collected for a 72-hour period from July 11 through July 13 on the following roadway segments:

- Monticello Avenue between Garrison Drive and Williamsburg Shopping Center Access Driveway *(volume, classification, and speed collected at this location)*
- Richmond Road between New Hope Road and Mount Vernon Avenue *(only volume collected at this location)*

<u>This space intentionally left blank.</u>

Future Traffic

It is anticipated that the proposed development will have an opening year of 2020. Future analyses will coincide with this year. Growth rates will be determined by using historical traffic volume trends over the previous six (6) years (i.e., 2011 to 2016) from the Virginia Department of Transportation (VDOT) data.

- Monticello Avenue – 0.5% per year
- Richmond Road – 2.0% per year

Proposed Land Use

Kimley-Horn will use *ITE Trip Generation 9th Edition* (2012) Trip Generation Rates and relevant Land Use Codes to develop the trip generation estimates for the proposed development. Trip generation estimates will be developed for a By-Right redevelopment under current zoning scenario, as well as the proposed Midtown Row Development Option 1 and Option 2 scenarios (i.e., Option 1 – approximately 362,000 square feet (sf) of student housing space, 23,000 of amenity space, approximately 115,000 sf of retail space, and a 122,700 sf hotel and Option 2 – approximately 311,000 sf of student housing development, approximately 23,000 sf of amenity space, and 148,000 sf of retail space, and).

Site traffic distributions will be determined from existing travel patterns, access to/from the external adjacent street network, as well as employment, college, and activity center destinations in the surrounding area.

Analysis Years

The proposed development is anticipated to be completed in 2020. Therefore, the following analysis scenarios for the AM and PM peak hours will be studied as part of this TIA update.

- *Scenario 1* – By-Right Opening Year (2020) By-Right Build conditions - Build-out year traffic conditions *with* background development trips applied *plus* traffic volumes generated by the By-Right redevelopment of the existing shopping center site under current zoning.
- *Scenario 2* – Option 1 Opening Year (2020) Build-out conditions - Build-out year traffic conditions *with* background development trips applied *plus* traffic volumes generated by the proposed development.
- *Scenario 3* – Option 2 Opening Year (2020) Build-out conditions - Build-out year traffic conditions *with* background development trips applied *plus* traffic volumes generated by the proposed development.
- *Scenario 4* – By-Right Opening Year +6 years (2026) By-Right Build conditions - Build-out year traffic conditions *with* background development trips applied *plus* traffic volumes generated by the By-Right redevelopment of the existing shopping center site under current zoning.

- *Scenario 5* – Option 1 Opening Year +6 years (2026) Build-out conditions - Build-out year traffic conditions *with* background development trips applied *plus* traffic volumes generated by the proposed development.
- *Scenario 6* – Option 2 Opening Year +6 years (2026) Build-out conditions - Build-out year traffic conditions *with* background development trips applied *plus* traffic volumes generated by the proposed development.

Traffic Operations Analysis

Proposed inputs and analysis methodologies will be consistent with VDOT's Traffic Operations and Safety Analysis Manual (TOSAM). Operational analyses for the study area intersections will be conducted using traffic analysis tools (e.g., Synchro 9.1 Professional, SimTraffic 9.1) and Highway Capacity Manual (HCM) methodologies.

The future conditions analyses will confirm the need and define the geometric configurations necessary for the proposed roadway and intersection capacity improvements. Measures of effectiveness that will be reported for each scenario will consist of delay per vehicle, level of service (LOS), and maximum queue lengths. These measures of effectiveness will be presented in tabular format. Vehicle delay and LOS will be summarized by movement, approach, and overall intersection, while maximum queue lengths will be summarized for each movement.

Reporting

A TIA report suitable for submission to the City of Williamsburg as a part of the Special Use Permit (SUP) application with an accompanying appendix (including all analysis files) will be prepared that summarizes the analysis methodology and results. The report and associated analysis files will be provided in electronic format as a part of the FINAL traffic analysis submittal.

Appendix B
Traffic Count Data

Peggy Malone & Associates, Inc.
(888) 247-8602

File Name : 1-Treyburn Dr and Monticello Ave AM
Site Code :
Start Date : 7/11/2017
Page No : 1

Groups Printed- Car

	Treyburn Dr Southbound					Monticello Ave Westbound					Treyburn Dr Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	3	0	0	0	3	0	24	0	0	24	0	0	0	0	0	1	36	3	0	40	67
06:45 AM	5	0	4	0	9	9	32	0	0	41	1	0	0	0	1	0	44	4	0	48	99
Total	8	0	4	0	12	9	56	0	0	65	1	0	0	0	1	1	80	7	0	88	166
07:00 AM	1	2	6	0	9	6	35	0	0	41	0	0	1	0	1	1	47	3	0	51	102
07:15 AM	8	0	10	0	18	7	30	0	1	38	0	0	2	0	2	4	61	8	0	73	131
07:30 AM	7	0	6	0	13	11	65	1	0	77	0	0	1	0	1	6	71	6	0	83	174
07:45 AM	8	2	8	1	19	5	85	2	1	93	2	0	0	0	2	6	87	9	0	102	216
Total	24	4	30	1	59	29	215	3	2	249	2	0	4	0	6	17	266	26	0	309	623
08:00 AM	6	10	21	0	37	5	93	5	0	103	1	0	2	0	3	5	75	3	0	83	226
08:15 AM	9	8	17	0	34	5	87	8	0	100	0	0	0	0	0	17	109	6	0	132	266
Grand Total	47	22	72	1	142	48	451	16	2	517	4	0	6	0	10	40	530	42	0	612	1281
Apprch %	33.1	15.5	50.7	0.7		9.3	87.2	3.1	0.4		40	0	60	0		6.5	86.6	6.9	0		
Total %	3.7	1.7	5.6	0.1	11.1	3.7	35.2	1.2	0.2	40.4	0.3	0	0.5	0	0.8	3.1	41.4	3.3	0	47.8	

	Treyburn Dr Southbound				Monticello Ave Westbound				Treyburn Dr Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	7	0	6	13	**11**	65	1	77	0	0	1	1	6	71	6	83	174
07:45 AM	8	2	8	18	5	85	2	92	**2**	0	0	2	6	87	**9**	102	214
08:00 AM	6	**10**	**21**	**37**	5	**93**	5	**103**	1	0	**2**	**3**	5	75	3	83	226
08:15 AM	**9**	8	17	34	5	87	**8**	100	0	0	0	0	**17**	**109**	6	**132**	**266**
Total Volume	30	20	52	102	26	330	16	372	3	0	3	6	34	342	24	400	880
% App. Total	29.4	19.6	51		7	88.7	4.3		50	0	50		8.5	85.5	6		
PHF	.833	.500	.619	.689	.591	.887	.500	.903	.375	.000	.375	.500	.500	.784	.667	.758	.827

Peggy Malone & Associates, Inc.
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File Name : 1-Treyburn Dr and Monticello Ave AM
Site Code :
Start Date : 7/11/2017
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Groups Printed- Truck

	Treyburn Dr Southbound					Monticello Ave Westbound					Treyburn Dr Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	4
06:45 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
Total	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	0	4	0	0	4	8
07:00 AM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	4
07:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
07:30 AM	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	1	0	0	1	4
07:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Total	0	0	0	0	0	2	5	0	0	7	0	0	0	0	0	0	8	0	0	8	15
08:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
Grand Total	0	0	0	0	0	4	10	0	0	14	0	0	0	0	0	0	14	0	0	14	28
Apprch %	0	0	0	0		28.6	71.4	0	0		0	0	0	0		0	100	0	0		
Total %	0	0	0	0	0	14.3	35.7	0	0	50	0	0	0	0	0	0	50	0	0	50	

	Treyburn Dr Southbound				Monticello Ave Westbound				Treyburn Dr Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 06:30 AM																	
06:30 AM	0	0	0	0	**1**	1	0	**2**	0	0	0	0	0	2	0	2	**4**
06:45 AM	0	0	0	0	0	**2**	0	2	0	0	0	0	0	2	0	2	4
07:00 AM	0	0	0	0	1	1	0	2	0	0	0	0	0	2	0	2	4
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	**3**	0	**3**	4
Total Volume	0	0	0	0	2	5	0	7	0	0	0	0	0	9	0	9	16
% App. Total	0	0	0		28.6	71.4	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.500	.625	.000	.875	.000	.000	.000	.000	.000	.750	.000	.750	1.00

Peggy Malone & Associates, Inc.
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File Name : 1-Treyburn Dr and Monticello Ave AM
Site Code :
Start Date : 7/11/2017
Page No : 1

Groups Printed- Combined

	Treyburn Dr Southbound					Monticello Ave Westbound					Treyburn Dr Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	3	0	0	0	3	1	25	0	0	26	0	0	0	0	0	1	38	3	0	42	71
06:45 AM	5	0	4	0	9	9	34	0	0	43	1	0	0	0	1	0	46	4	0	50	103
Total	8	0	4	0	12	10	59	0	0	69	1	0	0	0	1	1	84	7	0	92	174
07:00 AM	1	2	6	0	9	7	36	0	0	43	0	0	1	0	1	1	49	3	0	53	106
07:15 AM	8	0	10	0	18	7	31	0	1	39	0	0	2	0	2	4	64	8	0	76	135
07:30 AM	7	0	6	0	13	12	67	1	0	80	0	0	1	0	1	6	72	6	0	84	178
07:45 AM	8	2	8	1	19	5	86	2	1	94	2	0	0	0	2	6	89	9	0	104	219
Total	24	4	30	1	59	31	220	3	2	256	2	0	4	0	6	17	274	26	0	317	638
08:00 AM	6	10	21	0	37	6	93	5	0	104	1	0	2	0	3	5	75	3	0	83	227
08:15 AM	9	8	17	0	34	5	89	8	0	102	0	0	0	0	0	17	111	6	0	134	270
Grand Total	47	22	72	1	142	52	461	16	2	531	4	0	6	0	10	40	544	42	0	626	1309
Apprch %	33.1	15.5	50.7	0.7		9.8	86.8	3	0.4		40	0	60	0		6.4	86.9	6.7	0		
Total %	3.6	1.7	5.5	0.1	10.8	4	35.2	1.2	0.2	40.6	0.3	0	0.5	0	0.8	3.1	41.6	3.2	0	47.8	

	Treyburn Dr Southbound				Monticello Ave Westbound				Treyburn Dr Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	7	0	6	13	**12**	67	1	80	0	0	1	1	6	72	6	84	178
07:45 AM	8	2	8	18	5	86	2	93	**2**	0	0	2	6	89	**9**	104	217
08:00 AM	6	**10**	**21**	**37**	6	**93**	5	**104**	1	0	**2**	**3**	5	75	3	83	227
08:15 AM	**9**	8	17	34	5	89	**8**	102	0	0	0	0	**17**	**111**	6	**134**	**270**
Total Volume	30	20	52	102	28	335	16	379	3	0	3	6	34	347	24	405	892
% App. Total	29.4	19.6	51		7.4	88.4	4.2		50	0	50		8.4	85.7	5.9		
PHF	.833	.500	.619	.689	.583	.901	.500	.911	.375	.000	.375	.500	.500	.782	.667	.756	.826

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File Name : 1-Treyburn Dr and Monticello Ave PM
Site Code :
Start Date : 7/11/2017
Page No : 1

Groups Printed- Car

	Treyburn Dr Southbound					Monticello Ave Westbound					Treyburn Dr Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	15	0	17	0	32	17	167	0	0	184	2	0	2	0	4	0	146	15	0	161	381
04:15 PM	10	0	10	0	20	18	178	1	0	197	5	1	3	0	9	1	148	13	0	162	388
04:30 PM	8	0	11	0	19	10	159	2	0	171	1	3	1	0	5	1	164	21	0	186	381
04:45 PM	12	2	17	0	31	25	157	4	0	186	4	5	3	0	12	4	157	22	0	183	412
Total	45	2	55	0	102	70	661	7	0	738	12	9	9	0	30	6	615	71	0	692	1562
05:00 PM	12	0	16	0	28	12	162	1	0	175	4	5	12	0	21	3	167	19	0	189	413
05:15 PM	16	1	10	0	27	19	185	0	0	204	0	1	3	0	4	4	164	16	0	184	419
05:30 PM	11	2	11	0	24	17	161	0	0	178	0	2	3	0	5	1	164	13	0	178	385
05:45 PM	8	0	10	0	18	14	163	0	0	177	1	1	1	0	3	1	147	19	0	167	365
Total	47	3	47	0	97	62	671	1	0	734	5	9	19	0	33	9	642	67	0	718	1582
Grand Total	92	5	102	0	199	132	1332	8	0	1472	17	18	28	0	63	15	1257	138	0	1410	3144
Apprch %	46.2	2.5	51.3	0		9	90.5	0.5	0		27	28.6	44.4	0		1.1	89.1	9.8	0		
Total %	2.9	0.2	3.2	0	6.3	4.2	42.4	0.3	0	46.8	0.5	0.6	0.9	0	2	0.5	40	4.4	0	44.8	

	Treyburn Dr Southbound				Monticello Ave Westbound				Treyburn Dr Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	12	**2**	**17**	**31**	**25**	157	**4**	186	**4**	**5**	3	12	**4**	157	**22**	183	412
05:00 PM	12	0	16	28	12	162	1	175	4	5	**12**	**21**	3	**167**	19	**189**	413
05:15 PM	**16**	1	10	27	19	**185**	0	**204**	0	1	3	4	4	164	16	184	**419**
05:30 PM	11	2	11	24	17	161	0	178	0	2	3	5	1	164	13	178	385
Total Volume	51	5	54	110	73	665	5	743	8	13	21	42	12	652	70	734	1629
% App. Total	46.4	4.5	49.1		9.8	89.5	0.7		19	31	50		1.6	88.8	9.5		
PHF	.797	.625	.794	.887	.730	.899	.313	.911	.500	.650	.438	.500	.750	.976	.795	.971	.972

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File Name : 1-Treyburn Dr and Monticello Ave PM
Site Code :
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Groups Printed- Truck

	Treyburn Dr Southbound					Monticello Ave Westbound					Treyburn Dr Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	4
04:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	1	0	3	4
04:30 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	3
04:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	3
Total	0	0	0	0	0	2	4	0	0	6	0	0	0	0	0	0	6	2	0	8	14
05:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	2
05:15 PM	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	3
05:30 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	1	0	1	2	1	0	0	3	0	0	0	0	0	0	1	2	0	3	7
Grand Total	0	0	1	0	1	4	5	0	0	9	0	0	0	0	0	0	7	4	0	11	21
Apprch %	0	0	100	0		44.4	55.6	0	0		0	0	0	0		0	63.6	36.4	0		
Total %	0	0	4.8	0	4.8	19	23.8	0	0	42.9	0	0	0	0	0	0	33.3	19	0	52.4	

	Treyburn Dr Southbound				Monticello Ave Westbound				Treyburn Dr Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	**1**	**1**	0	**2**	0	0	0	0	0	**2**	0	2	**4**
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	**1**	**3**	4
04:30 PM	0	0	0	0	1	1	0	2	0	0	0	0	0	1	0	1	3
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	2	3
Total Volume	0	0	0	0	2	4	0	6	0	0	0	0	0	6	2	8	14
% App. Total	0	0	0		33.3	66.7	0		0	0	0		0	75	25		
PHF	.000	.000	.000	.000	.500	1.00	.000	.750	.000	.000	.000	.000	.000	.750	.500	.667	.875

Peggy Malone & Associates, Inc.
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File Name : 1-Treyburn Dr and Monticello Ave PM
Site Code :
Start Date : 7/11/2017
Page No : 1

Groups Printed- Combined

	Treyburn Dr Southbound					Monticello Ave Westbound					Treyburn Dr Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	15	0	17	0	32	18	168	0	0	186	2	0	2	0	4	0	148	15	0	163	385
04:15 PM	10	0	10	0	20	18	179	1	0	198	5	1	3	0	9	1	150	14	0	165	392
04:30 PM	8	0	11	0	19	11	160	2	0	173	1	3	1	0	5	1	165	21	0	187	384
04:45 PM	12	2	17	0	31	25	158	4	0	187	4	5	3	0	12	4	158	23	0	185	415
Total	45	2	55	0	102	72	665	7	0	744	12	9	9	0	30	6	621	73	0	700	1576
05:00 PM	12	0	16	0	28	13	162	1	0	176	4	5	12	0	21	3	168	19	0	190	415
05:15 PM	16	1	11	0	28	19	186	0	0	205	0	1	3	0	4	4	164	17	0	185	422
05:30 PM	11	2	11	0	24	18	161	0	0	179	0	2	3	0	5	1	164	13	0	178	386
05:45 PM	8	0	10	0	18	14	163	0	0	177	1	1	1	0	3	1	147	20	0	168	366
Total	47	3	48	0	98	64	672	1	0	737	5	9	19	0	33	9	643	69	0	721	1589
Grand Total	92	5	103	0	200	136	1337	8	0	1481	17	18	28	0	63	15	1264	142	0	1421	3165
Apprch %	46	2.5	51.5	0		9.2	90.3	0.5	0		27	28.6	44.4	0		1.1	89	10	0		
Total %	2.9	0.2	3.3	0	6.3	4.3	42.2	0.3	0	46.8	0.5	0.6	0.9	0	2	0.5	39.9	4.5	0	44.9	

	Treyburn Dr Southbound				Monticello Ave Westbound				Treyburn Dr Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	12	**2**	**17**	**31**	**25**	158	**4**	187	**4**	**5**	3	12	**4**	158	**23**	185	415
05:00 PM	12	0	16	28	13	162	1	176	4	5	**12**	**21**	3	**168**	19	**190**	415
05:15 PM	**16**	1	11	28	19	**186**	0	**205**	0	1	3	4	4	164	17	185	**422**
05:30 PM	11	2	11	24	18	161	0	179	0	2	3	5	1	164	13	178	386
Total Volume	51	5	55	111	75	667	5	747	8	13	21	42	12	654	72	738	1638
% App. Total	45.9	4.5	49.5		10	89.3	0.7		19	31	50		1.6	88.6	9.8		
PHF	.797	.625	.809	.895	.750	.897	.313	.911	.500	.650	.438	.500	.750	.973	.783	.971	.970

Peggy Malone & Associates, Inc.
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File Name : 2-Mt Vernon Ave and Monticello Ave AM
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Groups Printed- Car

	Mt Vernon Ave Southbound					Monticello Ave Westbound					Mt Vernon Ave Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	1	0	0	0	1	1	23	0	0	24	1	0	0	0	1	1	35	1	0	37	63
06:45 AM	5	1	1	0	7	0	37	5	0	42	0	0	2	0	2	3	45	1	0	49	100
Total	6	1	1	0	8	1	60	5	0	66	1	0	2	0	3	4	80	2	0	86	163
07:00 AM	3	0	0	0	3	0	38	5	0	43	1	0	1	1	3	1	54	0	0	55	104
07:15 AM	3	1	0	3	7	1	33	3	2	39	2	0	1	1	4	3	64	4	0	71	121
07:30 AM	2	0	0	0	2	1	73	5	0	79	2	0	2	0	4	2	65	5	1	73	158
07:45 AM	7	0	1	1	9	1	85	6	0	92	0	0	1	0	1	6	88	3	0	97	199
Total	15	1	1	4	21	3	229	19	2	253	5	0	5	2	12	12	271	12	1	296	582
08:00 AM	5	0	1	0	6	0	92	4	0	96	0	0	6	0	6	9	85	2	1	97	205
08:15 AM	4	1	0	0	5	0	96	7	0	103	0	0	2	0	2	13	101	9	0	123	233
Grand Total	30	3	3	4	40	4	477	35	2	518	6	0	15	2	23	38	537	25	2	602	1183
Apprch %	75	7.5	7.5	10		0.8	92.1	6.8	0.4		26.1	0	65.2	8.7		6.3	89.2	4.2	0.3		
Total %	2.5	0.3	0.3	0.3	3.4	0.3	40.3	3	0.2	43.8	0.5	0	1.3	0.2	1.9	3.2	45.4	2.1	0.2	50.9	

	Mt Vernon Ave Southbound				Monticello Ave Westbound				Mt Vernon Ave Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	2	0	0	2	**1**	73	5	79	**2**	0	2	4	2	65	5	72	157
07:45 AM	**7**	0	**1**	**8**	1	85	6	92	0	0	1	1	6	88	3	97	198
08:00 AM	5	0	1	6	0	92	4	96	0	0	**6**	**6**	9	85	2	96	204
08:15 AM	4	**1**	0	5	0	**96**	**7**	**103**	0	0	2	2	**13**	**101**	**9**	**123**	**233**
Total Volume	18	1	2	21	2	346	22	370	2	0	11	13	30	339	19	388	792
% App. Total	85.7	4.8	9.5		0.5	93.5	5.9		15.4	0	84.6		7.7	87.4	4.9		
PHF	.643	.250	.500	.656	.500	.901	.786	.898	.250	.000	.458	.542	.577	.839	.528	.789	.850

Peggy Malone & Associates, Inc.
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File Name : 2-Mt Vernon Ave and Monticello Ave AM
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Groups Printed- Truck

	Mt Vernon Ave Southbound					Monticello Ave Westbound					Mt Vernon Ave Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	0	0	0	0	0	0	1	1	0	2	0	0	1	0	1	0	2	0	0	2	5
06:45 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
Total	0	0	0	0	0	0	3	1	0	4	0	0	1	0	1	0	4	0	0	4	9
07:00 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
07:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
07:30 AM	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	0	0	0	0	0	4
07:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Total	0	0	0	0	0	0	7	0	0	7	1	0	0	0	1	0	7	0	0	7	15
08:00 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
08:15 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	5
Grand Total	0	0	0	0	0	0	15	1	0	16	1	0	1	0	2	0	13	0	0	13	31
Apprch %	0	0	0	0		0	93.8	6.2	0		50	0	50	0		0	100	0	0		
Total %	0	0	0	0	0	0	48.4	3.2	0	51.6	3.2	0	3.2	0	6.5	0	41.9	0	0	41.9	

	Mt Vernon Ave Southbound				Monticello Ave Westbound				Mt Vernon Ave Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 06:30 AM																	
06:30 AM	0	0	0	0	0	1	**1**	**2**	0	0	**1**	**1**	0	2	0	2	**5**
06:45 AM	0	0	0	0	0	**2**	0	2	0	0	0	0	0	2	0	2	4
07:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	**3**	0	**3**	4
Total Volume	0	0	0	0	0	6	1	7	0	0	1	1	0	9	0	9	17
% App. Total	0	0	0		0	85.7	14.3		0	0	100		0	100	0		
PHF	.000	.000	.000	.000	.000	.750	.250	.875	.000	.000	.250	.250	.000	.750	.000	.750	.850

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File Name : 2-Mt Vernon Ave and Monticello Ave AM
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Groups Printed- Combined

	Mt Vernon Ave Southbound					Monticello Ave Westbound					Mt Vernon Ave Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	1	0	0	0	1	1	24	1	0	26	1	0	1	0	2	1	37	1	0	39	68
06:45 AM	5	1	1	0	7	0	39	5	0	44	0	0	2	0	2	3	47	1	0	51	104
Total	6	1	1	0	8	1	63	6	0	70	1	0	3	0	4	4	84	2	0	90	172
07:00 AM	3	0	0	0	3	0	40	5	0	45	1	0	1	1	3	1	56	0	0	57	108
07:15 AM	3	1	0	3	7	1	34	3	2	40	2	0	1	1	4	3	67	4	0	74	125
07:30 AM	2	0	0	0	2	1	76	5	0	82	3	0	2	0	5	2	65	5	1	73	162
07:45 AM	7	0	1	1	9	1	86	6	0	93	0	0	1	0	1	6	90	3	0	99	202
Total	15	1	1	4	21	3	236	19	2	260	6	0	5	2	13	12	278	12	1	303	597
08:00 AM	5	0	1	0	6	0	94	4	0	98	0	0	6	0	6	9	85	2	1	97	207
08:15 AM	4	1	0	0	5	0	99	7	0	106	0	0	2	0	2	13	103	9	0	125	238
Grand Total	30	3	3	4	40	4	492	36	2	534	7	0	16	2	25	38	550	25	2	615	1214
Apprch %	75	7.5	7.5	10		0.7	92.1	6.7	0.4		28	0	64	8		6.2	89.4	4.1	0.3		
Total %	2.5	0.2	0.2	0.3	3.3	0.3	40.5	3	0.2	44	0.6	0	1.3	0.2	2.1	3.1	45.3	2.1	0.2	50.7	

	Mt Vernon Ave Southbound				Monticello Ave Westbound				Mt Vernon Ave Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	2	0	0	2	**1**	76	5	82	**3**	0	2	5	2	65	5	72	161
07:45 AM	**7**	0	**1**	**8**	1	86	6	93	0	0	1	1	6	90	3	99	201
08:00 AM	5	0	1	6	0	94	4	98	0	0	**6**	**6**	9	85	2	96	206
08:15 AM	4	**1**	0	5	0	**99**	**7**	**106**	0	0	2	2	**13**	**103**	**9**	**125**	**238**
Total Volume	18	1	2	21	2	355	22	379	3	0	11	14	30	343	19	392	806
% App. Total	85.7	4.8	9.5		0.5	93.7	5.8		21.4	0	78.6		7.7	87.5	4.8		
PHF	.643	.250	.500	.656	.500	.896	.786	.894	.250	.000	.458	.583	.577	.833	.528	.784	.847

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File Name : 2-Mt Vernon Ave and Monticello Ave PM
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Groups Printed- Car

	Mt Vernon Ave Southbound					Monticello Ave Westbound					Mt Vernon Ave Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	10	1	0	0	11	1	173	3	0	177	3	0	2	0	5	2	154	10	1	167	360
04:15 PM	7	0	1	0	8	1	185	3	0	189	5	1	3	0	9	3	153	7	0	163	369
04:30 PM	12	0	2	1	15	3	152	2	0	157	2	0	4	0	6	3	160	11	1	175	353
04:45 PM	8	1	1	0	10	0	169	2	0	171	1	0	7	0	8	9	166	12	4	191	380
Total	37	2	4	1	44	5	679	10	0	694	11	1	16	0	28	17	633	40	6	696	1462
05:00 PM	14	0	3	0	17	2	161	2	1	166	15	0	6	0	21	7	173	10	0	190	394
05:15 PM	10	0	2	0	12	3	182	2	0	187	4	0	3	0	7	5	156	8	2	171	377
05:30 PM	12	0	3	1	16	5	163	2	0	170	2	1	0	0	3	5	155	16	0	176	365
05:45 PM	6	1	0	0	7	0	162	3	0	165	5	0	4	0	9	3	146	10	0	159	340
Total	42	1	8	1	52	10	668	9	1	688	26	1	13	0	40	20	630	44	2	696	1476
Grand Total	79	3	12	2	96	15	1347	19	1	1382	37	2	29	0	68	37	1263	84	8	1392	2938
Apprch %	82.3	3.1	12.5	2.1		1.1	97.5	1.4	0.1		54.4	2.9	42.6	0		2.7	90.7	6	0.6		
Total %	2.7	0.1	0.4	0.1	3.3	0.5	45.8	0.6	0	47	1.3	0.1	1	0	2.3	1.3	43	2.9	0.3	47.4	

	Mt Vernon Ave Southbound				Monticello Ave Westbound				Mt Vernon Ave Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	8	**1**	1	10	0	169	**2**	171	1	0	**7**	8	**9**	166	12	187	376
05:00 PM	**14**	0	**3**	**17**	2	161	2	165	**15**	0	6	**21**	7	**173**	10	**190**	**393**
05:15 PM	10	0	2	12	3	**182**	2	**187**	4	0	3	7	5	156	8	169	375
05:30 PM	12	0	3	15	**5**	163	2	170	2	**1**	0	3	5	155	**16**	176	364
Total Volume	44	1	9	54	10	675	8	693	22	1	16	39	26	650	46	722	1508
% App. Total	81.5	1.9	16.7		1.4	97.4	1.2		56.4	2.6	41		3.6	90	6.4		
PHF	.786	.250	.750	.794	.500	.927	1.00	.926	.367	.250	.571	.464	.722	.939	.719	.950	.959

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Groups Printed- Truck

	Mt Vernon Ave Southbound					Monticello Ave Westbound					Mt Vernon Ave Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
04:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
04:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
04:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
Total	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	5	0	0	5	11
05:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
05:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	2
05:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	2	1	0	3	7
Grand Total	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	7	1	0	8	18
Apprch %	0	0	0	0		0	100	0	0		0	0	0	0		0	87.5	12.5	0		
Total %	0	0	0	0	0	0	55.6	0	0	55.6	0	0	0	0	0	0	38.9	5.6	0	44.4	

	Mt Vernon Ave Southbound				Monticello Ave Westbound				Mt Vernon Ave Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	**2**	0	**2**	**4**
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
04:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total Volume	0	0	0	0	0	6	0	6	0	0	0	0	0	5	0	5	11
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.750	.000	.750	.000	.000	.000	.000	.000	.625	.000	.625	.688

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File Name : 2-Mt Vernon Ave and Monticello Ave PM
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Groups Printed- Combined

	Mt Vernon Ave Southbound					Monticello Ave Westbound					Mt Vernon Ave Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	10	1	0	0	11	1	175	3	0	179	3	0	2	0	5	2	156	10	1	169	364
04:15 PM	7	0	1	0	8	1	186	3	0	190	5	1	3	0	9	3	154	7	0	164	371
04:30 PM	12	0	2	1	15	3	154	2	0	159	2	0	4	0	6	3	161	11	1	176	356
04:45 PM	8	1	1	0	10	0	170	2	0	172	1	0	7	0	8	9	167	12	4	192	382
Total	37	2	4	1	44	5	685	10	0	700	11	1	16	0	28	17	638	40	6	701	1473
05:00 PM	14	0	3	0	17	2	162	2	1	167	15	0	6	0	21	7	175	10	0	192	397
05:15 PM	10	0	2	0	12	3	183	2	0	188	4	0	3	0	7	5	156	9	2	172	379
05:30 PM	12	0	3	1	16	5	165	2	0	172	2	1	0	0	3	5	155	16	0	176	367
05:45 PM	6	1	0	0	7	0	162	3	0	165	5	0	4	0	9	3	146	10	0	159	340
Total	42	1	8	1	52	10	672	9	1	692	26	1	13	0	40	20	632	45	2	699	1483
Grand Total	79	3	12	2	96	15	1357	19	1	1392	37	2	29	0	68	37	1270	85	8	1400	2956
Apprch %	82.3	3.1	12.5	2.1		1.1	97.5	1.4	0.1		54.4	2.9	42.6	0		2.6	90.7	6.1	0.6		
Total %	2.7	0.1	0.4	0.1	3.2	0.5	45.9	0.6	0	47.1	1.3	0.1	1	0	2.3	1.3	43	2.9	0.3	47.4	

	Mt Vernon Ave Southbound				Monticello Ave Westbound				Mt Vernon Ave Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	8	**1**	1	10	0	170	**2**	172	1	0	**7**	8	**9**	167	12	188	378
05:00 PM	**14**	0	**3**	**17**	2	162	2	166	**15**	0	6	**21**	7	**175**	10	**192**	**396**
05:15 PM	10	0	2	12	3	**183**	2	**188**	4	0	3	7	5	156	9	170	377
05:30 PM	12	0	3	15	**5**	165	2	172	2	**1**	0	3	5	155	**16**	176	366
Total Volume	44	1	9	54	10	680	8	698	22	1	16	39	26	653	47	726	1517
% App. Total	81.5	1.9	16.7		1.4	97.4	1.1		56.4	2.6	41		3.6	89.9	6.5		
PHF	.786	.250	.750	.794	.500	.929	1.00	.928	.367	.250	.571	.464	.722	.933	.734	.945	.958

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	Williamsburg Shopping Ctr Southbound					Monticello Ave Westbound					Williamsburg Shopping Ctr Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	1	0	0	0	1	0	24	0	0	24	0	0	0	0	0	0	34	2	0	36	61
06:45 AM	0	0	0	0	0	0	41	0	0	41	0	0	0	0	0	0	42	0	0	42	83
Total	1	0	0	0	1	0	65	0	0	65	0	0	0	0	0	0	76	2	0	78	144
07:00 AM	0	0	0	2	2	0	42	0	1	43	0	0	0	1	1	1	53	2	0	56	102
07:15 AM	0	0	0	0	0	0	38	0	0	38	0	0	0	0	0	0	62	0	0	62	100
07:30 AM	0	0	0	0	0	1	77	0	0	78	1	0	0	0	1	0	65	0	0	65	144
07:45 AM	0	0	0	0	0	0	89	0	0	89	0	0	0	0	0	1	87	0	0	88	177
Total	0	0	0	2	2	1	246	0	1	248	1	0	0	1	2	2	267	2	0	271	523
08:00 AM	0	0	0	0	0	1	101	0	0	102	0	0	0	0	0	0	79	1	0	80	182
08:15 AM	0	0	0	1	1	0	97	0	0	97	0	0	2	0	2	0	95	1	0	96	196
Grand Total	1	0	0	3	4	2	509	0	1	512	1	0	2	1	4	2	517	6	0	525	1045
Apprch %	25	0	0	75		0.4	99.4	0	0.2		25	0	50	25		0.4	98.5	1.1	0		
Total %	0.1	0	0	0.3	0.4	0.2	48.7	0	0.1	49	0.1	0	0.2	0.1	0.4	0.2	49.5	0.6	0	50.2	

	Williamsburg Shopping Ctr Southbound				Monticello Ave Westbound				Williamsburg Shopping Ctr Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	**1**	77	0	78	**1**	0	0	1	0	65	0	65	144
07:45 AM	0	0	0	0	0	89	0	89	0	0	0	0	**1**	87	0	88	177
08:00 AM	0	0	0	0	1	**101**	0	**102**	0	0	0	0	0	79	**1**	80	182
08:15 AM	0	0	0	0	0	97	0	97	0	0	**2**	**2**	0	**95**	1	**96**	**195**
Total Volume	0	0	0	0	2	364	0	366	1	0	2	3	1	326	2	329	698
% App. Total	0	0	0		0.5	99.5	0		33.3	0	66.7		0.3	99.1	0.6		
PHF	.000	.000	.000	.000	.500	.901	.000	.897	.250	.000	.250	.375	.250	.858	.500	.857	.895

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Groups Printed- Truck

	Williamsburg Shopping Ctr Southbound					Monticello Ave Westbound					Williamsburg Shopping Ctr Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
06:45 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
Total	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	8
07:00 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
07:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
07:30 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
07:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Total	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	7	0	0	7	14
08:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	5
Grand Total	0	0	0	0	0	0	15	0	0	15	0	0	0	0	0	0	13	0	0	13	28
Apprch %	0	0	0	0		0	100	0	0		0	0	0	0		0	100	0	0		
Total %	0	0	0	0	0	0	53.6	0	0	53.6	0	0	0	0	0	0	46.4	0	0	46.4	

	Williamsburg Shopping Ctr Southbound				Monticello Ave Westbound				Williamsburg Shopping Ctr Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 06:30 AM																	
06:30 AM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	2	0	2	**4**
06:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
07:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	**3**	0	**3**	4
Total Volume	0	0	0	0	0	7	0	7	0	0	0	0	0	9	0	9	16
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.875	.000	.875	.000	.000	.000	.000	.000	.750	.000	.750	1.00

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	Williamsburg Shopping Ctr Southbound					Monticello Ave Westbound					Williamsburg Shopping Ctr Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	1	0	0	0	1	0	26	0	0	26	0	0	0	0	0	0	36	2	0	38	65
06:45 AM	0	0	0	0	0	0	43	0	0	43	0	0	0	0	0	0	44	0	0	44	87
Total	1	0	0	0	1	0	69	0	0	69	0	0	0	0	0	0	80	2	0	82	152
07:00 AM	0	0	0	2	2	0	44	0	1	45	0	0	0	1	1	1	55	2	0	58	106
07:15 AM	0	0	0	0	0	0	39	0	0	39	0	0	0	0	0	0	65	0	0	65	104
07:30 AM	0	0	0	0	0	1	80	0	0	81	1	0	0	0	1	0	65	0	0	65	147
07:45 AM	0	0	0	0	0	0	90	0	0	90	0	0	0	0	0	1	89	0	0	90	180
Total	0	0	0	2	2	1	253	0	1	255	1	0	0	1	2	2	274	2	0	278	537
08:00 AM	0	0	0	0	0	1	102	0	0	103	0	0	0	0	0	0	79	1	0	80	183
08:15 AM	0	0	0	1	1	0	100	0	0	100	0	0	2	0	2	0	97	1	0	98	201
Grand Total	1	0	0	3	4	2	524	0	1	527	1	0	2	1	4	2	530	6	0	538	1073
Apprch %	25	0	0	75		0.4	99.4	0	0.2		25	0	50	25		0.4	98.5	1.1	0		
Total %	0.1	0	0	0.3	0.4	0.2	48.8	0	0.1	49.1	0.1	0	0.2	0.1	0.4	0.2	49.4	0.6	0	50.1	

	Williamsburg Shopping Ctr Southbound				Monticello Ave Westbound				Williamsburg Shopping Ctr Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	**1**	80	0	81	**1**	0	0	1	0	65	0	65	147
07:45 AM	0	0	0	0	0	90	0	90	0	0	0	0	**1**	89	0	90	180
08:00 AM	0	0	0	0	1	**102**	0	**103**	0	0	0	0	0	79	**1**	80	183
08:15 AM	0	0	0	0	0	100	0	100	0	0	**2**	**2**	0	**97**	1	**98**	**200**
Total Volume	0	0	0	0	2	372	0	374	1	0	2	3	1	330	2	333	710
% App. Total	0	0	0		0.5	99.5	0		33.3	0	66.7		0.3	99.1	0.6		
PHF	.000	.000	.000	.000	.500	.912	.000	.908	.250	.000	.250	.375	.250	.851	.500	.849	.888

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	Williamsburg Shopping Ctr Southbound					Monticello Ave Westbound					Williamsburg Shopping Ctr Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	12	2	3	0	17	2	147	3	2	154	3	0	18	0	21	6	134	8	0	148	340
04:15 PM	8	3	5	0	16	3	170	2	0	175	2	0	9	1	12	6	131	9	0	146	349
04:30 PM	8	1	3	1	13	3	129	5	0	137	6	1	14	0	21	5	147	6	0	158	329
04:45 PM	8	1	0	1	10	1	152	5	0	158	4	0	11	0	15	4	148	6	0	158	341
Total	36	7	11	2	56	9	598	15	2	624	15	1	52	1	69	21	560	29	0	610	1359
05:00 PM	7	2	4	0	13	7	149	4	0	160	0	0	7	0	7	5	174	4	0	183	363
05:15 PM	10	1	5	0	16	1	173	1	2	177	3	0	8	0	11	8	146	5	0	159	363
05:30 PM	7	3	2	0	12	8	146	3	0	157	7	1	10	0	18	2	144	13	0	159	346
05:45 PM	7	1	2	0	10	3	147	2	2	154	4	0	11	0	15	4	131	6	0	141	320
Total	31	7	13	0	51	19	615	10	4	648	14	1	36	0	51	19	595	28	0	642	1392
Grand Total	67	14	24	2	107	28	1213	25	6	1272	29	2	88	1	120	40	1155	57	0	1252	2751
Apprch %	62.6	13.1	22.4	1.9		2.2	95.4	2	0.5		24.2	1.7	73.3	0.8		3.2	92.3	4.6	0		
Total %	2.4	0.5	0.9	0.1	3.9	1	44.1	0.9	0.2	46.2	1.1	0.1	3.2	0	4.4	1.5	42	2.1	0	45.5	

	Williamsburg Shopping Ctr Southbound				Monticello Ave Westbound				Williamsburg Shopping Ctr Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	8	1	0	9	1	152	**5**	158	4	0	**11**	15	4	148	6	158	340
05:00 PM	7	2	4	13	7	149	4	160	0	0	7	7	5	**174**	4	**183**	**363**
05:15 PM	**10**	1	**5**	**16**	1	**173**	1	**175**	3	0	8	11	**8**	146	5	159	361
05:30 PM	7	**3**	2	12	**8**	146	3	157	**7**	**1**	10	**18**	2	144	**13**	159	346
Total Volume	32	7	11	50	17	620	13	650	14	1	36	51	19	612	28	659	1410
% App. Total	64	14	22		2.6	95.4	2		27.5	2	70.6		2.9	92.9	4.2		
PHF	.800	.583	.550	.781	.531	.896	.650	.929	.500	.250	.818	.708	.594	.879	.538	.900	.971

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Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
04:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	3
04:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	3
04:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	6	0	0	6	0	0	1	0	1	1	3	0	0	4	11
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
05:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
05:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
Grand Total	0	0	0	0	0	0	8	0	0	8	0	0	1	0	1	1	5	0	0	6	15
Apprch %	0	0	0	0		0	100	0	0		0	0	100	0		16.7	83.3	0	0		
Total %	0	0	0	0	0	0	53.3	0	0	53.3	0	0	6.7	0	6.7	6.7	33.3	0	0	40	

	Williamsburg Shopping Ctr Southbound				Monticello Ave Westbound				Williamsburg Shopping Ctr Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	**2**	0	**2**	**4**
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	**1**	1	0	2	3
04:30 PM	0	0	0	0	0	2	0	2	0	0	**1**	**1**	0	0	0	0	3
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	6	0	6	0	0	1	1	1	3	0	4	11
% App. Total	0	0	0		0	100	0		0	0	100		25	75	0		
PHF	.000	.000	.000	.000	.000	.750	.000	.750	.000	.000	.250	.250	.250	.375	.000	.500	.688

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Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	12	2	3	0	17	2	149	3	2	156	3	0	18	0	21	6	136	8	0	150	344
04:15 PM	8	3	5	0	16	3	171	2	0	176	2	0	9	1	12	7	132	9	0	148	352
04:30 PM	8	1	3	1	13	3	131	5	0	139	6	1	15	0	22	5	147	6	0	158	332
04:45 PM	8	1	0	1	10	1	153	5	0	159	4	0	11	0	15	4	148	6	0	158	342
Total	36	7	11	2	56	9	604	15	2	630	15	1	53	1	70	22	563	29	0	614	1370
05:00 PM	7	2	4	0	13	7	149	4	0	160	0	0	7	0	7	5	175	4	0	184	364
05:15 PM	10	1	5	0	16	1	174	1	2	178	3	0	8	0	11	8	147	5	0	160	365
05:30 PM	7	3	2	0	12	8	147	3	0	158	7	1	10	0	18	2	144	13	0	159	347
05:45 PM	7	1	2	0	10	3	147	2	2	154	4	0	11	0	15	4	131	6	0	141	320
Total	31	7	13	0	51	19	617	10	4	650	14	1	36	0	51	19	597	28	0	644	1396
Grand Total	67	14	24	2	107	28	1221	25	6	1280	29	2	89	1	121	41	1160	57	0	1258	2766
Apprch %	62.6	13.1	22.4	1.9		2.2	95.4	2	0.5		24	1.7	73.6	0.8		3.3	92.2	4.5	0		
Total %	2.4	0.5	0.9	0.1	3.9	1	44.1	0.9	0.2	46.3	1	0.1	3.2	0	4.4	1.5	41.9	2.1	0	45.5	

	Williamsburg Shopping Ctr Southbound				Monticello Ave Westbound				Williamsburg Shopping Ctr Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	8	1	0	9	1	153	**5**	159	4	0	**11**	15	4	148	6	158	341
05:00 PM	7	2	4	13	7	149	4	160	0	0	7	7	5	**175**	4	**184**	**364**
05:15 PM	**10**	1	**5**	**16**	1	**174**	1	**176**	3	0	8	11	**8**	147	5	160	363
05:30 PM	7	**3**	2	12	**8**	147	3	158	**7**	**1**	10	**18**	2	144	**13**	159	347
Total Volume	32	7	11	50	17	623	13	653	14	1	36	51	19	614	28	661	1415
% App. Total	64	14	22		2.6	95.4	2		27.5	2	70.6		2.9	92.9	4.2		
PHF	.800	.583	.550	.781	.531	.895	.650	.928	.500	.250	.818	.708	.594	.877	.538	.898	.972

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File Name : 4-Garrison Dr and Monticello Ave AM
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Groups Printed- Car

	Garrison Dr Southbound				Monticello Ave Westbound				Monticello Ave Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	1	0	0	1	1	25	0	26	34	1	0	35	62
06:45 AM	0	0	1	1	1	44	0	45	39	1	0	40	86
Total	1	0	1	2	2	69	0	71	73	2	0	75	148
07:00 AM	0	1	1	2	2	41	0	43	55	0	1	56	101
07:15 AM	0	1	1	2	0	38	0	38	64	0	1	65	105
07:30 AM	1	1	0	2	0	80	0	80	65	1	1	67	149
07:45 AM	3	1	0	4	1	92	0	93	85	2	0	87	184
Total	4	4	2	10	3	251	0	254	269	3	3	275	539
08:00 AM	2	1	0	3	0	99	0	99	76	2	1	79	181
08:15 AM	4	0	0	4	1	95	0	96	95	2	1	98	198
Grand Total	11	5	3	19	6	514	0	520	513	9	5	527	1066
Apprch %	57.9	26.3	15.8		1.2	98.8	0		97.3	1.7	0.9		
Total %	1	0.5	0.3	1.8	0.6	48.2	0	48.8	48.1	0.8	0.5	49.4	

	Garrison Dr Southbound			Monticello Ave Westbound			Monticello Ave Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	1	**1**	2	0	80	80	65	1	66	148
07:45 AM	3	1	**4**	**1**	92	93	85	**2**	87	184
08:00 AM	2	1	3	0	**99**	**99**	76	2	78	180
08:15 AM	**4**	0	4	1	95	96	**95**	2	**97**	**197**
Total Volume	10	3	13	2	366	368	321	7	328	709
% App. Total	76.9	23.1		0.5	99.5		97.9	2.1		
PHF	.625	.750	.813	.500	.924	.929	.845	.875	.845	.900

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File Name : 4-Garrison Dr and Monticello Ave AM
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Groups Printed- Truck

	Garrison Dr Southbound				Monticello Ave Westbound				Monticello Ave Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	0	0	0	0	0	2	0	2	2	0	0	2	4
06:45 AM	0	0	0	0	0	2	0	2	1	0	0	1	3
Total	0	0	0	0	0	4	0	4	3	0	0	3	7
07:00 AM	0	0	0	0	0	2	0	2	1	0	0	1	3
07:15 AM	0	0	0	0	0	1	0	1	3	0	0	3	4
07:30 AM	0	0	0	0	0	3	0	3	0	0	0	0	3
07:45 AM	0	0	0	0	0	1	0	1	2	0	0	2	3
Total	0	0	0	0	0	7	0	7	6	0	0	6	13
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
08:15 AM	0	0	0	0	0	4	0	4	2	0	0	2	6
Grand Total	0	0	0	0	0	16	0	16	11	0	0	11	27
Apprch %	0	0	0		0	100	0		100	0	0		
Total %	0	0	0	0	0	59.3	0	59.3	40.7	0	0	40.7	

	Garrison Dr Southbound			Monticello Ave Westbound			Monticello Ave Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 06:30 AM										
06:30 AM	0	0	0	0	**2**	**2**	2	0	2	**4**
06:45 AM	0	0	0	0	2	2	1	0	1	3
07:00 AM	0	0	0	0	2	2	1	0	1	3
07:15 AM	0	0	0	0	1	1	**3**	0	**3**	4
Total Volume	0	0	0	0	7	7	7	0	7	14
% App. Total	0	0		0	100		100	0		
PHF	.000	.000	.000	.000	.875	.875	.583	.000	.583	.875

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Groups Printed- Combined

	Garrison Dr Southbound				Monticello Ave Westbound				Monticello Ave Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	1	0	0	1	1	27	0	28	36	1	0	37	66
06:45 AM	0	0	1	1	1	46	0	47	40	1	0	41	89
Total	1	0	1	2	2	73	0	75	76	2	0	78	155
07:00 AM	0	1	1	2	2	43	0	45	56	0	1	57	104
07:15 AM	0	1	1	2	0	39	0	39	67	0	1	68	109
07:30 AM	1	1	0	2	0	83	0	83	65	1	1	67	152
07:45 AM	3	1	0	4	1	93	0	94	87	2	0	89	187
Total	4	4	2	10	3	258	0	261	275	3	3	281	552
08:00 AM	2	1	0	3	0	100	0	100	76	2	1	79	182
08:15 AM	4	0	0	4	1	99	0	100	97	2	1	100	204
Grand Total	11	5	3	19	6	530	0	536	524	9	5	538	1093
Apprch %	57.9	26.3	15.8		1.1	98.9	0		97.4	1.7	0.9		
Total %	1	0.5	0.3	1.7	0.5	48.5	0	49	47.9	0.8	0.5	49.2	

	Garrison Dr Southbound			Monticello Ave Westbound			Monticello Ave Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	1	**1**	2	0	83	83	65	1	66	151
07:45 AM	3	1	**4**	**1**	93	94	87	**2**	89	187
08:00 AM	2	1	3	0	**100**	**100**	76	2	78	181
08:15 AM	**4**	0	4	1	99	100	**97**	2	**99**	**203**
Total Volume	10	3	13	2	375	377	325	7	332	722
% App. Total	76.9	23.1		0.5	99.5		97.9	2.1		
PHF	.625	.750	.813	.500	.938	.943	.838	.875	.838	.889

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Groups Printed- Car

	Garrison Dr Southbound				Monticello Ave Westbound				Monticello Ave Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	6	9	2	17	8	152	0	160	146	4	0	150	327
04:15 PM	4	4	0	8	7	178	0	185	140	6	1	147	340
04:30 PM	5	3	2	10	7	140	0	147	158	7	0	165	322
04:45 PM	5	5	0	10	8	159	0	167	153	2	1	156	333
Total	20	21	4	45	30	629	0	659	597	19	2	618	1322
05:00 PM	2	3	0	5	9	163	0	172	174	9	0	183	360
05:15 PM	3	4	2	9	9	180	0	189	160	5	0	165	363
05:30 PM	4	4	1	9	8	155	0	163	157	4	0	161	333
05:45 PM	8	5	0	13	5	154	0	159	139	6	0	145	317
Total	17	16	3	36	31	652	0	683	630	24	0	654	1373
Grand Total	37	37	7	81	61	1281	0	1342	1227	43	2	1272	2695
Apprch %	45.7	45.7	8.6		4.5	95.5	0		96.5	3.4	0.2		
Total %	1.4	1.4	0.3	3	2.3	47.5	0	49.8	45.5	1.6	0.1	47.2	

	Garrison Dr Southbound			Monticello Ave Westbound			Monticello Ave Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	**5**	**5**	**10**	8	159	167	153	2	155	332
05:00 PM	2	3	5	**9**	163	172	**174**	**9**	**183**	360
05:15 PM	3	4	7	9	**180**	**189**	160	5	165	**361**
05:30 PM	4	4	8	8	155	163	157	4	161	332
Total Volume	14	16	30	34	657	691	644	20	664	1385
% App. Total	46.7	53.3		4.9	95.1		97	3		
PHF	.700	.800	.750	.944	.913	.914	.925	.556	.907	.959

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Groups Printed- Truck

	Garrison Dr Southbound				Monticello Ave Westbound				Monticello Ave Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	2	0	2	0	1	0	1	3
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
04:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	2
Total	0	0	0	0	0	6	0	6	0	1	0	1	7
05:00 PM	0	0	0	0	0	1	0	1	2	0	0	2	3
05:15 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	3	0	3	3	0	0	3	6
Grand Total	0	0	0	0	0	9	0	9	3	1	0	4	13
Apprch %	0	0	0		0	100	0		75	25	0		
Total %	0	0	0	0	0	69.2	0	69.2	23.1	7.7	0	30.8	

	Garrison Dr Southbound			Monticello Ave Westbound			Monticello Ave Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	0	0	0	1	1	0	0	0	1
04:45 PM	0	0	0	0	**2**	**2**	0	0	0	2
05:00 PM	0	0	0	0	1	1	**2**	0	**2**	**3**
05:15 PM	0	0	0	0	1	1	1	0	1	2
Total Volume	0	0	0	0	5	5	3	0	3	8
% App. Total	0	0		0	100		100	0		
PHF	.000	.000	.000	.000	.625	.625	.375	.000	.375	.667

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Groups Printed- Combined

	Garrison Dr Southbound				Monticello Ave Westbound				Monticello Ave Eastbound				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	6	9	2	17	8	154	0	162	146	5	0	151	330
04:15 PM	4	4	0	8	7	179	0	186	140	6	1	147	341
04:30 PM	5	3	2	10	7	141	0	148	158	7	0	165	323
04:45 PM	5	5	0	10	8	161	0	169	153	2	1	156	335
Total	20	21	4	45	30	635	0	665	597	20	2	619	1329
05:00 PM	2	3	0	5	9	164	0	173	176	9	0	185	363
05:15 PM	3	4	2	9	9	181	0	190	161	5	0	166	365
05:30 PM	4	4	1	9	8	156	0	164	157	4	0	161	334
05:45 PM	8	5	0	13	5	154	0	159	139	6	0	145	317
Total	17	16	3	36	31	655	0	686	633	24	0	657	1379
Grand Total	37	37	7	81	61	1290	0	1351	1230	44	2	1276	2708
Apprch %	45.7	45.7	8.6		4.5	95.5	0		96.4	3.4	0.2		
Total %	1.4	1.4	0.3	3	2.3	47.6	0	49.9	45.4	1.6	0.1	47.1	

	Garrison Dr Southbound			Monticello Ave Westbound			Monticello Ave Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	**5**	**5**	**10**	8	161	169	153	2	155	334
05:00 PM	2	3	5	**9**	164	173	**176**	**9**	**185**	**363**
05:15 PM	3	4	7	9	**181**	**190**	161	5	166	363
05:30 PM	4	4	8	8	156	164	157	4	161	333
Total Volume	14	16	30	34	662	696	647	20	667	1393
% App. Total	46.7	53.3		4.9	95.1		97	3		
PHF	.700	.800	.750	.944	.914	.916	.919	.556	.901	.959

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Groups Printed- Car

	Richmond Rd Southbound					Lafayette St Westbound					Richmond Rd Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	14	15	5	0	34	1	10	0	0	11	0	5	3	0	8	14	8	13	1	36	89
06:45 AM	23	19	7	0	49	4	19	0	0	23	0	8	3	0	11	9	9	20	2	40	123
Total	37	34	12	0	83	5	29	0	0	34	0	13	6	0	19	23	17	33	3	76	212
07:00 AM	22	36	14	0	72	6	15	1	1	23	0	13	6	0	19	11	15	28	2	56	170
07:15 AM	17	41	24	0	82	10	17	0	0	27	1	10	5	0	16	12	17	27	1	57	182
07:30 AM	32	43	15	0	90	15	30	1	0	46	1	26	17	0	44	15	28	24	1	68	248
07:45 AM	36	58	30	1	125	11	46	0	0	57	0	28	13	0	41	23	33	27	2	85	308
Total	107	178	83	1	369	42	108	2	1	153	2	77	41	0	120	61	93	106	6	266	908
08:00 AM	43	56	24	2	125	13	40	3	0	56	1	24	13	0	38	24	21	22	1	68	287
08:15 AM	48	48	30	0	126	8	36	3	0	47	1	32	10	0	43	25	38	32	1	96	312
Grand Total	235	316	149	3	703	68	213	8	1	290	4	146	70	0	220	133	169	193	11	506	1719
Apprch %	33.4	45	21.2	0.4		23.4	73.4	2.8	0.3		1.8	66.4	31.8	0		26.3	33.4	38.1	2.2		
Total %	13.7	18.4	8.7	0.2	40.9	4	12.4	0.5	0.1	16.9	0.2	8.5	4.1	0	12.8	7.7	9.8	11.2	0.6	29.4	

	Richmond Rd Southbound				Lafayette St Westbound				Richmond Rd Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	32	43	15	90	**15**	30	1	46	**1**	26	**17**	**44**	15	28	24	67	247
07:45 AM	36	**58**	**30**	124	11	**46**	0	**57**	0	28	13	41	23	33	27	83	305
08:00 AM	43	56	24	123	13	40	**3**	56	1	24	13	38	24	21	22	67	284
08:15 AM	**48**	48	30	**126**	8	36	3	47	1	**32**	10	43	**25**	**38**	**32**	**95**	**311**
Total Volume	159	205	99	463	47	152	7	206	3	110	53	166	87	120	105	312	1147
% App. Total	34.3	44.3	21.4		22.8	73.8	3.4		1.8	66.3	31.9		27.9	38.5	33.7		
PHF	.828	.884	.825	.919	.783	.826	.583	.904	.750	.859	.779	.943	.870	.789	.820	.821	.922

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Groups Printed- Truck

	Richmond Rd Southbound					Lafayette St Westbound					Richmond Rd Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	0	0	1	0	1	0	0	0	0	0	0	1	2	0	3	0	1	1	0	2	6
06:45 AM	0	2	1	0	3	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	7
Total	0	2	2	0	4	0	2	0	0	2	0	1	2	0	3	0	3	1	0	4	13
07:00 AM	1	3	0	0	4	0	0	0	0	0	0	1	1	0	2	0	1	0	0	1	7
07:15 AM	1	4	0	0	5	0	0	3	0	3	0	0	0	0	0	1	1	1	0	3	11
07:30 AM	0	2	0	0	2	0	2	0	0	2	0	1	2	0	3	0	0	0	0	0	7
07:45 AM	1	5	0	0	6	2	1	0	0	3	0	4	0	0	4	1	0	0	0	1	14
Total	3	14	0	0	17	2	3	3	0	8	0	6	3	0	9	2	2	1	0	5	39
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	3	2	0	5	0	0	1	0	1	6
08:15 AM	1	2	0	0	3	1	1	0	0	2	0	1	1	0	2	1	0	1	0	2	9
Grand Total	4	18	2	0	24	3	6	3	0	12	0	11	8	0	19	3	5	4	0	12	67
Apprch %	16.7	75	8.3	0		25	50	25	0		0	57.9	42.1	0		25	41.7	33.3	0		
Total %	6	26.9	3	0	35.8	4.5	9	4.5	0	17.9	0	16.4	11.9	0	28.4	4.5	7.5	6	0	17.9	

	Richmond Rd Southbound				Lafayette St Westbound				Richmond Rd Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**1**	3	0	4	0	0	0	0	0	1	1	2	0	**1**	0	1	7
07:15 AM	1	4	0	5	0	0	**3**	**3**	0	0	0	0	**1**	1	**1**	**3**	11
07:30 AM	0	2	0	2	0	**2**	0	2	0	1	**2**	3	0	0	0	0	7
07:45 AM	1	**5**	0	**6**	**2**	1	0	3	0	**4**	0	**4**	1	0	0	1	**14**
Total Volume	3	14	0	17	2	3	3	8	0	6	3	9	2	2	1	5	39
% App. Total	17.6	82.4	0		25	37.5	37.5		0	66.7	33.3		40	40	20		
PHF	.750	.700	.000	.708	.250	.375	.250	.667	.000	.375	.375	.563	.500	.500	.250	.417	.696

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Groups Printed- Combined

	Richmond Rd Southbound					Lafayette St Westbound					Richmond Rd Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	14	15	6	0	35	1	10	0	0	11	0	6	5	0	11	14	9	14	1	38	95
06:45 AM	23	21	8	0	52	4	21	0	0	25	0	8	3	0	11	9	11	20	2	42	130
Total	37	36	14	0	87	5	31	0	0	36	0	14	8	0	22	23	20	34	3	80	225
07:00 AM	23	39	14	0	76	6	15	1	1	23	0	14	7	0	21	11	16	28	2	57	177
07:15 AM	18	45	24	0	87	10	17	3	0	30	1	10	5	0	16	13	18	28	1	60	193
07:30 AM	32	45	15	0	92	15	32	1	0	48	1	27	19	0	47	15	28	24	1	68	255
07:45 AM	37	63	30	1	131	13	47	0	0	60	0	32	13	0	45	24	33	27	2	86	322
Total	110	192	83	1	386	44	111	5	1	161	2	83	44	0	129	63	95	107	6	271	947
08:00 AM	43	56	24	2	125	13	40	3	0	56	1	27	15	0	43	24	21	23	1	69	293
08:15 AM	49	50	30	0	129	9	37	3	0	49	1	33	11	0	45	26	38	33	1	98	321
Grand Total	239	334	151	3	727	71	219	11	1	302	4	157	78	0	239	136	174	197	11	518	1786
Apprch %	32.9	45.9	20.8	0.4		23.5	72.5	3.6	0.3		1.7	65.7	32.6	0		26.3	33.6	38	2.1		
Total %	13.4	18.7	8.5	0.2	40.7	4	12.3	0.6	0.1	16.9	0.2	8.8	4.4	0	13.4	7.6	9.7	11	0.6	29	

	Richmond Rd Southbound				Lafayette St Westbound				Richmond Rd Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	32	45	15	92	**15**	32	1	48	**1**	27	**19**	**47**	15	28	24	67	254
07:45 AM	37	**63**	**30**	**130**	13	**47**	0	**60**	0	32	13	45	24	33	27	84	319
08:00 AM	43	56	24	123	13	40	**3**	56	1	27	15	43	24	21	23	68	290
08:15 AM	**49**	50	30	129	9	37	3	49	1	**33**	11	45	**26**	**38**	**33**	**97**	**320**
Total Volume	161	214	99	474	50	156	7	213	3	119	58	180	89	120	107	316	1183
% App. Total	34	45.1	20.9		23.5	73.2	3.3		1.7	66.1	32.2		28.2	38	33.9		
PHF	.821	.849	.825	.912	.833	.830	.583	.888	.750	.902	.763	.957	.856	.789	.811	.814	.924

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Groups Printed- Car

	Richmond Rd Southbound					Lafayette St Westbound					Richmond Rd Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	69	60	22	0	151	44	51	4	1	100	5	63	35	0	103	23	57	62	1	143	497
04:15 PM	77	60	29	0	166	31	64	2	1	98	3	45	49	1	98	20	58	60	4	142	504
04:30 PM	55	56	22	0	133	38	53	2	0	93	2	69	34	0	105	24	75	61	1	161	492
04:45 PM	71	50	21	0	142	29	69	3	0	101	3	51	36	0	90	26	66	61	3	156	489
Total	272	226	94	0	592	142	237	11	2	392	13	228	154	1	396	93	256	244	9	602	1982
05:00 PM	71	62	25	3	161	41	71	3	1	116	8	96	34	0	138	21	86	51	2	160	575
05:15 PM	65	60	22	0	147	46	77	3	0	126	2	89	51	2	144	17	80	54	1	152	569
05:30 PM	58	61	27	0	146	42	66	4	1	113	1	66	39	0	106	24	63	61	2	150	515
05:45 PM	73	64	25	2	164	32	58	5	0	95	2	77	30	0	109	18	54	50	1	123	491
Total	267	247	99	5	618	161	272	15	2	450	13	328	154	2	497	80	283	216	6	585	2150
Grand Total	539	473	193	5	1210	303	509	26	4	842	26	556	308	3	893	173	539	460	15	1187	4132
Apprch %	44.5	39.1	16	0.4		36	60.5	3.1	0.5		2.9	62.3	34.5	0.3		14.6	45.4	38.8	1.3		
Total %	13	11.4	4.7	0.1	29.3	7.3	12.3	0.6	0.1	20.4	0.6	13.5	7.5	0.1	21.6	4.2	13	11.1	0.4	28.7	

	Richmond Rd Southbound				Lafayette St Westbound				Richmond Rd Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	71	62	25	158	41	71	3	115	**8**	**96**	34	138	21	**86**	51	**158**	**569**
05:15 PM	65	60	22	147	**46**	**77**	3	**126**	2	89	**51**	**142**	17	80	54	151	566
05:30 PM	58	61	**27**	146	42	66	4	112	1	66	39	106	**24**	63	**61**	148	512
05:45 PM	**73**	**64**	25	**162**	32	58	**5**	95	2	77	30	109	18	54	50	122	488
Total Volume	267	247	99	613	161	272	15	448	13	328	154	495	80	283	216	579	2135
% App. Total	43.6	40.3	16.2		35.9	60.7	3.3		2.6	66.3	31.1		13.8	48.9	37.3		
PHF	.914	.965	.917	.946	.875	.883	.750	.889	.406	.854	.755	.871	.833	.823	.885	.916	.938

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Groups Printed- Truck

	Richmond Rd Southbound					Lafayette St Westbound					Richmond Rd Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	2	0	0	2	1	0	0	0	1	0	3	1	0	4	0	1	0	0	1	8
04:15 PM	1	2	0	0	3	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	5
04:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4
04:45 PM	1	2	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
Total	2	8	0	0	10	1	1	0	0	2	0	6	2	0	8	0	1	0	0	1	21
05:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	0	0	2	0	2	5
05:15 PM	1	2	0	0	3	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	5
05:30 PM	0	1	0	0	1	1	0	0	0	1	0	1	1	0	2	0	0	0	0	0	4
05:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	1	6	0	0	7	1	1	0	0	2	0	2	2	0	4	0	0	3	0	3	16
Grand Total	3	14	0	0	17	2	2	0	0	4	0	8	4	0	12	0	1	3	0	4	37
Apprch %	17.6	82.4	0	0		50	50	0	0		0	66.7	33.3	0		0	25	75	0		
Total %	8.1	37.8	0	0	45.9	5.4	5.4	0	0	10.8	0	21.6	10.8	0	32.4	0	2.7	8.1	0	10.8	

	Richmond Rd Southbound				Lafayette St Westbound				Richmond Rd Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	**2**	0	2	**1**	0	0	**1**	0	**3**	**1**	**4**	0	**1**	0	**1**	**8**
04:15 PM	**1**	2	0	**3**	0	**1**	0	1	0	1	0	1	0	0	0	0	5
04:30 PM	0	2	0	2	0	0	0	0	0	1	1	2	0	0	0	0	4
04:45 PM	1	2	0	3	0	0	0	0	0	1	0	1	0	0	0	0	4
Total Volume	2	8	0	10	1	1	0	2	0	6	2	8	0	1	0	1	21
% App. Total	20	80	0		50	50	0		0	75	25		0	100	0		
PHF	.500	1.00	.000	.833	.250	.250	.000	.500	.000	.500	.500	.500	.000	.250	.000	.250	.656

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	Richmond Rd Southbound					Lafayette St Westbound					Richmond Rd Northbound					Monticello Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	69	62	22	0	153	45	51	4	1	101	5	66	36	0	107	23	58	62	1	144	505
04:15 PM	78	62	29	0	169	31	65	2	1	99	3	46	49	1	99	20	58	60	4	142	509
04:30 PM	55	58	22	0	135	38	53	2	0	93	2	70	35	0	107	24	75	61	1	161	496
04:45 PM	72	52	21	0	145	29	69	3	0	101	3	52	36	0	91	26	66	61	3	156	493
Total	274	234	94	0	602	143	238	11	2	394	13	234	156	1	404	93	257	244	9	603	2003
05:00 PM	71	63	25	3	162	41	71	3	1	116	8	97	35	0	140	21	86	53	2	162	580
05:15 PM	66	62	22	0	150	46	78	3	0	127	2	89	51	2	144	17	80	55	1	153	574
05:30 PM	58	62	27	0	147	43	66	4	1	114	1	67	40	0	108	24	63	61	2	150	519
05:45 PM	73	66	25	2	166	32	58	5	0	95	2	77	30	0	109	18	54	50	1	123	493
Total	268	253	99	5	625	162	273	15	2	452	13	330	156	2	501	80	283	219	6	588	2166
Grand Total	542	487	193	5	1227	305	511	26	4	846	26	564	312	3	905	173	540	463	15	1191	4169
Apprch %	44.2	39.7	15.7	0.4		36.1	60.4	3.1	0.5		2.9	62.3	34.5	0.3		14.5	45.3	38.9	1.3		
Total %	13	11.7	4.6	0.1	29.4	7.3	12.3	0.6	0.1	20.3	0.6	13.5	7.5	0.1	21.7	4.1	13	11.1	0.4	28.6	

	Richmond Rd Southbound				Lafayette St Westbound				Richmond Rd Northbound				Monticello Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**72**	52	21	145	29	69	3	101	3	52	36	91	**26**	66	**61**	153	490
05:00 PM	71	**63**	25	**159**	41	71	3	115	**8**	**97**	35	140	21	**86**	53	**160**	**574**
05:15 PM	66	62	22	150	**46**	**78**	3	**127**	2	89	**51**	**142**	17	80	55	152	571
05:30 PM	58	62	**27**	147	43	66	**4**	113	1	67	40	108	24	63	61	148	516
Total Volume	267	239	95	601	159	284	13	456	14	305	162	481	88	295	230	613	2151
% App. Total	44.4	39.8	15.8		34.9	62.3	2.9		2.9	63.4	33.7		14.4	48.1	37.5		
PHF	.927	.948	.880	.945	.864	.910	.813	.898	.438	.786	.794	.847	.846	.858	.943	.958	.937

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Groups Printed- Car

	Richmond Rd Southbound					Dunkin Donuts Westbound					Richmond Rd Northbound					Mt Vernon Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	1	29	3	1	34	6	0	2	0	8	3	17	0	0	20	1	0	3	1	5	67
06:45 AM	8	42	9	0	59	5	1	7	2	15	8	23	0	2	33	2	0	2	4	8	115
Total	9	71	12	1	93	11	1	9	2	23	11	40	0	2	53	3	0	5	5	13	182
07:00 AM	4	69	13	3	89	13	0	4	0	17	5	42	0	2	49	5	0	1	3	9	164
07:15 AM	6	72	12	0	90	10	1	6	1	18	9	40	0	0	49	2	2	1	3	8	165
07:30 AM	3	83	12	0	98	10	5	4	1	20	13	50	0	1	64	3	2	3	2	10	192
07:45 AM	9	108	13	0	130	11	2	13	0	26	6	59	0	0	65	2	2	5	4	13	234
Total	22	332	50	3	407	44	8	27	2	81	33	191	0	3	227	12	6	10	12	40	755
08:00 AM	7	115	12	0	134	6	1	11	0	18	6	55	0	5	66	0	1	6	2	9	227
08:15 AM	10	101	9	0	120	9	0	16	0	25	13	57	0	0	70	4	0	5	1	10	225
Grand Total	48	619	83	4	754	70	10	63	4	147	63	343	0	10	416	19	7	26	20	72	1389
Apprch %	6.4	82.1	11	0.5		47.6	6.8	42.9	2.7		15.1	82.5	0	2.4		26.4	9.7	36.1	27.8		
Total %	3.5	44.6	6	0.3	54.3	5	0.7	4.5	0.3	10.6	4.5	24.7	0	0.7	29.9	1.4	0.5	1.9	1.4	5.2	

	Richmond Rd Southbound				Dunkin Donuts Westbound				Richmond Rd Northbound				Mt Vernon Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	3	83	12	98	10	**5**	4	19	**13**	50	0	63	3	**2**	3	8	188
07:45 AM	9	108	**13**	130	**11**	2	13	**26**	6	**59**	0	65	2	2	5	**9**	**230**
08:00 AM	7	**115**	12	**134**	6	1	11	18	6	55	0	61	0	1	**6**	7	220
08:15 AM	**10**	101	9	120	9	0	**16**	25	13	57	0	**70**	**4**	0	5	9	224
Total Volume	29	407	46	482	36	8	44	88	38	221	0	259	9	5	19	33	862
% App. Total	6	84.4	9.5		40.9	9.1	50		14.7	85.3	0		27.3	15.2	57.6		
PHF	.725	.885	.885	.899	.818	.400	.688	.846	.731	.936	.000	.925	.563	.625	.792	.917	.937

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Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
06:45 AM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
07:00 AM	0	4	1	0	5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	6
07:15 AM	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	6
07:30 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
07:45 AM	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	11
Total	0	16	1	0	17	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	26
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	5
08:15 AM	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	6
Grand Total	0	23	1	0	24	0	0	0	0	0	0	19	0	0	19	0	0	0	0	0	43
Apprch %	0	95.8	4.2	0		0	0	0	0		0	100	0	0		0	0	0	0		
Total %	0	53.5	2.3	0	55.8	0	0	0	0	0	0	44.2	0	0	44.2	0	0	0	0	0	

	Richmond Rd Southbound				Dunkin Donuts Westbound				Richmond Rd Northbound				Mt Vernon Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	4	**1**	**5**	0	0	0	0	0	1	0	1	0	0	0	0	6
07:15 AM	0	**5**	0	5	0	0	0	0	0	1	0	1	0	0	0	0	6
07:30 AM	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	3
07:45 AM	0	5	0	5	0	0	0	0	0	**6**	0	**6**	0	0	0	0	**11**
Total Volume	0	16	1	17	0	0	0	0	0	9	0	9	0	0	0	0	26
% App. Total	0	94.1	5.9		0	0	0		0	100	0		0	0	0		
PHF	.000	.800	.250	.850	.000	.000	.000	.000	.000	.375	.000	.375	.000	.000	.000	.000	.591

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	Richmond Rd Southbound					Dunkin Donuts Westbound					Richmond Rd Northbound					Mt Vernon Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	1	30	3	1	35	6	0	2	0	8	3	19	0	0	22	1	0	3	1	5	70
06:45 AM	8	45	9	0	62	5	1	7	2	15	8	23	0	2	33	2	0	2	4	8	118
Total	9	75	12	1	97	11	1	9	2	23	11	42	0	2	55	3	0	5	5	13	188
07:00 AM	4	73	14	3	94	13	0	4	0	17	5	43	0	2	50	5	0	1	3	9	170
07:15 AM	6	77	12	0	95	10	1	6	1	18	9	41	0	0	50	2	2	1	3	8	171
07:30 AM	3	85	12	0	100	10	5	4	1	20	13	51	0	1	65	3	2	3	2	10	195
07:45 AM	9	113	13	0	135	11	2	13	0	26	6	65	0	0	71	2	2	5	4	13	245
Total	22	348	51	3	424	44	8	27	2	81	33	200	0	3	236	12	6	10	12	40	781
08:00 AM	7	115	12	0	134	6	1	11	0	18	6	60	0	5	71	0	1	6	2	9	232
08:15 AM	10	104	9	0	123	9	0	16	0	25	13	60	0	0	73	4	0	5	1	10	231
Grand Total	48	642	84	4	778	70	10	63	4	147	63	362	0	10	435	19	7	26	20	72	1432
Apprch %	6.2	82.5	10.8	0.5		47.6	6.8	42.9	2.7		14.5	83.2	0	2.3		26.4	9.7	36.1	27.8		
Total %	3.4	44.8	5.9	0.3	54.3	4.9	0.7	4.4	0.3	10.3	4.4	25.3	0	0.7	30.4	1.3	0.5	1.8	1.4	5	

	Richmond Rd Southbound				Dunkin Donuts Westbound				Richmond Rd Northbound				Mt Vernon Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	3	85	12	100	10	**5**	4	19	**13**	51	0	64	3	**2**	3	8	191
07:45 AM	9	113	**13**	**135**	**11**	2	13	**26**	6	**65**	0	71	2	2	5	**9**	**241**
08:00 AM	7	**115**	12	134	6	1	11	18	6	60	0	66	0	1	**6**	7	225
08:15 AM	**10**	104	9	123	9	0	**16**	25	13	60	0	**73**	**4**	0	5	9	230
Total Volume	29	417	46	492	36	8	44	88	38	236	0	274	9	5	19	33	887
% App. Total	5.9	84.8	9.3		40.9	9.1	50		13.9	86.1	0		27.3	15.2	57.6		
PHF	.725	.907	.885	.911	.818	.400	.688	.846	.731	.908	.000	.938	.563	.625	.792	.917	.920

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Groups Printed- Car

	Richmond Rd Southbound					Dunkin Donuts Westbound					Richmond Rd Northbound					Mt Vernon Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	16	139	9	2	166	12	2	2	1	17	5	165	0	0	170	10	3	26	0	39	392
04:15 PM	15	152	6	0	173	12	4	5	0	21	7	129	0	0	136	9	2	19	4	34	364
04:30 PM	19	117	6	0	142	10	3	7	0	20	5	161	0	0	166	10	1	21	2	34	362
04:45 PM	12	128	10	0	150	16	3	2	3	24	2	141	0	0	143	12	3	18	1	34	351
Total	62	536	31	2	631	50	12	16	4	82	19	596	0	0	615	41	9	84	7	141	1469
05:00 PM	16	147	6	0	169	10	5	4	1	20	5	184	1	0	190	11	1	21	0	33	412
05:15 PM	12	131	7	0	150	14	1	4	3	22	4	180	0	4	188	13	0	23	2	38	398
05:30 PM	25	138	4	0	167	8	2	0	0	10	3	171	0	0	174	14	1	25	1	41	392
05:45 PM	7	151	6	0	164	8	1	3	0	12	6	150	0	2	158	3	0	18	1	22	356
Total	60	567	23	0	650	40	9	11	4	64	18	685	1	6	710	41	2	87	4	134	1558
Grand Total	122	1103	54	2	1281	90	21	27	8	146	37	1281	1	6	1325	82	11	171	11	275	3027
Apprch %	9.5	86.1	4.2	0.2		61.6	14.4	18.5	5.5		2.8	96.7	0.1	0.5		29.8	4	62.2	4		
Total %	4	36.4	1.8	0.1	42.3	3	0.7	0.9	0.3	4.8	1.2	42.3	0	0.2	43.8	2.7	0.4	5.6	0.4	9.1	

	Richmond Rd Southbound				Dunkin Donuts Westbound				Richmond Rd Northbound				Mt Vernon Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	16	147	6	**169**	10	**5**	**4**	**19**	5	**184**	**1**	**190**	11	**1**	21	33	**411**
05:15 PM	12	131	**7**	150	**14**	1	4	19	4	180	0	184	13	0	23	36	389
05:30 PM	**25**	138	4	167	8	2	0	10	3	171	0	174	**14**	1	**25**	**40**	391
05:45 PM	7	**151**	6	164	8	1	3	12	**6**	150	0	156	3	0	18	21	353
Total Volume	60	567	23	650	40	9	11	60	18	685	1	704	41	2	87	130	1544
% App. Total	9.2	87.2	3.5		66.7	15	18.3		2.6	97.3	0.1		31.5	1.5	66.9		
PHF	.600	.939	.821	.962	.714	.450	.688	.789	.750	.931	.250	.926	.732	.500	.870	.813	.939

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	Richmond Rd Southbound					Dunkin Donuts Westbound					Richmond Rd Northbound					Mt Vernon Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	6
04:15 PM	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	6
04:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
04:45 PM	0	6	0	0	6	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	8
Total	0	14	0	0	14	0	0	0	0	0	0	7	0	0	7	0	0	1	0	1	22
05:00 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
05:15 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
05:30 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
05:45 PM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	6	0	0	6	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	12
Grand Total	0	20	0	0	20	0	0	0	0	0	0	13	0	0	13	0	0	1	0	1	34
Apprch %	0	100	0	0		0	0	0	0		0	100	0	0		0	0	100	0		
Total %	0	58.8	0	0	58.8	0	0	0	0	0	0	38.2	0	0	38.2	0	0	2.9	0	2.9	

	Richmond Rd Southbound				Dunkin Donuts Westbound				Richmond Rd Northbound				Mt Vernon Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	2	0	2	0	0	0	0	0	**4**	0	**4**	0	0	0	0	6
04:15 PM	0	5	0	5	0	0	0	0	0	1	0	1	0	0	0	0	6
04:30 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
04:45 PM	0	**6**	0	**6**	0	0	0	0	0	1	0	1	0	0	**1**	**1**	**8**
Total Volume	0	14	0	14	0	0	0	0	0	7	0	7	0	0	1	1	22
% App. Total	0	100	0		0	0	0		0	100	0		0	0	100		
PHF	.000	.583	.000	.583	.000	.000	.000	.000	.000	.438	.000	.438	.000	.000	.250	.250	.688

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	Richmond Rd Southbound					Dunkin Donuts Westbound					Richmond Rd Northbound					Mt Vernon Ave Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	16	141	9	2	168	12	2	2	1	17	5	169	0	0	174	10	3	26	0	39	398
04:15 PM	15	157	6	0	178	12	4	5	0	21	7	130	0	0	137	9	2	19	4	34	370
04:30 PM	19	118	6	0	143	10	3	7	0	20	5	162	0	0	167	10	1	21	2	34	364
04:45 PM	12	134	10	0	156	16	3	2	3	24	2	142	0	0	144	12	3	19	1	35	359
Total	62	550	31	2	645	50	12	16	4	82	19	603	0	0	622	41	9	85	7	142	1491
05:00 PM	16	148	6	0	170	10	5	4	1	20	5	187	1	0	193	11	1	21	0	33	416
05:15 PM	12	133	7	0	152	14	1	4	3	22	4	181	0	4	189	13	0	23	2	38	401
05:30 PM	25	139	4	0	168	8	2	0	0	10	3	173	0	0	176	14	1	25	1	41	395
05:45 PM	7	153	6	0	166	8	1	3	0	12	6	150	0	2	158	3	0	18	1	22	358
Total	60	573	23	0	656	40	9	11	4	64	18	691	1	6	716	41	2	87	4	134	1570
Grand Total	122	1123	54	2	1301	90	21	27	8	146	37	1294	1	6	1338	82	11	172	11	276	3061
Apprch %	9.4	86.3	4.2	0.2		61.6	14.4	18.5	5.5		2.8	96.7	0.1	0.4		29.7	4	62.3	4		
Total %	4	36.7	1.8	0.1	42.5	2.9	0.7	0.9	0.3	4.8	1.2	42.3	0	0.2	43.7	2.7	0.4	5.6	0.4	9	

	Richmond Rd Southbound				Dunkin Donuts Westbound				Richmond Rd Northbound				Mt Vernon Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	12	134	**10**	156	**16**	3	2	**21**	2	142	0	144	12	**3**	19	34	355
05:00 PM	16	**148**	6	**170**	10	**5**	**4**	19	**5**	**187**	**1**	**193**	11	1	21	33	**415**
05:15 PM	12	133	7	152	14	1	4	19	4	181	0	185	13	0	23	36	392
05:30 PM	**25**	139	4	168	8	2	0	10	3	173	0	176	**14**	1	**25**	**40**	394
Total Volume	65	554	27	646	48	11	10	69	14	683	1	698	50	5	88	143	1556
% App. Total	10.1	85.8	4.2		69.6	15.9	14.5		2	97.9	0.1		35	3.5	61.5		
PHF	.650	.936	.675	.950	.750	.550	.625	.821	.700	.913	.250	.904	.893	.417	.880	.894	.937

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Groups Printed- Car

	Richmond Rd Southbound				Bacon Ave Westbound				Richmond Rd Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
06:30 AM	30	0	0	30	0	0	0	0	0	11	0	11	41
06:45 AM	28	0	0	28	0	0	2	2	0	11	0	11	41
Total	58	0	0	58	0	0	2	2	0	22	0	22	82
07:00 AM	43	1	0	44	1	0	1	2	0	18	0	18	64
07:15 AM	49	2	0	51	0	0	1	1	0	17	0	17	69
07:30 AM	56	0	0	56	0	0	0	0	0	43	2	45	101
07:45 AM	79	1	0	80	1	1	0	2	0	42	0	42	124
Total	227	4	0	231	2	1	2	5	0	120	2	122	358
08:00 AM	79	1	0	80	0	0	0	0	0	36	0	36	116
08:15 AM	73	0	0	73	0	0	0	0	0	40	0	40	113
Grand Total	437	5	0	442	2	1	4	7	0	218	2	220	669
Apprch %	98.9	1.1	0		28.6	14.3	57.1		0	99.1	0.9		
Total %	65.3	0.7	0	66.1	0.3	0.1	0.6	1	0	32.6	0.3	32.9	

	Richmond Rd Southbound			Bacon Ave Westbound			Richmond Rd Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	56	0	56	0	0	0	0	**43**	**43**	99
07:45 AM	**79**	**1**	**80**	**1**	**1**	**2**	0	42	42	**124**
08:00 AM	79	1	80	0	0	0	0	36	36	116
08:15 AM	73	0	73	0	0	0	0	40	40	113
Total Volume	287	2	289	1	1	2	0	161	161	452
% App. Total	99.3	0.7		50	50		0	100		
PHF	.908	.500	.903	.250	.250	.250	.000	.936	.936	.911

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Groups Printed- Truck

	Richmond Rd Southbound				Bacon Ave Westbound				Richmond Rd Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
06:30 AM	0	0	0	0	0	0	0	0	0	3	0	3	3
06:45 AM	2	0	0	2	0	0	0	0	0	0	0	0	2
Total	2	0	0	2	0	0	0	0	0	3	0	3	5
07:00 AM	3	0	0	3	0	0	0	0	0	2	0	2	5
07:15 AM	8	0	0	8	0	0	0	0	0	0	0	0	8
07:30 AM	2	0	0	2	0	0	0	0	0	3	0	3	5
07:45 AM	5	0	0	5	0	0	0	0	0	4	0	4	9
Total	18	0	0	18	0	0	0	0	0	9	0	9	27
08:00 AM	0	0	0	0	0	0	0	0	0	6	0	6	6
08:15 AM	3	0	0	3	0	0	0	0	0	2	0	2	5
Grand Total	23	0	0	23	0	0	0	0	0	20	0	20	43
Apprch %	100	0	0		0	0	0		0	100	0		
Total %	53.5	0	0	53.5	0	0	0	0	0	46.5	0	46.5	

	Richmond Rd Southbound			Bacon Ave Westbound			Richmond Rd Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	**8**	0	**8**	0	0	0	0	0	0	8
07:30 AM	2	0	2	0	0	0	0	3	3	5
07:45 AM	5	0	5	0	0	0	0	4	4	**9**
08:00 AM	0	0	0	0	0	0	0	**6**	**6**	6
Total Volume	15	0	15	0	0	0	0	13	13	28
% App. Total	100	0		0	0		0	100		
PHF	.469	.000	.469	.000	.000	.000	.000	.542	.542	.778

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	Richmond Rd Southbound				Bacon Ave Westbound				Richmond Rd Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
06:30 AM	30	0	0	30	0	0	0	0	0	14	0	14	44
06:45 AM	30	0	0	30	0	0	2	2	0	11	0	11	43
Total	60	0	0	60	0	0	2	2	0	25	0	25	87
07:00 AM	46	1	0	47	1	0	1	2	0	20	0	20	69
07:15 AM	57	2	0	59	0	0	1	1	0	17	0	17	77
07:30 AM	58	0	0	58	0	0	0	0	0	46	2	48	106
07:45 AM	84	1	0	85	1	1	0	2	0	46	0	46	133
Total	245	4	0	249	2	1	2	5	0	129	2	131	385
08:00 AM	79	1	0	80	0	0	0	0	0	42	0	42	122
08:15 AM	76	0	0	76	0	0	0	0	0	42	0	42	118
Grand Total	460	5	0	465	2	1	4	7	0	238	2	240	712
Apprch %	98.9	1.1	0		28.6	14.3	57.1		0	99.2	0.8		
Total %	64.6	0.7	0	65.3	0.3	0.1	0.6	1	0	33.4	0.3	33.7	

	Richmond Rd Southbound			Bacon Ave Westbound			Richmond Rd Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	58	0	58	0	0	0	0	**46**	**46**	104
07:45 AM	**84**	**1**	**85**	**1**	**1**	**2**	0	46	46	**133**
08:00 AM	79	1	80	0	0	0	0	42	42	122
08:15 AM	76	0	76	0	0	0	0	42	42	118
Total Volume	297	2	299	1	1	2	0	176	176	477
% App. Total	99.3	0.7		50	50		0	100		
PHF	.884	.500	.879	.250	.250	.250	.000	.957	.957	.897

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Groups Printed- Car

	Richmond Rd Southbound				Bacon Ave Westbound				Richmond Rd Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
04:00 PM	65	3	0	68	0	1	1	2	0	90	6	96	166
04:15 PM	76	3	0	79	0	0	0	0	1	87	0	88	167
04:30 PM	68	0	0	68	4	1	0	5	1	92	0	93	166
04:45 PM	73	1	0	74	0	0	0	0	1	95	0	96	170
Total	282	7	0	289	4	2	1	7	3	364	6	373	669
05:00 PM	77	3	0	80	0	1	1	2	2	133	3	138	220
05:15 PM	68	4	0	72	2	1	1	4	0	113	3	116	192
05:30 PM	74	1	0	75	3	0	0	3	1	98	3	102	180
05:45 PM	75	0	0	75	2	0	1	3	1	89	0	90	168
Total	294	8	0	302	7	2	3	12	4	433	9	446	760
Grand Total	576	15	0	591	11	4	4	19	7	797	15	819	1429
Apprch %	97.5	2.5	0		57.9	21.1	21.1		0.9	97.3	1.8		
Total %	40.3	1	0	41.4	0.8	0.3	0.3	1.3	0.5	55.8	1	57.3	

	Richmond Rd Southbound			Bacon Ave Westbound			Richmond Rd Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	73	1	74	0	0	0	1	95	96	170
05:00 PM	**77**	3	**80**	0	**1**	1	**2**	**133**	**135**	**216**
05:15 PM	68	**4**	72	2	1	**3**	0	113	113	188
05:30 PM	74	1	75	**3**	0	3	1	98	99	177
Total Volume	292	9	301	5	2	7	4	439	443	751
% App. Total	97	3		71.4	28.6		0.9	99.1		
PHF	.948	.563	.941	.417	.500	.583	.500	.825	.820	.869

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Groups Printed- Truck

	Richmond Rd Southbound				Bacon Ave Westbound				Richmond Rd Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
04:00 PM	2	0	0	2	0	0	0	0	0	4	0	4	6
04:15 PM	2	0	0	2	0	0	0	0	0	1	0	1	3
04:30 PM	2	0	0	2	0	0	0	0	0	3	0	3	5
04:45 PM	3	0	0	3	0	0	0	0	0	1	0	1	4
Total	9	0	0	9	0	0	0	0	0	9	0	9	18
05:00 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
05:15 PM	2	0	0	2	0	0	0	0	0	0	0	0	2
05:30 PM	1	0	0	1	0	0	0	0	0	2	0	2	3
05:45 PM	2	0	0	2	0	0	0	0	0	0	0	0	2
Total	6	0	0	6	0	0	0	0	0	4	0	4	10
Grand Total	15	0	0	15	0	0	0	0	0	13	0	13	28
Apprch %	100	0	0		0	0	0		0	100	0		
Total %	53.6	0	0	53.6	0	0	0	0	0	46.4	0	46.4	

	Richmond Rd Southbound			Bacon Ave Westbound			Richmond Rd Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	2	0	2	0	0	0	0	**4**	**4**	**6**
04:15 PM	2	0	2	0	0	0	0	1	1	3
04:30 PM	2	0	2	0	0	0	0	3	3	5
04:45 PM	**3**	0	**3**	0	0	0	0	1	1	4
Total Volume	9	0	9	0	0	0	0	9	9	18
% App. Total	100	0		0	0		0	100		
PHF	.750	.000	.750	.000	.000	.000	.000	.563	.563	.750

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Groups Printed- Combined

	Richmond Rd Southbound				Bacon Ave Westbound				Richmond Rd Northbound				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
04:00 PM	67	3	0	70	0	1	1	2	0	94	6	100	172
04:15 PM	78	3	0	81	0	0	0	0	1	88	0	89	170
04:30 PM	70	0	0	70	4	1	0	5	1	95	0	96	171
04:45 PM	76	1	0	77	0	0	0	0	1	96	0	97	174
Total	291	7	0	298	4	2	1	7	3	373	6	382	687
05:00 PM	78	3	0	81	0	1	1	2	2	135	3	140	223
05:15 PM	70	4	0	74	2	1	1	4	0	113	3	116	194
05:30 PM	75	1	0	76	3	0	0	3	1	100	3	104	183
05:45 PM	77	0	0	77	2	0	1	3	1	89	0	90	170
Total	300	8	0	308	7	2	3	12	4	437	9	450	770
Grand Total	591	15	0	606	11	4	4	19	7	810	15	832	1457
Apprch %	97.5	2.5	0		57.9	21.1	21.1		0.8	97.4	1.8		
Total %	40.6	1	0	41.6	0.8	0.3	0.3	1.3	0.5	55.6	1	57.1	

	Richmond Rd Southbound			Bacon Ave Westbound			Richmond Rd Northbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	76	1	77	0	0	0	1	96	97	174
05:00 PM	**78**	3	**81**	0	**1**	1	**2**	**135**	**137**	**219**
05:15 PM	70	**4**	74	2	1	**3**	0	113	113	190
05:30 PM	75	1	76	**3**	0	3	1	100	101	180
Total Volume	299	9	308	5	2	7	4	444	448	763
% App. Total	97.1	2.9		71.4	28.6		0.9	99.1		
PHF	.958	.563	.951	.417	.500	.583	.500	.822	.818	.871

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Groups Printed- Car

	Richmond Rd Southbound				Bypass Rd Westbound				Richmond Rd Northbound					
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	20	39	0	59	71	16	0	87	8	18	0	0	26	172
06:45 AM	31	44	0	75	91	34	0	125	22	17	0	0	39	239
Total	51	83	0	134	162	50	0	212	30	35	0	0	65	411
07:00 AM	45	45	0	90	68	33	0	101	29	22	0	0	51	242
07:15 AM	61	73	1	135	79	26	1	106	41	19	0	0	60	301
07:30 AM	46	60	0	106	70	51	0	121	37	27	0	0	64	291
07:45 AM	71	74	4	149	97	53	4	154	40	38	0	0	78	381
Total	223	252	5	480	314	163	5	482	147	106	0	0	253	1215
08:00 AM	76	80	0	156	82	60	0	142	31	37	0	0	68	366
08:15 AM	69	79	0	148	92	56	0	148	34	24	0	0	58	354
Grand Total	419	494	5	918	650	329	5	984	242	202	0	0	444	2346
Apprch %	45.6	53.8	0.5		66.1	33.4	0.5		54.5	45.5	0	0		
Total %	17.9	21.1	0.2	39.1	27.7	14	0.2	41.9	10.3	8.6	0	0	18.9	

	Richmond Rd Southbound			Bypass Rd Westbound			Richmond Rd Northbound				
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 07:30 AM											
07:30 AM	46	60	106	70	51	121	37	27	0	64	291
07:45 AM	71	74	145	**97**	53	**150**	**40**	**38**	0	**78**	**373**
08:00 AM	**76**	**80**	**156**	82	**60**	142	31	37	0	68	366
08:15 AM	69	79	148	92	56	148	34	24	0	58	354
Total Volume	262	293	555	341	220	561	142	126	0	268	1384
% App. Total	47.2	52.8		60.8	39.2		53	47	0		
PHF	.862	.916	.889	.879	.917	.935	.888	.829	.000	.859	.928

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Groups Printed- Truck

	Richmond Rd Southbound				Bypass Rd Westbound				Richmond Rd Northbound					
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	0	2	0	2	1	1	0	2	0	1	0	0	1	5
06:45 AM	3	0	0	3	3	0	0	3	1	0	0	0	1	7
Total	3	2	0	5	4	1	0	5	1	1	0	0	2	12
07:00 AM	2	0	0	2	0	4	0	4	1	1	0	0	2	8
07:15 AM	5	2	0	7	3	0	0	3	1	1	0	0	2	12
07:30 AM	1	5	0	6	1	1	0	2	0	1	0	0	1	9
07:45 AM	3	1	0	4	4	2	0	6	0	4	0	0	4	14
Total	11	8	0	19	8	7	0	15	2	7	0	0	9	43
08:00 AM	0	2	0	2	3	0	0	3	2	4	0	0	6	11
08:15 AM	2	3	0	5	1	1	0	2	2	4	0	0	6	13
Grand Total	16	15	0	31	16	9	0	25	7	16	0	0	23	79
Apprch %	51.6	48.4	0		64	36	0		30.4	69.6	0	0		
Total %	20.3	19	0	39.2	20.3	11.4	0	31.6	8.9	20.3	0	0	29.1	

	Richmond Rd Southbound			Bypass Rd Westbound			Richmond Rd Northbound				
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 07:30 AM											
07:30 AM	1	**5**	**6**	1	1	2	0	1	0	1	9
07:45 AM	**3**	1	4	**4**	**2**	**6**	0	**4**	0	4	**14**
08:00 AM	0	2	2	3	0	3	**2**	4	0	**6**	11
08:15 AM	2	3	5	1	1	2	2	4	0	6	13
Total Volume	6	11	17	9	4	13	4	13	0	17	47
% App. Total	35.3	64.7		69.2	30.8		23.5	76.5	0		
PHF	.500	.550	.708	.563	.500	.542	.500	.813	.000	.708	.839

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Groups Printed- Combined

	Richmond Rd Southbound				Bypass Rd Westbound				Richmond Rd Northbound					
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30 AM	20	41	0	61	72	17	0	89	8	19	0	0	27	177
06:45 AM	34	44	0	78	94	34	0	128	23	17	0	0	40	246
Total	54	85	0	139	166	51	0	217	31	36	0	0	67	423
07:00 AM	47	45	0	92	68	37	0	105	30	23	0	0	53	250
07:15 AM	66	75	1	142	82	26	1	109	42	20	0	0	62	313
07:30 AM	47	65	0	112	71	52	0	123	37	28	0	0	65	300
07:45 AM	74	75	4	153	101	55	4	160	40	42	0	0	82	395
Total	234	260	5	499	322	170	5	497	149	113	0	0	262	1258
08:00 AM	76	82	0	158	85	60	0	145	33	41	0	0	74	377
08:15 AM	71	82	0	153	93	57	0	150	36	28	0	0	64	367
Grand Total	435	509	5	949	666	338	5	1009	249	218	0	0	467	2425
Apprch %	45.8	53.6	0.5		66	33.5	0.5		53.3	46.7	0	0		
Total %	17.9	21	0.2	39.1	27.5	13.9	0.2	41.6	10.3	9	0	0	19.3	

	Richmond Rd Southbound			Bypass Rd Westbound			Richmond Rd Northbound				
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 07:30 AM											
07:30 AM	47	65	112	71	52	123	37	28	0	65	300
07:45 AM	74	75	149	**101**	55	**156**	**40**	**42**	0	**82**	**387**
08:00 AM	**76**	**82**	**158**	85	**60**	145	33	41	0	74	377
08:15 AM	71	82	153	93	57	150	36	28	0	64	367
Total Volume	268	304	572	350	224	574	146	139	0	285	1431
% App. Total	46.9	53.1		61	39		51.2	48.8	0		
PHF	.882	.927	.905	.866	.933	.920	.913	.827	.000	.869	.924

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Groups Printed- Car

	Richmond Rd Southbound				Bypass Rd Westbound				Richmond Rd Northbound					
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	84	169	1	254	131	92	1	224	67	120	1	0	188	666
04:15 PM	94	129	0	223	133	97	0	230	71	109	0	0	180	633
04:30 PM	75	122	1	198	143	78	3	224	80	112	0	0	192	614
04:45 PM	87	140	3	230	168	80	2	250	69	105	0	0	174	654
Total	340	560	5	905	575	347	6	928	287	446	1	0	734	2567
05:00 PM	102	155	0	257	151	78	0	229	87	123	0	0	210	696
05:15 PM	87	152	0	239	153	68	0	221	82	127	0	0	209	669
05:30 PM	99	130	0	229	158	78	0	236	78	139	0	0	217	682
05:45 PM	93	143	0	236	175	81	0	256	73	105	0	0	178	670
Total	381	580	0	961	637	305	0	942	320	494	0	0	814	2717
Grand Total	721	1140	5	1866	1212	652	6	1870	607	940	1	0	1548	5284
Apprch %	38.6	61.1	0.3		64.8	34.9	0.3		39.2	60.7	0.1	0		
Total %	13.6	21.6	0.1	35.3	22.9	12.3	0.1	35.4	11.5	17.8	0	0	29.3	

	Richmond Rd Southbound			Bypass Rd Westbound			Richmond Rd Northbound				
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 05:00 PM											
05:00 PM	**102**	**155**	**257**	151	78	229	**87**	123	0	210	**696**
05:15 PM	87	152	239	153	68	221	82	127	0	209	669
05:30 PM	99	130	229	158	78	236	78	**139**	0	**217**	682
05:45 PM	93	143	236	**175**	**81**	**256**	73	105	0	178	670
Total Volume	381	580	961	637	305	942	320	494	0	814	2717
% App. Total	39.6	60.4		67.6	32.4		39.3	60.7	0		
PHF	.934	.935	.935	.910	.941	.920	.920	.888	.000	.938	.976

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Groups Printed- Truck

	Richmond Rd Southbound				Bypass Rd Westbound				Richmond Rd Northbound					
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	2	2	0	4	2	0	0	2	0	4	0	0	4	10
04:15 PM	2	2	0	4	1	1	0	2	0	1	0	0	1	7
04:30 PM	1	2	0	3	1	1	0	2	0	1	0	0	1	6
04:45 PM	3	5	0	8	2	2	0	4	0	2	0	0	2	14
Total	8	11	0	19	6	4	0	10	0	8	0	0	8	37
05:00 PM	1	3	0	4	0	0	0	0	1	2	0	0	3	7
05:15 PM	2	0	0	2	0	0	0	0	1	0	0	0	1	3
05:30 PM	1	2	0	3	1	0	0	1	0	2	0	0	2	6
05:45 PM	2	0	0	2	0	0	0	0	0	0	0	0	0	2
Total	6	5	0	11	1	0	0	1	2	4	0	0	6	18
Grand Total	14	16	0	30	7	4	0	11	2	12	0	0	14	55
Apprch %	46.7	53.3	0		63.6	36.4	0		14.3	85.7	0	0		
Total %	25.5	29.1	0	54.5	12.7	7.3	0	20	3.6	21.8	0	0	25.5	

	Richmond Rd Southbound			Bypass Rd Westbound			Richmond Rd Northbound				
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 04:00 PM											
04:00 PM	2	2	4	**2**	0	2	0	**4**	0	**4**	10
04:15 PM	2	2	4	1	1	2	0	1	0	1	7
04:30 PM	1	2	3	1	1	2	0	1	0	1	6
04:45 PM	**3**	**5**	**8**	2	**2**	**4**	0	2	0	2	**14**
Total Volume	8	11	19	6	4	10	0	8	0	8	37
% App. Total	42.1	57.9		60	40		0	100	0		
PHF	.667	.550	.594	.750	.500	.625	.000	.500	.000	.500	.661

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	Richmond Rd Southbound				Bypass Rd Westbound				Richmond Rd Northbound					
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	86	171	1	258	133	92	1	226	67	124	1	0	192	676
04:15 PM	96	131	0	227	134	98	0	232	71	110	0	0	181	640
04:30 PM	76	124	1	201	144	79	3	226	80	113	0	0	193	620
04:45 PM	90	145	3	238	170	82	2	254	69	107	0	0	176	668
Total	348	571	5	924	581	351	6	938	287	454	1	0	742	2604
05:00 PM	103	158	0	261	151	78	0	229	88	125	0	0	213	703
05:15 PM	89	152	0	241	153	68	0	221	83	127	0	0	210	672
05:30 PM	100	132	0	232	159	78	0	237	78	141	0	0	219	688
05:45 PM	95	143	0	238	175	81	0	256	73	105	0	0	178	672
Total	387	585	0	972	638	305	0	943	322	498	0	0	820	2735
Grand Total	735	1156	5	1896	1219	656	6	1881	609	952	1	0	1562	5339
Apprch %	38.8	61	0.3		64.8	34.9	0.3		39	60.9	0.1	0		
Total %	13.8	21.7	0.1	35.5	22.8	12.3	0.1	35.2	11.4	17.8	0	0	29.3	

	Richmond Rd Southbound			Bypass Rd Westbound			Richmond Rd Northbound				
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 05:00 PM											
05:00 PM	**103**	**158**	**261**	151	78	229	**88**	125	0	213	**703**
05:15 PM	89	152	241	153	68	221	83	127	0	210	672
05:30 PM	100	132	232	159	78	237	78	**141**	0	**219**	688
05:45 PM	95	143	238	**175**	**81**	**256**	73	105	0	178	672
Total Volume	387	585	972	638	305	943	322	498	0	820	2735
% App. Total	39.8	60.2		67.7	32.3		39.3	60.7	0		
PHF	.939	.926	.931	.911	.941	.921	.915	.883	.000	.936	.973

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Tue 7/11/2017

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710001.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
00:15	0	11	1	0	0	0	0	0	0	0	0	0	0	0	0	12
00:30	0	11	1	0	0	0	0	0	0	0	0	0	0	0	0	12
00:45	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	4
01:00	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3
Hour Total	0	26	4	0	0	0	1	0	0	0	0	0	0	0	0	31
01:15	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
01:30	0	7	0	0	1	0	0	0	0	0	0	0	0	0	0	8
01:45	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Hour Total	0	20	0	0	1	0	0	0	0	0	0	0	0	0	0	21
02:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
02:30	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
02:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Hour Total	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0	10
03:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
03:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Hour Total	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
04:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:30	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
04:45	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
05:00	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	6
Hour Total	0	12	1	0	0	0	0	0	1	0	0	0	0	0	0	14
05:15	0	8	3	0	0	0	0	0	0	0	0	0	0	0	0	11
05:30	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
05:45	0	8	2	0	0	0	0	0	0	0	0	0	0	0	0	10
06:00	0	12	4	0	0	0	0	0	0	0	0	0	0	0	0	16
Hour Total	0	32	9	0	0	0	0	0	0	0	0	0	0	0	0	41
06:15	0	18	2	0	0	1	0	1	0	0	0	0	0	0	0	22
06:30	0	18	3	0	0	0	0	0	0	0	0	0	0	0	0	21
06:45	0	34	1	0	2	0	0	0	0	0	0	0	0	0	0	37
07:00	0	34	8	0	1	0	0	0	0	0	0	0	0	0	0	43
Hour Total	0	104	14	0	3	1	0	1	0	0	0	0	0	0	0	123
07:15	1	42	12	0	1	0	0	0	0	0	0	0	0	0	0	56
07:30	1	50	11	0	1	1	0	0	0	0	0	1	0	0	0	65
07:45	0	56	10	0	0	0	0	0	0	0	0	0	0	0	0	66
08:00	0	73	14	0	2	0	0	0	0	0	0	0	0	0	0	89
Hour Total	2	221	47	0	4	1	0	0	0	0	0	1	0	0	0	276
08:15	0	73	4	0	0	0	0	0	0	0	0	0	0	0	0	77
08:30	0	82	12	0	2	0	0	0	0	0	0	0	0	0	0	96
08:45	0	87	14	0	1	0	0	0	0	0	0	0	0	0	0	102
09:00	0	98	17	0	2	1	0	0	0	0	0	0	0	0	0	118

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Tue 7/11/2017

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710001.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Hour Total	0	340	47	0	5	1	0	0	0	0	0	0	0	0	0	393
09:15	0	89	26	0	0	0	0	1	0	0	0	0	0	0	0	116
09:30	0	87	12	1	1	0	0	0	0	0	0	0	0	0	0	101
09:45	1	74	19	0	1	0	0	0	0	0	0	0	0	0	0	95
10:00	0	92	16	1	3	1	0	0	1	0	0	0	0	0	0	114
Hour Total	1	342	73	2	5	1	0	1	1	0	0	0	0	0	0	426
10:15	0	112	15	0	1	0	0	0	0	0	0	0	0	0	0	128
10:30	0	90	15	0	2	0	0	1	0	0	0	0	0	0	0	108
10:45	1	109	15	0	3	0	0	1	1	0	0	0	0	0	0	130
11:00	0	113	9	0	0	0	0	1	0	0	1	0	0	0	0	124
Hour Total	1	424	54	0	6	0	0	3	1	0	1	0	0	0	0	490
11:15	0	118	26	0	1	0	0	0	0	0	0	0	0	0	0	145
11:30	0	117	20	0	2	0	0	0	0	0	0	0	0	0	0	139
11:45	0	132	19	0	1	0	0	1	0	0	0	0	0	0	0	153
12:00	0	122	23	0	3	1	0	0	0	0	0	0	0	0	0	149
Hour Total	0	489	88	0	7	1	0	1	0	0	0	0	0	0	0	586
12:15	0	122	17	0	1	0	0	0	0	0	0	0	0	0	0	140
12:30	0	128	21	1	0	0	0	0	0	0	0	0	0	0	0	150
12:45	0	123	25	0	1	0	0	0	0	0	0	0	0	0	0	149
13:00	0	139	25	0	2	0	1	0	0	0	0	0	0	0	0	167
Hour Total	0	512	88	1	4	0	1	0	0	0	0	0	0	0	0	606
13:15	0	123	23	0	0	0	0	0	0	0	0	0	0	0	0	146
13:30	1	141	18	0	1	0	0	0	0	0	0	1	0	0	0	162
13:45	0	102	16	1	0	0	0	0	0	0	0	0	0	0	0	119
14:00	0	116	22	0	0	0	0	0	0	0	0	0	0	0	0	138
Hour Total	1	482	79	1	1	0	0	0	0	0	0	1	0	0	0	565
14:15	1	114	14	0	0	0	0	0	0	0	0	0	0	0	0	129
14:30	0	124	27	0	1	0	0	0	0	0	0	0	0	0	0	152
14:45	0	110	21	0	0	0	0	0	0	0	0	0	0	0	0	131
15:00	0	114	9	0	0	0	0	1	0	0	0	0	0	0	0	124
Hour Total	1	462	71	0	1	0	0	1	0	0	0	0	0	0	0	536
15:15	0	133	23	0	1	0	0	0	0	0	0	0	0	0	0	157
15:30	0	126	20	0	0	0	0	0	1	0	0	0	0	0	0	147
15:45	0	118	21	0	0	0	0	0	0	0	0	0	0	0	0	139
16:00	1	118	16	0	0	0	0	0	1	0	0	0	0	0	0	136
Hour Total	1	495	80	0	1	0	0	0	2	0	0	0	0	0	0	579
16:15	0	124	17	0	1	0	0	0	0	0	0	0	0	0	0	142
16:30	1	117	25	0	0	0	0	0	0	0	0	0	0	0	0	143
16:45	1	142	18	0	0	0	0	1	0	0	0	1	0	0	0	163
17:00	0	133	19	0	0	0	0	0	0	0	0	0	0	0	0	152
Hour Total	2	516	79	0	1	0	0	1	0	0	0	1	0	0	0	600

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Tue 7/11/2017

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710001.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
17:15	0	168	17	0	1	0	0	0	0	0	0	0	0	0	0	186
17:30	2	137	15	0	2	0	0	0	0	0	0	0	1	0	0	157
17:45	1	145	13	0	0	0	0	0	0	0	0	0	0	0	0	159
18:00	0	119	20	0	0	0	0	0	0	0	0	0	0	0	0	139
Hour Total	3	569	65	0	3	0	0	0	0	0	0	0	1	0	0	641
18:15	1	125	12	0	0	0	0	0	0	0	0	0	0	0	0	138
18:30	0	121	16	0	0	0	0	0	1	0	0	0	0	0	0	138
18:45	1	106	16	0	0	0	0	0	0	0	0	0	0	0	0	123
19:00	1	100	16	0	0	0	0	0	0	1	0	0	0	0	0	118
Hour Total	3	452	60	0	0	0	0	0	1	1	0	0	0	0	0	517
19:15	0	99	12	0	1	0	0	0	0	0	0	0	0	0	0	112
19:30	0	80	12	0	0	0	0	0	0	0	0	0	0	0	0	92
19:45	1	80	9	0	0	0	0	0	0	0	0	0	0	0	0	90
20:00	0	103	6	0	0	0	0	0	0	0	0	0	0	0	0	109
Hour Total	1	362	39	0	1	0	0	0	0	0	0	0	0	0	0	403
20:15	1	81	16	0	0	0	0	0	0	0	0	0	0	0	0	98
20:30	0	89	10	0	0	0	0	0	0	0	0	0	0	0	0	99
20:45	0	81	8	0	0	0	0	0	0	0	0	0	0	0	0	89
21:00	0	70	10	0	0	0	0	0	0	0	0	0	0	0	0	80
Hour Total	1	321	44	0	0	0	0	0	0	0	0	0	0	0	0	366
21:15	0	74	10	0	1	0	0	0	0	0	0	0	0	0	0	85
21:30	0	52	7	0	0	0	0	0	0	0	0	0	0	0	0	59
21:45	0	39	10	0	0	0	0	0	0	0	0	0	0	0	0	49
22:00	1	48	3	0	0	0	0	0	0	0	0	0	0	0	0	52
Hour Total	1	213	30	0	1	0	0	0	0	0	0	0	0	0	0	245
22:15	0	38	4	0	0	0	0	0	0	0	0	0	0	0	0	42
22:30	0	25	4	0	0	0	0	0	0	0	0	0	0	0	0	29
22:45	0	23	4	0	0	0	0	0	0	0	0	0	0	0	0	27
23:00	1	17	2	0	0	0	0	0	0	0	0	0	0	0	0	20
Hour Total	1	103	14	0	0	0	0	0	0	0	0	0	0	0	0	118
23:15	0	21	3	0	0	0	0	0	0	0	0	0	0	0	0	24
23:30	0	17	2	0	0	0	0	0	0	0	0	0	0	0	0	19
23:45	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7
24:00	0	17	1	0	0	0	0	0	0	0	0	0	0	0	0	18
Hour Total	0	62	6	0	0	0	0	0	0	0	0	0	0	0	0	68
DAY TOTAL	19	6573	993	4	44	5	2	8	6	1	1	3	1	0	0	7660
PERCENTS	0.3%	85.9%	13.0%	0.1%	0.6%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Passenger Vehicles 99.0% Trucks & Buses 0.9%

AM Times	06:45	11:15	11:15	09:15	10:00	05:30		10:15	10:00		10:15	06:45			11:15
AM Peaks	2	489	88	2	9	1	1	3	2		1	1			586
PM Times	17:30	17:00	12:30	12:15	12:15		12:15	14:15	15:15	18:15		12:45	16:45		16:45
PM Peaks	4	583	94	1	4		1	1	2	1		1	1		658

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Wed 7/12/2017

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710001.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
00:15	0	12	1	0	0	0	0	0	0	0	0	0	0	0	0	13
00:30	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7
00:45	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	4
01:00	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	3
Hour Total	0	24	2	0	1	0	0	0	0	0	0	0	0	0	0	27
01:15	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
01:30	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3
01:45	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Hour Total	0	12	1	0	0	0	0	0	0	0	0	0	0	0	0	13
02:15	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
02:30	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
02:45	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	10
03:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:45	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:15	0	2	1	0	0	0	0	0	1	0	0	0	0	0	0	4
04:30	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5
04:45	0	6	1	0	0	0	0	0	0	0	0	0	0	0	0	7
05:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	6
Hour Total	0	16	5	0	0	0	0	0	1	0	0	0	0	0	0	22
05:15	1	3	2	0	0	1	0	0	0	0	0	0	0	0	0	7
05:30	0	3	2	0	1	0	0	0	0	0	0	0	0	0	0	6
05:45	0	14	1	0	0	0	0	0	0	0	0	0	0	0	0	15
06:00	0	13	3	0	0	0	0	0	0	0	0	0	0	0	0	16
Hour Total	1	33	8	0	1	1	0	0	0	0	0	0	0	0	0	44
06:15	0	9	3	0	0	1	0	0	0	0	0	0	0	0	0	13
06:30	0	16	4	0	1	0	0	0	0	0	0	0	0	0	0	21
06:45	0	32	5	0	1	0	0	0	0	0	0	0	0	0	0	38
07:00	0	31	10	0	0	1	0	0	0	0	0	0	0	0	0	42
Hour Total	0	88	22	0	2	2	0	0	0	0	0	0	0	0	0	114
07:15	0	46	13	0	0	0	0	1	0	0	0	0	0	0	0	60
07:30	0	53	14	0	0	0	0	0	0	0	0	0	0	0	0	67
07:45	0	66	10	0	2	1	0	0	0	0	0	0	0	0	0	79
08:00	0	64	18	0	0	1	0	2	0	0	0	0	0	0	0	85
Hour Total	0	229	55	0	2	2	0	3	0	0	0	0	0	0	0	291
08:15	1	76	11	0	1	1	0	0	0	0	0	0	0	0	0	90
08:30	1	71	13	0	1	0	0	0	0	0	0	0	0	0	0	86
08:45	0	80	13	0	1	0	0	1	0	0	0	0	0	0	0	95
09:00	0	84	16	0	1	0	0	1	0	0	0	0	1	0	0	103

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Wed 7/12/2017

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710001.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Hour Total	2	311	53	0	4	1	0	2	0	0	0	0	1	0	0	374
09:15	0	83	15	0	1	0	0	0	0	0	0	0	0	0	0	99
09:30	0	81	14	0	0	0	0	0	1	0	0	0	0	0	0	96
09:45	0	92	13	0	1	0	0	0	0	0	0	0	0	0	0	106
10:00	0	91	17	0	1	0	0	1	0	0	0	0	0	0	0	110
Hour Total	0	347	59	0	3	0	0	1	1	0	0	0	0	0	0	411
10:15	0	88	23	0	1	0	0	1	0	0	0	0	0	0	0	113
10:30	1	103	19	0	1	0	0	0	0	0	0	0	0	0	0	124
10:45	0	104	30	0	0	0	0	1	0	0	0	1	0	0	0	136
11:00	0	104	19	0	0	0	0	0	0	0	0	0	0	0	0	123
Hour Total	1	399	91	0	2	0	0	2	0	0	0	1	0	0	0	496
11:15	0	93	8	0	0	0	0	0	0	0	0	0	0	0	0	101
11:30	0	110	14	0	1	0	0	0	0	0	0	0	0	0	0	125
11:45	1	118	19	1	0	0	0	0	0	0	0	0	0	0	0	139
12:00	1	109	21	0	1	0	0	1	0	0	0	1	0	0	0	134
Hour Total	2	430	62	1	2	0	0	1	0	0	0	1	0	0	0	499
12:15	2	116	25	0	3	0	0	0	0	0	0	0	0	0	0	146
12:30	0	136	23	1	0	0	0	0	0	0	0	0	1	0	0	161
12:45	2	122	17	1	1	0	0	0	0	0	0	0	0	0	0	143
13:00	0	135	22	0	3	0	0	0	0	0	0	0	0	0	0	160
Hour Total	4	509	87	2	7	0	0	0	0	0	0	0	1	0	0	610
13:15	0	125	22	0	1	1	0	0	0	0	0	0	0	0	0	149
13:30	0	130	21	0	0	0	0	1	0	0	0	0	0	0	0	152
13:45	0	115	19	0	1	0	0	0	0	0	0	0	0	0	0	135
14:00	0	98	33	0	1	0	0	0	0	0	0	1	0	0	0	133
Hour Total	0	468	95	0	3	1	0	1	0	0	0	1	0	0	0	569
14:15	0	127	26	0	1	0	0	0	0	0	0	0	0	0	0	154
14:30	1	108	25	0	0	0	0	0	0	0	0	0	0	0	0	134
14:45	0	119	12	0	0	0	0	0	0	0	0	0	0	0	0	131
15:00	0	118	13	0	1	0	0	1	0	0	0	0	0	0	0	133
Hour Total	1	472	76	0	2	0	0	1	0	0	0	0	0	0	0	552
15:15	0	121	22	0	0	0	0	0	0	0	0	0	0	0	0	143
15:30	1	124	25	0	0	0	0	1	1	0	0	0	0	0	0	152
15:45	0	134	25	0	1	0	0	0	1	0	1	0	0	0	0	162
16:00	1	88	23	0	0	0	0	0	0	0	0	0	0	0	0	112
Hour Total	2	467	95	0	1	0	0	1	2	0	1	0	0	0	0	569
16:15	0	133	18	0	0	0	0	1	1	0	0	0	0	0	0	153
16:30	1	118	19	0	0	0	0	0	0	0	0	0	0	0	0	138
16:45	1	132	12	0	0	0	0	0	0	0	0	0	1	0	0	146
17:00	2	131	19	0	0	0	0	0	0	0	0	0	0	0	0	152
Hour Total	4	514	68	0	0	0	0	1	1	0	0	0	1	0	0	589

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Wed 7/12/2017

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710001.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
17:15	0	149	17	0	0	0	0	0	0	0	0	0	0	0	0	166
17:30	1	135	13	0	0	0	0	0	0	0	0	0	0	0	0	149
17:45	1	112	23	0	0	0	0	1	1	0	0	0	0	0	0	138
18:00	0	126	15	0	0	0	0	0	0	0	0	0	0	0	0	141
Hour Total	2	522	68	0	0	0	0	1	1	0	0	0	0	0	0	594
18:15	0	126	20	0	0	0	0	0	0	0	0	0	0	0	0	146
18:30	0	120	19	0	0	0	0	1	1	0	0	0	0	0	0	141
18:45	1	112	8	0	0	0	0	0	0	0	0	0	0	0	0	121
19:00	1	117	9	0	1	0	0	0	0	0	0	0	0	0	0	128
Hour Total	2	475	56	0	1	0	0	1	1	0	0	0	0	0	0	536
19:15	0	92	15	0	0	0	0	0	0	0	0	0	0	0	0	107
19:30	0	80	11	0	0	0	0	0	0	0	0	0	0	0	0	91
19:45	0	79	15	0	0	0	0	0	0	0	0	0	0	0	0	94
20:00	0	90	9	0	0	0	0	0	0	0	0	0	0	0	0	99
Hour Total	0	341	50	0	0	0	0	0	0	0	0	0	0	0	0	391
20:15	0	84	13	0	0	0	0	0	0	0	0	0	0	0	0	97
20:30	0	77	18	0	0	0	0	0	0	0	0	0	0	0	0	95
20:45	0	93	7	0	0	0	0	0	0	0	0	0	0	0	0	100
21:00	0	64	11	0	2	0	0	0	0	0	0	0	0	0	0	77
Hour Total	0	318	49	0	2	0	0	0	0	0	0	0	0	0	0	369
21:15	1	57	5	0	0	0	0	0	0	0	0	0	0	0	0	63
21:30	0	59	10	0	0	0	0	0	0	0	0	0	0	0	0	69
21:45	0	59	8	0	0	0	0	0	0	0	0	0	0	0	0	67
22:00	0	49	4	0	0	0	0	0	0	0	0	0	0	0	0	53
Hour Total	1	224	27	0	0	0	0	0	0	0	0	0	0	0	0	252
22:15	0	39	4	0	0	0	0	0	0	0	0	0	0	0	0	43
22:30	0	32	4	0	0	0	0	0	0	0	0	0	0	0	0	36
22:45	0	26	1	0	0	0	0	0	0	0	0	0	0	0	0	27
23:00	0	20	1	0	0	0	0	0	0	0	0	0	0	0	0	21
Hour Total	0	117	10	0	0	0	0	0	0	0	0	0	0	0	0	127
23:15	0	26	3	0	0	0	0	0	1	0	0	0	0	0	0	30
23:30	0	13	2	0	0	0	0	0	0	0	0	0	0	0	0	15
23:45	0	6	1	0	0	0	0	0	0	0	0	0	0	0	0	7
24:00	0	10	3	0	0	0	0	0	0	0	0	0	0	0	0	13
Hour Total	0	55	9	0	0	0	0	0	1	0	0	0	0	0	0	65
DAY TOTAL	22	6384	1048	3	33	7	0	15	8	0	1	3	3	0	0	7527
PERCENTS	0.3%	84.9%	14.0%	0.1%	0.5%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Passenger Vehicles 99.0% Trucks & Buses 0.9%

AM Times	07:45	11:15	10:15	11:00	07:45	07:30	07:15	03:30	10:00	08:15	11:15
AM Peaks	2	430	91	1	4	3	3	1	1	1	499
PM Times	12:15	16:45	13:45	12:15	12:15	12:30	14:45	15:30	15:00	13:15	12:15	12:30
PM Peaks	4	547	103	2	7	1	2	3	1	1	1	613

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710001.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
00:15	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7
00:30	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9
00:45	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	6
01:00	1	3	1	0	1	0	0	0	0	0	0	0	0	0	0	6
Hour Total	1	24	2	0	1	0	0	0	0	0	0	0	0	0	0	28
01:15	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7
01:30	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5
01:45	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Hour Total	0	14	2	0	0	0	0	0	0	0	0	0	0	0	0	16
02:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
02:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:45	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Hour Total	0	6	1	0	0	0	0	0	0	0	0	0	0	0	0	7
03:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2
04:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Hour Total	0	4	0	0	0	0	0	1	0	0	0	0	0	0	0	5
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45	0	6	0	0	0	0	0	0	1	0	0	0	0	0	0	7
05:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Hour Total	0	10	1	0	0	0	0	0	1	0	0	0	0	0	0	12
05:15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
05:45	0	13	3	0	2	0	0	0	0	0	0	0	0	0	0	18
06:00	0	18	3	0	0	0	0	0	0	0	0	0	0	0	0	21
Hour Total	1	37	6	0	2	0	0	0	0	0	0	0	0	0	0	46
06:15	0	21	3	0	0	0	0	0	0	0	0	0	0	0	0	24
06:30	0	21	4	0	0	0	0	0	0	0	0	0	0	0	0	25
06:45	0	34	5	0	2	0	0	1	0	0	0	0	0	0	0	42
07:00	0	34	11	0	0	0	0	0	0	0	0	0	0	0	0	45
Hour Total	0	110	23	0	2	0	0	1	0	0	0	0	0	0	0	136
07:15	0	50	9	0	1	0	0	0	0	0	0	0	0	0	0	60
07:30	1	52	13	0	1	0	0	0	1	0	0	0	0	0	0	68
07:45	0	61	10	0	0	0	0	0	0	0	0	0	0	0	0	71
08:00	2	74	18	0	0	0	0	0	0	0	0	0	0	0	0	94
Hour Total	3	237	50	0	2	0	0	0	1	0	0	0	0	0	0	293
08:15	0	51	16	0	3	0	0	1	0	0	0	0	0	0	0	71
08:30	0	90	8	0	0	0	0	0	0	0	0	0	0	0	0	98
08:45	0	84	8	0	0	0	0	0	0	0	0	0	0	0	0	92
09:00	0	98	15	0	0	0	0	0	0	0	0	0	0	0	0	113

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710001.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Hour Total	0	323	47	0	3	0	0	1	0	0	0	0	0	0	0	374
09:15	0	78	17	0	2	0	0	0	1	0	0	0	0	0	0	98
09:30	0	62	11	0	1	2	0	0	0	0	0	0	0	0	0	76
09:45	0	75	16	0	0	0	0	0	0	0	0	0	0	0	0	91
10:00	0	94	10	0	0	0	0	0	0	0	0	0	0	0	0	104
Hour Total	0	309	54	0	3	2	0	0	1	0	0	0	0	0	0	369
10:15	0	94	21	0	2	0	0	0	0	0	0	0	0	0	0	117
10:30	0	93	15	1	1	3	0	0	0	0	1	0	0	0	0	114
10:45	1	92	20	0	1	0	0	0	0	0	0	0	0	0	0	114
11:00	0	119	22	0	0	0	0	1	1	0	0	0	0	0	0	143
Hour Total	1	398	78	1	4	3	0	1	1	0	1	0	0	0	0	488
11:15	0	99	26	0	0	0	0	0	0	0	0	0	1	0	0	126
11:30	0	109	21	1	5	0	0	0	0	0	0	0	0	0	0	136
11:45	0	95	28	0	1	0	0	1	0	0	0	0	0	0	0	125
12:00	0	116	24	0	1	1	0	0	1	0	0	0	0	0	0	143
Hour Total	0	419	99	1	7	1	0	1	1	0	0	0	1	0	0	530
12:15	2	127	28	0	1	0	0	0	0	0	0	0	1	0	0	159
12:30	0	120	22	1	1	0	0	0	0	0	0	0	0	0	0	144
12:45	0	116	24	0	1	1	0	0	0	0	0	0	0	0	0	142
13:00	0	131	22	1	1	0	0	0	1	0	0	0	0	0	0	156
Hour Total	2	494	96	2	4	1	0	0	1	0	0	0	1	0	0	601
13:15	0	125	27	0	1	0	0	0	0	0	0	0	0	0	0	153
13:30	1	114	22	0	0	0	0	1	0	0	0	0	1	0	0	139
13:45	2	125	19	0	1	0	0	1	0	0	1	0	0	0	0	149
14:00	1	120	30	0	1	1	0	0	0	0	0	0	0	0	0	153
Hour Total	4	484	98	0	3	1	0	2	0	0	1	0	1	0	0	594
14:15	1	149	13	0	0	0	0	0	0	0	0	1	0	0	0	164
14:30	0	124	24	0	1	0	0	0	0	0	0	0	0	0	0	149
14:45	0	111	15	0	1	0	0	0	0	0	0	0	0	0	0	127
15:00	0	143	14	0	0	0	0	0	0	0	0	0	0	0	0	157
Hour Total	1	527	66	0	2	0	0	0	0	0	0	1	0	0	0	597
15:15	1	102	29	0	0	0	0	0	0	0	0	0	0	0	0	132
15:30	0	128	17	0	0	1	0	1	0	0	0	1	0	0	0	148
15:45	0	132	20	0	1	0	0	0	1	0	0	0	0	0	0	154
16:00	0	107	12	0	0	0	0	0	0	0	0	1	0	0	0	120
Hour Total	1	469	78	0	1	1	0	1	1	0	0	2	0	0	0	554
16:15	1	125	20	0	0	0	0	1	1	0	0	0	0	0	0	148
16:30	1	117	14	0	0	0	0	0	0	0	0	0	0	0	0	132
16:45	1	144	23	0	0	0	0	0	1	0	0	0	0	0	0	169
17:00	0	131	20	0	0	0	0	0	0	0	0	0	0	0	0	151
Hour Total	3	517	77	0	0	0	0	1	2	0	0	0	0	0	0	600

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Thu 7/13/2017

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710001.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
17:15	2	147	27	0	1	0	1	0	0	0	0	0	0	0	0	178
17:30	0	128	15	0	0	0	0	0	0	0	0	0	0	0	0	143
17:45	0	126	24	0	0	0	0	0	1	0	0	0	0	0	0	151
18:00	1	143	20	0	0	0	0	0	0	0	0	0	0	0	0	164
Hour Total	3	544	86	0	1	0	1	0	1	0	0	0	0	0	0	636
18:15	0	121	17	0	0	0	0	0	0	0	0	0	0	0	0	138
18:30	0	119	15	0	0	0	0	0	1	0	0	0	0	0	0	135
18:45	0	102	12	0	0	0	0	0	0	0	0	0	0	0	0	114
19:00	0	109	11	0	0	0	0	0	0	0	0	0	0	0	0	120
Hour Total	0	451	55	0	0	0	0	0	1	0	0	0	0	0	0	507
19:15	0	88	14	0	0	0	0	1	0	0	0	0	0	0	0	103
19:30	0	108	16	0	0	0	0	0	0	0	0	0	0	0	0	124
19:45	0	120	12	0	0	0	0	0	0	0	0	0	0	0	0	132
20:00	0	109	17	0	0	0	0	0	0	0	0	0	0	0	0	126
Hour Total	0	425	59	0	0	0	0	1	0	0	0	0	0	0	0	485
20:15	0	80	13	0	0	0	0	0	0	0	0	0	0	0	0	93
20:30	0	91	10	0	1	0	0	0	0	0	0	0	0	0	0	102
20:45	0	93	11	0	0	0	0	0	0	0	0	0	0	0	0	104
21:00	0	81	12	0	2	0	0	0	0	0	0	0	0	0	0	95
Hour Total	0	345	46	0	3	0	0	0	0	0	0	0	0	0	0	394
21:15	0	65	10	0	0	0	0	0	0	0	0	0	0	0	0	75
21:30	0	62	5	0	0	0	0	0	0	0	0	0	0	0	0	67
21:45	0	61	10	0	0	0	0	0	0	0	0	0	0	0	0	71
22:00	0	45	5	0	0	0	0	0	0	0	0	0	0	0	0	50
Hour Total	0	233	30	0	0	0	0	0	0	0	0	0	0	0	0	263
22:15	0	34	3	0	0	0	0	0	0	0	0	0	0	0	0	37
22:30	0	29	4	0	0	0	0	0	0	0	0	0	0	0	0	33
22:45	1	13	3	0	0	0	0	0	0	0	0	0	0	0	0	17
23:00	0	27	3	0	0	0	0	0	0	0	0	0	0	0	0	30
Hour Total	1	103	13	0	0	0	0	0	0	0	0	0	0	0	0	117
23:15	0	23	2	0	0	0	0	0	0	0	0	0	0	0	0	25
23:30	0	18	1	0	0	0	0	0	0	0	0	0	0	0	0	19
23:45	0	10	1	0	0	0	0	0	1	0	0	0	0	0	0	12
24:00	0	11	1	0	0	0	0	0	0	0	0	0	0	0	0	12
Hour Total	0	62	5	0	0	0	0	0	1	0	0	0	0	0	0	68
DAY TOTAL	21	6545	1072	4	38	9	1	10	12	0	2	3	3	0	0	7720
PERCENTS	0.3%	84.8%	13.9%	0.1%	0.5%	0.2%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Passenger Vehicles 98.9% Trucks & Buses 1.0%

AM Times	07:15	11:00	11:15	09:45	11:15	09:45	11:00	04:00	09:45	10:30	11:00
AM Peaks	3	422	99	1	7	3	2	1	1	1	530
PM Times	13:30	16:45	13:15	12:15	12:15	12:15	16:30	13:00	15:30	13:00	15:15	12:15	16:45
PM Peaks	5	550	98	2	4	1	1	2	2	1	2	1	641

GRAND TOTAL	62	19502	3113	11	115	21	3	33	26	1	4	9	7	0	0	22907
PERCENTS	0.3%	85.2%	13.6%	0.1%	0.6%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Peggy Malone & Associates
SPEED SUMMARY
Tue 7/11/2017

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710002.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
00:15	0	0	0	2	6	3	1	0	0	0	0	0	0	0	12
00:30	0	0	0	1	11	0	0	0	0	0	0	0	0	0	12
00:45	0	1	0	0	3	0	0	0	0	0	0	0	0	0	4
01:00	0	0	0	1	1	0	1	0	0	0	0	0	0	0	3
Hour Total	0	1	0	4	21	3	2	0	0	0	0	0	0	0	31
01:15	0	0	0	0	1	1	1	1	0	0	0	0	0	0	4
01:30	0	0	0	0	1	5	2	0	0	0	0	0	0	0	8
01:45	0	0	0	1	2	0	0	0	0	0	0	0	0	0	3
02:00	0	0	0	1	5	0	0	0	0	0	0	0	0	0	6
Hour Total	0	0	0	2	9	6	3	1	0	0	0	0	0	0	21
02:15	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
02:30	0	0	0	2	0	1	0	0	0	0	0	0	0	0	3
02:45	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
03:00	0	1	0	1	2	0	0	0	0	0	0	0	0	0	4
Hour Total	0	1	0	3	4	2	0	0	0	0	0	0	0	0	10
03:15	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
03:30	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
03:45	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
04:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Hour Total	0	0	1	1	2	0	1	0	0	0	0	0	0	0	5
04:15	0	0	0	1	0	1	0	0	0	0	0	0	0	0	2
04:30	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
04:45	0	0	0	1	2	0	1	0	0	0	0	0	0	0	4
05:00	0	0	0	1	4	1	0	0	0	0	0	0	0	0	6
Hour Total	0	0	0	4	7	2	1	0	0	0	0	0	0	0	14
05:15	0	0	0	1	6	4	0	0	0	0	0	0	0	0	11
05:30	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4
05:45	0	0	0	0	7	3	0	0	0	0	0	0	0	0	10
06:00	0	0	0	0	11	4	1	0	0	0	0	0	0	0	16
Hour Total	0	0	0	1	28	11	1	0	0	0	0	0	0	0	41
06:15	0	0	0	4	8	9	1	0	0	0	0	0	0	0	22
06:30	0	0	0	1	8	8	4	0	0	0	0	0	0	0	21
06:45	0	1	0	4	12	15	5	0	0	0	0	0	0	0	37
07:00	0	0	0	0	13	29	1	0	0	0	0	0	0	0	43
Hour Total	0	1	0	9	41	61	11	0	0	0	0	0	0	0	123
07:15	0	0	0	9	15	27	5	0	0	0	0	0	0	0	56
07:30	1	0	0	1	23	34	5	1	0	0	0	0	0	0	65
07:45	0	0	0	2	27	27	7	3	0	0	0	0	0	0	66
08:00	0	0	0	3	38	42	5	1	0	0	0	0	0	0	89
Hour Total	1	0	0	15	103	130	22	5	0	0	0	0	0	0	276
08:15	0	0	0	5	37	26	9	0	0	0	0	0	0	0	77
08:30	0	1	0	3	51	33	8	0	0	0	0	0	0	0	96
08:45	0	0	2	3	50	38	9	0	0	0	0	0	0	0	102
09:00	0	0	1	16	54	40	6	1	0	0	0	0	0	0	118

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710002.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
Hour Total	0	1	3	27	192	137	32	1	0	0	0	0	0	0	393
09:15	0	0	1	17	61	33	4	0	0	0	0	0	0	0	116
09:30	0	0	1	23	33	39	4	1	0	0	0	0	0	0	101
09:45	1	0	1	7	60	20	5	1	0	0	0	0	0	0	95
10:00	0	8	7	26	49	21	2	1	0	0	0	0	0	0	114
Hour Total	1	8	10	73	203	113	15	3	0	0	0	0	0	0	426
10:15	1	1	10	44	53	17	2	0	0	0	0	0	0	0	128
10:30	1	2	0	18	64	19	3	1	0	0	0	0	0	0	108
10:45	0	1	13	53	43	18	2	0	0	0	0	0	0	0	130
11:00	0	1	10	43	48	18	4	0	0	0	0	0	0	0	124
Hour Total	2	5	33	158	208	72	11	1	0	0	0	0	0	0	490
11:15	0	1	9	58	62	14	1	0	0	0	0	0	0	0	145
11:30	0	8	8	46	66	10	1	0	0	0	0	0	0	0	139
11:45	0	0	16	64	51	22	0	0	0	0	0	0	0	0	153
12:00	0	4	13	49	49	32	2	0	0	0	0	0	0	0	149
Hour Total	0	13	46	217	228	78	4	0	0	0	0	0	0	0	586
12:15	0	0	4	41	70	24	1	0	0	0	0	0	0	0	140
12:30	4	6	24	46	44	25	1	0	0	0	0	0	0	0	150
12:45	2	2	9	48	68	19	1	0	0	0	0	0	0	0	149
13:00	4	1	32	69	50	10	1	0	0	0	0	0	0	0	167
Hour Total	10	9	69	204	232	78	4	0	0	0	0	0	0	0	606
13:15	0	0	9	54	67	15	1	0	0	0	0	0	0	0	146
13:30	3	8	20	66	57	8	0	0	0	0	0	0	0	0	162
13:45	0	0	4	36	49	29	1	0	0	0	0	0	0	0	119
14:00	0	4	16	61	42	15	0	0	0	0	0	0	0	0	138
Hour Total	3	12	49	217	215	67	2	0	0	0	0	0	0	0	565
14:15	0	0	5	44	66	10	4	0	0	0	0	0	0	0	129
14:30	0	0	15	55	52	27	3	0	0	0	0	0	0	0	152
14:45	0	0	11	42	55	21	2	0	0	0	0	0	0	0	131
15:00	0	3	11	33	54	20	3	0	0	0	0	0	0	0	124
Hour Total	0	3	42	174	227	78	12	0	0	0	0	0	0	0	536
15:15	0	0	25	58	59	15	0	0	0	0	0	0	0	0	157
15:30	1	2	10	45	69	20	0	0	0	0	0	0	0	0	147
15:45	0	1	6	49	61	22	0	0	0	0	0	0	0	0	139
16:00	0	0	4	52	62	16	2	0	0	0	0	0	0	0	136
Hour Total	1	3	45	204	251	73	2	0	0	0	0	0	0	0	579
16:15	0	3	15	49	63	11	1	0	0	0	0	0	0	0	142
16:30	1	3	8	59	60	12	0	0	0	0	0	0	0	0	143
16:45	1	5	17	51	73	15	1	0	0	0	0	0	0	0	163
17:00	0	4	23	38	63	23	1	0	0	0	0	0	0	0	152
Hour Total	2	15	63	197	259	61	3	0	0	0	0	0	0	0	600

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710002.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
17:15	0	4	17	87	62	15	1	0	0	0	0	0	0	0	186
17:30	3	13	32	67	35	7	0	0	0	0	0	0	0	0	157
17:45	0	2	13	68	59	15	1	1	0	0	0	0	0	0	159
18:00	4	2	15	57	49	11	1	0	0	0	0	0	0	0	139
Hour Total	7	21	77	279	205	48	3	1	0	0	0	0	0	0	641
18:15	1	2	21	45	48	18	3	0	0	0	0	0	0	0	138
18:30	0	1	7	51	63	15	1	0	0	0	0	0	0	0	138
18:45	0	2	8	32	54	25	2	0	0	0	0	0	0	0	123
19:00	0	5	12	35	40	26	0	0	0	0	0	0	0	0	118
Hour Total	1	10	48	163	205	84	6	0	0	0	0	0	0	0	517
19:15	0	1	12	28	59	10	2	0	0	0	0	0	0	0	112
19:30	0	1	5	31	40	13	2	0	0	0	0	0	0	0	92
19:45	0	0	2	30	38	17	3	0	0	0	0	0	0	0	90
20:00	0	1	9	20	55	22	2	0	0	0	0	0	0	0	109
Hour Total	0	3	28	109	192	62	9	0	0	0	0	0	0	0	403
20:15	0	1	8	28	45	14	2	0	0	0	0	0	0	0	98
20:30	0	4	3	21	53	17	1	0	0	0	0	0	0	0	99
20:45	0	0	3	17	54	13	2	0	0	0	0	0	0	0	89
21:00	0	0	4	19	39	14	4	0	0	0	0	0	0	0	80
Hour Total	0	5	18	85	191	58	9	0	0	0	0	0	0	0	366
21:15	0	0	2	15	52	16	0	0	0	0	0	0	0	0	85
21:30	0	0	3	13	31	10	2	0	0	0	0	0	0	0	59
21:45	0	1	2	8	26	10	2	0	0	0	0	0	0	0	49
22:00	0	1	3	15	24	9	0	0	0	0	0	0	0	0	52
Hour Total	0	2	10	51	133	45	4	0	0	0	0	0	0	0	245
22:15	0	0	5	4	18	15	0	0	0	0	0	0	0	0	42
22:30	0	0	1	0	16	9	3	0	0	0	0	0	0	0	29
22:45	0	1	1	6	10	9	0	0	0	0	0	0	0	0	27
23:00	0	0	0	0	8	10	2	0	0	0	0	0	0	0	20
Hour Total	0	1	7	10	52	43	5	0	0	0	0	0	0	0	118
23:15	0	0	2	0	8	13	1	0	0	0	0	0	0	0	24
23:30	0	0	3	0	12	4	0	0	0	0	0	0	0	0	19
23:45	0	0	0	0	1	6	0	0	0	0	0	0	0	0	7
24:00	0	0	1	1	6	9	1	0	0	0	0	0	0	0	18
Hour Total	0	0	6	1	27	32	2	0	0	0	0	0	0	0	68
DAY TOTAL	28	114	555	2208	3235	1344	164	12	0	0	0	0	0	0	7660
PERCENTS	0.4%	1.5%	7.3%	28.9%	42.2%	17.5%	2.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710002.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total

Statistical Information...

15th Percentile Speed
21.0 mph

85th Percentile Speed
31.4 mph

Median Speed
26.4 mph

Average Speed
26.2 mph

10 MPH Pace Speed
20 mph to 30 mph
5443 vehicles in pace
Representing 71.0% of the total vehicles

Vehicles > 25 MPH
4755
62.1%

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710002.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
00:15	0	0	0	3	6	4	0	0	0	0	0	0	0	0	13
00:30	0	0	0	2	4	1	0	0	0	0	0	0	0	0	7
00:45	0	0	0	1	0	3	0	0	0	0	0	0	0	0	4
01:00	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
Hour Total	0	0	0	6	13	8	0	0	0	0	0	0	0	0	27
01:15	0	0	0	1	2	2	1	0	0	0	0	0	0	0	6
01:30	0	0	0	1	0	2	0	0	0	0	0	0	0	0	3
01:45	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
02:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
Hour Total	0	0	0	2	4	6	1	0	0	0	0	0	0	0	13
02:15	0	0	0	0	2	1	0	0	0	0	0	0	0	0	3
02:30	0	0	0	0	2	1	0	1	0	0	0	0	0	0	4
02:45	0	0	0	1	1	1	0	0	0	0	0	0	0	0	3
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	0	0	1	5	3	0	1	0	0	0	0	0	0	10
03:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
03:45	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	0	0	0	2	1	0	0	0	0	0	0	0	0	3
04:15	0	0	0	0	2	2	0	0	0	0	0	0	0	0	4
04:30	0	0	2	0	2	1	0	0	0	0	0	0	0	0	5
04:45	0	0	0	0	4	3	0	0	0	0	0	0	0	0	7
05:00	0	0	0	1	5	0	0	0	0	0	0	0	0	0	6
Hour Total	0	0	2	1	13	6	0	0	0	0	0	0	0	0	22
05:15	0	0	0	0	4	2	1	0	0	0	0	0	0	0	7
05:30	0	0	1	0	4	1	0	0	0	0	0	0	0	0	6
05:45	0	0	0	2	9	4	0	0	0	0	0	0	0	0	15
06:00	0	0	0	2	5	6	3	0	0	0	0	0	0	0	16
Hour Total	0	0	1	4	22	13	4	0	0	0	0	0	0	0	44
06:15	0	0	0	2	8	2	1	0	0	0	0	0	0	0	13
06:30	0	0	0	0	7	13	1	0	0	0	0	0	0	0	21
06:45	0	0	0	6	16	10	6	0	0	0	0	0	0	0	38
07:00	0	0	0	7	18	14	1	2	0	0	0	0	0	0	42
Hour Total	0	0	0	15	49	39	9	2	0	0	0	0	0	0	114
07:15	0	0	0	7	25	18	6	4	0	0	0	0	0	0	60
07:30	0	0	0	0	25	33	9	0	0	0	0	0	0	0	67
07:45	0	0	0	6	37	27	9	0	0	0	0	0	0	0	79
08:00	0	0	1	15	31	30	7	1	0	0	0	0	0	0	85
Hour Total	0	0	1	28	118	108	31	5	0	0	0	0	0	0	291
08:15	0	1	1	9	32	38	9	0	0	0	0	0	0	0	90
08:30	0	0	1	2	20	44	17	2	0	0	0	0	0	0	86
08:45	0	0	1	18	39	33	4	0	0	0	0	0	0	0	95
09:00	0	1	1	13	53	32	3	0	0	0	0	0	0	0	103

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710002.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
Hour Total	0	2	4	42	144	147	33	2	0	0	0	0	0	0	374
09:15	0	0	4	4	48	37	6	0	0	0	0	0	0	0	99
09:30	2	5	6	20	39	23	1	0	0	0	0	0	0	0	96
09:45	0	1	1	15	53	31	4	1	0	0	0	0	0	0	106
10:00	0	0	2	17	72	16	3	0	0	0	0	0	0	0	110
Hour Total	2	6	13	56	212	107	14	1	0	0	0	0	0	0	411
10:15	0	0	5	22	47	28	11	0	0	0	0	0	0	0	113
10:30	0	0	4	37	61	19	3	0	0	0	0	0	0	0	124
10:45	1	3	13	57	45	16	1	0	0	0	0	0	0	0	136
11:00	0	0	14	24	66	18	0	1	0	0	0	0	0	0	123
Hour Total	1	3	36	140	219	81	15	1	0	0	0	0	0	0	496
11:15	0	1	1	22	57	17	3	0	0	0	0	0	0	0	101
11:30	0	1	3	35	64	19	3	0	0	0	0	0	0	0	125
11:45	0	4	20	49	55	10	1	0	0	0	0	0	0	0	139
12:00	0	0	15	36	61	19	2	1	0	0	0	0	0	0	134
Hour Total	0	6	39	142	237	65	9	1	0	0	0	0	0	0	499
12:15	0	1	10	63	56	16	0	0	0	0	0	0	0	0	146
12:30	2	6	5	57	77	12	2	0	0	0	0	0	0	0	161
12:45	1	1	16	48	67	8	2	0	0	0	0	0	0	0	143
13:00	0	0	23	77	54	6	0	0	0	0	0	0	0	0	160
Hour Total	3	8	54	245	254	42	4	0	0	0	0	0	0	0	610
13:15	0	0	5	53	61	26	4	0	0	0	0	0	0	0	149
13:30	0	8	22	41	59	18	3	1	0	0	0	0	0	0	152
13:45	0	1	8	42	59	20	5	0	0	0	0	0	0	0	135
14:00	0	0	4	37	74	17	1	0	0	0	0	0	0	0	133
Hour Total	0	9	39	173	253	81	13	1	0	0	0	0	0	0	569
14:15	1	8	21	59	53	12	0	0	0	0	0	0	0	0	154
14:30	0	0	9	49	44	30	2	0	0	0	0	0	0	0	134
14:45	0	5	8	37	67	14	0	0	0	0	0	0	0	0	131
15:00	0	1	8	49	44	26	4	1	0	0	0	0	0	0	133
Hour Total	1	14	46	194	208	82	6	1	0	0	0	0	0	0	552
15:15	1	13	27	39	42	20	1	0	0	0	0	0	0	0	143
15:30	1	9	16	54	53	16	3	0	0	0	0	0	0	0	152
15:45	0	6	39	38	66	12	1	0	0	0	0	0	0	0	162
16:00	1	2	2	41	52	12	1	1	0	0	0	0	0	0	112
Hour Total	3	30	84	172	213	60	6	1	0	0	0	0	0	0	569
16:15	0	1	6	55	75	16	0	0	0	0	0	0	0	0	153
16:30	2	0	12	59	52	11	2	0	0	0	0	0	0	0	138
16:45	1	5	21	40	56	22	1	0	0	0	0	0	0	0	146
17:00	1	1	13	46	76	13	2	0	0	0	0	0	0	0	152
Hour Total	4	7	52	200	259	62	5	0	0	0	0	0	0	0	589

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710002.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
17:15	0	3	17	46	66	34	0	0	0	0	0	0	0	0	166
17:30	1	2	14	49	69	14	0	0	0	0	0	0	0	0	149
17:45	1	1	15	23	71	26	1	0	0	0	0	0	0	0	138
18:00	0	2	7	37	63	29	3	0	0	0	0	0	0	0	141
Hour Total	2	8	53	155	269	103	4	0	0	0	0	0	0	0	594
18:15	0	0	11	29	75	28	3	0	0	0	0	0	0	0	146
18:30	0	1	8	45	54	22	10	1	0	0	0	0	0	0	141
18:45	0	0	16	35	49	13	8	0	0	0	0	0	0	0	121
19:00	0	1	4	27	67	26	3	0	0	0	0	0	0	0	128
Hour Total	0	2	39	136	245	89	24	1	0	0	0	0	0	0	536
19:15	0	1	9	23	60	12	2	0	0	0	0	0	0	0	107
19:30	0	4	14	9	43	15	5	1	0	0	0	0	0	0	91
19:45	0	1	2	23	53	11	4	0	0	0	0	0	0	0	94
20:00	0	2	11	33	35	14	4	0	0	0	0	0	0	0	99
Hour Total	0	8	36	88	191	52	15	1	0	0	0	0	0	0	391
20:15	0	0	10	22	43	20	1	1	0	0	0	0	0	0	97
20:30	0	0	9	29	40	15	2	0	0	0	0	0	0	0	95
20:45	0	0	18	33	38	11	0	0	0	0	0	0	0	0	100
21:00	0	1	0	15	42	18	1	0	0	0	0	0	0	0	77
Hour Total	0	1	37	99	163	64	4	1	0	0	0	0	0	0	369
21:15	0	1	4	9	38	10	1	0	0	0	0	0	0	0	63
21:30	0	0	1	15	29	23	1	0	0	0	0	0	0	0	69
21:45	0	0	3	10	43	11	0	0	0	0	0	0	0	0	67
22:00	0	0	6	8	25	11	3	0	0	0	0	0	0	0	53
Hour Total	0	1	14	42	135	55	5	0	0	0	0	0	0	0	252
22:15	0	1	2	8	20	9	3	0	0	0	0	0	0	0	43
22:30	0	0	1	0	21	11	3	0	0	0	0	0	0	0	36
22:45	0	0	1	4	15	7	0	0	0	0	0	0	0	0	27
23:00	0	0	0	1	16	4	0	0	0	0	0	0	0	0	21
Hour Total	0	1	4	13	72	31	6	0	0	0	0	0	0	0	127
23:15	0	1	2	3	10	10	3	0	1	0	0	0	0	0	30
23:30	0	0	0	4	3	7	1	0	0	0	0	0	0	0	15
23:45	0	0	1	0	2	3	1	0	0	0	0	0	0	0	7
24:00	0	0	1	0	5	7	0	0	0	0	0	0	0	0	13
Hour Total	0	1	4	7	20	27	5	0	1	0	0	0	0	0	65
DAY TOTAL	16	107	558	1961	3320	1332	213	19	1	0	0	0	0	0	7527
PERCENTS	0.3%	1.5%	7.5%	26.0%	44.1%	17.6%	2.8%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710002.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total

Statistical Information...

15th Percentile Speed
21.2 mph

85th Percentile Speed
31.6 mph

Median Speed
26.7 mph

Average Speed
26.4 mph

10 MPH Pace Speed
20 mph to 30 mph
5281 vehicles in pace
Representing 70.1% of the total vehicles

Vehicles > 25 MPH
4885
64.9%

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710002.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
00:15	0	0	0	0	4	3	0	0	0	0	0	0	0	0	7
00:30	0	0	0	1	7	0	1	0	0	0	0	0	0	0	9
00:45	0	0	0	2	2	1	1	0	0	0	0	0	0	0	6
01:00	0	0	1	0	2	3	0	0	0	0	0	0	0	0	6
Hour Total	0	0	1	3	15	7	2	0	0	0	0	0	0	0	28
01:15	0	0	0	0	5	2	0	0	0	0	0	0	0	0	7
01:30	0	0	0	0	3	1	1	0	0	0	0	0	0	0	5
01:45	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
02:00	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
Hour Total	0	0	0	1	9	5	1	0	0	0	0	0	0	0	16
02:15	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
02:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
02:45	0	0	0	1	0	2	0	0	0	0	0	0	0	0	3
03:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Hour Total	0	0	0	3	1	2	1	0	0	0	0	0	0	0	7
03:15	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
03:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
04:00	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
Hour Total	0	0	0	0	2	2	1	0	0	0	0	0	0	0	5
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
04:45	0	0	0	1	3	3	0	0	0	0	0	0	0	0	7
05:00	0	0	0	1	1	2	0	0	0	0	0	0	0	0	4
Hour Total	0	0	0	2	4	6	0	0	0	0	0	0	0	0	12
05:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
05:30	0	0	0	0	5	1	0	0	0	0	0	0	0	0	6
05:45	0	0	0	0	12	5	1	0	0	0	0	0	0	0	18
06:00	0	0	0	1	10	9	1	0	0	0	0	0	0	0	21
Hour Total	0	0	0	1	27	15	3	0	0	0	0	0	0	0	46
06:15	0	0	0	1	10	11	2	0	0	0	0	0	0	0	24
06:30	0	0	0	1	7	13	4	0	0	0	0	0	0	0	25
06:45	0	0	0	7	15	16	3	1	0	0	0	0	0	0	42
07:00	0	0	0	2	13	23	7	0	0	0	0	0	0	0	45
Hour Total	0	0	0	11	45	63	16	1	0	0	0	0	0	0	136
07:15	0	0	1	2	20	25	10	2	0	0	0	0	0	0	60
07:30	0	0	0	2	22	40	3	1	0	0	0	0	0	0	68
07:45	0	1	0	2	25	33	9	1	0	0	0	0	0	0	71
08:00	1	0	0	3	33	46	11	0	0	0	0	0	0	0	94
Hour Total	1	1	1	9	100	144	33	4	0	0	0	0	0	0	293
08:15	0	1	0	3	37	28	1	1	0	0	0	0	0	0	71
08:30	0	0	0	1	56	32	9	0	0	0	0	0	0	0	98
08:45	0	0	0	11	29	45	7	0	0	0	0	0	0	0	92
09:00	0	0	3	7	59	38	6	0	0	0	0	0	0	0	113

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710002.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
Hour Total	0	1	3	22	181	143	23	1	0	0	0	0	0	0	374
09:15	0	0	1	7	45	31	13	1	0	0	0	0	0	0	98
09:30	0	0	2	6	31	26	10	1	0	0	0	0	0	0	76
09:45	0	2	1	27	42	19	0	0	0	0	0	0	0	0	91
10:00	0	0	2	21	46	32	3	0	0	0	0	0	0	0	104
Hour Total	0	2	6	61	164	108	26	2	0	0	0	0	0	0	369
10:15	0	0	0	30	69	15	2	1	0	0	0	0	0	0	117
10:30	0	5	2	28	46	31	2	0	0	0	0	0	0	0	114
10:45	0	4	3	22	63	21	1	0	0	0	0	0	0	0	114
11:00	3	0	11	40	64	23	2	0	0	0	0	0	0	0	143
Hour Total	3	9	16	120	242	90	7	1	0	0	0	0	0	0	488
11:15	0	1	17	30	58	17	3	0	0	0	0	0	0	0	126
11:30	0	0	7	43	61	24	1	0	0	0	0	0	0	0	136
11:45	0	0	4	41	64	14	2	0	0	0	0	0	0	0	125
12:00	0	0	2	32	72	36	1	0	0	0	0	0	0	0	143
Hour Total	0	1	30	146	255	91	7	0	0	0	0	0	0	0	530
12:15	0	2	27	42	61	26	1	0	0	0	0	0	0	0	159
12:30	0	0	9	46	71	15	3	0	0	0	0	0	0	0	144
12:45	0	3	25	49	49	14	1	1	0	0	0	0	0	0	142
13:00	0	2	22	54	60	16	2	0	0	0	0	0	0	0	156
Hour Total	0	7	83	191	241	71	7	1	0	0	0	0	0	0	601
13:15	0	3	20	35	70	24	1	0	0	0	0	0	0	0	153
13:30	7	8	11	37	44	27	5	0	0	0	0	0	0	0	139
13:45	3	13	23	50	47	12	0	1	0	0	0	0	0	0	149
14:00	5	21	22	31	56	14	4	0	0	0	0	0	0	0	153
Hour Total	15	45	76	153	217	77	10	1	0	0	0	0	0	0	594
14:15	1	4	10	62	70	15	2	0	0	0	0	0	0	0	164
14:30	0	4	16	63	48	17	1	0	0	0	0	0	0	0	149
14:45	0	0	6	43	58	15	5	0	0	0	0	0	0	0	127
15:00	0	1	21	40	62	30	3	0	0	0	0	0	0	0	157
Hour Total	1	9	53	208	238	77	11	0	0	0	0	0	0	0	597
15:15	0	2	14	36	47	31	2	0	0	0	0	0	0	0	132
15:30	5	10	18	46	51	15	3	0	0	0	0	0	0	0	148
15:45	2	4	21	65	49	11	2	0	0	0	0	0	0	0	154
16:00	2	4	6	32	53	21	2	0	0	0	0	0	0	0	120
Hour Total	9	20	59	179	200	78	9	0	0	0	0	0	0	0	554
16:15	0	0	12	42	64	27	3	0	0	0	0	0	0	0	148
16:30	0	3	13	35	52	26	3	0	0	0	0	0	0	0	132
16:45	0	2	25	43	77	21	1	0	0	0	0	0	0	0	169
17:00	1	11	25	51	47	13	2	1	0	0	0	0	0	0	151
Hour Total	1	16	75	171	240	87	9	1	0	0	0	0	0	0	600

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710002.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
17:15	5	9	13	60	72	17	1	1	0	0	0	0	0	0	178
17:30	0	2	19	36	68	17	1	0	0	0	0	0	0	0	143
17:45	1	0	12	49	70	16	2	1	0	0	0	0	0	0	151
18:00	1	1	16	76	58	10	2	0	0	0	0	0	0	0	164
Hour Total	7	12	60	221	268	60	6	2	0	0	0	0	0	0	636
18:15	0	0	7	27	79	23	2	0	0	0	0	0	0	0	138
18:30	0	0	7	29	73	19	7	0	0	0	0	0	0	0	135
18:45	0	1	5	35	48	23	1	1	0	0	0	0	0	0	114
19:00	0	0	8	16	65	22	9	0	0	0	0	0	0	0	120
Hour Total	0	1	27	107	265	87	19	1	0	0	0	0	0	0	507
19:15	0	0	5	19	52	25	2	0	0	0	0	0	0	0	103
19:30	0	1	6	28	69	19	1	0	0	0	0	0	0	0	124
19:45	0	3	13	33	58	23	2	0	0	0	0	0	0	0	132
20:00	0	2	12	48	42	17	4	1	0	0	0	0	0	0	126
Hour Total	0	6	36	128	221	84	9	1	0	0	0	0	0	0	485
20:15	0	1	11	22	42	16	1	0	0	0	0	0	0	0	93
20:30	0	0	4	24	59	11	4	0	0	0	0	0	0	0	102
20:45	0	2	4	16	61	19	2	0	0	0	0	0	0	0	104
21:00	0	2	8	36	38	10	1	0	0	0	0	0	0	0	95
Hour Total	0	5	27	98	200	56	8	0	0	0	0	0	0	0	394
21:15	0	0	2	16	48	8	1	0	0	0	0	0	0	0	75
21:30	0	0	3	14	43	6	1	0	0	0	0	0	0	0	67
21:45	0	0	2	5	47	17	0	0	0	0	0	0	0	0	71
22:00	0	0	5	21	13	10	1	0	0	0	0	0	0	0	50
Hour Total	0	0	12	56	151	41	3	0	0	0	0	0	0	0	263
22:15	0	1	5	9	16	6	0	0	0	0	0	0	0	0	37
22:30	0	0	2	6	14	8	3	0	0	0	0	0	0	0	33
22:45	0	0	1	0	6	6	4	0	0	0	0	0	0	0	17
23:00	0	0	2	3	16	7	2	0	0	0	0	0	0	0	30
Hour Total	0	1	10	18	52	27	9	0	0	0	0	0	0	0	117
23:15	0	1	1	2	12	7	1	1	0	0	0	0	0	0	25
23:30	0	1	0	2	11	2	3	0	0	0	0	0	0	0	19
23:45	0	0	1	0	7	3	1	0	0	0	0	0	0	0	12
24:00	0	0	0	2	4	6	0	0	0	0	0	0	0	0	12
Hour Total	0	2	2	6	34	18	5	1	0	0	0	0	0	0	68
DAY TOTAL	37	138	577	1915	3372	1439	225	17	0	0	0	0	0	0	7720
PERCENTS	0.5%	1.8%	7.5%	24.9%	43.6%	18.6%	2.9%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Station #: 000000009348
Site ID: Site A EB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: EAST
Lane: 1

File: D0710002.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
GRAND TOTAL	81	1690	9927	602	1	0	0	359	6084	4115	48	0	0	0	22907
PERCENTS	0.4%	1.6%	7.4%	26.6%	43.3%	17.9%	2.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
21.1 mph

85th Percentile Speed
31.8 mph

Median Speed
26.8 mph

Average Speed
26.4 mph

10 MPH Pace Speed
20 mph to 30 mph
5287 vehicles in pace
Representing 68.4% of the total vehicles

Vehicles > 25 MPH
5053
65.5%

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Tue 7/11/2017

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710003.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
00:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
00:30	0	7	0	0	1	0	0	0	0	0	0	0	0	0	0	8
00:45	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	6
01:00	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0	8
Hour Total	0	21	2	0	1	0	0	0	0	0	0	0	0	0	0	24
01:15	1	3	1	0	1	0	0	0	0	0	0	0	0	0	0	6
01:30	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
01:45	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	6
02:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Hour Total	1	14	2	0	1	0	0	0	0	0	0	0	0	0	0	18
02:15	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
02:30	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	8
02:45	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	15
03:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:45	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Hour Total	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
04:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:30	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:45	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	4
05:00	0	5	0	0	0	0	0	0	1	0	0	0	0	0	0	6
Hour Total	0	12	2	0	0	0	0	0	1	0	0	0	0	0	0	15
05:15	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5
05:30	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5
05:45	0	5	1	0	0	0	0	1	0	0	0	0	0	0	0	7
06:00	0	3	1	0	2	0	0	0	0	0	0	0	0	0	0	6
Hour Total	0	16	4	0	2	0	0	1	0	0	0	0	0	0	0	23
06:15	0	8	5	0	0	0	0	0	0	0	0	0	0	0	0	13
06:30	0	15	2	0	0	0	0	0	0	0	0	0	0	0	0	17
06:45	1	18	3	0	1	0	0	0	0	0	0	0	0	0	0	23
07:00	0	35	6	0	2	0	0	0	0	0	0	0	0	0	0	43
Hour Total	1	76	16	0	3	0	0	0	0	0	0	0	0	0	0	96
07:15	0	33	10	0	1	0	0	0	0	0	0	0	0	0	0	44
07:30	0	35	3	0	0	0	0	1	0	0	0	0	0	0	0	39
07:45	0	64	14	0	2	0	0	0	1	0	0	0	0	0	0	81
08:00	0	81	8	0	0	0	0	0	1	0	0	0	0	0	0	90
Hour Total	0	213	35	0	3	0	0	1	2	0	0	0	0	0	0	254
08:15	1	89	10	0	1	0	0	0	1	0	0	0	0	0	0	102
08:30	0	81	18	0	1	0	0	1	0	0	0	0	0	0	0	101
08:45	0	71	10	0	3	0	0	0	1	0	0	0	0	0	0	85
09:00	0	97	11	0	3	1	0	0	0	0	0	0	0	0	0	112

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Tue 7/11/2017

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710003.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Hour Total	1	338	49	0	8	1	0	1	2	0	0	0	0	0	0	400
09:15	0	95	10	0	2	0	0	0	0	0	0	0	0	0	0	107
09:30	0	87	11	0	1	0	0	0	2	0	0	0	0	0	0	101
09:45	2	85	19	0	1	0	0	0	0	0	0	0	1	0	0	108
10:00	0	88	11	0	1	0	0	0	0	0	0	0	0	0	0	100
Hour Total	2	355	51	0	5	0	0	0	2	0	0	0	1	0	0	416
10:15	1	91	19	0	2	1	0	0	0	0	0	0	0	0	0	114
10:30	0	103	16	0	1	2	0	1	0	0	0	0	0	0	0	123
10:45	0	99	17	0	0	0	0	0	0	0	0	0	0	0	0	116
11:00	0	100	17	0	3	0	0	0	0	0	0	0	0	0	0	120
Hour Total	1	393	69	0	6	3	0	1	0	0	0	0	0	0	0	473
11:15	0	109	16	0	4	0	0	0	0	0	0	0	0	0	0	129
11:30	0	113	24	0	1	0	0	0	0	0	0	0	0	0	0	138
11:45	1	104	18	1	0	0	0	0	0	0	0	0	0	0	0	124
12:00	0	99	18	0	1	0	0	0	0	0	0	0	1	0	0	119
Hour Total	1	425	76	1	6	0	0	0	0	0	0	0	1	0	0	510
12:15	1	128	16	0	2	0	0	0	0	0	1	1	1	0	0	150
12:30	0	120	30	0	0	0	1	0	0	0	0	0	0	0	0	151
12:45	1	120	13	0	1	0	0	0	0	0	0	0	0	0	0	135
13:00	0	117	22	0	0	0	0	1	1	0	0	1	0	0	0	142
Hour Total	2	485	81	0	3	0	1	1	1	0	1	2	1	0	0	578
13:15	0	112	25	0	0	0	0	0	0	0	0	0	1	0	0	138
13:30	0	107	12	0	0	0	0	0	0	0	0	0	0	0	0	119
13:45	0	131	21	0	0	0	0	0	0	0	0	1	0	0	0	153
14:00	0	118	19	0	0	0	0	1	0	0	0	1	0	0	0	139
Hour Total	0	468	77	0	0	0	0	1	0	0	0	2	1	0	0	549
14:15	1	115	17	0	1	0	0	1	0	0	0	0	1	0	0	136
14:30	2	115	27	0	2	0	0	0	1	0	0	0	0	0	0	147
14:45	1	132	20	0	0	0	0	0	0	0	0	0	0	0	0	153
15:00	0	147	11	0	0	0	0	0	0	0	1	0	0	0	0	159
Hour Total	4	509	75	0	3	0	0	1	1	0	1	0	1	0	0	595
15:15	0	133	22	0	0	0	0	0	1	0	0	0	1	0	0	157
15:30	1	120	17	0	1	0	0	1	0	0	0	0	0	0	0	140
15:45	1	122	26	0	1	0	0	0	0	0	0	1	0	0	0	151
16:00	0	108	25	0	1	0	0	0	0	0	0	0	0	0	0	134
Hour Total	2	483	90	0	3	0	0	1	1	0	0	1	1	0	0	582
16:15	1	123	25	1	1	0	0	0	0	0	0	0	0	0	0	151
16:30	2	127	35	0	1	0	0	0	0	0	0	0	0	0	0	165
16:45	0	118	13	0	1	0	0	0	0	0	0	0	1	0	0	133
17:00	0	130	28	0	0	0	0	0	0	0	0	0	0	0	0	158
Hour Total	3	498	101	1	3	0	0	0	0	0	0	0	1	0	0	607

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Tue 7/11/2017

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710003.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
17:15	0	133	16	0	0	0	0	0	0	0	0	0	0	0	0	149
17:30	0	157	16	0	1	0	0	0	0	0	0	0	0	0	0	174
17:45	2	123	15	0	2	1	0	0	0	0	0	0	0	0	0	143
18:00	1	134	16	0	1	0	0	0	0	0	0	0	0	0	0	152
Hour Total	3	547	63	0	4	1	0	0	0	0	0	0	0	0	0	618
18:15	2	110	17	0	1	1	0	0	0	0	1	0	0	0	0	132
18:30	0	124	18	0	0	0	0	0	0	0	0	0	0	0	0	142
18:45	0	111	7	0	1	0	0	0	0	0	0	0	0	0	0	119
19:00	0	89	11	0	0	0	0	0	0	0	0	0	0	0	0	100
Hour Total	2	434	53	0	2	1	0	0	0	0	1	0	0	0	0	493
19:15	0	99	20	0	1	0	0	0	0	0	0	0	0	0	0	120
19:30	1	93	15	0	0	0	0	0	0	0	0	0	0	0	0	109
19:45	0	91	11	0	0	0	0	0	0	0	0	0	0	0	0	102
20:00	1	94	11	0	1	0	0	0	0	0	0	0	0	0	0	107
Hour Total	2	377	57	0	2	0	0	0	0	0	0	0	0	0	0	438
20:15	0	87	11	0	1	0	0	0	0	0	0	0	0	0	0	99
20:30	0	69	9	0	0	0	0	0	0	0	0	0	0	0	0	78
20:45	0	69	7	0	0	0	0	0	0	0	0	0	0	0	0	76
21:00	0	67	6	0	0	0	0	0	0	0	0	0	0	0	0	73
Hour Total	0	292	33	0	1	0	0	0	0	0	0	0	0	0	0	326
21:15	0	77	17	0	0	0	0	0	0	0	0	0	0	0	0	94
21:30	0	56	5	0	0	0	0	0	0	0	0	0	0	0	0	61
21:45	1	52	5	0	0	0	0	0	0	0	0	0	0	0	0	58
22:00	1	42	3	0	0	0	0	0	0	0	0	0	0	0	0	46
Hour Total	2	227	30	0	0	0	0	0	0	0	0	0	0	0	0	259
22:15	0	50	3	0	0	0	0	0	0	0	0	0	0	0	0	53
22:30	0	29	0	0	1	0	0	0	0	0	0	0	0	0	0	30
22:45	0	29	2	0	0	0	0	0	0	0	0	0	0	0	0	31
23:00	0	29	3	0	0	0	0	0	0	0	0	0	0	0	0	32
Hour Total	0	137	8	0	1	0	0	0	0	0	0	0	0	0	0	146
23:15	0	19	3	0	0	0	0	0	0	0	0	0	0	0	0	22
23:30	1	14	0	0	0	0	0	0	0	0	0	0	0	0	0	15
23:45	0	14	2	0	0	0	0	0	0	0	0	0	0	0	0	16
24:00	0	12	2	0	0	0	0	0	0	0	0	0	0	0	0	14
Hour Total	1	59	7	0	0	0	0	0	0	0	0	0	0	0	0	67
DAY TOTAL	28	6400	981	2	57	6	1	8	10	0	3	5	7	0	0	7508
PERCENTS	0.4%	85.3%	13.1%	0.1%	0.8%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Passenger Vehicles 98.6% Trucks & Buses 1.3%

AM Times	09:30	11:00	11:15	11:00	08:30	09:45	05:00	07:30	09:00	11:00
AM Peaks	3	426	76	1	9	3	1	3	1	511
PM Times	17:30	17:15	15:45	15:30	17:30	17:30	12:15	13:30	14:30	12:15	12:15	12:15	17:00
PM Peaks	5	547	111	1	5	2	1	2	2	1	2	1	624

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Wed 7/12/2017

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710003.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
00:15	0	15	1	0	0	0	0	0	0	0	0	0	0	0	0	16
00:30	0	9	1	0	0	0	0	0	0	0	0	0	0	0	0	10
00:45	0	5	2	0	0	0	0	0	0	0	0	0	0	0	0	7
01:00	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	3
Hour Total	0	30	5	0	1	0	0	0	0	0	0	0	0	0	0	36
01:15	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
01:30	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5
01:45	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7
02:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Hour Total	0	20	1	0	0	0	0	0	0	0	0	0	0	0	0	21
02:15	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	4
02:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:45	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
03:00	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	3
Hour Total	0	7	0	0	2	0	0	0	1	0	0	0	0	0	0	10
03:15	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
03:30	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	6
04:15	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	3
05:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Hour Total	0	7	2	0	0	0	0	0	1	0	0	0	0	0	0	10
05:15	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	5
05:30	0	7	0	0	0	0	0	1	0	0	0	0	0	0	0	8
05:45	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	4
06:00	0	11	2	0	1	0	0	0	0	0	0	0	0	0	0	14
Hour Total	0	25	3	0	1	1	0	1	0	0	0	0	0	0	0	31
06:15	0	13	3	0	0	0	1	0	0	0	0	0	0	0	0	17
06:30	0	17	3	0	1	0	0	1	0	0	0	0	0	0	0	22
06:45	0	18	5	0	2	0	0	0	0	0	0	0	0	0	0	25
07:00	0	36	8	0	0	0	0	0	0	0	0	0	0	0	0	44
Hour Total	0	84	19	0	3	0	1	1	0	0	0	0	0	0	0	108
07:15	0	33	6	0	1	0	0	0	0	0	0	0	0	0	0	40
07:30	0	42	5	0	0	0	0	1	0	0	0	0	0	0	0	48
07:45	0	47	7	0	2	0	0	0	0	0	0	0	0	0	0	56
08:00	0	80	8	0	0	0	0	0	0	0	0	0	0	0	0	88
Hour Total	0	202	26	0	3	0	0	1	0	0	0	0	0	0	0	232
08:15	1	77	9	0	3	0	0	1	0	0	1	0	0	0	0	92
08:30	0	71	17	0	0	0	0	1	0	0	0	0	0	0	0	89
08:45	0	65	10	1	2	1	0	0	0	0	0	0	0	0	0	79
09:00	1	96	16	0	3	0	0	0	1	0	0	1	0	0	0	118

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Wed 7/12/2017

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710003.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Hour Total	2	309	52	1	8	1	0	2	1	0	1	1	0	0	0	378
09:15	0	87	12	0	1	0	0	0	0	0	0	0	0	0	0	100
09:30	0	78	11	0	0	1	0	0	0	0	0	0	0	0	0	90
09:45	0	90	19	0	1	1	0	0	0	0	0	0	0	0	0	111
10:00	0	88	14	0	0	0	0	0	0	0	0	1	0	0	0	103
Hour Total	0	343	56	0	2	2	0	0	0	0	0	1	0	0	0	404
10:15	1	70	21	0	1	1	0	0	1	0	0	0	0	0	0	95
10:30	0	81	21	0	3	0	0	0	0	0	0	0	0	0	0	105
10:45	0	96	11	0	1	1	0	0	0	0	0	0	0	0	0	109
11:00	0	106	19	0	2	0	0	0	0	0	0	0	0	0	0	127
Hour Total	1	353	72	0	7	2	0	0	1	0	0	0	0	0	0	436
11:15	1	90	13	0	2	0	0	0	0	0	0	0	0	0	0	106
11:30	0	99	14	0	2	0	0	0	0	0	0	0	0	0	0	115
11:45	1	119	28	0	1	0	0	1	0	0	0	1	0	0	0	151
12:00	0	119	20	0	1	0	0	0	0	0	0	2	0	0	0	142
Hour Total	2	427	75	0	6	0	0	1	0	0	0	3	0	0	0	514
12:15	0	121	24	0	3	0	0	1	1	0	0	0	0	0	0	150
12:30	0	139	19	0	1	0	0	0	0	0	0	1	1	0	0	161
12:45	1	119	15	0	2	0	0	0	0	0	0	0	0	0	0	137
13:00	2	134	15	1	1	0	0	2	0	0	0	0	0	0	0	155
Hour Total	3	513	73	1	7	0	0	3	1	0	0	1	1	0	0	603
13:15	1	121	19	0	1	0	0	0	0	0	0	1	0	0	0	143
13:30	2	126	25	0	0	0	0	1	1	0	0	0	0	0	0	155
13:45	0	124	21	0	1	0	0	0	0	0	0	0	2	0	0	148
14:00	0	142	18	0	1	0	0	0	1	0	0	0	0	0	0	162
Hour Total	3	513	83	0	3	0	0	1	2	0	0	1	2	0	0	608
14:15	0	110	24	0	0	0	0	0	0	0	0	0	1	0	0	135
14:30	1	121	19	0	0	0	0	0	1	0	0	0	1	0	0	143
14:45	1	125	14	0	0	0	0	0	0	0	0	0	0	0	0	140
15:00	1	112	17	0	0	0	0	0	2	0	0	0	0	0	0	132
Hour Total	3	468	74	0	0	0	0	0	3	0	0	0	2	0	0	550
15:15	1	121	15	0	1	0	0	0	0	0	0	0	0	0	0	138
15:30	0	110	18	0	1	0	0	1	0	0	0	0	0	0	0	130
15:45	2	102	21	0	2	0	0	0	0	0	0	0	0	0	0	127
16:00	1	135	21	1	1	0	0	0	0	0	0	0	0	0	0	159
Hour Total	4	468	75	1	5	0	0	1	0	0	0	0	0	0	0	554
16:15	0	111	37	0	1	0	0	0	0	0	0	1	0	0	0	150
16:30	1	122	21	0	0	0	0	1	0	0	0	1	0	0	0	146
16:45	1	114	25	0	1	0	0	1	0	0	0	0	0	0	0	142
17:00	0	148	15	0	0	0	0	0	0	0	0	0	0	0	0	163
Hour Total	2	495	98	0	2	0	0	2	0	0	0	2	0	0	0	601

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Wed 7/12/2017

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710003.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
17:15	1	143	18	0	0	0	0	0	1	0	0	0	0	0	0	163
17:30	3	136	17	0	1	0	0	0	0	1	0	0	0	0	0	158
17:45	0	120	19	0	0	1	0	2	0	0	0	1	0	0	0	143
18:00	0	129	13	0	0	0	0	1	0	0	0	0	0	0	0	143
Hour Total	4	528	67	0	1	1	0	3	1	1	0	1	0	0	0	607
18:15	0	119	17	0	0	1	0	0	0	0	0	0	0	0	0	137
18:30	0	117	13	0	1	0	0	0	0	0	0	0	0	0	0	131
18:45	1	98	12	1	0	0	0	0	0	0	0	0	0	0	0	112
19:00	0	100	17	0	0	0	0	0	0	0	0	0	0	0	0	117
Hour Total	1	434	59	1	1	1	0	0	0	0	0	0	0	0	0	497
19:15	0	83	7	0	0	0	0	0	0	0	0	0	0	0	0	90
19:30	0	90	10	0	0	0	0	0	0	0	0	0	0	0	0	100
19:45	0	94	9	0	0	0	0	0	0	0	0	0	0	0	0	103
20:00	0	82	12	0	0	0	0	0	0	0	0	0	0	0	0	94
Hour Total	0	349	38	0	0	0	0	0	0	0	0	0	0	0	0	387
20:15	0	80	7	0	1	0	0	0	0	0	0	0	0	0	0	88
20:30	0	99	9	0	0	0	0	0	0	0	0	0	0	0	0	108
20:45	1	77	10	0	1	0	0	0	0	0	0	0	0	0	0	89
21:00	0	79	7	0	0	0	0	0	0	0	0	0	0	0	0	86
Hour Total	1	335	33	0	2	0	0	0	0	0	0	0	0	0	0	371
21:15	0	82	8	0	0	0	0	0	0	0	0	0	0	0	0	90
21:30	1	85	6	0	0	0	0	0	0	0	0	0	0	0	0	92
21:45	0	64	13	0	0	0	0	0	0	0	0	0	0	0	0	77
22:00	0	50	5	0	0	0	0	0	0	0	0	0	0	0	0	55
Hour Total	1	281	32	0	0	0	0	0	0	0	0	0	0	0	0	314
22:15	0	35	4	0	0	0	0	0	0	0	0	0	0	0	0	39
22:30	0	30	3	0	1	0	0	0	0	0	0	0	0	0	0	34
22:45	0	29	2	0	0	0	0	0	1	0	0	0	0	0	0	32
23:00	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	27
Hour Total	0	121	9	0	1	0	0	0	1	0	0	0	0	0	0	132
23:15	0	24	2	0	0	0	0	0	0	0	0	0	0	0	0	26
23:30	0	24	5	0	0	0	0	0	0	0	0	0	0	0	0	29
23:45	0	18	2	0	0	0	0	0	0	0	0	0	0	0	0	20
24:00	0	10	2	0	0	0	0	0	0	0	0	0	0	0	0	12
Hour Total	0	76	11	0	0	0	0	0	0	0	0	0	0	0	0	87
DAY TOTAL	27	6393	964	4	55	8	1	16	12	1	1	10	5	0	0	7497
PERCENTS	0.4%	85.3%	12.9%	0.1%	0.8%	0.1%	0.0%	0.2%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	100%

Passenger Vehicles 98.4% Trucks & Buses 1.5%

AM Times	08:15	11:15	09:45	08:00	08:15	09:30	05:30	07:30	02:15	07:30	11:15	11:15
AM Peaks	2	427	75	1	8	3	1	2	1	1	3	514
PM Times	12:45	17:00	16:00	12:15	12:15	17:30	12:15	14:15	16:45	12:30	13:45	17:00
PM Peaks	6	547	104	1	7	2	3	3	1	2	4	627

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Thu 7/13/2017

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710003.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
00:15	0	9	3	0	0	0	0	0	0	0	0	0	0	0	0	12
00:30	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7
00:45	0	8	1	0	1	0	0	0	0	0	0	0	0	0	0	10
01:00	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Hour Total	0	30	4	0	1	0	0	0	0	0	0	0	0	0	0	35
01:15	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
01:30	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
01:45	0	6	1	0	0	0	0	0	0	0	0	0	0	0	0	7
02:00	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5
Hour Total	0	19	2	0	0	0	0	0	0	0	0	0	0	0	0	21
02:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
02:30	0	3	1	0	1	0	0	0	0	0	0	0	0	0	0	5
02:45	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
03:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Hour Total	0	10	1	0	2	0	0	0	0	0	0	0	0	0	0	13
03:15	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
03:30	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
04:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:30	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:45	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	4
05:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Hour Total	0	9	2	0	0	0	0	0	0	0	0	0	0	0	0	11
05:15	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5
05:30	0	3	2	0	1	0	0	0	0	0	0	0	0	0	0	6
05:45	0	5	0	0	1	0	0	0	0	0	0	0	0	0	0	6
06:00	0	4	0	0	1	0	0	0	0	0	0	0	0	0	0	5
Hour Total	0	16	3	0	3	0	0	0	0	0	0	0	0	0	0	22
06:15	0	10	3	0	0	0	0	0	0	0	0	0	0	0	0	13
06:30	0	15	3	0	0	0	0	0	0	0	0	0	0	0	0	18
06:45	0	19	7	0	3	0	0	0	0	0	0	0	0	0	0	29
07:00	0	32	12	0	3	0	0	1	0	0	0	0	0	0	0	48
Hour Total	0	76	25	0	6	0	0	1	0	0	0	0	0	0	0	108
07:15	0	33	5	0	1	0	0	0	0	0	0	0	0	0	0	39
07:30	0	37	4	0	0	0	0	0	0	0	0	0	0	0	0	41
07:45	0	51	7	0	3	0	0	0	0	0	0	0	0	0	0	61
08:00	2	76	11	0	0	1	0	0	0	0	0	0	0	0	0	90
Hour Total	2	197	27	0	4	1	0	0	0	0	0	0	0	0	0	231
08:15	0	71	13	0	1	0	0	0	1	0	0	0	0	0	0	86
08:30	0	87	10	1	1	1	0	0	1	0	1	0	0	0	0	102
08:45	2	73	13	0	2	0	0	0	0	0	0	0	0	0	0	90
09:00	0	82	15	0	4	0	0	0	0	0	0	0	0	0	0	101

Peggy Malone & Associates
CLASSIFICATION SUMMARY
Thu 7/13/2017

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710003.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
Hour Total	2	313	51	1	8	1	0	0	2	0	1	0	0	0	0	379
09:15	0	84	8	0	1	0	0	0	0	0	0	0	0	0	0	93
09:30	0	71	12	0	2	0	0	0	0	0	0	0	0	0	0	85
09:45	0	80	16	0	1	0	0	0	0	0	0	0	0	0	0	97
10:00	0	91	15	0	0	0	0	0	0	0	0	0	0	0	0	106
Hour Total	0	326	51	0	4	0	0	0	0	0	0	0	0	0	0	381
10:15	1	86	9	0	1	2	0	1	0	0	0	0	1	0	0	101
10:30	0	89	20	0	0	1	0	0	0	0	0	1	0	0	0	111
10:45	0	112	13	0	1	1	0	0	0	0	0	0	0	0	0	127
11:00	0	101	12	0	0	0	0	0	0	0	0	0	0	0	0	113
Hour Total	1	388	54	0	2	4	0	1	0	0	0	1	1	0	0	452
11:15	1	86	14	0	4	2	0	1	0	0	0	0	1	0	0	109
11:30	1	88	22	0	0	2	0	1	0	0	0	0	0	0	0	114
11:45	1	84	20	0	0	0	0	0	1	0	0	0	0	0	0	106
12:00	0	128	21	0	0	1	0	0	0	0	1	0	1	0	0	152
Hour Total	3	386	77	0	4	5	0	2	1	0	1	0	2	0	0	481
12:15	1	98	24	0	1	0	1	0	0	0	0	0	1	0	0	126
12:30	0	105	22	0	1	1	0	0	0	0	0	0	0	0	0	129
12:45	0	117	19	0	1	0	0	0	0	0	0	0	0	0	0	137
13:00	0	120	18	1	2	0	0	1	0	0	0	1	0	0	0	143
Hour Total	1	440	83	1	5	1	1	1	0	0	0	1	1	0	0	535
13:15	1	144	17	0	2	0	0	0	0	0	0	1	0	0	0	165
13:30	0	122	19	0	1	1	0	1	0	0	0	0	0	0	0	144
13:45	0	112	28	0	0	0	0	0	0	0	0	1	0	0	0	141
14:00	1	130	21	0	3	0	0	1	0	0	0	1	0	0	0	157
Hour Total	2	508	85	0	6	1	0	2	0	0	0	3	0	0	0	607
14:15	1	119	20	0	1	0	0	0	0	0	0	1	0	0	0	142
14:30	0	122	15	0	1	0	0	3	0	0	1	0	0	0	0	142
14:45	1	144	27	0	0	0	0	1	0	0	0	1	0	0	0	174
15:00	1	107	10	0	0	0	0	2	0	0	0	0	0	0	0	120
Hour Total	3	492	72	0	2	0	0	6	0	0	1	2	0	0	0	578
15:15	1	129	20	0	0	1	0	0	1	0	0	0	0	0	0	152
15:30	2	106	21	0	1	0	0	1	0	0	0	0	0	0	0	131
15:45	0	112	22	0	0	1	0	1	0	0	0	0	0	0	0	136
16:00	0	122	22	0	3	0	0	0	0	0	0	2	0	0	0	149
Hour Total	3	469	85	0	4	2	0	2	1	0	0	2	0	0	0	568
16:15	3	130	30	0	1	0	0	0	0	0	0	0	1	0	0	165
16:30	0	118	17	0	0	0	0	0	0	0	0	0	1	0	0	136
16:45	1	121	21	0	2	0	0	0	1	0	0	0	0	0	0	146
17:00	1	134	23	0	3	0	0	1	0	0	0	0	2	0	0	164
Hour Total	5	503	91	0	6	0	0	1	1	0	0	0	4	0	0	611

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710003.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
17:15	1	137	21	0	2	0	0	2	2	0	0	0	2	0	0	167
17:30	1	147	23	0	2	0	0	1	0	0	0	1	0	0	0	175
17:45	1	117	16	1	0	0	0	0	0	0	0	0	0	0	0	135
18:00	1	134	14	0	0	0	0	0	0	0	0	0	0	0	0	149
Hour Total	4	535	74	1	4	0	0	3	2	0	0	1	2	0	0	626
18:15	1	132	16	0	0	1	0	0	0	0	0	0	0	0	0	150
18:30	0	93	11	0	0	0	0	0	0	0	0	0	0	0	0	104
18:45	1	113	13	0	1	0	0	0	0	0	0	0	0	0	0	128
19:00	1	107	12	0	0	0	0	0	0	0	0	0	0	0	0	120
Hour Total	3	445	52	0	1	1	0	0	0	0	0	0	0	0	0	502
19:15	0	117	12	0	1	0	0	0	0	0	0	1	0	0	0	131
19:30	0	95	13	0	0	0	0	0	0	0	0	0	0	0	0	108
19:45	0	120	8	0	0	0	0	0	0	0	0	0	0	0	0	128
20:00	1	94	12	0	0	0	0	0	0	0	0	1	0	0	0	108
Hour Total	1	426	45	0	1	0	0	0	0	0	0	2	0	0	0	475
20:15	1	101	16	0	1	0	0	0	0	0	0	0	0	0	0	119
20:30	1	73	11	0	0	0	0	0	0	0	0	0	0	0	0	85
20:45	0	85	9	0	0	0	0	1	0	0	0	0	0	0	0	95
21:00	0	68	8	0	0	0	0	0	0	0	0	0	0	0	0	76
Hour Total	2	327	44	0	1	0	0	1	0	0	0	0	0	0	0	375
21:15	0	94	7	0	0	0	0	0	1	0	0	0	0	0	0	102
21:30	0	63	8	0	0	0	0	0	0	0	0	0	0	0	0	71
21:45	0	73	5	0	0	0	0	0	0	0	0	0	0	0	0	78
22:00	0	67	6	0	0	0	0	0	0	0	0	0	0	0	0	73
Hour Total	0	297	26	0	0	0	0	0	1	0	0	0	0	0	0	324
22:15	0	41	5	0	0	0	0	0	0	0	0	0	0	0	0	46
22:30	0	36	1	0	1	0	0	0	0	0	0	0	0	0	0	38
22:45	0	30	4	0	0	0	0	0	0	0	0	0	0	0	0	34
23:00	0	39	1	0	0	0	0	0	0	0	0	0	0	0	0	40
Hour Total	0	146	11	0	1	0	0	0	0	0	0	0	0	0	0	158
23:15	0	16	1	0	0	0	0	0	0	0	0	0	0	0	0	17
23:30	0	30	1	0	0	0	0	0	0	0	0	0	0	0	0	31
23:45	0	20	3	0	0	0	0	0	0	0	0	0	0	0	0	23
24:00	0	17	1	0	0	0	0	0	0	0	0	0	0	0	0	18
Hour Total	0	83	6	0	0	0	0	0	0	0	0	0	0	0	0	89
DAY TOTAL	32	6447	971	3	65	16	1	20	8	0	3	12	10	0	0	7588
PERCENTS	0.5%	85.0%	12.8%	0.1%	0.9%	0.2%	0.0%	0.2%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	100%

Passenger Vehicles 98.1% Trucks & Buses 1.8%

AM Times	08:00	10:15	11:15	07:45	08:45	10:45	10:45	07:45	07:45	09:45	11:15	11:15
AM Peaks	4	388	77	1	9	5	2	2	1	1	2	481
PM Times	14:45	16:45	15:30	12:15	16:45	15:00	12:15	14:15	16:30	13:45	13:00	16:30	16:45
PM Peaks	5	539	95	1	9	2	1	6	3	1	3	5	652

GRAND TOTAL	87	19240	2916	9	177	30	3	44	30	1	7	27	22	0	0 22593
PERCENTS	0.4%	85.2%	13.0%	0.1%	0.8%	0.2%	0.0%	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0% 100%

Peggy Malone & Associates
SPEED SUMMARY
Tue 7/11/2017

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710004.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
00:15	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
00:30	0	0	0	3	2	3	0	0	0	0	0	0	0	0	8
00:45	0	0	0	1	4	1	0	0	0	0	0	0	0	0	6
01:00	0	0	0	1	5	2	0	0	0	0	0	0	0	0	8
Hour Total	0	0	1	5	12	6	0	0	0	0	0	0	0	0	24
01:15	0	0	0	0	3	3	0	0	0	0	0	0	0	0	6
01:30	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4
01:45	0	0	0	0	4	2	0	0	0	0	0	0	0	0	6
02:00	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
Hour Total	0	0	0	1	12	5	0	0	0	0	0	0	0	0	18
02:15	0	0	0	1	2	2	0	0	0	0	0	0	0	0	5
02:30	0	0	1	1	4	1	1	0	0	0	0	0	0	0	8
02:45	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	0	1	2	8	3	1	0	0	0	0	0	0	0	15
03:15	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
03:30	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
03:45	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
04:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
Hour Total	0	0	0	1	3	2	0	0	0	0	0	0	0	0	6
04:15	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
04:30	0	0	0	1	1	1	0	0	0	0	0	0	0	0	3
04:45	0	0	0	1	3	0	0	0	0	0	0	0	0	0	4
05:00	0	0	0	1	5	0	0	0	0	0	0	0	0	0	6
Hour Total	0	0	0	3	11	1	0	0	0	0	0	0	0	0	15
05:15	0	0	0	0	2	2	1	0	0	0	0	0	0	0	5
05:30	0	0	0	0	1	3	1	0	0	0	0	0	0	0	5
05:45	0	0	0	1	5	1	0	0	0	0	0	0	0	0	7
06:00	0	0	0	2	4	0	0	0	0	0	0	0	0	0	6
Hour Total	0	0	0	3	12	6	2	0	0	0	0	0	0	0	23
06:15	0	0	1	2	4	5	0	1	0	0	0	0	0	0	13
06:30	0	0	0	4	9	4	0	0	0	0	0	0	0	0	17
06:45	0	1	2	2	8	8	2	0	0	0	0	0	0	0	23
07:00	0	0	0	5	21	15	2	0	0	0	0	0	0	0	43
Hour Total	0	1	3	13	42	32	4	1	0	0	0	0	0	0	96
07:15	0	2	0	11	14	14	3	0	0	0	0	0	0	0	44
07:30	0	0	0	2	19	15	3	0	0	0	0	0	0	0	39
07:45	0	0	1	11	39	27	2	0	1	0	0	0	0	0	81
08:00	0	0	0	10	49	27	4	0	0	0	0	0	0	0	90
Hour Total	0	2	1	34	121	83	12	0	1	0	0	0	0	0	254
08:15	0	0	3	9	56	33	1	0	0	0	0	0	0	0	102
08:30	1	0	13	10	55	20	2	0	0	0	0	0	0	0	101
08:45	0	0	0	22	40	22	1	0	0	0	0	0	0	0	85
09:00	0	0	4	22	67	18	1	0	0	0	0	0	0	0	112

Peggy Malone & Associates
SPEED SUMMARY
Tue 7/11/2017

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710004.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
Hour Total	1	0	20	63	218	93	5	0	0	0	0	0	0	0	400
09:15	0	0	2	28	54	23	0	0	0	0	0	0	0	0	107
09:30	0	0	2	25	53	17	4	0	0	0	0	0	0	0	101
09:45	1	2	12	24	50	19	0	0	0	0	0	0	0	0	108
10:00	1	1	16	31	39	10	2	0	0	0	0	0	0	0	100
Hour Total	2	3	32	108	196	69	6	0	0	0	0	0	0	0	416
10:15	5	5	15	37	40	12	0	0	0	0	0	0	0	0	114
10:30	1	1	10	48	48	15	0	0	0	0	0	0	0	0	123
10:45	0	1	13	40	39	23	0	0	0	0	0	0	0	0	116
11:00	0	5	17	49	40	9	0	0	0	0	0	0	0	0	120
Hour Total	6	12	55	174	167	59	0	0	0	0	0	0	0	0	473
11:15	2	5	15	44	50	12	1	0	0	0	0	0	0	0	129
11:30	2	2	11	51	61	10	1	0	0	0	0	0	0	0	138
11:45	2	4	7	51	52	8	0	0	0	0	0	0	0	0	124
12:00	3	6	12	39	46	12	1	0	0	0	0	0	0	0	119
Hour Total	9	17	45	185	209	42	3	0	0	0	0	0	0	0	510
12:15	8	18	26	43	46	9	0	0	0	0	0	0	0	0	150
12:30	4	2	25	59	49	11	1	0	0	0	0	0	0	0	151
12:45	2	12	17	51	47	5	1	0	0	0	0	0	0	0	135
13:00	5	12	25	60	35	5	0	0	0	0	0	0	0	0	142
Hour Total	19	44	93	213	177	30	2	0	0	0	0	0	0	0	578
13:15	2	4	18	50	59	5	0	0	0	0	0	0	0	0	138
13:30	0	0	16	49	42	11	1	0	0	0	0	0	0	0	119
13:45	2	8	23	50	60	9	1	0	0	0	0	0	0	0	153
14:00	10	12	19	43	46	9	0	0	0	0	0	0	0	0	139
Hour Total	14	24	76	192	207	34	2	0	0	0	0	0	0	0	549
14:15	5	12	16	46	49	8	0	0	0	0	0	0	0	0	136
14:30	4	11	26	62	37	7	0	0	0	0	0	0	0	0	147
14:45	4	14	19	49	55	10	2	0	0	0	0	0	0	0	153
15:00	1	4	10	79	44	19	2	0	0	0	0	0	0	0	159
Hour Total	14	41	71	236	185	44	4	0	0	0	0	0	0	0	595
15:15	6	18	17	57	47	12	0	0	0	0	0	0	0	0	157
15:30	1	3	19	71	41	4	1	0	0	0	0	0	0	0	140
15:45	5	3	15	50	60	15	3	0	0	0	0	0	0	0	151
16:00	5	7	19	47	46	8	2	0	0	0	0	0	0	0	134
Hour Total	17	31	70	225	194	39	6	0	0	0	0	0	0	0	582
16:15	2	11	21	49	60	6	2	0	0	0	0	0	0	0	151
16:30	12	19	28	42	53	10	1	0	0	0	0	0	0	0	165
16:45	4	12	12	32	63	10	0	0	0	0	0	0	0	0	133
17:00	0	5	11	44	76	20	2	0	0	0	0	0	0	0	158
Hour Total	18	47	72	167	252	46	5	0	0	0	0	0	0	0	607

Peggy Malone & Associates
SPEED SUMMARY
Tue 7/11/2017

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710004.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
17:15	7	7	16	35	66	18	0	0	0	0	0	0	0	0	149
17:30	1	9	35	78	43	8	0	0	0	0	0	0	0	0	174
17:45	10	21	42	33	29	8	0	0	0	0	0	0	0	0	143
18:00	5	12	31	54	39	9	2	0	0	0	0	0	0	0	152
Hour Total	23	49	124	200	177	43	2	0	0	0	0	0	0	0	618
18:15	3	15	18	34	53	9	0	0	0	0	0	0	0	0	132
18:30	2	6	8	47	68	10	1	0	0	0	0	0	0	0	142
18:45	0	0	7	40	56	16	0	0	0	0	0	0	0	0	119
19:00	0	2	9	35	40	14	0	0	0	0	0	0	0	0	100
Hour Total	5	23	42	156	217	49	1	0	0	0	0	0	0	0	493
19:15	8	5	20	45	34	8	0	0	0	0	0	0	0	0	120
19:30	0	1	20	31	49	7	1	0	0	0	0	0	0	0	109
19:45	0	0	1	38	49	14	0	0	0	0	0	0	0	0	102
20:00	1	3	8	39	44	10	2	0	0	0	0	0	0	0	107
Hour Total	9	9	49	153	176	39	3	0	0	0	0	0	0	0	438
20:15	0	4	11	34	42	7	1	0	0	0	0	0	0	0	99
20:30	0	0	4	24	38	10	2	0	0	0	0	0	0	0	78
20:45	0	0	1	31	38	6	0	0	0	0	0	0	0	0	76
21:00	0	1	4	26	35	7	0	0	0	0	0	0	0	0	73
Hour Total	0	5	20	115	153	30	3	0	0	0	0	0	0	0	326
21:15	0	0	15	37	35	7	0	0	0	0	0	0	0	0	94
21:30	0	0	1	13	34	12	1	0	0	0	0	0	0	0	61
21:45	0	0	2	8	32	14	2	0	0	0	0	0	0	0	58
22:00	0	0	0	11	22	11	1	1	0	0	0	0	0	0	46
Hour Total	0	0	18	69	123	44	4	1	0	0	0	0	0	0	259
22:15	0	0	0	18	25	10	0	0	0	0	0	0	0	0	53
22:30	0	0	0	6	16	7	1	0	0	0	0	0	0	0	30
22:45	0	0	0	9	14	5	3	0	0	0	0	0	0	0	31
23:00	0	0	0	5	14	12	1	0	0	0	0	0	0	0	32
Hour Total	0	0	0	38	69	34	5	0	0	0	0	0	0	0	146
23:15	0	0	0	4	10	5	3	0	0	0	0	0	0	0	22
23:30	0	0	0	4	7	3	1	0	0	0	0	0	0	0	15
23:45	0	0	1	1	8	6	0	0	0	0	0	0	0	0	16
24:00	0	0	0	1	9	3	1	0	0	0	0	0	0	0	14
Hour Total	0	0	1	10	34	17	5	0	0	0	0	0	0	0	67
DAY TOTAL	137	308	794	2366	2975	850	75	2	1	0	0	0	0	0	7508
PERCENTS	1.9%	4.2%	10.6%	31.5%	39.6%	11.3%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710004.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total

Statistical Information...

15th Percentile Speed
19.3 mph

85th Percentile Speed
29.7 mph

Median Speed
25.3 mph

Average Speed
24.5 mph

10 MPH Pace Speed
20 mph to 30 mph
5341 vehicles in pace
Representing 71.1% of the total vehicles

Vehicles > 25 MPH
3903
52.0%

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710004.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
00:15	0	0	0	2	11	2	1	0	0	0	0	0	0	0	16
00:30	0	0	0	0	6	3	1	0	0	0	0	0	0	0	10
00:45	0	0	0	0	3	4	0	0	0	0	0	0	0	0	7
01:00	0	0	0	0	2	1	0	0	0	0	0	0	0	0	3
Hour Total	0	0	0	2	22	10	2	0	0	0	0	0	0	0	36
01:15	0	0	0	2	2	1	0	0	0	0	0	0	0	0	5
01:30	0	0	1	0	3	1	0	0	0	0	0	0	0	0	5
01:45	0	0	0	0	5	2	0	0	0	0	0	0	0	0	7
02:00	0	0	0	1	2	1	0	0	0	0	0	0	0	0	4
Hour Total	0	0	1	3	12	5	0	0	0	0	0	0	0	0	21
02:15	0	0	0	1	2	1	0	0	0	0	0	0	0	0	4
02:30	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
02:45	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
03:00	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
Hour Total	0	0	0	1	7	1	1	0	0	0	0	0	0	0	10
03:15	0	0	0	0	2	1	0	0	0	0	0	0	0	0	3
03:30	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	0	0	0	5	1	0	0	0	0	0	0	0	0	6
04:15	0	0	0	0	2	1	0	0	0	0	0	0	0	0	3
04:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
05:00	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4
Hour Total	0	0	0	0	9	1	0	0	0	0	0	0	0	0	10
05:15	0	0	1	1	2	0	1	0	0	0	0	0	0	0	5
05:30	0	0	0	0	4	4	0	0	0	0	0	0	0	0	8
05:45	0	0	0	0	2	2	0	0	0	0	0	0	0	0	4
06:00	0	0	1	1	8	4	0	0	0	0	0	0	0	0	14
Hour Total	0	0	2	2	16	10	1	0	0	0	0	0	0	0	31
06:15	1	0	0	4	9	2	1	0	0	0	0	0	0	0	17
06:30	0	0	0	2	16	4	0	0	0	0	0	0	0	0	22
06:45	0	0	0	6	12	4	3	0	0	0	0	0	0	0	25
07:00	0	0	0	5	24	11	3	1	0	0	0	0	0	0	44
Hour Total	1	0	0	17	61	21	7	1	0	0	0	0	0	0	108
07:15	0	0	0	4	20	14	2	0	0	0	0	0	0	0	40
07:30	0	0	1	4	18	20	5	0	0	0	0	0	0	0	48
07:45	0	0	0	13	24	18	1	0	0	0	0	0	0	0	56
08:00	0	0	0	4	44	35	4	1	0	0	0	0	0	0	88
Hour Total	0	0	1	25	106	87	12	1	0	0	0	0	0	0	232
08:15	1	1	2	13	50	23	2	0	0	0	0	0	0	0	92
08:30	0	0	2	11	43	29	4	0	0	0	0	0	0	0	89
08:45	0	0	2	9	43	22	3	0	0	0	0	0	0	0	79
09:00	1	2	5	29	55	23	3	0	0	0	0	0	0	0	118

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710004.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
Hour Total	2	3	11	62	191	97	12	0	0	0	0	0	0	0	378
09:15	0	7	5	22	44	21	1	0	0	0	0	0	0	0	100
09:30	2	1	6	27	37	13	3	1	0	0	0	0	0	0	90
09:45	0	0	3	28	66	13	1	0	0	0	0	0	0	0	111
10:00	3	6	6	27	47	13	1	0	0	0	0	0	0	0	103
Hour Total	5	14	20	104	194	60	6	1	0	0	0	0	0	0	404
10:15	1	6	15	22	33	14	4	0	0	0	0	0	0	0	95
10:30	1	4	11	32	42	12	3	0	0	0	0	0	0	0	105
10:45	0	4	17	37	38	12	1	0	0	0	0	0	0	0	109
11:00	3	1	7	54	47	14	1	0	0	0	0	0	0	0	127
Hour Total	5	15	50	145	160	52	9	0	0	0	0	0	0	0	436
11:15	0	0	3	39	54	9	1	0	0	0	0	0	0	0	106
11:30	2	2	5	37	55	14	0	0	0	0	0	0	0	0	115
11:45	5	7	21	46	59	11	2	0	0	0	0	0	0	0	151
12:00	0	6	14	45	64	11	2	0	0	0	0	0	0	0	142
Hour Total	7	15	43	167	232	45	5	0	0	0	0	0	0	0	514
12:15	6	8	18	41	58	13	6	0	0	0	0	0	0	0	150
12:30	5	19	21	65	43	7	0	1	0	0	0	0	0	0	161
12:45	5	3	19	50	54	4	2	0	0	0	0	0	0	0	137
13:00	4	11	19	42	54	24	1	0	0	0	0	0	0	0	155
Hour Total	20	41	77	198	209	48	9	1	0	0	0	0	0	0	603
13:15	4	4	23	42	54	16	0	0	0	0	0	0	0	0	143
13:30	3	6	25	68	44	9	0	0	0	0	0	0	0	0	155
13:45	5	8	11	57	62	4	1	0	0	0	0	0	0	0	148
14:00	0	0	17	68	66	10	1	0	0	0	0	0	0	0	162
Hour Total	12	18	76	235	226	39	2	0	0	0	0	0	0	0	608
14:15	2	14	15	55	37	12	0	0	0	0	0	0	0	0	135
14:30	3	10	13	61	44	10	1	1	0	0	0	0	0	0	143
14:45	2	6	22	37	53	18	2	0	0	0	0	0	0	0	140
15:00	3	2	11	32	60	24	0	0	0	0	0	0	0	0	132
Hour Total	10	32	61	185	194	64	3	1	0	0	0	0	0	0	550
15:15	0	1	14	60	48	14	1	0	0	0	0	0	0	0	138
15:30	0	4	8	55	45	17	1	0	0	0	0	0	0	0	130
15:45	2	7	20	38	50	9	0	1	0	0	0	0	0	0	127
16:00	2	7	26	62	48	14	0	0	0	0	0	0	0	0	159
Hour Total	4	19	68	215	191	54	2	1	0	0	0	0	0	0	554
16:15	7	14	23	43	57	5	1	0	0	0	0	0	0	0	150
16:30	4	9	23	49	46	13	2	0	0	0	0	0	0	0	146
16:45	2	10	7	45	65	11	2	0	0	0	0	0	0	0	142
17:00	1	13	23	38	55	32	1	0	0	0	0	0	0	0	163
Hour Total	14	46	76	175	223	61	6	0	0	0	0	0	0	0	601

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710004.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
17:15	9	17	23	46	54	12	1	1	0	0	0	0	0	0	163
17:30	4	12	19	42	62	17	2	0	0	0	0	0	0	0	158
17:45	4	11	7	37	61	20	3	0	0	0	0	0	0	0	143
18:00	2	7	21	41	55	16	1	0	0	0	0	0	0	0	143
Hour Total	19	47	70	166	232	65	7	1	0	0	0	0	0	0	607
18:15	0	3	17	33	64	20	0	0	0	0	0	0	0	0	137
18:30	4	7	20	34	59	7	0	0	0	0	0	0	0	0	131
18:45	2	4	13	31	46	15	1	0	0	0	0	0	0	0	112
19:00	0	0	5	40	56	15	1	0	0	0	0	0	0	0	117
Hour Total	6	14	55	138	225	57	2	0	0	0	0	0	0	0	497
19:15	1	5	13	18	43	10	0	0	0	0	0	0	0	0	90
19:30	0	0	4	31	45	17	3	0	0	0	0	0	0	0	100
19:45	0	1	4	28	50	19	1	0	0	0	0	0	0	0	103
20:00	2	3	9	36	36	8	0	0	0	0	0	0	0	0	94
Hour Total	3	9	30	113	174	54	4	0	0	0	0	0	0	0	387
20:15	0	1	5	44	32	4	2	0	0	0	0	0	0	0	88
20:30	0	0	8	37	52	11	0	0	0	0	0	0	0	0	108
20:45	1	4	14	21	38	10	1	0	0	0	0	0	0	0	89
21:00	0	0	0	39	35	11	1	0	0	0	0	0	0	0	86
Hour Total	1	5	27	141	157	36	4	0	0	0	0	0	0	0	371
21:15	0	3	12	37	31	7	0	0	0	0	0	0	0	0	90
21:30	0	0	0	19	55	17	1	0	0	0	0	0	0	0	92
21:45	0	0	5	20	40	12	0	0	0	0	0	0	0	0	77
22:00	0	0	1	15	31	8	0	0	0	0	0	0	0	0	55
Hour Total	0	3	18	91	157	44	1	0	0	0	0	0	0	0	314
22:15	0	0	0	7	25	6	1	0	0	0	0	0	0	0	39
22:30	0	0	0	8	14	10	2	0	0	0	0	0	0	0	34
22:45	0	0	0	11	14	5	2	0	0	0	0	0	0	0	32
23:00	0	0	0	6	12	6	2	1	0	0	0	0	0	0	27
Hour Total	0	0	0	32	65	27	7	1	0	0	0	0	0	0	132
23:15	0	0	0	3	13	9	1	0	0	0	0	0	0	0	26
23:30	0	0	1	4	17	7	0	0	0	0	0	0	0	0	29
23:45	0	0	0	2	9	9	0	0	0	0	0	0	0	0	20
24:00	0	0	0	4	4	4	0	0	0	0	0	0	0	0	12
Hour Total	0	0	1	13	43	29	1	0	0	0	0	0	0	0	87
DAY TOTAL	109	281	687	2230	3111	968	103	8	0	0	0	0	0	0	7497
PERCENTS	1.5%	3.8%	9.2%	29.8%	41.4%	12.9%	1.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710004.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total

Statistical Information...

15th Percentile Speed
20.1 mph

85th Percentile Speed
29.9 mph

Median Speed
25.7 mph

Average Speed
25.0 mph

10 MPH Pace Speed
20 mph to 30 mph
5341 vehicles in pace
Representing 71.2% of the total vehicles

Vehicles > 25 MPH
4190
55.9%

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710004.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
00:15	0	0	0	1	8	2	1	0	0	0	0	0	0	0	12
00:30	0	0	0	0	4	2	1	0	0	0	0	0	0	0	7
00:45	0	0	0	1	6	2	1	0	0	0	0	0	0	0	10
01:00	0	0	0	1	3	2	0	0	0	0	0	0	0	0	6
Hour Total	0	0	0	3	21	8	3	0	0	0	0	0	0	0	35
01:15	0	0	0	1	2	2	1	0	0	0	0	0	0	0	6
01:30	0	0	0	0	2	1	0	0	0	0	0	0	0	0	3
01:45	0	0	0	1	4	2	0	0	0	0	0	0	0	0	7
02:00	0	0	0	0	3	2	0	0	0	0	0	0	0	0	5
Hour Total	0	0	0	2	11	7	1	0	0	0	0	0	0	0	21
02:15	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
02:30	0	0	0	0	3	1	1	0	0	0	0	0	0	0	5
02:45	0	0	0	0	3	1	0	0	0	0	0	0	0	0	4
03:00	0	0	0	1	0	1	0	0	0	0	0	0	0	0	2
Hour Total	0	0	0	1	7	4	1	0	0	0	0	0	0	0	13
03:15	0	0	0	0	2	0	2	0	0	0	0	0	0	0	4
03:30	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour Total	0	0	0	0	2	2	2	0	0	0	0	0	0	0	6
04:15	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
04:30	0	0	0	0	2	1	0	0	0	0	0	0	0	0	3
04:45	0	0	0	1	2	0	1	0	0	0	0	0	0	0	4
05:00	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
Hour Total	0	0	0	2	7	1	1	0	0	0	0	0	0	0	11
05:15	0	0	0	1	0	4	0	0	0	0	0	0	0	0	5
05:30	0	0	0	0	3	3	0	0	0	0	0	0	0	0	6
05:45	0	0	0	2	2	1	1	0	0	0	0	0	0	0	6
06:00	0	0	0	2	2	0	1	0	0	0	0	0	0	0	5
Hour Total	0	0	0	5	7	8	2	0	0	0	0	0	0	0	22
06:15	0	0	1	2	8	2	0	0	0	0	0	0	0	0	13
06:30	0	0	0	3	6	9	0	0	0	0	0	0	0	0	18
06:45	0	1	1	3	10	12	2	0	0	0	0	0	0	0	29
07:00	0	0	0	5	26	17	0	0	0	0	0	0	0	0	48
Hour Total	0	1	2	13	50	40	2	0	0	0	0	0	0	0	108
07:15	0	0	3	5	12	14	5	0	0	0	0	0	0	0	39
07:30	0	0	0	0	25	13	3	0	0	0	0	0	0	0	41
07:45	0	0	0	8	37	11	5	0	0	0	0	0	0	0	61
08:00	0	0	0	12	57	16	4	1	0	0	0	0	0	0	90
Hour Total	0	0	3	25	131	54	17	1	0	0	0	0	0	0	231
08:15	2	1	1	15	42	22	2	1	0	0	0	0	0	0	86
08:30	0	2	1	23	56	18	2	0	0	0	0	0	0	0	102
08:45	0	0	4	29	42	12	2	1	0	0	0	0	0	0	90
09:00	0	0	0	14	64	22	1	0	0	0	0	0	0	0	101

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710004.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
Hour Total	2	3	6	81	204	74	7	2	0	0	0	0	0	0	379
09:15	0	0	3	33	42	11	4	0	0	0	0	0	0	0	93
09:30	0	0	1	21	50	13	0	0	0	0	0	0	0	0	85
09:45	0	0	1	24	54	14	4	0	0	0	0	0	0	0	97
10:00	2	6	5	31	51	10	1	0	0	0	0	0	0	0	106
Hour Total	2	6	10	109	197	48	9	0	0	0	0	0	0	0	381
10:15	3	3	7	25	48	13	2	0	0	0	0	0	0	0	101
10:30	1	2	4	37	55	11	1	0	0	0	0	0	0	0	111
10:45	0	0	13	50	48	16	0	0	0	0	0	0	0	0	127
11:00	0	1	4	52	42	12	2	0	0	0	0	0	0	0	113
Hour Total	4	6	28	164	193	52	5	0	0	0	0	0	0	0	452
11:15	6	8	20	33	39	3	0	0	0	0	0	0	0	0	109
11:30	2	8	16	40	37	11	0	0	0	0	0	0	0	0	114
11:45	1	0	7	42	41	14	1	0	0	0	0	0	0	0	106
12:00	1	8	18	65	45	11	4	0	0	0	0	0	0	0	152
Hour Total	10	24	61	180	162	39	5	0	0	0	0	0	0	0	481
12:15	6	5	14	42	51	7	1	0	0	0	0	0	0	0	126
12:30	3	6	16	37	55	10	2	0	0	0	0	0	0	0	129
12:45	0	1	13	46	58	16	3	0	0	0	0	0	0	0	137
13:00	8	7	13	61	42	12	0	0	0	0	0	0	0	0	143
Hour Total	17	19	56	186	206	45	6	0	0	0	0	0	0	0	535
13:15	4	22	28	62	40	8	1	0	0	0	0	0	0	0	165
13:30	5	18	10	62	33	16	0	0	0	0	0	0	0	0	144
13:45	10	12	31	43	36	9	0	0	0	0	0	0	0	0	141
14:00	8	21	25	63	37	3	0	0	0	0	0	0	0	0	157
Hour Total	27	73	94	230	146	36	1	0	0	0	0	0	0	0	607
14:15	5	20	18	44	46	9	0	0	0	0	0	0	0	0	142
14:30	5	11	20	40	52	13	1	0	0	0	0	0	0	0	142
14:45	2	12	18	70	56	16	0	0	0	0	0	0	0	0	174
15:00	0	1	6	44	52	16	1	0	0	0	0	0	0	0	120
Hour Total	12	44	62	198	206	54	2	0	0	0	0	0	0	0	578
15:15	12	16	22	47	35	18	2	0	0	0	0	0	0	0	152
15:30	3	9	16	39	44	16	4	0	0	0	0	0	0	0	131
15:45	3	7	15	61	38	11	1	0	0	0	0	0	0	0	136
16:00	3	10	24	54	40	15	3	0	0	0	0	0	0	0	149
Hour Total	21	42	77	201	157	60	10	0	0	0	0	0	0	0	568
16:15	5	12	23	45	66	12	2	0	0	0	0	0	0	0	165
16:30	5	9	7	37	60	15	3	0	0	0	0	0	0	0	136
16:45	3	4	17	41	64	16	1	0	0	0	0	0	0	0	146
17:00	6	22	33	34	55	14	0	0	0	0	0	0	0	0	164
Hour Total	19	47	80	157	245	57	6	0	0	0	0	0	0	0	611

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710004.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
17:15	9	11	35	36	62	12	2	0	0	0	0	0	0	0	167
17:30	9	14	35	61	47	8	1	0	0	0	0	0	0	0	175
17:45	1	3	9	42	66	12	2	0	0	0	0	0	0	0	135
18:00	0	3	6	45	73	19	3	0	0	0	0	0	0	0	149
Hour Total	19	31	85	184	248	51	8	0	0	0	0	0	0	0	626
18:15	5	9	26	35	55	20	0	0	0	0	0	0	0	0	150
18:30	0	0	2	31	49	19	3	0	0	0	0	0	0	0	104
18:45	0	1	5	39	63	20	0	0	0	0	0	0	0	0	128
19:00	0	1	10	37	55	16	1	0	0	0	0	0	0	0	120
Hour Total	5	11	43	142	222	75	4	0	0	0	0	0	0	0	502
19:15	1	14	27	45	35	9	0	0	0	0	0	0	0	0	131
19:30	0	0	9	34	50	12	3	0	0	0	0	0	0	0	108
19:45	0	0	2	43	70	11	2	0	0	0	0	0	0	0	128
20:00	0	0	12	54	33	9	0	0	0	0	0	0	0	0	108
Hour Total	1	14	50	176	188	41	5	0	0	0	0	0	0	0	475
20:15	0	3	17	43	39	15	2	0	0	0	0	0	0	0	119
20:30	0	2	6	35	34	8	0	0	0	0	0	0	0	0	85
20:45	0	1	2	30	50	10	2	0	0	0	0	0	0	0	95
21:00	0	0	7	24	37	8	0	0	0	0	0	0	0	0	76
Hour Total	0	6	32	132	160	41	4	0	0	0	0	0	0	0	375
21:15	0	0	9	32	55	6	0	0	0	0	0	0	0	0	102
21:30	0	0	4	26	32	9	0	0	0	0	0	0	0	0	71
21:45	0	0	2	19	41	15	1	0	0	0	0	0	0	0	78
22:00	0	0	0	13	39	19	2	0	0	0	0	0	0	0	73
Hour Total	0	0	15	90	167	49	3	0	0	0	0	0	0	0	324
22:15	0	0	0	13	22	10	1	0	0	0	0	0	0	0	46
22:30	0	0	0	4	17	16	1	0	0	0	0	0	0	0	38
22:45	0	0	0	9	16	8	1	0	0	0	0	0	0	0	34
23:00	0	0	0	5	23	8	3	1	0	0	0	0	0	0	40
Hour Total	0	0	0	31	78	42	6	1	0	0	0	0	0	0	158
23:15	0	0	0	1	11	4	1	0	0	0	0	0	0	0	17
23:30	0	0	0	4	13	11	2	1	0	0	0	0	0	0	31
23:45	0	0	0	5	13	5	0	0	0	0	0	0	0	0	23
24:00	0	0	0	0	8	9	1	0	0	0	0	0	0	0	18
Hour Total	0	0	0	10	45	29	4	1	0	0	0	0	0	0	89
DAY TOTAL	139	327	704	2322	3060	917	114	5	0	0	0	0	0	0	7588
PERCENTS	1.9%	4.4%	9.3%	30.6%	40.3%	12.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Station #: 000000009379
Site ID: Site A WB
Location: Monticello Ave., btw Garrison & Shop Ctr
Direction: WEST
Lane: 1

File: D0710004.prn
City: 17-220 TO Max
County: 37.28154, -76.72136

TIME	10	15	20	25	30	35	40	45	50	55	60	65	70	71+	Total
GRAND TOTAL	385	916	2185	6918	9146	2735	292	15	1	0	0	0	0	0	22593
PERCENTS	1.8%	4.1%	9.7%	30.7%	40.4%	12.1%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Statistical Information...

15th Percentile Speed
19.8 mph

85th Percentile Speed
29.8 mph

Median Speed
25.5 mph

Average Speed
24.8 mph

10 MPH Pace Speed
20 mph to 30 mph
5382 vehicles in pace
Representing 70.9% of the total vehicles

Vehicles > 25 MPH
4096
54.0%

Peggy Malone & Associates
WEEKLY SUMMARY
Starting:7/11/2017

Station #: 000000010612
Site ID: Site B NB
Location: Richmond Rd., btw Mt. Vernon & New Hope
Direction: NORTH

File: D0711001.prn
City: 17-220 TO Min
County: 37.28514, -76.72018

TIME	MON		TUE 11		WED 12		THU 13		FRI		SAT		SUN		WK TOT		WK AVG	
Lane 1	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm
00:15			19	188	14	193	21	187							54	568	18	189
00:30			7	195	10	176	14	189							31	560	10	186
00:45			11	169	12	163	9	175							32	507	10	169
01:00			7	178	9	183	12	171							28	532	9	177
01:15			5	155	12	176	6	180							23	511	7	170
01:30			11	185	6	186	9	180							26	551	8	183
01:45			10	139	9	162	3	169							22	470	7	156
02:00			13	171	6	189	6	138							25	498	8	166
02:15			6	160	7	196	12	182							25	538	8	179
02:30			11	152	12	171	6	163							29	486	9	162
02:45			2	175	7	172	8	182							17	529	5	176
03:00			5	170	4	194	1	167							10	531	3	177
03:15			4	156	3	173	6	173							13	502	4	167
03:30			4	157	3	168	4	183							11	508	3	169
03:45			4	170	3	174	9	184							16	528	5	176
04:00			3	175	2	158	4	179							9	512	3	170
04:15			1	205	2	192	7	169							10	566	3	188
04:30			4	164	5	168	3	191							12	523	4	174
04:45			7	192	7	170	4	209							18	571	6	190
05:00			12	180	4	181	9	200							25	561	8	187
05:15			10	209	3	198	3	215							16	622	5	207
05:30			5	218	12	224	10	202							27	644	9	214
05:45			8	192	19	186	13	182							40	560	13	186
06:00			14	175	19	159	18	172							51	506	17	168
06:15			29	166	23	169	35	178							87	513	29	171
06:30			21	169	17	175	22	156							60	500	20	166
06:45			26	145	41	159	38	153							105	457	35	152
07:00			31	178	33	134	32	141							96	453	32	151
07:15			57	130	54	132	61	145							172	407	57	135
07:30			52	142	69	141	62	151							183	434	61	144
07:45			63	128	72	136	66	141							201	405	67	135
08:00			84	151	80	131	62	172							226	454	75	151
08:15			71	132	75	150	76	133							222	415	74	138
08:30			75	146	73	140	84	138							232	424	77	141
08:45			78	125	81	149	92	128							251	402	83	134
09:00			96	124	101	104	95	121							292	349	97	116
09:15			124	115	93	141	110	120							327	376	109	125
09:30			106	112	93	133	95	114							294	359	98	119
09:45			102	81	107	111	92	97							301	289	100	96
10:00			118	83	130	65	107	72							355	220	118	73
10:15			132	61	100	72	115	82							347	215	115	71
10:30			110	48	124	73	123	64							357	185	119	61
10:45			124	61	142	49	114	45							380	155	126	51
11:00			125	34	123	39	111	45							359	118	119	39
11:15			177	39	123	62	169	38							469	139	156	46
11:30			169	29	144	19	169	26							482	74	160	24
11:45			194	29	155	26	200	20							549	75	183	25
12:00			196	18	168	32	168	19							532	69	177	23
TOTALS	0		9219		9265		9336		0		0		0		27820		9242	
AM Times			11:15		11:15		11:15								11:15		11:15	
AM Peaks			736		590		706								2032		676	
AM PHF			0.94		0.88		0.88								0.93		0.92	
PM Times			16:45		17:00		16:45								16:45		16:45	
PM Peaks			799		789		826								2398		798	
PM PHF			0.92		0.88		0.96								0.93		0.93	

Peggy Malone & Associates
WEEKLY SUMMARY
Starting:7/11/2017

Station #: 000000010771
Site ID: Site B SB
Location: Richmond Rd., btw Mt. Vernon & New Hope
Direction: SOUTH

File: D0711002.prn
City: 17-220 TO Min
County: 37.28514, -76.72018

TIME	MON		TUE		WED		THU		FRI		SAT		SUN		WK TOT		WK AVG	
			11		12		13											
Lane 1	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm
00:15			9	187	14	191	16	190							39	568	13	189
00:30			10	163	16	197	16	189							42	549	14	183
00:45			12	170	7	201	7	176							26	547	8	182
01:00			10	203	11	207	9	219							30	629	10	209
01:15			18	179	10	202	10	194							38	575	12	191
01:30			12	177	11	175	7	192							30	544	10	181
01:45			5	177	9	162	10	161							24	500	8	166
02:00			8	185	5	167	9	204							22	556	7	185
02:15			7	161	5	167	6	169							18	497	6	165
02:30			6	168	2	161	5	165							13	494	4	164
02:45			1	168	5	164	4	189							10	521	3	173
03:00			0	162	7	163	5	161							12	486	4	162
03:15			4	184	3	191	5	175							12	550	4	183
03:30			1	164	3	171	6	143							10	478	3	159
03:45			9	168	2	144	3	176							14	488	4	162
04:00			4	158	3	187	2	186							9	531	3	177
04:15			5	177	5	203	2	157							12	537	4	179
04:30			10	174	2	165	3	160							15	499	5	166
04:45			6	147	6	159	7	188							19	494	6	164
05:00			9	155	8	154	9	158							26	467	8	155
05:15			6	175	8	136	7	170							21	481	7	160
05:30			7	155	26	172	15	153							48	480	16	160
05:45			24	172	20	150	24	173							68	495	22	165
06:00			28	171	28	164	34	171							90	506	30	168
06:15			25	175	28	180	29	165							82	520	27	173
06:30			33	160	44	167	40	166							117	493	39	164
06:45			37	168	49	168	49	181							135	517	45	172
07:00			74	182	76	160	69	167							219	509	73	169
07:15			87	157	73	146	80	197							240	500	80	166
07:30			103	129	92	174	89	170							284	473	94	157
07:45			103	170	119	145	102	161							324	476	108	158
08:00			143	141	139	150	163	148							445	439	148	146
08:15			132	147	124	120	143	166							399	433	133	144
08:30			132	114	130	114	134	125							396	353	132	117
08:45			136	111	123	106	120	118							379	335	126	111
09:00			163	97	187	117	164	96							514	310	171	103
09:15			153	101	142	96	145	110							440	307	146	102
09:30			168	84	152	110	128	92							448	286	149	95
09:45			167	92	170	77	161	97							498	266	166	88
10:00			180	75	154	64	166	102							500	241	166	80
10:15			152	60	134	58	145	63							431	181	143	60
10:30			154	44	159	58	140	55							453	157	151	52
10:45			170	42	153	61	201	41							524	144	174	48
11:00			135	34	145	51	174	55							454	140	151	46
11:15			182	38	145	34	143	36							470	108	156	36
11:30			172	22	157	40	144	36							473	98	157	32
11:45			163	21	193	21	148	23							504	65	168	21
12:00			196	22	155	20	190	26							541	68	180	22
TOTALS	0		9857		9849		10103		0		0		0		29809		9904	
AM Times			11:15		9:00		10:45								11:15		11:15	
AM Peaks			713		651		662								1988		661	
AM PHF			0.91		0.87		0.82								0.92		0.92	
PM Times			13:00		12:30		12:45								12:30		12:30	
PM Peaks			736		807		781								2300		765	
PM PHF			0.91		0.97		0.89								0.91		0.92	

Data Collection Group

757.478.6761
LSmith@DataCollectionGroup.net

File Name : Monticello and Treyburn AM
Site Code : 00343434
Start Date : 5/9/2017
Page No : 1

Groups Printed- Passenger Veh - Trucks

	Monticello From North					Wm & Mary From East					Monticello From South					Treyburn From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	7	20	1	0	28	0	0	1	0	1	3	62	5	0	70	5	0	6	0	11	110
07:15 AM	6	44	0	0	50	0	0	3	0	3	2	66	4	0	72	7	1	7	0	15	140
07:30 AM	5	68	2	0	75	0	0	1	0	1	3	89	9	0	101	7	2	8	0	17	194
07:45 AM	7	90	1	0	98	0	0	2	0	2	6	116	8	0	130	9	3	12	0	24	254
Total	25	222	4	0	251	0	0	7	0	7	14	333	26	0	373	28	6	33	0	67	698
08:00 AM	5	87	2	0	94	1	0	4	0	5	3	118	6	0	127	9	3	15	0	27	253
08:15 AM	11	93	1	0	105	1	0	1	0	2	11	119	5	0	135	8	4	12	0	24	266
08:30 AM	11	94	2	0	107	0	1	0	0	1	3	111	8	0	122	11	2	15	0	28	258
08:45 AM	7	89	1	0	97	1	1	4	0	6	11	109	12	0	132	24	5	9	0	38	273
Total	34	363	6	0	403	3	2	9	0	14	28	457	31	0	516	52	14	51	0	117	1050
Grand Total	59	585	10	0	654	3	2	16	0	21	42	790	57	0	889	80	20	84	0	184	1748
Apprch %	9	89.4	1.5	0		14.3	9.5	76.2	0		4.7	88.9	6.4	0		43.5	10.9	45.7	0		
Total %	3.4	33.5	0.6	0	37.4	0.2	0.1	0.9	0	1.2	2.4	45.2	3.3	0	50.9	4.6	1.1	4.8	0	10.5	
Passenger Veh	55	565	10	0	630	2	2	14	0	18	40	765	55	0	860	79	19	84	0	182	1690
% Passenger Veh	93.2	96.6	100	0	96.3	66.7	100	87.5	0	85.7	95.2	96.8	96.5	0	96.7	98.8	95	100	0	98.9	96.7
Trucks	4	20	0	0	24	1	0	2	0	3	2	25	2	0	29	1	1	0	0	2	58
% Trucks	6.8	3.4	0	0	3.7	33.3	0	12.5	0	14.3	4.8	3.2	3.5	0	3.3	1.2	5	0	0	1.1	3.3

Data Collection Group

757.478.6761
LSmith@DataCollectionGroup.net

File Name : Monticello and Treyburn AM
Site Code : 00343434
Start Date : 5/9/2017
Page No : 2

	Monticello From North					Wm & Mary From East					Monticello From South					Treyburn From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	5	87	**2**	0	94	**1**	0	**4**	0	5	3	118	6	0	127	9	3	**15**	0	27	253
08:15 AM	**11**	93	1	0	105	1	0	1	0	2	**11**	**119**	5	0	**135**	8	4	12	0	24	266
08:30 AM	11	**94**	2	0	**107**	0	**1**	0	0	1	3	111	8	0	122	11	2	15	0	28	258
08:45 AM	7	89	1	0	97	1	1	4	0	**6**	11	109	**12**	0	132	**24**	**5**	9	0	**38**	**273**
Total Volume	34	363	6	0	403	3	2	9	0	14	28	457	31	0	516	52	14	51	0	117	1050
% App. Total	8.4	90.1	1.5	0		21.4	14.3	64.3	0		5.4	88.6	6	0		44.4	12	43.6	0		
PHF	.773	.965	.750	.000	.942	.750	.500	.563	.000	.583	.636	.960	.646	.000	.956	.542	.700	.850	.000	.770	.962
Passenger Veh	32	352	6	0	390	2	2	8	0	12	28	445	29	0	502	51	13	51	0	115	1019
% Passenger Veh	94.1	97.0	100	0	96.8	66.7	100	88.9	0	85.7	100	97.4	93.5	0	97.3	98.1	92.9	100	0	98.3	97.0
Trucks	2	11	0	0	13	1	0	1	0	2	0	12	2	0	14	1	1	0	0	2	31
% Trucks	5.9	3.0	0	0	3.2	33.3	0	11.1	0	14.3	0	2.6	6.5	0	2.7	1.9	7.1	0	0	1.7	3.0

Data Collection Group

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File Name : Monticello and Treyburn AM
Site Code : 00343434
Start Date : 5/9/2017
Page No : 3

Peak Hour Data

Peak Hour Begins at 08:00 AM

Passenger Veh
Trucks

North

Monticello

	Out	In	Total
	498	390	888
	13	13	26
	511	403	914

	Right	Thru	Left	Peds
	32	352	6	0
	2	11	0	0
	34	363	6	0

Wm & Mary

	Out	In	Total
	47	12	59
	1	2	3
	48	14	62

	Right	Thru	Left	Peds
	2	2	8	0
	1	0	1	0
	3	2	9	0

Treyburn

	Out	In	Total
	63	115	178
	4	2	6
	67	117	184

	Left	Thru	Right	Peds
	51	13	51	0
	0	1	1	0
	51	14	52	0

Monticello

	Out	In	Total
	411	502	913
	13	14	27
	424	516	940

	Left	Thru	Right	Peds
	29	445	28	0
	2	12	0	0
	31	457	28	0

Data Collection Group

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File Name : Monticello and Treyburn PM
Site Code : 00001122
Start Date : 5/9/2017
Page No : 1

Groups Printed- Passenger Veh - Trucks

	Monticello From North					Wm & Mary From East					Monticello From South					Treyburn From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	15	207	1	0	223	3	5	6	0	14	3	173	18	0	194	23	1	14	0	38	469
04:15 PM	16	189	2	0	207	4	5	6	0	15	8	159	17	0	184	15	1	15	0	31	437
04:30 PM	16	192	1	0	209	3	2	6	0	11	2	186	18	0	206	6	0	14	0	20	446
04:45 PM	18	197	1	0	216	2	3	10	0	15	2	148	15	0	165	19	0	13	0	32	428
Total	65	785	5	0	855	12	15	28	0	55	15	666	68	0	749	63	2	56	0	121	1780
05:00 PM	21	209	3	0	233	3	5	8	0	16	4	185	16	0	205	15	0	14	0	29	483
05:15 PM	18	198	2	0	218	1	3	4	0	8	6	166	19	0	191	15	3	9	0	27	444
05:30 PM	17	163	0	0	180	3	2	7	0	12	1	170	22	0	193	13	1	17	0	31	416
05:45 PM	8	158	0	0	166	1	1	7	0	9	3	155	17	0	175	6	2	10	0	18	368
Total	64	728	5	0	797	8	11	26	0	45	14	676	74	0	764	49	6	50	0	105	1711
Grand Total	129	1513	10	0	1652	20	26	54	0	100	29	1342	142	0	1513	112	8	106	0	226	3491
Apprch %	7.8	91.6	0.6	0		20	26	54	0		1.9	88.7	9.4	0		49.6	3.5	46.9	0		
Total %	3.7	43.3	0.3	0	47.3	0.6	0.7	1.5	0	2.9	0.8	38.4	4.1	0	43.3	3.2	0.2	3	0	6.5	
Passenger Veh	124	1501	10	0	1635	20	26	51	0	97	29	1330	137	0	1496	111	8	106	0	225	3453
% Passenger Veh	96.1	99.2	100	0	99	100	100	94.4	0	97	100	99.1	96.5	0	98.9	99.1	100	100	0	99.6	98.9
Trucks	5	12	0	0	17	0	0	3	0	3	0	12	5	0	17	1	0	0	0	1	38
% Trucks	3.9	0.8	0	0	1	0	0	5.6	0	3	0	0.9	3.5	0	1.1	0.9	0	0	0	0.4	1.1

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File Name : Monticello and Treyburn PM
Site Code : 00001122
Start Date : 5/9/2017
Page No : 2

	Monticello From North					Wm & Mary From East					Monticello From South					Treyburn From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	16	192	1	0	209	**3**	2	6	0	11	2	**186**	18	0	**206**	6	0	**14**	0	20	446
04:45 PM	18	197	1	0	216	2	3	**10**	0	15	2	148	15	0	165	**19**	0	13	0	**32**	428
05:00 PM	**21**	**209**	**3**	0	**233**	3	**5**	8	0	**16**	4	185	16	0	205	15	0	14	0	29	**483**
05:15 PM	18	198	2	0	218	1	3	4	0	8	**6**	166	**19**	0	191	15	**3**	9	0	27	444
Total Volume	73	796	7	0	876	9	13	28	0	50	14	685	68	0	767	55	3	50	0	108	1801
% App. Total	8.3	90.9	0.8	0		18	26	56	0		1.8	89.3	8.9	0		50.9	2.8	46.3	0		
PHF	.869	.952	.583	.000	.940	.750	.650	.700	.000	.781	.583	.921	.895	.000	.931	.724	.250	.893	.000	.844	.932
Passenger Veh	70	791	7	0	868	9	13	27	0	49	14	678	65	0	757	55	3	50	0	108	1782
% Passenger Veh	95.9	99.4	100	0	99.1	100	100	96.4	0	98.0	100	99.0	95.6	0	98.7	100	100	100	0	100	98.9
Trucks	3	5	0	0	8	0	0	1	0	1	0	7	3	0	10	0	0	0	0	0	19
% Trucks	4.1	0.6	0	0	0.9	0	0	3.6	0	2.0	0	1.0	4.4	0	1.3	0	0	0	0	0	1.1

Data Collection Group

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File Name : Monticello and Treyburn PM
Site Code : 00001122
Start Date : 5/9/2017
Page No : 3

Peak Hour Data

Peak Hour Begins at 04:30 PM

Passenger Veh
Trucks

North

Monticello

	Out	In	Total
	737	868	1605
	7	8	15
	744	876	1620

	Right	Thru	Left	Peds
	70	791	7	0
	3	5	0	0
	73	796	7	0

Wm & Mary

	Right	Thru	Left	Peds
	9	13	27	0
	0	0	1	0
	9	13	28	0

	Out	In	Total
	24	49	73
	0	1	1
	24	50	74

Treyburn

	Left	Thru	Right	Peds
	50	3	55	0
	0	0	0	0
	50	3	55	0

	Out	In	Total
	148	108	256
	6	0	6
	154	108	262

Monticello

	Left	Thru	Right	Peds
	65	678	14	0
	3	7	0	0
	68	685	14	0

	Out	In	Total
	873	757	1630
	6	10	16
	879	767	1646

Appendix C
Trip Generation Research Summary

Table 1: Summary of Student Housing Trip Generation Studies

Source	Land Use	Code	Unit	RATE & PERCENTAGES									Notes
				Daily			AM Peak Hour			PM Peak Hour			
				Rate	Enter	Exit	Rate	Enter	Exit	Rate	Enter	Exit	
ITE Trip Generation Manual	Apartments	220	Dwelling Units	6.65			0.51	20%	80%	0.62	65%	30%	These have formulas as well as rates
TripGeneration.org (Spack)	Student Housing	-	Dwelling Units	11.81	49%	49%	0.45	32%	66%	0.92	49%	49%	Used adjacent street rates
Spack Consulting	Student Housing Apartments	-	Dwelling Units	2.82	50%	50%	0.13	39%	61%	0.24	54%	46%	These have formulas as well as rates
Spack Consulting	Student Housing Apartments	-	Bedrooms	1.42	50%	50%	0.07	43%	57%	0.13	53%	47%	These have formulas as well as rates
Spack Consulting	Student Housing Apartments	-	Parking Stalls	2.82	50%	50%	0.13	47%	53%	0.27	54%	46%	These have formulas as well as rates
FDOT 2012 Study	Student Apartments	-	Dwelling Units	12.57						1.00			These have formulas as well as rates
FDOT 2012 Study	Student Apartments	-	Persons	4.11						0.32			These have formulas as well as rates
FDOT 2012 Study	Student Apartments	-	Bedrooms	3.98						0.31			These have formulas as well as rates
FDOT 2012 Study	Student Apartments	-	Vehicles	4.47						0.35			These have formulas as well as rates
UCSD	Student Housing	-	Beds	1.38			2.27%	35%	65%	2.67%	48%	52%	Rate is percent of ADT
UCSD	Student Housing	-	Dwelling Units	2.76			2.27%	35%	65%	2.67%	48%	52%	Rate is percent of ADT
UCSD	Faculty and Staff Housing	-	Beds	3.69			4.74%	31%	69%	4.40%	63%	37%	Rate is percent of ADT
UCSD	Faculty and Staff Housing	-	Dwelling Units	5.92			4.74%	31%	69%	4.40%	63%	37%	Rate is percent of ADT

Appendix D
Volume Worksheets

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Treyburn Drive
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Treyburn Drive Northbound			Treyburn Drive Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	26	369	37	17	356	28	3	0	3	56	22	32
Trucks	0	5	0	0	5	2	0	0	0	0	0	0
Total Existing 2017 Traffic	26	375	37	17	362	30	3	0	3	56	22	32
Truck %	0%	1%	0%	0%	1%	7%	0%	-	0%	0%	0%	0%
PHF	0.83											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	26	380	37	17	367	30	3	0	3	56	22	32
2026 No Build	26	392	37	17	378	30	3	0	3	56	22	32
By-Right												
Proposed Trips												
Entering Distribution		*20%*								*5%*		
Exiting Distribution					20%	5%						
Entering Assignment		*54*								*14*		
Exiting Assignment					40	10						
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Proposed + Background												
2020 Total Traffic	26	434	37	17	407	40	3	0	3	70	22	32
2026 Total Traffic	26	446	37	17	418	40	3	0	3	70	22	32

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Treyburn Drive Northbound			Treyburn Drive Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	76	704	13	5	718	79	23	14	9	58	5	55
Trucks	2	2	0	0	2	2	0	0	0	1	0	0
Total Existing 2017 Traffic	78	706	13	5	720	81	23	14	9	59	5	55
Truck %	3%	0%	0%	0%	0%	3%	0%	0%	0%	2%	0%	0%
PHF	0.97											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	78	717	13	5	731	81	23	14	9	59	5	55
2026 No Build	78	739	13	5	753	81	23	14	9	59	5	55
By-Right												
Proposed Trips												
Entering Distribution		*20%*								*5%*		
Exiting Distribution					20%	5%						
Entering Assignment		*78*								*20*		
Exiting Assignment					76	19						
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Proposed + Background												
2020 Total Traffic	78	795	13	5	807	100	23	14	9	79	5	55
2026 Total Traffic	78	817	13	5	829	100	23	14	9	79	5	55

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Mount Vernon Avenue
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Mount Vernon Avenue Northbound			Mount Vernon Avenue Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	21	366	32	24	374	2	12	0	2	2	1	19
Trucks	0	4	0	0	10	0	0	0	1	0	0	0
Total Existing 2017 Traffic	21	370	32	24	383	2	12	0	3	2	1	19
Truck %	0%	1%	0%	0%	3%	0%	0%	-	33%	0%	0%	0%
PHF	0.85											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	21	376	32	24	389	2	12	0	3	2	1	19
2026 No Build	21	387	32	24	401	2	12	0	3	2	1	19
By-Right												
Proposed Trips												
Entering Distribution		*25%*										
Exiting Distribution					25%							
Entering Assignment		*68*										
Exiting Assignment					50							
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Proposed + Background												
2020 Total Traffic	21	444	32	24	439	2	12	0	3	2	1	19
2026 Total Traffic	21	455	32	24	451	2	12	0	3	2	1	19

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Mount Vernon Avenue Northbound			Mount Vernon Avenue Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	50	702	28	9	729	11	17	1	24	10	1	48
Trucks	1	3	0	0	5	0	0	0	0	0	0	0
Total Existing 2017 Traffic	51	705	28	9	734	11	17	1	24	10	1	48
Truck %	2%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
PHF	0.96											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	51	716	28	9	745	11	17	1	24	10	1	48
2026 No Build	51	738	28	9	768	11	17	1	24	10	1	48
By-Right												
Proposed Trips												
Entering Distribution		*25%*										
Exiting Distribution					25%							
Entering Assignment		*98*										
Exiting Assignment					95							
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Proposed + Background												
2020 Total Traffic	51	814	28	9	840	11	17	1	24	10	1	48
2026 Total Traffic	51	836	28	9	863	11	17	1	24	10	1	48

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Williamsburg Shopping Center Access Driveway
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Shopping Center Driveway Northbound			Shopping Center Driveway Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	2	352	1	0	393	2	2	0	1	0	0	0
Trucks	0	4	0	0	9	0	0	0	0	0	0	0
Total Existing 2017 Traffic	2	356	1	0	402	2	2	0	1	0	0	0
Truck %	0%	1%	0%	-	2%	0%	0%	-	0%	-	-	-
PHF	0.89											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	2	362	1	0	408	2	2	0	1	0	0	0
2026 No Build	2	373	1	0	420	2	2	0	1	0	0	0
By-Right												
Proposed Trips												
Entering Distribution		*10%*	*15%*	*30%*								
Exiting Distribution					10%		15%		25%			
Entering Assignment		*27*	*41*	*81*								
Exiting Assignment					20		30		50			
Pass-by												
Entering Pass-by %		*-15%*	*15%*	*15%*	*-5%*							
Exiting Pass-by %							5%		25%			
Entering Pass-by Assignment		*-22*	*22*	*22*	*-7*							
Exiting Pass-by Assignment							6		28			
Proposed + Background												
2020 Total Traffic	2	367	64	103	421	2	38	0	79	0	0	0
2026 Total Traffic	2	378	64	103	433	2	38	0	79	0	0	0

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Shopping Center Driveway Northbound			Shopping Center Driveway Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	30	661	21	14	670	18	39	1	15	12	8	35
Trucks	0	2	0	0	3	0	0	0	0	0	0	0
Total Existing 2017 Traffic	30	663	21	14	673	18	39	1	15	12	8	35
Truck %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
PHF	0.97											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	30	673	21	14	683	18	39	1	15	12	8	35
2026 No Build	30	694	21	14	704	18	39	1	15	12	8	35
By-Right												
Proposed Trips												
Entering Distribution		*10%*	*15%*	*30%*								
Exiting Distribution					10%		15%		25%			
Entering Assignment		*39*	*59*	*117*								
Exiting Assignment					38		57		95			
Pass-by												
Entering Pass-by %		*-15%*	*15%*	*15%*	*-5%*							
Exiting Pass-by %							5%		25%			
Entering Pass-by Assignment		*-32*	*32*	*32*	*-11*							
Exiting Pass-by Assignment							10		52			
Proposed + Background												
2020 Total Traffic	30	680	112	163	710	18	106	1	162	12	8	35
2026 Total Traffic	30	701	112	163	731	18	106	1	162	12	8	35

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Garrison Drive
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound		Monticello Avenue Westbound		Garrison Drive Southbound	
	Left	Thru	Thru	Right	Left	Right
2017 Counts						
Cars	8	347	395	2	3	11
Trucks	0	4	10	0	0	0
Total Existing 2017 Traffic	8	351	405	2	3	11
Truck %	0%	1%	2%	0%	0%	0%
PHF	0.89					
Growth Rate	0.0%	0.5%	0.5%	0.0%	0.0%	0.0%
Background Traffic						
2020 No Build	8	356	411	2	3	11
2026 No Build	8	367	424	2	3	11
By-Right						
Proposed Trips						
Entering Distribution		*10%*	*30%*			
Exiting Distribution		25%	10%			
Entering Assignment		*27*	*81*			
Exiting Assignment		50	20			
Pass-by						
Entering Pass-by %			*10%*			
Exiting Pass-by %		10%				
Entering Pass-by Assignment			*15*			
Exiting Pass-by Assignment		11				
Proposed + Background						
2020 Total Traffic	8	444	527	2	3	11
2026 Total Traffic	8	455	540	2	3	11

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound		Monticello Avenue Westbound		Garrison Drive Southbound	
	Left	Thru	Thru	Right	Left	Right
2017 Counts						
Cars	22	696	710	37	17	15
Trucks	0	3	5	0	0	0
Total Existing 2017 Traffic	22	699	715	37	17	15
Truck %	0%	0%	1%	0%	0%	0%
PHF	0.96					
Growth Rate	0.0%	0.5%	0.5%	0.0%	0.0%	0.0%
Background Traffic						
2020 No Build	22	709	726	37	17	15
2026 No Build	22	731	748	37	17	15
By-Right						
Proposed Trips						
Entering Distribution		*10%*	*30%*			
Exiting Distribution		25%	10%			
Entering Assignment		*39*	*117*			
Exiting Assignment		95	38			
Pass-by						
Entering Pass-by %			*10%*			
Exiting Pass-by %		10%				
Entering Pass-by Assignment			*21*			
Exiting Pass-by Assignment		21				
Proposed + Background						
2020 Total Traffic	22	864	902	37	17	15
2026 Total Traffic	22	886	924	37	17	15

VOLUME DEVELOPMENT SHEET

Richmond Road at Monticello Avenue/Lafayette Street
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Lafayette Street Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	113	130	94	8	164	51	57	119	3	107	221	172
Trucks	2	0	2	0	4	3	5	10	0	0	10	2
Total Existing 2017 Traffic	115	130	96	8	168	54	63	129	3	107	231	174
Truck %	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	115	132	96	8	171	54	63	136	3	107	245	174
2026 No Build	115	136	96	8	176	54	63	154	3	107	276	174
By-Right												
Proposed Trips												
Entering Distribution					*5%*		*10%*				*20%*	*25%*
Exiting Distribution	25%	5%	5%					20%				
Entering Assignment					*14*		*27*				*54*	*68*
Exiting Assignment	50	10	10					40				
Pass-by												
Entering Pass-by %											*-20%*	*20%*
Exiting Pass-by %			25%									
Entering Pass-by Assignment											*-29*	*29*
Exiting Pass-by Assignment			28									
Proposed + Background												
2020 Total Traffic	165	142	134	8	185	54	90	176	3	107	270	271
2026 Total Traffic	165	146	134	8	190	54	90	194	3	107	301	271

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Lafayette Street Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	245	319	95	14	306	171	173	326	15	103	252	286
Trucks	3	0	0	0	1	1	2	3	0	0	6	2
Total Existing 2017 Traffic	248	319	95	14	307	172	175	329	15	103	258	288
Truck %	1%	0%	0%	0%	0%	1%	1%	1%	0%	0%	3%	1%
PHF	0.94											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	248	323	95	14	311	172	175	350	15	103	274	288
2026 No Build	248	333	95	14	321	172	175	394	15	103	308	288
By-Right												
Proposed Trips												
Entering Distribution					*5%*		*10%*				*20%*	*25%*
Exiting Distribution	25%	5%	5%					20%				
Entering Assignment					*20*		*39*				*78*	*98*
Exiting Assignment	95	19	19					76				
Pass-by												
Entering Pass-by %											*-20%*	*20%*
Exiting Pass-by %			25%									
Entering Pass-by Assignment											*-42*	*42*
Exiting Pass-by Assignment			52									
Proposed + Background												
2020 Total Traffic	343	342	166	14	331	172	214	426	15	103	310	428
2026 Total Traffic	343	352	166	14	341	172	214	470	15	103	344	428

VOLUME DEVELOPMENT SHEET

Richmond Road at Mount Vernon Avenue
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Mount Vernon Avenue Eastbound			Parking Lot Driveway Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	21	5	10	48	9	39	0	239	41	50	440	31
Trucks	0	0	0	0	0	0	0	16	0	0	11	0
Total Existing 2017 Traffic	21	5	10	48	9	39	0	255	41	50	450	31
Truck %	0%	0%	0%	0%	0%	0%	-	6%	0%	0%	2%	0%
PHF	0.92											
Growth Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	21	5	10	48	9	39	0	270	41	50	478	31
2026 No Build	21	5	10	48	9	39	0	305	41	50	538	31
By-Right												
Proposed Trips												
Entering Distribution											*45%*	
Exiting Distribution								45%				
Entering Assignment											*122*	
Exiting Assignment								90				
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Proposed + Background												
2020 Total Traffic	21	5	10	48	9	39	0	360	41	50	600	31
2026 Total Traffic	21	5	10	48	9	39	0	395	41	50	660	31

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Mount Vernon Avenue Eastbound			Parking Lot Driveway Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	94	5	54	11	12	52	1	730	15	29	588	70
Trucks	1	0	0	0	0	0	0	8	0	0	11	0
Total Existing 2017 Traffic	95	5	54	11	12	52	1	738	15	29	598	70
Truck %	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	2%	0%
PHF	0.94											
Growth Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	95	5	54	11	12	52	1	783	15	29	635	70
2026 No Build	95	5	54	11	12	52	1	882	15	29	715	70
By-Right												
Proposed Trips												
Entering Distribution											*45%*	
Exiting Distribution								45%				
Entering Assignment											*176*	
Exiting Assignment								171				
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Proposed + Background												
2020 Total Traffic	95	5	54	11	12	52	1	954	15	29	811	70
2026 Total Traffic	95	5	54	11	12	52	1	1,053	15	29	891	70

VOLUME DEVELOPMENT SHEET

Richmond Road at Bacon Avenue
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Bacon Avenue Westbound Left	Bacon Avenue Westbound Right	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru
2017 Counts						
Cars	1	1	174	0	2	310
Trucks	0	0	16	0	0	11
Total Existing 2017 Traffic	1	1	190	0	2	321
Truck %	0%	0%	9%	-	0%	3%
PHF			0.90			
Growth Rate	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%
Background Traffic						
2020 No Build	1	1	202	0	2	340
2026 No Build	1	1	227	0	2	383
By-Right						
Proposed Trips						
Entering Distribution			*20%*			*5%*
Exiting Distribution			5%			20%
Entering Assignment			*54*			*14*
Exiting Assignment			10			40
Pass-by						
Entering Pass-by %						
Exiting Pass-by %						
Entering Pass-by Assignment						
Exiting Pass-by Assignment						
Proposed + Background						
2020 Total Traffic	1	1	266	0	2	394
2026 Total Traffic	1	1	291	0	2	437

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Bacon Avenue Westbound Left	Bacon Avenue Westbound Right	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru
2017 Counts						
Cars	2	5	474	4	10	315
Trucks	0	0	5	0	0	8
Total Existing 2017 Traffic	2	5	480	4	10	323
Truck %	0%	0%	1%	0%	0%	2%
PHF			0.87			
Growth Rate	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%
Background Traffic						
2020 No Build	2	5	509	4	10	343
2026 No Build	2	5	573	4	10	386
By-Right						
Proposed Trips						
Entering Distribution			*20%*			*5%*
Exiting Distribution			5%			20%
Entering Assignment			*78*			*20*
Exiting Assignment			19			76
Pass-by						
Entering Pass-by %						
Exiting Pass-by %						
Entering Pass-by Assignment						
Exiting Pass-by Assignment						
Proposed + Background						
2020 Total Traffic	2	5	606	4	10	439
2026 Total Traffic	2	5	670	4	10	482

VOLUME DEVELOPMENT SHEET

Richmond Road at Bypass Road
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Bypass Road Westbound Left	Bypass Road Westbound Right	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru
2017 Counts						
Cars	238	368	136	153	316	283
Trucks	4	10	14	4	12	6
Total Existing 2017 Traffic	242	378	150	158	328	289
Truck %	2%	3%	9%	3%	4%	2%
PHF			0.92			
Growth Rate	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%
Background Traffic						
2020 No Build	242	378	159	158	328	307
2026 No Build	242	378	179	158	328	346
By-Right						
Proposed Trips						
Entering Distribution	*20%*					*25%*
Exiting Distribution			25%	20%		
Entering Assignment	*54*					*68*
Exiting Assignment			50	40		
Pass-by						
Entering Pass-by %						
Exiting Pass-by %						
Entering Pass-by Assignment						
Exiting Pass-by Assignment						
Proposed + Background						
2020 Total Traffic	296	378	209	198	328	375
2026 Total Traffic	296	378	229	198	328	414

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Bypass Road Westbound Left	Bypass Road Westbound Right	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru
2017 Counts						
Cars	328	680	534	341	623	405
Trucks	2	3	6	2	11	8
Total Existing 2017 Traffic	330	684	540	343	634	413
Truck %	1%	0%	1%	1%	2%	2%
PHF			0.97			
Growth Rate	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%
Background Traffic						
2020 No Build	330	684	573	343	634	438
2026 No Build	330	684	645	343	634	493
By-Right						
Proposed Trips						
Entering Distribution	*20%*					*25%*
Exiting Distribution			25%	20%		
Entering Assignment	*78*					*98*
Exiting Assignment			95	76		
Pass-by						
Entering Pass-by %						
Exiting Pass-by %						
Entering Pass-by Assignment						
Exiting Pass-by Assignment						
Proposed + Background						
2020 Total Traffic	408	684	668	419	634	536
2026 Total Traffic	408	684	740	419	634	591

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Existing Access #1
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Existing Access #1 Northbound			NA Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	0	337	13	0	393	0	4	0	0	0	0	0
Trucks	0	4	0	2	10	0	0	0	0	0	0	0
Total Existing 2017 Traffic	0	341	13	2	403	0	4	0	0	0	0	0
Truck %	-	1%	0%	100%	2%	-	0%	-	-	-	-	-
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	0	346	13	2	409	0	4	0	0	0	0	0
2026 No Build	0	357	13	2	422	0	4	0	0	0	0	0
By-Right												
Proposed Trips												
Entering Distribution			*10%*	*10%*	*30%*							
Exiting Distribution		25%					10%		10%			
Entering Assignment			*27*	*27*	*81*							
Exiting Assignment		50					20		20			
Pass-by												
Entering Pass-by %		*-10%*	*10%*	*15%*	*5%*							
Exiting Pass-by %		10%					5%		20%			
Entering Pass-by Assignment		*-15*	*15*	*22*	*7*							
Exiting Pass-by Assignment		11					6		22			
Proposed + Background												
2020 Total Traffic	0	392	55	51	497	0	30	0	42	0	0	0
2026 Total Traffic	0	403	55	51	510	0	30	0	42	0	0	0

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Existing Access #1 Northbound			NA Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	0	659	54	18	747	0	0	0	0	0	0	0
Trucks	0	3	0	0	5	0	0	0	0	0	0	0
Total Existing 2017 Traffic	0	662	54	18	752	0	0	0	0	0	0	0
Truck %	-	0%	0%	0%	1%	-	-	-	-	-	-	-
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	0	672	54	18	763	0	0	0	0	0	0	0
2026 No Build	0	692	54	18	787	0	0	0	0	0	0	0
By-Right												
Proposed Trips												
Entering Distribution			*10%*	*10%*	*30%*							
Exiting Distribution		25%					10%		10%			
Entering Assignment			*39*	*39*	*117*							
Exiting Assignment		95					38		38			
Pass-by												
Entering Pass-by %		*-10%*	*10%*	*15%*	*5%*							
Exiting Pass-by %		10%					5%		20%			
Entering Pass-by Assignment		*-21*	*21*	*32*	*11*							
Exiting Pass-by Assignment		21					10		41			
Proposed + Background												
2020 Total Traffic	0	767	114	89	891	0	48	0	79	0	0	0
2026 Total Traffic	0	787	114	89	915	0	48	0	79	0	0	0

VOLUME DEVELOPMENT SHEET

Richmond Road at Existing Access #2
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Existing Access #2 Eastbound			NA Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	4	0	0	0	0	0	0	175	0	0	312	11
Trucks	0	0	0	0	0	0	1	15	0	0	11	1
Total Existing 2017 Traffic	4	0	0	0	0	0	1	190	0	0	323	12
Truck %	0%	-	-	-	-	-	100%	8%	-	-	3%	8%
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	4	0	0	0	0	0	1	202	0	0	343	12
2026 No Build	4	0	0	0	0	0	1	227	0	0	386	12
By-Right												
Proposed Trips												
Entering Distribution							*10%*	*10%*			*5%*	*15%*
Exiting Distribution	15%		15%					5%			5%	
Entering Assignment							*27*	*27*			*14*	*41*
Exiting Assignment	30		30					10			10	
Pass-by												
Entering Pass-by %							*15%*	*-15%*			*-10%*	*10%*
Exiting Pass-by %	15%		10%									
Entering Pass-by Assignment							*22*	*-22*			*-15*	*15*
Exiting Pass-by Assignment	17		11									
Proposed + Background												
2020 Total Traffic	51	0	41	0	0	0	50	217	0	0	352	68
2026 Total Traffic	51	0	41	0	0	0	50	242	0	0	395	68

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Existing Access #2 Eastbound			NA Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	35	0	0	0	0	0	0	479	0	0	325	36
Trucks	0	0	2	0	0	0	0	5	0	0	6	0
Total Existing 2017 Traffic	35	0	2	0	0	0	0	484	0	0	331	36
Truck %	0%	-	100%	-	-	-	-	1%	-	-	2%	0%
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	35	0	2	0	0	0	0	514	0	0	351	36
2026 No Build	35	0	2	0	0	0	0	578	0	0	396	36
By-Right												
Proposed Trips												
Entering Distribution							*10%*	*10%*			*5%*	*15%*
Exiting Distribution	15%		15%				5%				5%	
Entering Assignment							*39*	*39*			*20*	*59*
Exiting Assignment	57		57				19				19	
Pass-by												
Entering Pass-by %							*15%*	*-15%*			*-10%*	*10%*
Exiting Pass-by %	15%		10%									
Entering Pass-by Assignment							*32*	*-32*			*-21*	*21*
Exiting Pass-by Assignment	31		21									
Proposed + Background												
2020 Total Traffic	123	0	80	0	0	0	90	521	0	0	369	116
2026 Total Traffic	123	0	80	0	0	0	90	585	0	0	414	116

VOLUME DEVELOPMENT SHEET

Richmond Road at Existing Access #3
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Existing Access #1 Northbound			NA Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	0	0	0	0	0	0	0	174	0	0	311	0
Trucks	0	0	0	0	0	0	0	16	0	0	11	0
Total Existing 2017 Traffic	0	0	0	0	0	0	0	190	0	0	322	0
Truck %	-	-	-	-	-	-	-	8%	-	-	3%	-
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	0	0	0	0	0	0	0	202	0	0	342	0
2026 No Build	0	0	0	0	0	0	0	227	0	0	385	0
By-Right												
Proposed Trips												
Entering Distribution							*5%*	*20%*				*5%*
Exiting Distribution	5%		5%								20%	
Entering Assignment							*14*	*54*				*14*
Exiting Assignment	10		10								40	
Pass-by												
Entering Pass-by %							*10%*	*-10%*			*-10%*	*10%*
Exiting Pass-by %	10%		10%									
Entering Pass-by Assignment							*15*	*-15*			*-15*	*15*
Exiting Pass-by Assignment	11		11									
Proposed + Background												
2020 Total Traffic	21	0	21	0	0	0	29	241	0	0	367	29
2026 Total Traffic	21	0	21	0	0	0	29	266	0	0	410	29

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Existing Access #1 Northbound			NA Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	0	0	0	0	0	0	0	478	0	0	317	0
Trucks	0	0	0	0	0	0	0	5	0	0	8	0
Total Existing 2017 Traffic	0	0	0	0	0	0	0	483	0	0	325	0
Truck %	-	-	-	-	-	-	-	1%	-	-	2%	-
PHF	0.94											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	0	0	0	0	0	0	0	513	0	0	345	0
2026 No Build	0	0	0	0	0	0	0	577	0	0	388	0
By-Right												
Proposed Trips												
Entering Distribution							*5%*	*20%*				*5%*
Exiting Distribution	5%		5%								20%	
Entering Assignment							*20*	*78*				*20*
Exiting Assignment	19		19								76	
Pass-by												
Entering Pass-by %							*10%*	*-10%*			*-10%*	*10%*
Exiting Pass-by %	10%		10%									
Entering Pass-by Assignment							*21*	*-21*			*-21*	*21*
Exiting Pass-by Assignment	21		21									
Proposed + Background												
2020 Total Traffic	40	0	40	0	0	0	41	570	0	0	400	41
2026 Total Traffic	40	0	40	0	0	0	41	634	0	0	443	41

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Treyburn Drive
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Treyburn Drive Northbound			Treyburn Drive Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	26	369	37	17	356	28	3	0	3	56	22	32
Trucks	0	5	0	0	5	2	0	0	0	0	0	0
Total Existing 2017 Traffic	26	375	37	17	362	30	3	0	3	56	22	32
Truck %	0%	1%	0%	0%	1%	7%	0%	-	0%	0%	0%	0%
PHF	0.83											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	26	380	37	17	367	30	3	0	3	56	22	32
2026 No Build	26	392	37	17	378	30	3	0	3	56	22	32
Option 1 - Retail												
Proposed Trips												
Entering Distribution		*20%*								*5%*		
Exiting Distribution					20%	5%						
Entering Assignment		*43*								*11*		
Exiting Assignment					44	11						
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution		*25%*								*5%*		
Exiting Distribution					25%	5%						
Entering Assignment		*3*								*1*		
Exiting Assignment					5	1						
Proposed + Background												
2020 Total Traffic	26	426	37	17	416	42	3	0	3	68	22	32
2026 Total Traffic	26	438	37	17	427	42	3	0	3	68	22	32

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Treyburn Drive Northbound			Treyburn Drive Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	76	704	13	5	718	79	23	14	9	58	5	55
Trucks	2	2	0	0	2	2	0	0	0	1	0	0
Total Existing 2017 Traffic	78	706	13	5	720	81	23	14	9	59	5	55
Truck %	3%	0%	0%	0%	0%	3%	0%	0%	0%	2%	0%	0%
PHF	0.97											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	78	717	13	5	731	81	23	14	9	59	5	55
2026 No Build	78	739	13	5	753	81	23	14	9	59	5	55
Option 1 - Retail												
Proposed Trips												
Entering Distribution		*20%*								*5%*		
Exiting Distribution					20%	5%						
Entering Assignment		*22*								*5*		
Exiting Assignment					25	6						
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution		*25%*								*5%*		
Exiting Distribution					25%	5%						
Entering Assignment		*9*								*2*		
Exiting Assignment					8	2						
Proposed + Background												
2020 Total Traffic	78	748	13	5	764	89	23	14	9	66	5	55
2026 Total Traffic	78	770	13	5	786	89	23	14	9	66	5	55

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Mount Vernon Avenue
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Mount Vernon Avenue Northbound			Mount Vernon Avenue Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	21	366	32	24	374	2	12	0	2	2	1	19
Trucks	0	4	0	0	10	0	0	0	1	0	0	0
Total Existing 2017 Traffic	21	370	32	24	383	2	12	0	3	2	1	19
Truck %	0%	1%	0%	0%	3%	0%	0%	-	33%	0%	0%	0%
PHF	0.85											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	21	376	32	24	389	2	12	0	3	2	1	19
2026 No Build	21	387	32	24	401	2	12	0	3	2	1	19
Option 1 - Retail												
Proposed Trips												
Entering Distribution		*25%*										
Exiting Distribution					25%							
Entering Assignment		*54*										
Exiting Assignment					55							
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution		*30%*										
Exiting Distribution					30%							
Entering Assignment		*4*										
Exiting Assignment					6							
Proposed + Background												
2020 Total Traffic	21	434	32	24	450	2	12	0	3	2	1	19
2026 Total Traffic	21	445	32	24	462	2	12	0	3	2	1	19

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Mount Vernon Avenue Northbound			Mount Vernon Avenue Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	50	702	28	9	729	11	17	1	24	10	1	48
Trucks	1	3	0	0	5	0	0	0	0	0	0	0
Total Existing 2017 Traffic	51	705	28	9	734	11	17	1	24	10	1	48
Truck %	2%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
PHF	0.96											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	51	716	28	9	745	11	17	1	24	10	1	48
2026 No Build	51	738	28	9	768	11	17	1	24	10	1	48
Option 1 - Retail												
Proposed Trips												
Entering Distribution		*25%*										
Exiting Distribution					25%							
Entering Assignment		*27*										
Exiting Assignment					32							
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution		*30%*										
Exiting Distribution					30%							
Entering Assignment		*10*										
Exiting Assignment					9							
Proposed + Background												
2020 Total Traffic	51	753	28	9	786	11	17	1	24	10	1	48
2026 Total Traffic	51	775	28	9	809	11	17	1	24	10	1	48

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Williamsburg Shopping Center Access Driveway
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Shopping Center Driveway Northbound			Shopping Center Driveway Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	2	352	1	0	393	2	2	0	1	0	0	0
Trucks	0	4	0	0	9	0	0	0	0	0	0	0
Total Existing 2017 Traffic	2	356	1	0	402	2	2	0	1	0	0	0
Truck %	0%	1%	0%	-	2%	0%	0%	-	0%	-	-	-
PHF	0.89											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	2	362	1	0	408	2	2	0	1	0	0	0
2026 No Build	2	373	1	0	420	2	2	0	1	0	0	0
Option 1 - Retail												
Proposed Trips												
Entering Distribution		*15%*	*10%*	*20%*								
Exiting Distribution					10%		15%		15%			
Entering Assignment		*33*	*22*	*43*								
Exiting Assignment					22		33		33			
Pass-by												
Entering Pass-by %		*-5%*	*5%*	*10%*	*-5%*							
Exiting Pass-by %							5%		10%			
Entering Pass-by Assignment		*-5*	*5*	*10*	*-5*							
Exiting Pass-by Assignment							5		11			
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution			*30%*	*60%*								
Exiting Distribution							30%		60%			
Entering Assignment			*4*	*7*								
Exiting Assignment							6		13			
Proposed + Background												
2020 Total Traffic	2	390	32	60	425	2	46	0	58	0	0	0
2026 Total Traffic	2	401	32	60	437	2	46	0	58	0	0	0

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Shopping Center Driveway Northbound			Shopping Center Driveway Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	30	661	21	14	670	18	39	1	15	12	8	35
Trucks	0	2	0	0	3	0	0	0	0	0	0	0
Total Existing 2017 Traffic	30	663	21	14	673	18	39	1	15	12	8	35
Truck %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
PHF	0.97											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	30	673	21	14	683	18	39	1	15	12	8	35
2026 No Build	30	694	21	14	704	18	39	1	15	12	8	35
Option 1 - Retail												
Proposed Trips												
Entering Distribution		*15%*	*10%*	*20%*								
Exiting Distribution					10%		15%		15%			
Entering Assignment		*16*	*11*	*22*								
Exiting Assignment					13		19		19			
Pass-by												
Entering Pass-by %		*-5%*	*5%*	*10%*	*-5%*							
Exiting Pass-by %							5%		10%			
Entering Pass-by Assignment		*-2*	*2*	*4*	*-2*							
Exiting Pass-by Assignment							2		5			
Option 1- Student Housing												
Proposed Trips												
Entering Distribution			*30%*	*60%*								
Exiting Distribution							30%		60%			
Entering Assignment			*10*	*20*								
Exiting Assignment							9		19			
Proposed + Background												
2020 Total Traffic	30	687	44	60	694	18	69	1	58	12	8	35
2026 Total Traffic	30	708	44	60	715	18	69	1	58	12	8	35

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Garrison Drive
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Garrison Drive Northbound			Garrison Drive Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	8	347	0	0	395	2	0	0	0	3	0	11
Trucks	0	4	0	0	10	0	0	0	0	0	0	0
Total Existing 2017 Traffic	8	351	0	0	405	2	0	0	0	3	0	11
Truck %	0%	1%	-	-	2%	0%	-	-	-	0%	-	0%
PHF	0.89											
Growth Rate	0.0%	0.5%			0.5%	0.0%				0.0%		0.0%
Background Traffic												
2020 No Build	8	356			411	2				3		11
2026 No Build	8	367			424	2				3		11
Option 1 - Retail												
Proposed Trips												
Entering Distribution			*15%*	*20%*	*20%*							
Exiting Distribution		15%					10%		20%			
Entering Assignment			*33*	*43*	*43*							
Exiting Assignment		33					22		44			
Pass-by												
Entering Pass-by %		*-20%*	*20%*	*20%*								
Exiting Pass-by %		5%					5%		35%			
Entering Pass-by Assignment		*-20*	*20*	*20*								
Exiting Pass-by Assignment		5					5		37			
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution					*60%*							
Exiting Distribution		60%										
Entering Assignment					*7*							
Exiting Assignment		13										
Proposed + Background												
2020 Total Traffic	8	387	53	63	461	2	27	0	81	3	0	11
2026 Total Traffic	8	398	53	63	474	2	27	0	81	3	0	11

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Garrison Drive Northbound			Garrison Drive Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	22	696	0	0	710	37	0	0	0	17	0	15
Trucks	0	3	0	0	5	0	0	0	0	0	0	0
Total Existing 2017 Traffic	22	699	0	0	715	37	0	0	0	17	0	15
Truck %	0%	0%	-	-	1%	0%	-	-	-	0%	-	0%
PHF	0.96											
Growth Rate	0.0%	0.5%		0.5%		0.0%				0.0%		0.0%
Background Traffic												
2020 No Build	22	709			726	37				17		15
2026 No Build	22	731			748	37				17		15
Option 1 - Retail												
Proposed Trips												
Entering Distribution			*15%*	*20%*	*20%*							
Exiting Distribution		15%					10%		20%			
Entering Assignment			*16*	*22*	*22*							
Exiting Assignment		19					13		25			
Pass-by												
Entering Pass-by %		*-20%*	*20%*	*20%*								
Exiting Pass-by %		5%					5%		35%			
Entering Pass-by Assignment		*-8*	*8*	*8*								
Exiting Pass-by Assignment		2					2		17			
Option 1- Student Housing												
Proposed Trips												
Entering Distribution					*60%*							
Exiting Distribution		60%										
Entering Assignment					*20*							
Exiting Assignment		19										
Proposed + Background												
2020 Total Traffic	22	741	24	30	768	37	15	0	42	17	0	15
2026 Total Traffic	22	763	24	30	790	37	15	0	42	17	0	15

VOLUME DEVELOPMENT SHEET

Richmond Road at Monticello Avenue/Lafayette Street
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Lafayette Street Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	113	130	94	8	164	51	57	119	3	107	221	172
Trucks	2	0	2	0	4	3	5	10	0	0	10	2
Total Existing 2017 Traffic	116	130	96	8	168	54	63	129	3	107	231	174
Truck %	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	116	132	96	8	171	54	63	136	3	107	245	174
2026 No Build	116	136	96	8	176	54	63	154	3	107	276	174
Option 1 - Retail												
Proposed Trips												
Entering Distribution					*5%*		*10%*				*20%*	*25%*
Exiting Distribution	25%	5%	5%					20%				
Entering Assignment					*11*		*22*				*43*	*54*
Exiting Assignment	55	11	11					44				
Pass-by												
Entering Pass-by %											*-20%*	*20%*
Exiting Pass-by %			20%									
Entering Pass-by Assignment											*-20*	*20*
Exiting Pass-by Assignment			21									
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution					*5%*		*30%*					*25%*
Exiting Distribution	25%	5%	30%									
Entering Assignment					*1*		*4*					*3*
Exiting Assignment	5	1	6									
Proposed + Background												
2020 Total Traffic	176	144	134	8	183	54	89	180	3	107	268	251
2026 Total Traffic	176	148	134	8	188	54	89	198	3	107	299	251

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Lafayette Street Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	245	319	95	14	306	171	173	326	15	103	252	286
Trucks	3	0	0	0	1	1	2	3	0	0	6	2
Total Existing 2017 Traffic	248	319	95	14	307	172	175	329	15	103	258	288
Truck %	1%	0%	0%	0%	0%	1%	1%	1%	0%	0%	3%	1%
PHF	0.94											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	248	323	95	14	311	172	175	350	15	103	274	288
2026 No Build	248	333	95	14	321	172	175	394	15	103	308	288
Option 1 - Retail												
Proposed Trips												
Entering Distribution					*5%*		*10%*				*20%*	*25%*
Exiting Distribution	25%	5%	5%					20%				
Entering Assignment					*5*		*11*				*22*	*27*
Exiting Assignment	32	6	6					25				
Pass-by												
Entering Pass-by %											*-20%*	*20%*
Exiting Pass-by %			20%									
Entering Pass-by Assignment											*-8*	*8*
Exiting Pass-by Assignment			10									
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution					*5%*		*30%*					*25%*
Exiting Distribution	25%	5%	30%									
Entering Assignment					*2*		*10*					*9*
Exiting Assignment	8	2	9									
Proposed + Background												
2020 Total Traffic	288	331	120	14	318	172	196	375	15	103	288	332
2026 Total Traffic	288	341	120	14	328	172	196	419	15	103	322	332

VOLUME DEVELOPMENT SHEET

Richmond Road at Mount Vernon Avenue
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Mount Vernon Avenue Eastbound			Parking Lot Driveway Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	21	5	10	48	9	39	0	239	41	50	440	31
Trucks	0	0	0	0	0	0	0	16	0	0	11	0
Total Existing 2017 Traffic	21	5	10	48	9	39	0	255	41	50	450	31
Truck %	0%	0%	0%	0%	0%	0%	-	6%	0%	0%	2%	0%
PHF	0.92											
Growth Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	21	5	10	48	9	39	0	270	41	50	478	31
2026 No Build	21	5	10	48	9	39	0	305	41	50	538	31
Option 1 - Retail												
Proposed Trips												
Entering Distribution											*45%*	
Exiting Distribution								45%				
Entering Assignment											*98*	
Exiting Assignment								99				
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution											*25%*	
Exiting Distribution								25%				
Entering Assignment											*3*	
Exiting Assignment								5				
Proposed + Background												
2020 Total Traffic	21	5	10	48	9	39	0	374	41	50	579	31
2026 Total Traffic	21	5	10	48	9	39	0	409	41	50	639	31

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Mount Vernon Avenue Eastbound			Parking Lot Driveway Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	94	5	54	11	12	52	1	730	15	29	588	70
Trucks	1	0	0	0	0	0	0	8	0	0	11	0
Total Existing 2017 Traffic	95	5	54	11	12	52	1	738	15	29	598	70
Truck %	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	2%	0%
PHF	0.94											
Growth Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	95	5	54	11	12	52	1	783	15	29	635	70
2026 No Build	95	5	54	11	12	52	1	882	15	29	715	70
Option 1- Retail												
Proposed Trips												
Entering Distribution											*45%*	
Exiting Distribution								45%				
Entering Assignment											*49*	
Exiting Assignment								57				
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution											*25%*	
Exiting Distribution								25%				
Entering Assignment											*9*	
Exiting Assignment								8				
Proposed + Background												
2020 Total Traffic	95	5	54	11	12	52	1	848	15	29	693	70
2026 Total Traffic	95	5	54	11	12	52	1	947	15	29	773	70

VOLUME DEVELOPMENT SHEET

Richmond Road at Bacon Avenue
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Bacon Avenue Westbound Left	Bacon Avenue Westbound Right	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru
2017 Counts						
Cars	1	1	174	0	2	310
Trucks	0	0	16	0	0	11
Total Existing 2017 Traffic	1	1	190	0	2	321
Truck %	0%	0%	9%	-	0%	3%
PHF			0.90			
Growth Rate	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%
Background Traffic						
2020 No Build	1	1	202	0	2	340
2026 No Build	1	1	227	0	2	383
Option 1 - Retail						
Proposed Trips						
Entering Distribution			*20%*			*5%*
Exiting Distribution			5%			20%
Entering Assignment			*43*			*11*
Exiting Assignment			11			44
Pass-by						
Entering Pass-by %						
Exiting Pass-by %						
Entering Pass-by Assignment						
Exiting Pass-by Assignment						
Option 1 - Student Housing						
Proposed Trips						
Entering Distribution			*30%*			
Exiting Distribution						30%
Entering Assignment			*4*			
Exiting Assignment						6
Proposed + Background						
2020 Total Traffic	1	1	260	0	2	401
2026 Total Traffic	1	1	285	0	2	444

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Bacon Avenue Westbound Left	Bacon Avenue Westbound Right	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru
2017 Counts						
Cars	2	5	474	4	10	315
Trucks	0	0	5	0	0	8
Total Existing 2017 Traffic	2	5	480	4	10	323
Truck %	0%	0%	1%	0%	0%	2%
PHF			0.87			
Growth Rate	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%
Background Traffic						
2020 No Build	2	5	509	4	10	343
2026 No Build	2	5	573	4	10	386
Option 1- Retail						
Proposed Trips						
Entering Distribution			*20%*			*5%*
Exiting Distribution			5%			20%
Entering Assignment			*22*			*5*
Exiting Assignment			6			25
Pass-by						
Entering Pass-by %						
Exiting Pass-by %						
Entering Pass-by Assignment						
Exiting Pass-by Assignment						
Option 1 - Student Housing						
Proposed Trips						
Entering Distribution			*30%*			
Exiting Distribution						30%
Entering Assignment			*10*			
Exiting Assignment						9
Proposed + Background						
2020 Total Traffic	2	5	547	4	10	382
2026 Total Traffic	2	5	611	4	10	425

VOLUME DEVELOPMENT SHEET

Richmond Road at Bypass Road
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Bypass Road Westbound Left	Bypass Road Westbound Right	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru
2017 Counts						
Cars	238	368	136	153	316	283
Trucks	4	10	14	4	12	6
Total Existing 2017 Traffic	242	378	150	158	328	289
Truck %	2%	3%	9%	3%	4%	2%
PHF			0.92			
Growth Rate	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%
Background Traffic						
2020 No Build	242	378	159	158	328	307
2026 No Build	242	378	179	158	328	346
Option 1 - Retail						
Proposed Trips						
Entering Distribution	*20%*					*25%*
Exiting Distribution			25%	20%		
Entering Assignment	*43*					*54*
Exiting Assignment			55	44		
Pass-by						
Entering Pass-by %						
Exiting Pass-by %						
Entering Pass-by Assignment						
Exiting Pass-by Assignment						
Option 1 - Student Housing						
Proposed Trips						
Entering Distribution	*10%*					*15%*
Exiting Distribution			15%	10%		
Entering Assignment	*1*					*2*
Exiting Assignment			3	2		
Proposed + Background						
2020 Total Traffic	286	378	217	204	328	363
2026 Total Traffic	286	378	237	204	328	402

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Bypass Road Westbound Left	Bypass Road Westbound Right	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru
2017 Counts						
Cars	328	680	534	341	623	405
Trucks	2	3	6	2	11	8
Total Existing 2017 Traffic	330	684	540	343	634	413
Truck %	1%	0%	1%	1%	2%	2%
PHF			0.97			
Growth Rate	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%
Background Traffic						
2020 No Build	330	684	573	343	634	438
2026 No Build	330	684	645	343	634	493
Option 1 - Retail						
Proposed Trips						
Entering Distribution	*20%*					*25%*
Exiting Distribution			25%	20%		
Entering Assignment	*22*					*27*
Exiting Assignment			32	25		
Pass-by						
Entering Pass-by %						
Exiting Pass-by %						
Entering Pass-by Assignment						
Exiting Pass-by Assignment						
Option 1 Student Housing						
Proposed Trips						
Entering Distribution	*10%*					*15%*
Exiting Distribution			15%	10%		
Entering Assignment	*3*					*5*
Exiting Assignment			5	3		
Proposed + Background						
2020 Total Traffic	355	684	610	371	634	470
2026 Total Traffic	355	684	682	371	634	525

VOLUME DEVELOPMENT SHEET

Richmond Road at Existing Access #2
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Existing Access #2 Eastbound Left	Existing Access #2 Eastbound Thru	Existing Access #2 Eastbound Right	NA Westbound Left	NA Westbound Thru	NA Westbound Right	Richmond Road Northbound Left	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru	Richmond Road Southbound Right
2017 Counts												
Cars	4	0	0	0	0	0	0	175	0	0	312	11
Trucks	0	0	0	0	0	0	1	15	0	0	11	1
Total Existing 2017 Traffic	4	0	0	0	0	0	1	190	0	0	323	12
Truck %	0%	-	-	-	-	-	100%	8%	-	-	3%	8%
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	4	0	0	0	0	0	1	202	0	0	343	12
2026 No Build	4	0	0	0	0	0	1	227	0	0	386	12
Option 1 - Retail												
Proposed Trips												
Entering Distribution							*10%*	*10%*			*5%*	*15%*
Exiting Distribution	15%		15%					5%			5%	
Entering Assignment							*22*	*22*			*11*	*33*
Exiting Assignment	33		33					11			11	
Pass-by												
Entering Pass-by %							*15%*	*-15%*			*-10%*	*10%*
Exiting Pass-by %	15%		10%									
Entering Pass-by Assignment							*15*	*-15*			*-10*	*10*
Exiting Pass-by Assignment	16		11									
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution								*30%*				
Exiting Distribution											30%	
Entering Assignment								*4*				
Exiting Assignment											6	
Proposed + Background												
2020 Total Traffic	53	0	44	0	0	0	38	224	0	0	361	55
2026 Total Traffic	53	0	44	0	0	0	38	249	0	0	404	55

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Existing Access #2 Eastbound Left	Existing Access #2 Eastbound Through	Existing Access #2 Eastbound Right	NA Westbound Left	NA Westbound Through	NA Westbound Right	Richmond Road Northbound Left	Richmond Road Northbound Through	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Through	Richmond Road Southbound Right
2017 Counts												
Cars	35	0	0	0	0	0	0	479	0	0	325	36
Trucks	0	0	2	0	0	0	0	5	0	0	6	0
Total Existing 2017 Traffic	35	0	2	0	0	0	0	484	0	0	331	36
Truck %	0%	-	100%	-	-	-	-	1%	-	-	2%	0%
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	35	0	2	0	0	0	0	514	0	0	351	36
2026 No Build	35	0	2	0	0	0	0	578	0	0	396	36
Option 1 - Retail												
Proposed Trips												
Entering Distribution							*10%*	*10%*			*5%*	*15%*
Exiting Distribution	15%		15%				5%				5%	
Entering Assignment							*11*	*11*			*5*	*16*
Exiting Assignment	19		19				6				6	
Pass-by												
Entering Pass-by %							*15%*	*-15%*			*-10%*	*10%*
Exiting Pass-by %	15%		10%									
Entering Pass-by Assignment							*6*	*-6*			*-4*	*4*
Exiting Pass-by Assignment	7		5									
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution								*30%*				
Exiting Distribution											30%	
Entering Assignment								*10*				
Exiting Assignment											9	
Proposed + Background												
2020 Total Traffic	61	0	26	0	0	0	23	529	0	0	367	56
2026 Total Traffic	61	0	26	0	0	0	23	593	0	0	412	56

VOLUME DEVELOPMENT SHEET

Richmond Road at Existing Access #3
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Existing Access #3 Eastbound Left	Existing Access #3 Eastbound Thru	Existing Access #3 Eastbound Right	NA Westbound Left	NA Westbound Thru	NA Westbound Right	Richmond Road Northbound Left	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru	Richmond Road Southbound Right
2017 Counts												
Cars	0	0	0	0	0	0	0	174	0	0	311	0
Trucks	0	0	0	0	0	0	0	16	0	0	11	0
Total Existing 2017 Traffic	0	0	0	0	0	0	0	190	0	0	322	0
Truck %	-	-	-	-	-	-	-	8%	-	-	3%	-
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	0	0	0	0	0	0	0	202	0	0	342	0
2026 No Build	0	0	0	0	0	0	0	227	0	0	385	0
Option 1 - Retail												
Proposed Trips												
Entering Distribution							*5%*	*20%*				*5%*
Exiting Distribution	5%		5%								20%	
Entering Assignment							*11*	*43*				*11*
Exiting Assignment	11		11								44	
Pass-by												
Entering Pass-by %							*10%*	*-10%*			*-10%*	*10%*
Exiting Pass-by %	10%		10%									
Entering Pass-by Assignment							*10*	*-10*			*-10*	*10*
Exiting Pass-by Assignment	11		11									
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution							*10%*	*30%*				
Exiting Distribution			10%								30%	
Entering Assignment							*1*	*4*				
Exiting Assignment			2								6	
Proposed + Background												
2020 Total Traffic	22	0	24	0	0	0	22	239	0	0	382	21
2026 Total Traffic	22	0	24	0	0	0	22	264	0	0	425	21

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Existing Access #3 Eastbound Left	Existing Access #3 Eastbound Through	Existing Access #3 Eastbound Right	NA Westbound Left	NA Westbound Through	NA Westbound Right	Richmond Road Northbound Left	Richmond Road Northbound Through	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Through	Richmond Road Southbound Right
2017 Counts												
Cars	0	0	0	0	0	0	0	478	0	0	317	0
Trucks	0	0	0	0	0	0	0	5	0	0	8	0
Total Existing 2017 Traffic	0	0	0	0	0	0	0	483	0	0	325	0
Truck %	-	-	-	-	-	-	-	1%	-	-	2%	-
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	0	0	0	0	0	0	0	513	0	0	345	0
2026 No Build	0	0	0	0	0	0	0	577	0	0	388	0
Option 1- Retail												
Proposed Trips												
Entering Distribution							*5%*	*20%*				*5%*
Exiting Distribution	5%		5%								20%	
Entering Assignment							*5*	*22*				*5*
Exiting Assignment	6		6								25	
Pass-by												
Entering Pass-by %							*10%*	*-10%*			*-10%*	*10%*
Exiting Pass-by %	10%		10%									
Entering Pass-by Assignment							*4*	*-4*			*-4*	*4*
Exiting Pass-by Assignment	5		5									
Option 1 - Student Housing												
Proposed Trips												
Entering Distribution							*10%*	*30%*				
Exiting Distribution			10%								30%	
Entering Assignment							*3*	*10*				
Exiting Assignment			3								9	
Proposed + Background												
2020 Total Traffic	11	0	14	0	0	0	12	541	0	0	375	9
2026 Total Traffic	11	0	14	0	0	0	12	605	0	0	418	9

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Treyburn Drive
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Treyburn Drive Northbound			Treyburn Drive Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	26	369	37	17	356	28	3	0	3	56	22	32
Trucks	0	5	0	0	5	2	0	0	0	0	0	0
Total Existing 2017 Traffic	26	375	37	17	362	30	3	0	3	56	22	32
Truck %	0%	1%	0%	0%	1%	7%	0%	-	0%	0%	0%	0%
PHF	0.83											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	26	380	37	17	367	30	3	0	3	56	22	32
2026 No Build	26	392	37	17	378	30	3	0	3	56	22	32
Option 2 - Retail												
Proposed Trips												
Entering Distribution		*20%*								*5%*		
Exiting Distribution					20%	5%						
Entering Assignment		*44*								*11*		
Exiting Assignment					48	12						
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution		*25%*								*5%*		
Exiting Distribution					25%	5%						
Entering Assignment		*3*								*1*		
Exiting Assignment					5	1						
Proposed + Background												
2020 Total Traffic	26	427	37	17	420	43	3	0	3	68	22	32
2026 Total Traffic	26	439	37	17	431	43	3	0	3	68	22	32

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Treyburn Drive Northbound			Treyburn Drive Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	76	704	13	5	718	79	23	14	9	58	5	55
Trucks	2	2	0	0	2	2	0	0	0	1	0	0
Total Existing 2017 Traffic	78	706	13	5	720	81	23	14	9	59	5	55
Truck %	3%	0%	0%	0%	0%	3%	0%	0%	0%	2%	0%	0%
PHF	0.97											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	78	717	13	5	731	81	23	14	9	59	5	55
2026 No Build	78	739	13	5	753	81	23	14	9	59	5	55
Option 2 - Retail												
Proposed Trips												
Entering Distribution		*20%*								*5%*		
Exiting Distribution					20%	5%						
Entering Assignment		*18*								*5*		
Exiting Assignment					23	6						
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution		*25%*								*5%*		
Exiting Distribution					25%	5%						
Entering Assignment		*7*								*1*		
Exiting Assignment					7	1						
Proposed + Background												
2020 Total Traffic	78	742	13	5	761	88	23	14	9	65	5	55
2026 Total Traffic	78	764	13	5	783	88	23	14	9	65	5	55

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Mount Vernon Avenue
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Mount Vernon Avenue Northbound			Mount Vernon Avenue Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	21	366	32	24	374	2	12	0	2	2	1	19
Trucks	0	4	0	0	10	0	0	0	1	0	0	0
Total Existing 2017 Traffic	21	370	32	24	383	2	12	0	3	2	1	19
Truck %	0%	1%	0%	0%	3%	0%	0%	-	33%	0%	0%	0%
PHF	0.85											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	21	376	32	24	389	2	12	0	3	2	1	19
2026 No Build	21	387	32	24	401	2	12	0	3	2	1	19
Option 2 - Retail												
Proposed Trips												
Entering Distribution		*25%*										
Exiting Distribution					25%							
Entering Assignment		*56*										
Exiting Assignment					60							
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution		*30%*										
Exiting Distribution					30%							
Entering Assignment		*3*										
Exiting Assignment					5							
Proposed + Background												
2020 Total Traffic	21	435	32	24	454	2	12	0	3	2	1	19
2026 Total Traffic	21	446	32	24	466	2	12	0	3	2	1	19

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Mount Vernon Avenue Northbound			Mount Vernon Avenue Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	50	702	28	9	729	11	17	1	24	10	1	48
Trucks	1	3	0	0	5	0	0	0	0	0	0	0
Total Existing 2017 Traffic	51	705	28	9	734	11	17	1	24	10	1	48
Truck %	2%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
PHF	0.96											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	51	716	28	9	745	11	17	1	24	10	1	48
2026 No Build	51	738	28	9	768	11	17	1	24	10	1	48
Option 2 - Retail												
Proposed Trips												
Entering Distribution		*25%*										
Exiting Distribution					25%							
Entering Assignment		*23*										
Exiting Assignment					29							
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution		*30%*										
Exiting Distribution					30%							
Entering Assignment		*9*										
Exiting Assignment					8							
Proposed + Background												
2020 Total Traffic	51	748	28	9	782	11	17	1	24	10	1	48
2026 Total Traffic	51	770	28	9	805	11	17	1	24	10	1	48

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Treyburn Drive
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Treyburn Drive Northbound			Treyburn Drive Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	26	369	37	17	356	28	3	0	3	56	22	32
Trucks	0	5	0	0	5	2	0	0	0	0	0	0
Total Existing 2017 Traffic	26	375	37	17	362	30	3	0	3	56	22	32
Truck %	0%	1%	0%	0%	1%	7%	0%	-	0%	0%	0%	0%
PHF	0.83											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	26	380	37	17	367	30	3	0	3	56	22	32
2026 No Build	26	392	37	17	378	30	3	0	3	56	22	32
Option 2 - Retail												
Proposed Trips												
Entering Distribution		*20%*								*5%*		
Exiting Distribution					20%	5%						
Entering Assignment		*44*								*11*		
Exiting Assignment					48	12						
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution		*25%*								*5%*		
Exiting Distribution					25%	5%						
Entering Assignment		*3*								*1*		
Exiting Assignment					5	1						
Proposed + Background												
2020 Total Traffic	26	427	37	17	420	43	3	0	3	68	22	32
2026 Total Traffic	26	439	37	17	431	43	3	0	3	68	22	32

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Treyburn Drive Northbound			Treyburn Drive Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	76	704	13	5	718	79	23	14	9	58	5	55
Trucks	2	2	0	0	2	2	0	0	0	1	0	0
Total Existing 2017 Traffic	78	706	13	5	720	81	23	14	9	59	5	55
Truck %	3%	0%	0%	0%	0%	3%	0%	0%	0%	2%	0%	0%
PHF	0.97											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Background Traffic												
2020 No Build	78	717	13	5	731	81	23	14	9	59	5	55
2026 No Build	78	739	13	5	753	81	23	14	9	59	5	55
Option 2 - Retail												
Proposed Trips												
Entering Distribution		*20%*								*5%*		
Exiting Distribution					20%	5%						
Entering Assignment		*18*								*5*		
Exiting Assignment					23	6						
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution		*25%*								*5%*		
Exiting Distribution					25%	5%						
Entering Assignment		*7*								*1*		
Exiting Assignment					7	1						
Proposed + Background												
2020 Total Traffic	78	742	13	5	761	88	23	14	9	65	5	55
2026 Total Traffic	78	764	13	5	783	88	23	14	9	65	5	55

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Garrison Drive

AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound Left	Monticello Avenue Eastbound Thru	Monticello Avenue Westbound Thru	Monticello Avenue Westbound Right	Garrison Drive Southbound Left	Garrison Drive Southbound Right
2017 Counts						
Cars	8	347	395	2	3	11
Trucks	0	4	10	0	0	0
Total Existing 2017 Traffic	8	351	405	2	3	11
Truck %	0%	1%	2%	0%	0%	0%
PHF	0.89					
Growth Rate	0.0%	0.5%	0.5%	0.0%	0.0%	0.0%
Background Traffic						
2020 No Build	8	356	411	2	3	11
2026 No Build	8	367	424	2	3	11
Option 2 - Retail						
Proposed Trips						
Entering Distribution		*10%*	*20%*			
Exiting Distribution		15%	10%			
Entering Assignment		*22*	*44*			
Exiting Assignment		36	24			
Pass-by						
Entering Pass-by %			*10%*			
Exiting Pass-by %		10%				
Entering Pass-by Assignment			*12*			
Exiting Pass-by Assignment		13				
Option 2 - Student Housing						
Proposed Trips						
Entering Distribution			*60%*			
Exiting Distribution		60%				
Entering Assignment			*6*			
Exiting Assignment		11				
Proposed + Background						
2020 Total Traffic	8	438	497	2	3	11
2026 Total Traffic	8	449	510	2	3	11

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound Left	Monticello Avenue Eastbound Thru	Monticello Avenue Westbound Thru	Monticello Avenue Westbound Right	Garrison Drive Southbound Left	Garrison Drive Southbound Right
2017 Counts						
Cars	22	696	710	37	17	15
Trucks	0	3	5	0	0	0
Total Existing 2017 Traffic	22	699	715	37	17	15
Truck %	0%	0%	1%	0%	0%	0%
PHF	0.96					
Growth Rate	0.0%	0.5%	0.5%	0.0%	0.0%	0.0%
Background Traffic						
2020 No Build	22	709	726	37	17	15
2026 No Build	22	731	748	37	17	15
Option 2 - Retail						
Proposed Trips						
Entering Distribution		*10%*	*20%*			
Exiting Distribution		15%	10%			
Entering Assignment		*9*	*18*			
Exiting Assignment		17	12			
Pass-by						
Entering Pass-by %			*10%*			
Exiting Pass-by %		10%				
Entering Pass-by Assignment			*5*			
Exiting Pass-by Assignment		6				
Option 2 - Student Housing						
Proposed Trips						
Entering Distribution			*60%*			
Exiting Distribution		60%				
Entering Assignment			*17*			
Exiting Assignment		16				
Proposed + Background						
2020 Total Traffic	22	757	778	37	17	15
2026 Total Traffic	22	779	800	37	17	15

VOLUME DEVELOPMENT SHEET

Richmond Road at Monticello Avenue/Lafayette Street
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Lafayette Street Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	113	130	94	8	164	51	57	119	3	107	221	172
Trucks	2	0	2	0	4	3	5	10	0	0	10	2
Total Existing 2017 Traffic	116	130	96	8	168	54	63	129	3	107	231	174
Truck %	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	116	132	96	8	171	54	63	136	3	107	245	174
2026 No Build	116	136	96	8	176	54	63	154	3	107	276	174
Option 2 - Retail												
Proposed Trips												
Entering Distribution					*5%*		*10%*				*20%*	*25%*
Exiting Distribution	25%	5%	5%					20%				
Entering Assignment					*11*		*22*				*44*	*56*
Exiting Assignment	60	12	12					48				
Pass-by												
Entering Pass-by %											*-20%*	*20%*
Exiting Pass-by %			20%									
Entering Pass-by Assignment											*-24*	*24*
Exiting Pass-by Assignment			26									
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution					*5%*		*30%*					*25%*
Exiting Distribution	25%	5%	30%									
Entering Assignment					*1*		*3*					*3*
Exiting Assignment	5	1	5									
Proposed + Background												
2020 Total Traffic	181	145	139	8	183	54	88	184	3	107	265	257
2026 Total Traffic	181	149	139	8	188	54	88	202	3	107	296	257

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Lafayette Street Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	245	319	95	14	306	171	173	326	15	103	252	286
Trucks	3	0	0	0	1	1	2	3	0	0	6	2
Total Existing 2017 Traffic	248	319	95	14	307	172	175	329	15	103	258	288
Truck %	1%	0%	0%	0%	0%	1%	1%	1%	0%	0%	3%	1%
PHF	0.94											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	248	323	95	14	311	172	175	350	15	103	274	288
2026 No Build	248	333	95	14	321	172	175	394	15	103	308	288
Option 2 - Retail												
Proposed Trips												
Entering Distribution					*5%*		*10%*				*20%*	*25%*
Exiting Distribution	25%	5%	5%					20%				
Entering Assignment					*5*		*9*				*18*	*23*
Exiting Assignment	29	6	6					23				
Pass-by												
Entering Pass-by %											*-20%*	*20%*
Exiting Pass-by %			20%									
Entering Pass-by Assignment											*-10*	*10*
Exiting Pass-by Assignment			13									
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution					*5%*		*30%*					*25%*
Exiting Distribution	25%	5%	30%									
Entering Assignment					*1*		*9*					*7*
Exiting Assignment	7	1	8									
Proposed + Background												
2020 Total Traffic	284	330	122	14	317	172	193	373	15	103	282	328
2026 Total Traffic	284	340	122	14	327	172	193	417	15	103	316	328

VOLUME DEVELOPMENT SHEET

Richmond Road at Mount Vernon Avenue
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Mount Vernon Avenue Eastbound			Parking Lot Driveway Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	21	5	10	48	9	39	0	239	41	50	440	31
Trucks	0	0	0	0	0	0	0	16	0	0	11	0
Total Existing 2017 Traffic	21	5	10	48	9	39	0	255	41	50	450	31
Truck %	0%	0%	0%	0%	0%	0%	-	6%	0%	0%	2%	0%
PHF	0.92											
Growth Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	21	5	10	48	9	39	0	270	41	50	478	31
2026 No Build	21	5	10	48	9	39	0	305	41	50	538	31
Option 2 - Retail												
Proposed Trips												
Entering Distribution											*45%*	
Exiting Distribution								45%				
Entering Assignment											*100*	
Exiting Assignment								108				
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution											*25%*	
Exiting Distribution								25%				
Entering Assignment											*3*	
Exiting Assignment								5				
Proposed + Background												
2020 Total Traffic	21	5	10	48	9	39	0	383	41	50	581	31
2026 Total Traffic	21	5	10	48	9	39	0	418	41	50	641	31

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Mount Vernon Avenue Eastbound			Parking Lot Driveway Westbound			Richmond Road Northbound			Richmond Road Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	94	5	54	11	12	52	1	730	15	29	588	70
Trucks	1	0	0	0	0	0	0	8	0	0	11	0
Total Existing 2017 Traffic	95	5	54	11	12	52	1	738	15	29	598	70
Truck %	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	2%	0%
PHF	0.94											
Growth Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	95	5	54	11	12	52	1	783	15	29	635	70
2026 No Build	95	5	54	11	12	52	1	882	15	29	715	70
Option 2 - Retail												
Proposed Trips												
Entering Distribution											*45%*	
Exiting Distribution								45%				
Entering Assignment											*41*	
Exiting Assignment								52				
Pass-by												
Entering Pass-by %												
Exiting Pass-by %												
Entering Pass-by Assignment												
Exiting Pass-by Assignment												
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution											*25%*	
Exiting Distribution								25%				
Entering Assignment											*7*	
Exiting Assignment								7				
Proposed + Background												
2020 Total Traffic	95	5	54	11	12	52	1	842	15	29	683	70
2026 Total Traffic	95	5	54	11	12	52	1	941	15	29	763	70

VOLUME DEVELOPMENT SHEET

Richmond Road at Bacon Avenue
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Bacon Avenue Westbound Left	Bacon Avenue Westbound Right	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru
2017 Counts						
Cars	1	1	174	0	2	310
Trucks	0	0	16	0	0	11
Total Existing 2017 Traffic	1	1	190	0	2	321
Truck %	0%	0%	9%	-	0%	3%
PHF	0.90					
Growth Rate	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%
Background Traffic						
2020 No Build	1	1	202	0	2	340
2026 No Build	1	1	227	0	2	383
Option 2 - Retail Retail						
Proposed Trips						
Entering Distribution			*20%*			*5%*
Exiting Distribution			5%			20%
Entering Assignment			*44*			*11*
Exiting Assignment			12			48
Pass-by						
Entering Pass-by %						
Exiting Pass-by %						
Entering Pass-by Assignment						
Exiting Pass-by Assignment						
Option 2 - Student Housing						
Proposed Trips						
Entering Distribution			*30%*			
Exiting Distribution						30%
Entering Assignment			*3*			
Exiting Assignment						5
Proposed + Background						
2020 Total Traffic	1	1	261	0	2	404
2026 Total Traffic	1	1	286	0	2	447

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Bacon Avenue Westbound Left	Bacon Avenue Westbound Right	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru
2017 Counts						
Cars	2	5	474	4	10	315
Trucks	0	0	5	0	0	8
Total Existing 2017 Traffic	2	5	480	4	10	323
Truck %	0%	0%	1%	0%	0%	2%
PHF	0.87					
Growth Rate	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%
Background Traffic						
2020 No Build	2	5	509	4	10	343
2026 No Build	2	5	573	4	10	386
Option 2 - Retail						
Proposed Trips						
Entering Distribution			*20%*			*5%*
Exiting Distribution			5%			20%
Entering Assignment			*18*			*5*
Exiting Assignment			6			23
Pass-by						
Entering Pass-by %						
Exiting Pass-by %						
Entering Pass-by Assignment						
Exiting Pass-by Assignment						
Option 2 - Student Housing						
Proposed Trips						
Entering Distribution			*30%*			
Exiting Distribution						30%
Entering Assignment			*9*			
Exiting Assignment						8
Proposed + Background						
2020 Total Traffic	2	5	542	4	10	379
2026 Total Traffic	2	5	606	4	10	422

VOLUME DEVELOPMENT SHEET

Richmond Road at Bypass Road
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Bypass Road Westbound Left	Bypass Road Westbound Right	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru
2017 Counts						
Cars	238	368	136	153	316	283
Trucks	4	10	14	4	12	6
Total Existing 2017 Traffic	242	378	150	158	328	289
Truck %	2%	3%	9%	3%	4%	2%
PHF	0.92					
Growth Rate	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%
Background Traffic						
2020 No Build	242	378	159	158	328	307
2026 No Build	242	378	179	158	328	346
Option 2 - Retail						
Proposed Trips						
Entering Distribution	*20%*					*25%*
Exiting Distribution			25%	20%		
Entering Assignment	*44*					*56*
Exiting Assignment			60	48		
Pass-by						
Entering Pass-by %						
Exiting Pass-by %						
Entering Pass-by Assignment						
Exiting Pass-by Assignment						
Option 2 - Student Housing						
Proposed Trips						
Entering Distribution	*10%*					*15%*
Exiting Distribution			15%	10%		
Entering Assignment	*1*					*2*
Exiting Assignment			3	2		
Proposed + Background						
2020 Total Traffic	287	378	222	208	328	365
2026 Total Traffic	287	378	242	208	328	404

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Bypass Road Westbound Left	Bypass Road Westbound Right	Richmond Road Northbound Thru	Richmond Road Northbound Right	Richmond Road Southbound Left	Richmond Road Southbound Thru
2017 Counts						
Cars	328	680	534	341	623	405
Trucks	2	3	6	2	11	8
Total Existing 2017 Traffic	330	684	540	343	634	413
Truck %	1%	0%	1%	1%	2%	2%
PHF	0.97					
Growth Rate	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%
Background Traffic						
2020 No Build	330	684	573	343	634	438
2026 No Build	330	684	645	343	634	493
Option 2 - Retail						
Proposed Trips						
Entering Distribution	*20%*					*25%*
Exiting Distribution			25%	20%		
Entering Assignment	*18*					*23*
Exiting Assignment			29	23		
Pass-by						
Entering Pass-by %						
Exiting Pass-by %						
Entering Pass-by Assignment						
Exiting Pass-by Assignment						
Option 2 - Student Housing						
Proposed Trips						
Entering Distribution	*10%*					*15%*
Exiting Distribution			15%	10%		
Entering Assignment	*3*					*4*
Exiting Assignment			4	3		
Proposed + Background						
2020 Total Traffic	351	684	606	369	634	465
2026 Total Traffic	351	684	678	369	634	520

VOLUME DEVELOPMENT SHEET

Monticello Avenue at Existing Access #1
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Existing Access #1 Northbound			NA Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	0	337	13	0	393	0	4	0	0	0	0	0
Trucks	0	4	0	2	10	0	0	0	0	0	0	0
Total Existing 2017 Traffic	0	341	13	2	403	0	4	0	0	0	0	0
Truck %	-	1%	0%	100%	2%	-	0%	-	-	-	-	-
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	0	346	13	2	409	0	4	0	0	0	0	0
2026 No Build	0	357	13	2	422	0	4	0	0	0	0	0
Option 2 - Retail												
Proposed Trips												
Entering Distribution			*10%*	*20%*	*20%*							
Exiting Distribution		15%					10%		20%			
Entering Assignment			*22*	*44*	*44*							
Exiting Assignment		36					24		48			
Pass-by												
Entering Pass-by %		*-20%*	*20%*	*15%*	*5%*							
Exiting Pass-by %		10%					5%		30%			
Entering Pass-by Assignment		*-24*	*24*	*18*	*6*							
Exiting Pass-by Assignment		13					7		39			
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution					*60%*							
Exiting Distribution		60%										
Entering Assignment					*6*							
Exiting Assignment		11										
Proposed + Background												
2020 Total Traffic	0	382	59	64	465	0	35	0	87	0	0	0
2026 Total Traffic	0	393	59	64	478	0	35	0	87	0	0	0

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Existing Access #1 Northbound			NA Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	0	659	54	18	747	0	0	0	0	0	0	0
Trucks	0	3	0	0	5	0	0	0	0	0	0	0
Total Existing 2017 Traffic	0	662	54	18	752	0	0	0	0	0	0	0
Truck %	-	0%	0%	0%	1%	-	-	-	-	-	-	-
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	0	672	54	18	763	0	0	0	0	0	0	0
2026 No Build	0	692	54	18	787	0	0	0	0	0	0	0
Option 2 - Retail												
Proposed Trips												
Entering Distribution			*10%*	*10%*	*30%*							
Exiting Distribution		25%					10%		10%			
Entering Assignment			*9*	*9*	*27*							
Exiting Assignment		29					12		12			
Pass-by												
Entering Pass-by %		*-20%*	*20%*	*15%*	*5%*							
Exiting Pass-by %		10%					5%		30%			
Entering Pass-by Assignment		*-10*	*10*	*7*	*2*							
Exiting Pass-by Assignment		6					3		19			
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution					*60%*							
Exiting Distribution		60%										
Entering Assignment					*17*							
Exiting Assignment		16										
Proposed + Background												
2020 Total Traffic	0	713	73	34	809	0	15	0	31	0	0	0
2026 Total Traffic	0	733	73	34	833	0	15	0	31	0	0	0

VOLUME DEVELOPMENT SHEET

Richmond Road at Existing Access #2
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Existing Access #1 Northbound			NA Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	4	0	0	0	0	0	0	175	0	0	312	11
Trucks	0	0	0	0	0	0	1	15	0	0	11	1
Total Existing 2017 Traffic	4	0	0	0	0	0	1	190	0	0	323	12
Truck %	0%	-	-	-	-	-	100%	8%	-	-	3%	8%
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	4	0	0	0	0	0	1	202	0	0	343	12
2026 No Build	4	0	0	0	0	0	1	227	0	0	386	12
Option 2 - Retail												
Proposed Trips												
Entering Distribution							*10%*	*10%*			*5%*	*15%*
Exiting Distribution	15%		15%					5%			5%	
Entering Assignment							*22*	*22*			*11*	*33*
Exiting Assignment	36		36					12			12	
Pass-by												
Entering Pass-by %							*15%*	*-15%*			*-10%*	*10%*
Exiting Pass-by %	15%		10%									
Entering Pass-by Assignment							*18*	*-18*			*-12*	*12*
Exiting Pass-by Assignment	20		13									
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution								*30%*				
Exiting Distribution											30%	
Entering Assignment								*3*				
Exiting Assignment											5	
Proposed + Background												
2020 Total Traffic	60	0	49	0	0	0	41	221	0	0	359	57
2026 Total Traffic	60	0	49	0	0	0	41	246	0	0	402	57

PM Peak Hour
(4:45 PM to 5:45 PM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Existing Access #1 Northbound			NA Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	35	0	0	0	0	0	0	479	0	0	325	36
Trucks	0	0	2	0	0	0	0	5	0	0	6	0
Total Existing 2017 Traffic	35	0	2	0	0	0	0	484	0	0	331	36
Truck %	0%	-	100%	-	-	-	-	1%	-	-	2%	0%
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	35	0	2	0	0	0	0	514	0	0	351	36
2026 No Build	35	0	2	0	0	0	0	578	0	0	396	36
Option 2 - Retail												
Proposed Trips												
Entering Distribution							*10%*	*10%*			*5%*	*15%*
Exiting Distribution	15%		15%				5%				5%	
Entering Assignment							*9*	*9*			*5*	*14*
Exiting Assignment	17		17				6				6	
Pass-by												
Entering Pass-by %							*15%*	*-15%*			*-10%*	*10%*
Exiting Pass-by %	15%		10%									
Entering Pass-by Assignment							*7*	*-7*			*-5*	*5*
Exiting Pass-by Assignment	9		6									
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution								*30%*				
Exiting Distribution											30%	
Entering Assignment								*9*				
Exiting Assignment											8	
Proposed + Background												
2020 Total Traffic	61	0	25	0	0	0	22	525	0	0	365	55
2026 Total Traffic	61	0	25	0	0	0	22	589	0	0	410	55

VOLUME DEVELOPMENT SHEET

Richmond Road at Existing Access #3
AM Peak Hour
(7:30 AM to 8:30 AM)

Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Existing Access #1 Northbound			NA Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2017 Counts												
Cars	0	0	0	0	0	0	0	174	0	0	311	0
Trucks	0	0	0	0	0	0	0	16	0	0	11	0
tal Existing 2017 Traffic	0	0	0	0	0	0	0	190	0	0	322	0
Truck %	-	-	-	-	-	-	-	8%	-	-	3%	-
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	0	0	0	0	0	0	0	202	0	0	342	0
2026 No Build	0	0	0	0	0	0	0	227	0	0	385	0
Option 2 - Retail												
Proposed Trips												
Entering Distribution							*5%*	*20%*				*5%*
Exiting Distribution	5%		5%								20%	
Entering Assignment							*11*	*44*				*11*
Exiting Assignment	12		12								48	
Pass-by												
Entering Pass-by %							*10%*	*-10%*			*-10%*	*10%*
Exiting Pass-by %	10%		10%									
ring Pass-by Assignment							*12*	*-12*			*-12*	*12*
xiting Pass-by Assignment	13		13									
Option 2- Student Housing												
Proposed Trips												
Entering Distribution							*10%*	*30%*				
Exiting Distribution			10%								30%	
Entering Assignment							*1*	*3*				
Exiting Assignment			2								5	
Proposed + Background												
2020 Total Traffic	25	0	27	0	0	0	24	237	0	0	383	23
2026 Total Traffic	25	0	27	0	0	0	24	262	0	0	426	23

PM Peak Hour
(4:45 PM to 5:45 PM)

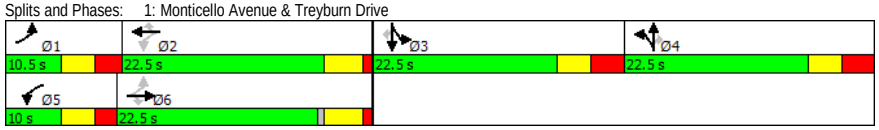
Description	Monticello Avenue Eastbound			Monticello Avenue Westbound			Existing Access #1 Northbound			NA Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2017 Counts												
Cars	0	0	0	0	0	0	0	478	0	0	317	0
Trucks	0	0	0	0	0	0	0	5	0	0	8	0
tal Existing 2017 Traffic	0	0	0	0	0	0	0	483	0	0	325	0
Truck %	-	-	-	-	-	-	-	1%	-	-	2%	-
PHF	0.92											
Growth Rate	0.0%	0.5%	0.0%	0.0%	0.5%	0.0%	0.0%	2.0%	0.0%	0.0%	2.0%	0.0%
Background Traffic												
2020 No Build	0	0	0	0	0	0	0	513	0	0	345	0
2026 No Build	0	0	0	0	0	0	0	577	0	0	388	0
Option 2 - Retail												
Proposed Trips												
Entering Distribution							*5%*	*20%*				*5%*
Exiting Distribution	5%		5%								20%	
Entering Assignment							*5*	*18*				*5*
Exiting Assignment	6		6								23	
Pass-by												
Entering Pass-by %							*10%*	*-10%*			*-10%*	*10%*
Exiting Pass-by %	10%		10%									
ring Pass-by Assignment							*5*	*-5*			*-5*	*5*
xiting Pass-by Assignment	6		6									
Option 2 - Student Housing												
Proposed Trips												
Entering Distribution							*10%*	*30%*				
Exiting Distribution			10%								30%	
Entering Assignment							*3*	*9*				
Exiting Assignment			3								8	
Proposed + Background												
2020 Total Traffic	12	0	15	0	0	0	13	535	0	0	371	10
2026 Total Traffic	12	0	15	0	0	0	13	599	0	0	414	10

Appendix E
Synchro and SimTraffic Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	375	37	17	362	30	3	0	3	56	22	32
Future Volume (vph)	26	375	37	17	362	30	3	0	3	56	22	32
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.950			0.966	
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509	0	1805	1615	0	1835	1615
Flt Permitted	0.207			0.248				0.950			0.966	
Satd. Flow (perm)	393	1881	1615	471	1881	1509	0	1805	1615	0	1835	1615
Satd. Flow (RTOR)			196			196			175			175
Adj. Flow (vph)	31	452	45	20	436	36	4	0	4	67	27	39
Lane Group Flow (vph)	31	452	45	20	436	36	0	4	4	0	94	39
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	10.5	22.5	22.5	10.0	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	20.3	20.5	20.5	19.7	18.6	18.6		17.0	17.0		8.6	8.6
Actuated g/C Ratio	0.33	0.33	0.33	0.32	0.30	0.30		0.28	0.28		0.14	0.14
v/c Ratio	0.13	0.72	0.07	0.08	0.77	0.06		0.01	0.01		0.37	0.10
Control Delay	16.0	29.8	0.2	15.1	35.1	0.2		21.3	0.0		30.7	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	16.0	29.8	0.2	15.1	35.1	0.2		21.3	0.0		30.7	0.6
LOS	B	C	A	B	D	A		C	A		C	A
Approach Delay		26.4			31.7			10.7			21.8	
Approach LOS		C			C			B			C	

Intersection Summary	
Cycle Length: 78	
Actuated Cycle Length: 61.6	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 28.0	Intersection LOS: C
Intersection Capacity Utilization 41.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	375	37	17	362	30	3	0	3	56	22	32
Future Volume (vph)	26	375	37	17	362	30	3	0	3	56	22	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.97	1.00
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509		1805	1615		1835	1615
Flt Permitted	0.21	1.00	1.00	0.25	1.00	1.00		0.95	1.00		0.97	1.00
Satd. Flow (perm)	393	1881	1615	471	1881	1509		1805	1615		1835	1615
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	31	452	45	20	436	36	4	0	4	67	27	39
RTOR Reduction (vph)	0	0	31	0	0	26	0	0	3	0	0	35
Lane Group Flow (vph)	31	452	14	20	436	10	0	4	1	0	94	4
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	22.2	20.5	20.5	19.9	19.1	19.1		17.0	17.0		7.1	7.1
Effective Green, g (s)	22.2	20.5	20.5	19.9	19.1	19.1		17.0	17.0		7.1	7.1
Actuated g/C Ratio	0.33	0.31	0.31	0.30	0.29	0.29		0.25	0.25		0.11	0.11
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	166	576	494	156	537	430		458	410		194	171
v/s Ratio Prot	c0.00	c0.24		0.00	0.23			c0.00			c0.05	
v/s Ratio Perm	0.06		0.01	0.04		0.01			0.00			0.00
v/c Ratio	0.19	0.78	0.03	0.13	0.81	0.02		0.01	0.00		0.48	0.02
Uniform Delay, d1	16.3	21.2	16.2	17.4	22.2	17.2		18.7	18.6		28.2	26.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	6.9	0.0	0.4	12.6	0.1		0.0	0.0		1.9	0.1
Delay (s)	16.9	28.1	16.3	17.8	34.8	17.3		18.7	18.6		30.1	26.9
Level of Service	B	C	B	B	C	B		B	B		C	C
Approach Delay (s)		26.4			32.8			18.7			29.1	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	22.0
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	370	32	24	383	2	12	0	3	2	1	19
Future Volume (vph)	21	370	32	24	383	2	12	0	3	2	1	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.999			0.970			0.881	
Flt Protected	0.950			0.950				0.963			0.996	
Satd. Flow (prot)	1805	1860	0	1805	1843	0	0	1654	0	0	1667	0
Flt Permitted	0.950			0.950				0.963			0.996	
Satd. Flow (perm)	1805	1860	0	1805	1843	0	0	1654	0	0	1667	0
Adj. Flow (vph)	25	435	38	28	451	2	14	0	4	2	1	22
Lane Group Flow (vph)	25	473	0	28	453	0	0	18	0	0	25	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 32.5%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	370	32	24	383	2	12	0	3	2	1	19
Future Volume (Veh/h)	21	370	32	24	383	2	12	0	3	2	1	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	25	435	38	28	451	2	14	0	4	2	1	22
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.95			0.79			0.82	0.82	0.79	0.82	0.82	0.95
vC, conflicting volume	453			473			1034	1013	454	997	1031	452
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	395			203			785	760	179	741	782	394
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	98			97			94	100	99	99	100	96
cM capacity (veh/h)	1113			1093			237	263	626	262	256	625

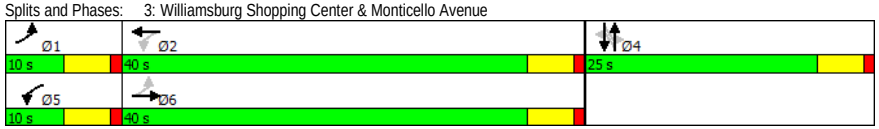
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	25	473	28	453	18	25
Volume Left	25	0	28	0	14	2
Volume Right	0	38	0	2	4	22
cSH	1113	1700	1093	1700	275	535
Volume to Capacity	0.02	0.28	0.03	0.27	0.07	0.05
Queue Length 95th (ft)	2	0	2	0	5	4
Control Delay (s)	8.3	0.0	8.4	0.0	19.0	12.1
Lane LOS	A		A		C	B
Approach Delay (s)	0.4		0.5		19.0	12.1
Approach LOS					C	B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	356	1	0	402	2	2	0	1	0	0	0
Future Volume (vph)	2	356	1	0	402	2	2	0	1	0	0	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.999			0.850				
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1805	1881	0	1900	1861	0	1805	1615	0	0	1900	0
Flt Permitted	0.450											
Satd. Flow (perm)	855	1881	0	1900	1861	0	1900	1615	0	0	1900	0
Satd. Flow (RTOR)								451				
Adj. Flow (vph)	2	400	1	0	452	2	2	0	1	0	0	0
Lane Group Flow (vph)	2	401	0	0	454	0	2	1	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	10.0	40.0		10.0	40.0		25.0	25.0		25.0	25.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	52.4	56.7			55.1		5.7	5.7				
Actuated g/C Ratio	0.89	0.96			0.93		0.10	0.10				
v/c Ratio	0.00	0.22			0.26		0.01	0.00				
Control Delay	1.0	1.0			2.3		28.0	0.0				
Queue Delay	0.0	0.0			0.0		0.0	0.0				
Total Delay	1.0	1.0			2.3		28.0	0.0				
LOS	A	A			A		C	A				
Approach Delay		1.0			2.3			18.7				
Approach LOS		A			A			B				

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 59.2	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.26	
Intersection Signal Delay: 1.8	Intersection LOS: A
Intersection Capacity Utilization 33.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	356	1	0	402	2	2	0	1	0	0	0
Future Volume (vph)	2	356	1	0	402	2	2	0	1	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0		5.0	5.0				
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			1.00		1.00	0.85				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	1805	1881			1862		1805	1615				
Flt Permitted	0.45	1.00			1.00		1.00	1.00				
Satd. Flow (perm)	855	1881			1862		1900	1615				
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)	2	400	1	0	452	2	2	0	1	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	2	401	0	0	454	0	2	0	0	0	0	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	56.6	56.6			50.8		1.0	1.0				
Effective Green, g (s)	56.6	56.6			50.8		1.0	1.0				
Actuated g/C Ratio	0.84	0.84			0.75		0.01	0.01				
Clearance Time (s)	5.0	5.0			5.0		5.0	5.0				
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Lane Grp Cap (vph)	727	1574			1399		28	23				
v/s Ratio Prot	0.00	c0.21			c0.24			0.00				
v/s Ratio Perm	0.00						c0.00					
v/c Ratio	0.00	0.25			0.32		0.07	0.00				
Uniform Delay, d1	1.1	1.1			2.8		32.8	32.8				
Progression Factor	1.00	1.00			1.00		1.00	1.00				
Incremental Delay, d2	0.0	0.4			0.6		1.1	0.0				
Delay (s)	1.1	1.5			3.4		33.9	32.8				
Level of Service	A	A			A		C	C				
Approach Delay (s)		1.5			3.4			33.6			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	2.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	67.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	351	405	2	3	11
Future Volume (vph)	8	351	405	2	3	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.892	
Flt Protected	0.950				0.990	
Satd. Flow (prot)	1805	1881	1861	0	1678	0
Flt Permitted	0.950				0.990	
Satd. Flow (perm)	1805	1881	1861	0	1678	0
Adj. Flow (vph)	9	394	455	2	3	12
Lane Group Flow (vph)	9	394	457	0	15	0
Sign Control		Free	Free		Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 31.4%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	351	405	2	3	11
Future Volume (Veh/h)	8	351	405	2	3	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	9	394	455	2	3	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		489	447			
pX, platoon unblocked	0.92				0.92	0.92
vC, conflicting volume	457				868	456
vC1, stage 1 conf vol					456	
vC2, stage 2 conf vol					412	
vCu, unblocked vol	366				813	365
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	98
cM capacity (veh/h)	1107				533	630

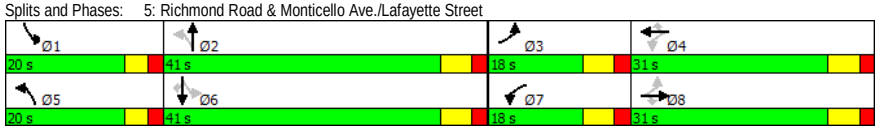
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	9	394	457	15
Volume Left	9	0	0	3
Volume Right	0	0	2	12
cSH	1107	1700	1700	607
Volume to Capacity	0.01	0.23	0.27	0.02
Queue Length 95th (ft)	1	0	0	2
Control Delay (s)	8.3	0.0	0.0	11.1
Lane LOS	A			B
Approach Delay (s)	0.2		0.0	11.1
Approach LOS				B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	130	96	8	168	54	63	129	3	107	231	174
Future Volume (vph)	116	130	96	8	168	54	63	129	3	107	231	174
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1900	1583	1805	1845	1524	1656	3338	0	1805	1827	1599
Flt Permitted	0.417			0.667			0.584			0.620		
Satd. Flow (perm)	777	1900	1583	1267	1845	1524	1018	3338	0	1178	1827	1599
Satd. Flow (RTOR)			139			139		2				189
Adj. Flow (vph)	126	141	104	9	183	59	68	140	3	116	251	189
Lane Group Flow (vph)	126	141	104	9	183	59	68	143	0	116	251	189
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2			6		6
Total Split (s)	18.0	31.0	31.0	18.0	31.0	31.0	20.0	41.0		20.0	41.0	41.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Act Effct Green (s)	30.0	27.9	27.9	22.4	14.3	14.3	44.6	35.2		47.0	38.7	38.7
Actuated g/C Ratio	0.33	0.30	0.30	0.24	0.16	0.16	0.49	0.38		0.51	0.42	0.42
v/c Ratio	0.35	0.24	0.18	0.03	0.64	0.17	0.12	0.11		0.17	0.33	0.24
Control Delay	24.6	26.7	3.2	20.6	47.0	1.0	12.0	19.9		12.0	21.9	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.5	0.0
Total Delay	24.6	26.7	3.2	20.6	47.0	1.0	12.0	19.9		12.0	22.4	4.2
LOS	C	C	A	C	D	A	B	B		B	C	A
Approach Delay		19.4			35.2			17.3			14.0	
Approach LOS		B			D			B			B	

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 91.7	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 19.8	Intersection LOS: B
Intersection Capacity Utilization 53.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



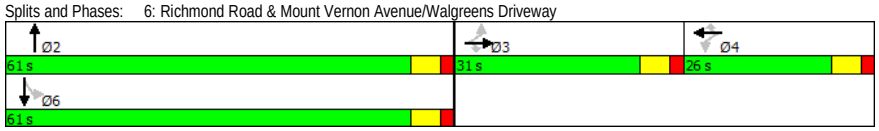
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	130	96	8	168	54	63	129	3	107	231	174
Future Volume (vph)	116	130	96	8	168	54	63	129	3	107	231	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1900	1583	1805	1845	1524	1656	3337		1805	1827	1599
Flt Permitted	0.42	1.00	1.00	0.67	1.00	1.00	0.58	1.00		0.62	1.00	1.00
Satd. Flow (perm)	777	1900	1583	1267	1845	1524	1019	3337		1179	1827	1599
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)	126	141	104	9	183	59	68	140	3	116	251	189
RTOR Reduction (vph)	0	0	74	0	0	47	0	1	0	0	0	114
Lane Group Flow (vph)	126	141	30	9	183	12	68	142	0	116	251	75
Heavy Vehicles (%)	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2			6		6
Actuated Green, G (s)	35.3	27.9	27.9	20.7	19.3	19.3	42.9	36.3		47.7	38.7	38.7
Effective Green, g (s)	35.3	27.9	27.9	20.7	19.3	19.3	42.9	36.3		47.7	38.7	38.7
Actuated g/C Ratio	0.36	0.29	0.29	0.21	0.20	0.20	0.44	0.37		0.49	0.40	0.40
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	382	543	452	276	364	301	490	1241		633	724	634
v/s Ratio Prot	c0.03	0.07		0.00	c0.10		0.01	0.04		c0.02	c0.14	
v/s Ratio Perm	0.09		0.02	0.01		0.01	0.05			0.07		0.05
v/c Ratio	0.33	0.26	0.07	0.03	0.50	0.04	0.14	0.11		0.18	0.35	0.12
Uniform Delay, d1	21.9	26.9	25.4	30.4	34.9	31.7	16.0	20.1		13.7	20.6	18.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3	0.1	0.0	1.1	0.1	0.1	0.2		0.1	1.3	0.4
Delay (s)	22.4	27.1	25.4	30.5	36.0	31.7	16.1	20.3		13.8	21.9	19.0
Level of Service	C	C	C	C	D	C	B	C		B	C	B
Approach Delay (s)		25.0			34.8			18.9			19.2	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	97.6	Sum of lost time (s)	23.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	255	41	50	450	31
Future Volume (vph)	21	5	10	48	9	39	0	255	41	50	450	31
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.979			0.990	
Flt Protected		0.961			0.960					0.950		
Satd. Flow (prot)	0	1826	1615	0	1824	1615	0	3361	0	1805	3508	0
Flt Permitted		0.455			0.741					0.557		
Satd. Flow (perm)	0	864	1615	0	1408	1615	0	3361	0	1058	3508	0
Satd. Flow (RTOR)			83			83		21			8	
Adj. Flow (vph)	23	5	11	52	10	42	0	277	45	54	489	34
Lane Group Flow (vph)	0	28	11	0	62	42	0	322	0	54	523	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	31.0	31.0	31.0	26.0	26.0	26.0		61.0		61.0	61.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		11.1	11.1		9.4	9.4		61.1		61.1	61.1	
Actuated g/C Ratio		0.12	0.12		0.10	0.10		0.68		0.68	0.68	
v/c Ratio		0.26	0.04		0.42	0.17		0.14		0.08	0.22	
Control Delay		43.7	0.3		49.4	2.9		8.7		10.9	9.4	
Queue Delay		0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay		43.7	0.3		49.4	2.9		8.7		10.9	9.4	
LOS		D	A		D	A		A		B	A	
Approach Delay		31.4			30.6			8.7			9.5	
Approach LOS		C			C			A			A	

Intersection Summary	
Cycle Length: 118	
Actuated Cycle Length: 89.9	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay: 12.2	Intersection LOS: B
Intersection Capacity Utilization 44.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	255	41	50	450	31
Future Volume (vph)	21	5	10	48	9	39	0	255	41	50	450	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		0.98		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1825	1615		1824	1615		3361		1805	3509	
Flt Permitted		0.46	1.00		0.74	1.00		1.00		0.56	1.00	
Satd. Flow (perm)		865	1615		1408	1615		3361		1058	3509	
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)	23	5	11	52	10	42	0	277	45	54	489	34
RTOR Reduction (vph)	0	0	10	0	0	38	0	8	0	0	3	0
Lane Group Flow (vph)	0	28	1	0	62	4	0	314	0	54	520	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		8.0	8.0		8.1	8.1		59.7		59.7	59.7	
Effective Green, g (s)		8.0	8.0		8.1	8.1		59.7		59.7	59.7	
Actuated g/C Ratio		0.09	0.09		0.09	0.09		0.64		0.64	0.64	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		73	137		121	139		2139		673	2233	
v/s Ratio Prot								0.09			c0.15	
v/s Ratio Perm		c0.03	0.00		c0.04	0.00				0.05		
v/c Ratio		0.38	0.01		0.51	0.03		0.15		0.08	0.23	
Uniform Delay, d1		40.6	39.3		41.0	39.2		6.8		6.5	7.3	
Progression Factor		1.00	1.00		1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		3.3	0.0		3.6	0.1		0.1		0.2	0.2	
Delay (s)		43.9	39.3		44.6	39.3		7.0		6.8	7.5	
Level of Service		D	D		D	D		A		A	A	
Approach Delay (s)		42.6			42.5			7.0			7.5	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	93.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	1	190	0	2	321
Future Volume (vph)	1	1	190	0	2	321
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932					
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1728	0	1743	0	1805	1845
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1728	0	1743	0	1805	1845
Adj. Flow (vph)	1	1	211	0	2	357
Lane Group Flow (vph)	2	0	211	0	2	357
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 26.9%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	1	190	0	2	321
Future Volume (Veh/h)	1	1	190	0	2	321
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	1	211	0	2	357
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						657
pX, platoon unblocked	0.92					
vC, conflicting volume	572	211			211	
vC1, stage 1 conf vol	211					
vC2, stage 2 conf vol	361					
vCu, unblocked vol	495	211			211	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	657	834			1372	

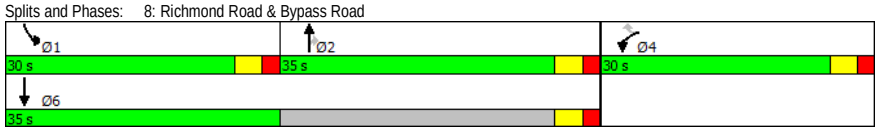
Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	2	211	2	357
Volume Left	1	0	2	0
Volume Right	1	0	0	0
cSH	735	1700	1372	1700
Volume to Capacity	0.00	0.12	0.00	0.21
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	9.9	0.0	7.6	0.0
Lane LOS	A		A	
Approach Delay (s)	9.9	0.0	0.0	
Approach LOS	A			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	242	378	150	158	328	289
Future Volume (vph)	242	378	150	158	328	289
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Satd. Flow (RTOR)		411		172		
Adj. Flow (vph)	263	411	163	172	357	314
Lane Group Flow (vph)	263	411	163	172	357	314
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	30.0	30.0	35.0	35.0	30.0	35.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	16.7	16.7	30.3	30.3	13.3	48.7
Actuated g/C Ratio	0.22	0.22	0.40	0.40	0.18	0.65
v/c Ratio	0.67	0.62	0.12	0.23	0.60	0.26
Control Delay	36.3	7.3	16.7	4.3	33.8	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	7.3	16.7	4.3	33.8	7.2
LOS	D	A	B	A	C	A
Approach Delay	18.6		10.3			21.4
Approach LOS	B		B			C

Intersection Summary	
Cycle Length: 95	
Actuated Cycle Length: 75.5	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 18.1	Intersection LOS: B
Intersection Capacity Utilization 43.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	242	378	150	158	328	289
Future Volume (vph)	242	378	150	158	328	289
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	263	411	163	172	357	314
RTOR Reduction (vph)	0	320	0	103	0	0
Lane Group Flow (vph)	263	91	163	69	357	314
Heavy Vehicles (%)	2%	3%	9%	3%	4%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	16.7	16.7	30.5	30.5	13.3	48.8
Effective Green, g (s)	16.7	16.7	30.5	30.5	13.3	48.8
Actuated g/C Ratio	0.22	0.22	0.40	0.40	0.18	0.65
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	391	346	1337	633	593	1204
v/s Ratio Prot	c0.15		0.05		c0.11	c0.17
v/s Ratio Perm		0.06		0.04		
v/c Ratio	0.67	0.26	0.12	0.11	0.60	0.26
Uniform Delay, d1	26.9	24.3	14.1	14.0	28.7	5.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	0.4	0.2	0.4	1.7	0.5
Delay (s)	31.4	24.7	14.3	14.4	30.4	6.2
Level of Service	C	C	B	B	C	A
Approach Delay (s)	27.3		14.3			19.1
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	75.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	118	322	140	86	264	100	29	27	97	37
Average Queue (ft)	20	134	21	13	131	18	3	2	44	16
95th Queue (ft)	67	254	82	58	229	74	16	13	82	41
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)	0	6	0	0	14	0				
Queuing Penalty (veh)	0	4	0	0	7	1				

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	LTR	LTR
Maximum Queue (ft)	39	2	40	47	38
Average Queue (ft)	7	0	7	14	16
95th Queue (ft)	29	2	30	41	42
Link Distance (ft)		452		311	426
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	225		190		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	EB	WB	NB	NB
Directions Served	L	TR	TR	L	TR
Maximum Queue (ft)	10	47	82	20	25
Average Queue (ft)	1	2	6	2	1
95th Queue (ft)	7	24	38	13	11
Link Distance (ft)		399	432	399	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	200				75
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: Monticello Avenue/Monticello Ave. & Garrison Drive

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	30	38
Average Queue (ft)	3	11
95th Queue (ft)	17	36
Link Distance (ft)		473
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	65	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	R
Maximum Queue (ft)	141	222	80	55	187	83	103	88	81	114	200	90
Average Queue (ft)	65	81	51	8	92	27	31	25	23	33	73	26
95th Queue (ft)	121	166	94	32	160	62	71	66	58	79	156	63
Link Distance (ft)		368			431			569			288	288
Upstream Blk Time (%)											0	
Queuing Penalty (veh)											0	
Storage Bay Dist (ft)	150		80	125		225	150		200	225		
Storage Blk Time (%)	0	8	1	0	4		0			0	0	
Queuing Penalty (veh)	0	16	2	0	2		0			0	0	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	65	37	86	50	66	92	68	197	121
Average Queue (ft)	22	9	43	32	16	31	17	52	30
95th Queue (ft)	54	32	84	63	47	74	50	132	84
Link Distance (ft)		530	71		288	288		1299	1299
Upstream Blk Time (%)			5						
Queuing Penalty (veh)			0						
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)			11	1			0	3	
Queuing Penalty (veh)			4	1			0	1	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	23	20
Average Queue (ft)	2	1
95th Queue (ft)	12	9
Link Distance (ft)	288	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		165
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	T	R	L	L	T
Maximum Queue (ft)	225	99	99	92	178	225	164
Average Queue (ft)	114	45	34	7	71	127	66
95th Queue (ft)	192	82	78	51	161	194	133
Link Distance (ft)	870	1299	1299			812	812
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				250	450		
Storage Blk Time (%)							
Queuing Penalty (veh)							

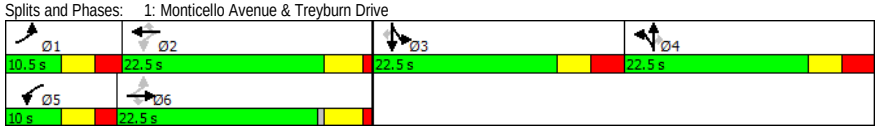
Network Summary

Network wide Queuing Penalty: 39

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	706	13	5	720	81	23	14	9	59	5	55
Future Volume (vph)	78	706	13	5	720	81	23	14	9	59	5	55
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.969			0.956	
Satd. Flow (prot)	1752	1900	1615	1805	1900	1568	0	1841	1615	0	1783	1615
Flt Permitted	0.163			0.188				0.969			0.956	
Satd. Flow (perm)	301	1900	1615	357	1900	1568	0	1841	1615	0	1783	1615
Satd. Flow (RTOR)			196			196			175			175
Adj. Flow (vph)	80	728	13	5	742	84	24	14	9	61	5	57
Lane Group Flow (vph)	80	728	13	5	742	84	0	38	9	0	66	57
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	10.5	22.5	22.5	10.0	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	24.4	24.6	24.6	21.8	18.6	18.6		17.0	17.0		8.0	8.0
Actuated g/C Ratio	0.37	0.38	0.38	0.33	0.29	0.29		0.26	0.26		0.12	0.12
v/c Ratio	0.35	1.02	0.02	0.02	1.37	0.14		0.08	0.02		0.30	0.16
Control Delay	18.6	62.8	0.1	13.8	204.1	0.5		22.1	0.0		31.8	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	18.6	62.8	0.1	13.8	204.1	0.5		22.1	0.0		31.8	1.0
LOS	B	E	A	B	F	A		C	A		C	A
Approach Delay		57.5			182.3			17.8			17.5	
Approach LOS		E			F			B			B	

Intersection Summary	
Cycle Length: 78	
Actuated Cycle Length: 65.1	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.37	
Intersection Signal Delay: 110.7	Intersection LOS: F
Intersection Capacity Utilization 65.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	706	13	5	720	81	23	14	9	59	5	55
Future Volume (vph)	78	706	13	5	720	81	23	14	9	59	5	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1752	1900	1615	1805	1900	1568		1842	1615		1783	1615
Flt Permitted	0.16	1.00	1.00	0.19	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (perm)	300	1900	1615	357	1900	1568		1842	1615		1783	1615
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)	80	728	13	5	742	84	24	14	9	61	5	57
RTOR Reduction (vph)	0	0	8	0	0	59	0	0	7	0	0	52
Lane Group Flow (vph)	80	728	5	5	742	25	0	38	2	0	66	5
Heavy Vehicles (%)	3%	0%	0%	0%	0%	3%	0%	0%	0%	2%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	28.3	24.6	24.6	22.2	21.3	21.3		17.0	17.0		6.4	6.4
Effective Green, g (s)	28.3	24.6	24.6	22.2	21.3	21.3		17.0	17.0		6.4	6.4
Actuated g/C Ratio	0.40	0.35	0.35	0.32	0.30	0.30		0.24	0.24		0.09	0.09
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	196	663	564	131	574	474		444	389		162	146
v/s Ratio Prot	c0.02	c0.38		0.00	c0.39			c0.02			c0.04	
v/s Ratio Perm	0.14		0.00	0.01		0.02			0.00			0.00
v/c Ratio	0.41	1.10	0.01	0.04	1.29	0.05		0.09	0.01		0.41	0.04
Uniform Delay, d1	16.3	22.9	14.9	18.7	24.6	17.4		20.7	20.3		30.2	29.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.4	64.8	0.0	0.1	144.3	0.2		0.4	0.0		1.7	0.1
Delay (s)	17.7	87.7	14.9	18.8	168.9	17.6		21.1	20.3		31.9	29.3
Level of Service	B	F	B	B	F	B		C	C		C	C
Approach Delay (s)		79.7			152.7			20.9			30.7	
Approach LOS		E			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	108.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	70.4	Sum of lost time (s)	22.0
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	705	28	9	734	11	17	1	24	10	1	48
Future Volume (vph)	51	705	28	9	734	11	17	1	24	10	1	48
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.998			0.923			0.889	
Flt Protected	0.950			0.950				0.980			0.992	
Satd. Flow (prot)	1770	1889	0	1805	1878	0	0	1719	0	0	1676	0
Flt Permitted	0.950			0.950				0.980			0.992	
Satd. Flow (perm)	1770	1889	0	1805	1878	0	0	1719	0	0	1676	0
Adj. Flow (vph)	53	734	29	9	765	11	18	1	25	10	1	50
Lane Group Flow (vph)	53	763	0	9	776	0	0	44	0	0	61	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 54.1%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	705	28	9	734	11	17	1	24	10	1	48
Future Volume (Veh/h)	51	705	28	9	734	11	17	1	24	10	1	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	53	734	29	9	765	11	18	1	25	10	1	50
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.76			0.66			0.78	0.78	0.66	0.78	0.78	0.76
vC, conflicting volume	776			763			1688	1648	748	1654	1658	770
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	553			380			1059	1008	358	1015	1020	546
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			99			86	99	95	93	99	88
cM capacity (veh/h)	778			783			130	173	455	150	170	414

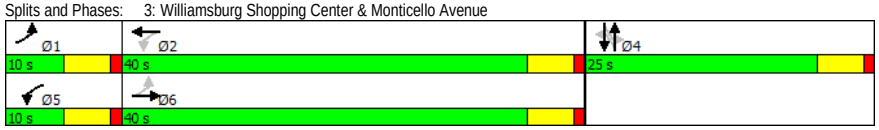
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	53	763	9	776	44	61
Volume Left	53	0	9	0	18	10
Volume Right	0	29	0	11	25	50
cSH	778	1700	783	1700	221	315
Volume to Capacity	0.07	0.45	0.01	0.46	0.20	0.19
Queue Length 95th (ft)	5	0	1	0	18	18
Control Delay (s)	10.0	0.0	9.7	0.0	25.3	19.1
Lane LOS	A		A		D	C
Approach Delay (s)	0.6		0.1		25.3	19.1
Approach LOS					D	C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	663	21	14	673	18	39	1	15	12	8	35
Future Volume (vph)	30	663	21	14	673	18	39	1	15	12	8	35
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.996			0.859			0.913	
Flt Protected	0.950			0.950			0.950				0.989	
Satd. Flow (prot)	1805	1890	0	1805	1892	0	1805	1632	0	0	1716	0
Flt Permitted	0.300			0.325			0.851				0.921	
Satd. Flow (perm)	570	1890	0	618	1892	0	1617	1632	0	0	1598	0
Satd. Flow (RTOR)		3			2			15			36	
Adj. Flow (vph)	31	684	22	14	694	19	40	1	15	12	8	36
Lane Group Flow (vph)	31	706	0	14	713	0	40	16	0	0	56	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	10.0	40.0		10.0	40.0		25.0	25.0		25.0	25.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	42.8	44.1		41.9	42.4		7.3	7.3			7.3	
Actuated g/C Ratio	0.76	0.78		0.75	0.75		0.13	0.13			0.13	
v/c Ratio	0.06	0.48		0.02	0.50		0.19	0.07			0.24	
Control Delay	3.2	6.8		3.1	8.5		25.6	14.0			15.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	3.2	6.8		3.1	8.5		25.6	14.0			15.8	
LOS	A	A		A	A		C	B			B	
Approach Delay		6.7			8.4			22.3			15.8	
Approach LOS		A			A			C			B	

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 56.2	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 8.4	Intersection LOS: A
Intersection Capacity Utilization 54.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	663	21	14	673	18	39	1	15	12	8	35
Future Volume (vph)	30	663	21	14	673	18	39	1	15	12	8	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.86			0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1805	1891		1805	1892		1805	1633			1717	
Flt Permitted	0.30	1.00		0.33	1.00		0.85	1.00			0.92	
Satd. Flow (perm)	570	1891		618	1892		1617	1633			1598	
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)	31	684	22	14	694	19	40	1	15	12	8	36
RTOR Reduction (vph)	0	1	0	0	1	0	0	14	0	0	33	0
Lane Group Flow (vph)	31	705	0	14	712	0	40	2	0	0	23	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	43.7	41.9		41.9	41.0		4.7	4.7			4.7	
Effective Green, g (s)	43.7	41.9		41.9	41.0		4.7	4.7			4.7	
Actuated g/C Ratio	0.70	0.67		0.67	0.66		0.08	0.08			0.08	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	434	1267		431	1241		121	122			120	
v/s Ratio Prot	c0.00	0.37		0.00	c0.38			0.00				
v/s Ratio Perm	0.05			0.02			c0.02				0.01	
v/c Ratio	0.07	0.56		0.03	0.57		0.33	0.02			0.19	
Uniform Delay, d1	3.7	5.4		3.9	5.9		27.4	26.8			27.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.1	1.8		0.0	1.9		1.6	0.1			0.8	
Delay (s)	3.8	7.2		3.9	7.9		29.0	26.8			27.9	
Level of Service	A	A		A	A		C	C			C	
Approach Delay (s)		7.0			7.8			28.4			27.9	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	22	699	715	37	17	15
Future Volume (vph)	22	699	715	37	17	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.993		0.936	
Flt Protected	0.950				0.974	
Satd. Flow (prot)	1805	1900	1869	0	1732	0
Flt Permitted	0.950				0.974	
Satd. Flow (perm)	1805	1900	1869	0	1732	0
Adj. Flow (vph)	23	728	745	39	18	16
Lane Group Flow (vph)	23	728	784	0	34	0
Sign Control		Free	Free		Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 49.9%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	699	715	37	17	15
Future Volume (Veh/h)	22	699	715	37	17	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	23	728	745	39	18	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		489	447			
pX, platoon unblocked	0.78				0.89	0.78
vC, conflicting volume	784				1538	764
vC1, stage 1 conf vol					764	
vC2, stage 2 conf vol					774	
vCu, unblocked vol	585				1000	560
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	97				95	96
cM capacity (veh/h)	782				363	416

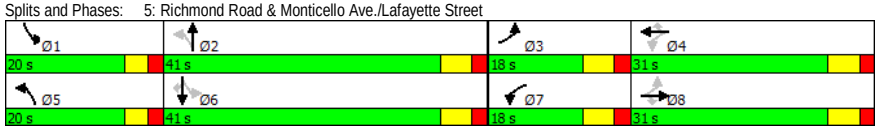
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	23	728	784	34
Volume Left	23	0	0	18
Volume Right	0	0	39	16
cSH	782	1700	1700	386
Volume to Capacity	0.03	0.43	0.46	0.09
Queue Length 95th (ft)	2	0	0	7
Control Delay (s)	9.7	0.0	0.0	15.2
Lane LOS	A			C
Approach Delay (s)	0.3		0.0	15.2
Approach LOS				C

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	319	95	14	307	172	175	329	15	103	258	288
Future Volume (vph)	248	319	95	14	307	172	175	329	15	103	258	288
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.993				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	1900	1615	1805	1900	1599	1787	3551	0	1805	1845	1599
Flt Permitted	0.238			0.515			0.445			0.533		
Satd. Flow (perm)	448	1900	1615	978	1900	1599	837	3551	0	1013	1845	1599
Satd. Flow (RTOR)			139			183		4				306
Adj. Flow (vph)	264	339	101	15	327	183	186	350	16	110	274	306
Lane Group Flow (vph)	264	339	101	15	327	183	186	366	0	110	274	306
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2			6		6
Total Split (s)	18.0	31.0	31.0	18.0	31.0	31.0	20.0	41.0		20.0	41.0	41.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Act Effct Green (s)	39.0	34.5	34.5	29.7	21.7	21.7	50.1	37.5		45.4	35.1	35.1
Actuated g/C Ratio	0.38	0.33	0.33	0.29	0.21	0.21	0.48	0.36		0.44	0.34	0.34
v/c Ratio	0.81	0.54	0.16	0.04	0.82	0.38	0.36	0.28		0.21	0.44	0.41
Control Delay	45.8	34.1	2.8	21.1	57.1	7.7	16.7	24.7		15.4	30.6	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	1.4	0.3
Total Delay	45.8	34.1	2.8	21.1	57.1	7.7	16.7	24.7		15.4	32.0	5.3
LOS	D	C	A	C	E	A	B	C		B	C	A
Approach Delay		34.0			38.8			22.0			17.5	
Approach LOS		C			D			C			B	

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 103.6	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 27.7	Intersection LOS: C
Intersection Capacity Utilization 72.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



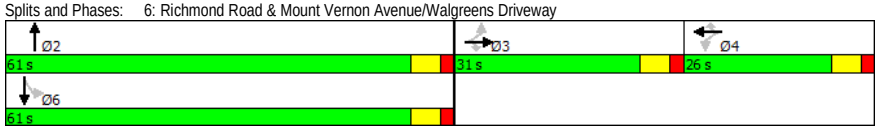
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	319	95	14	307	172	175	329	15	103	258	288
Future Volume (vph)	248	319	95	14	307	172	175	329	15	103	258	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1787	1900	1615	1805	1900	1599	1787	3552		1805	1845	1599
Flt Permitted	0.24	1.00	1.00	0.52	1.00	1.00	0.45	1.00		0.53	1.00	1.00
Satd. Flow (perm)	449	1900	1615	979	1900	1599	838	3552		1012	1845	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	264	339	101	15	327	183	186	350	16	110	274	306
RTOR Reduction (vph)	0	0	69	0	0	140	0	3	0	0	0	206
Lane Group Flow (vph)	264	339	32	15	327	43	186	363	0	110	274	100
Heavy Vehicles (%)	1%	0%	0%	0%	0%	1%	1%	1%	0%	0%	3%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	3	8		7	4		5	2		1	6	
Permitted Phases	8		8	4		4	2			6		6
Actuated Green, G (s)	43.5	34.5	34.5	28.5	25.5	25.5	49.1	37.5		44.5	35.2	35.2
Effective Green, g (s)	43.5	34.5	34.5	28.5	25.5	25.5	49.1	37.5		44.5	35.2	35.2
Actuated g/C Ratio	0.41	0.32	0.32	0.27	0.24	0.24	0.46	0.35		0.41	0.33	0.33
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	331	610	519	283	451	380	486	1241		488	605	524
v/s Ratio Prot	c0.09	0.18		0.00	0.17		c0.04	0.10		0.02	c0.15	
v/s Ratio Perm	c0.23		0.02	0.01		0.03	0.13			0.07		0.06
v/c Ratio	0.80	0.56	0.06	0.05	0.73	0.11	0.38	0.29		0.23	0.45	0.19
Uniform Delay, d1	24.3	30.1	25.2	29.2	37.7	32.1	18.1	25.3		19.6	28.5	25.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.5	1.1	0.1	0.1	5.7	0.1	0.5	0.6		0.2	2.4	0.8
Delay (s)	36.8	31.2	25.3	29.3	43.4	32.2	18.6	25.9		19.8	30.9	26.7
Level of Service	D	C	C	C	D	C	B	C		B	C	C
Approach Delay (s)		32.4			39.1			23.4			27.2	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	107.3	Sum of lost time (s)	23.0
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	738	15	29	598	70
Future Volume (vph)	95	5	54	11	12	52	0	738	15	29	598	70
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.997			0.984	
Flt Protected		0.955			0.977					0.950		
Satd. Flow (prot)	0	1797	1615	0	1856	1615	0	3564	0	1805	3490	0
Flt Permitted		0.156			0.794					0.292		
Satd. Flow (perm)	0	294	1615	0	1509	1615	0	3564	0	555	3490	0
Satd. Flow (RTOR)			83			83		2			14	
Adj. Flow (vph)	101	5	57	12	13	55	0	785	16	31	636	74
Lane Group Flow (vph)	0	106	57	0	25	55	0	801	0	31	710	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	31.0	31.0	31.0	26.0	26.0	26.0		61.0		61.0	61.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		25.1	25.1		7.1	7.1		55.3		55.3	55.3	
Actuated g/C Ratio		0.24	0.24		0.07	0.07		0.54		0.54	0.54	
v/c Ratio		1.49	0.13		0.24	0.29		0.42		0.10	0.38	
Control Delay		312.6	4.0		52.0	8.4		15.7		14.3	14.9	
Queue Delay		0.0	0.0		0.0	0.0		1.2		0.0	0.0	
Total Delay		312.6	4.0		52.0	8.4		16.9		14.3	14.9	
LOS		F	A		D	A		B		B	B	
Approach Delay		204.7			22.0			16.9			14.9	
Approach LOS		F			C			B			B	

Intersection Summary	
Cycle Length: 118	
Actuated Cycle Length: 103	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.49	
Intersection Signal Delay: 33.4	Intersection LOS: C
Intersection Capacity Utilization 46.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	738	15	29	598	70
Future Volume (vph)	95	5	54	11	12	52	0	738	15	29	598	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1796	1615		1855	1615		3564		1805	3491	
Flt Permitted		0.16	1.00		0.79	1.00		1.00		0.29	1.00	
Satd. Flow (perm)		293	1615		1509	1615		3564		555	3491	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	101	5	57	12	13	55	0	785	16	31	636	74
RTOR Reduction (vph)	0	0	43	0	0	52	0	1	0	0	7	0
Lane Group Flow (vph)	0	106	14	0	25	3	0	800	0	31	703	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		25.1	25.1		5.9	5.9		55.3		55.3	55.3	
Effective Green, g (s)		25.1	25.1		5.9	5.9		55.3		55.3	55.3	
Actuated g/C Ratio		0.24	0.24		0.06	0.06		0.53		0.53	0.53	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		70	388		85	91		1889		294	1850	
v/s Ratio Prot								c0.22			0.20	
v/s Ratio Perm		c0.36	0.01		c0.02	0.00				0.06		
v/c Ratio		1.51	0.04		0.29	0.03		0.42		0.11	0.38	
Uniform Delay, d1		39.6	30.3		47.2	46.5		14.8		12.2	14.4	
Progression Factor		1.00	1.00		1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2		291.5	0.0		1.9	0.2		0.7		0.7	0.6	
Delay (s)		331.1	30.4		49.1	46.7		15.5		12.9	15.0	
Level of Service		F	C		D	D		B		B	B	
Approach Delay (s)		226.0			47.4			15.5			14.9	
Approach LOS		F			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	104.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	5	480	4	10	323
Future Volume (vph)	2	5	480	4	10	323
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.899		0.999			
Flt Protected	0.988				0.950	
Satd. Flow (prot)	1688	0	1879	0	1805	1863
Flt Permitted	0.988				0.950	
Satd. Flow (perm)	1688	0	1879	0	1805	1863
Adj. Flow (vph)	2	6	552	5	11	371
Lane Group Flow (vph)	8	0	557	0	11	371
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 35.5%		ICU Level of Service A
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	5	480	4	10	323
Future Volume (Veh/h)	2	5	480	4	10	323
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	2	6	552	5	11	371
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						657
pX, platoon unblocked	0.90					
vC, conflicting volume	948	554			557	
vC1, stage 1 conf vol	554					
vC2, stage 2 conf vol	393					
vCu, unblocked vol	884	554			557	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			99	
cM capacity (veh/h)	498	535			1024	

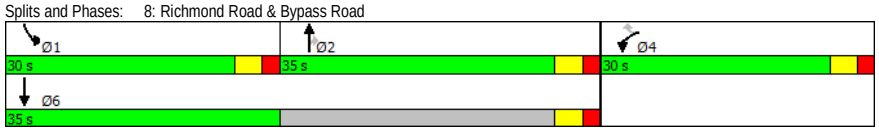
Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	8	557	11	371
Volume Left	2	0	11	0
Volume Right	6	5	0	0
cSH	526	1700	1024	1700
Volume to Capacity	0.02	0.33	0.01	0.22
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	12.0	0.0	8.6	0.0
Lane LOS	B		A	
Approach Delay (s)	12.0	0.0	0.2	
Approach LOS	B			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	330	684	540	343	634	413
Future Volume (vph)	330	684	540	343	634	413
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1787	1615	3574	1599	3433	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1787	1615	3574	1599	3433	1863
Satd. Flow (RTOR)		553		354		
Adj. Flow (vph)	340	705	557	354	654	426
Lane Group Flow (vph)	340	705	557	354	654	426
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	30.0	30.0	35.0	35.0	30.0	35.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	20.9	20.9	30.3	30.3	21.0	56.4
Actuated g/C Ratio	0.24	0.24	0.35	0.35	0.24	0.65
v/c Ratio	0.79	0.87	0.45	0.45	0.79	0.35
Control Delay	46.3	20.8	25.0	4.8	39.3	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	20.8	25.0	4.8	39.3	8.7
LOS	D	C	C	A	D	A
Approach Delay	29.1		17.1			27.2
Approach LOS	C		B			C

Intersection Summary	
Cycle Length: 95	
Actuated Cycle Length: 87.4	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 24.8	Intersection LOS: C
Intersection Capacity Utilization 65.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	330	684	540	343	634	413
Future Volume (vph)	330	684	540	343	634	413
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1787	1615	3574	1599	3433	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1787	1615	3574	1599	3433	1863
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	340	705	557	354	654	426
RTOR Reduction (vph)	0	421	0	231	0	0
Lane Group Flow (vph)	340	284	557	123	654	426
Heavy Vehicles (%)	1%	0%	1%	1%	2%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	20.9	20.9	30.4	30.4	21.0	56.4
Effective Green, g (s)	20.9	20.9	30.4	30.4	21.0	56.4
Actuated g/C Ratio	0.24	0.24	0.35	0.35	0.24	0.65
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	427	386	1244	556	825	1203
v/s Ratio Prot	c0.19		c0.16		c0.19	0.23
v/s Ratio Perm		0.18		0.08		
v/c Ratio	0.80	0.74	0.45	0.22	0.79	0.35
Uniform Delay, d1	31.2	30.7	22.0	20.1	31.1	7.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.9	7.2	1.2	0.9	5.3	0.8
Delay (s)	41.1	37.8	23.1	21.0	36.4	7.9
Level of Service	D	D	C	C	D	A
Approach Delay (s)	38.9		22.3			25.1
Approach LOS	D		C			C

Intersection Summary			
HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	87.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	150	787	126	183	467	100	61	36	94	57
Average Queue (ft)	92	560	16	12	458	53	19	8	41	26
95th Queue (ft)	187	949	83	82	465	129	49	30	80	52
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)		27			43					
Queuing Penalty (veh)		0			341					
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)	0	50	0	0	70	1				
Queuing Penalty (veh)	1	46	1	0	60	4				

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	WB	WB	NB	SB
Directions Served	L	L	TR	LTR	LTR
Maximum Queue (ft)	72	190	424	323	435
Average Queue (ft)	26	25	410	266	357
95th Queue (ft)	60	127	447	402	538
Link Distance (ft)			399	311	426
Upstream Blk Time (%)			34	59	55
Queuing Penalty (veh)			256	0	0
Storage Bay Dist (ft)	225	190			
Storage Blk Time (%)		0	82		
Queuing Penalty (veh)		0	7		

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (ft)	144	277	344	447	118	64	79
Average Queue (ft)	20	118	82	419	37	13	33
95th Queue (ft)	78	245	319	537	84	43	68
Link Distance (ft)		399		432	399		182
Upstream Blk Time (%)				34			
Queuing Penalty (veh)				249			
Storage Bay Dist (ft)	200		345			75	
Storage Blk Time (%)	0	2	0	75	5	0	
Queuing Penalty (veh)	0	1	1	11	1	0	

Intersection: 4: Monticello Avenue/Monticello Ave. & Garrison Drive

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	43	106	386	233
Average Queue (ft)	10	8	314	91
95th Queue (ft)	35	55	529	235
Link Distance (ft)		432	368	473
Upstream Blk Time (%)			20	
Queuing Penalty (veh)			158	
Storage Bay Dist (ft)	65			
Storage Blk Time (%)	0	1		
Queuing Penalty (veh)	0	0		

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	T	R
Maximum Queue (ft)	150	377	80	116	452	225	150	581	200	197	264	281
Average Queue (ft)	129	206	47	23	355	163	118	293	126	51	124	128
95th Queue (ft)	175	366	101	95	570	307	186	660	245	129	229	257
Link Distance (ft)		368			431			569			288	288
Upstream Blk Time (%)		1			55			16			0	2
Queuing Penalty (veh)		6			0			77			1	5
Storage Bay Dist (ft)	150		80	125		225	150		200	225		
Storage Blk Time (%)	5	27	1	0	71	1	42	23	2	0	1	
Queuing Penalty (veh)	21	92	4	0	133	5	145	84	7	0	1	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	98	137	81	50	175	192	72	206	189
Average Queue (ft)	58	31	26	35	50	79	16	64	60
95th Queue (ft)	98	83	65	62	123	156	47	144	140
Link Distance (ft)		530	71		288	288		1299	1299
Upstream Blk Time (%)			1						
Queuing Penalty (veh)			0						
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)	2	0	3	2			0	4	
Queuing Penalty (veh)	1	0	2	0			0	1	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	30	296	36
Average Queue (ft)	6	75	3
95th Queue (ft)	24	276	19
Link Distance (ft)	288	272	
Upstream Blk Time (%)		16	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			165
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	L	T
Maximum Queue (ft)	280	422	205	223	221	306	352	246
Average Queue (ft)	161	134	121	114	55	177	221	95
95th Queue (ft)	250	373	187	193	177	272	313	188
Link Distance (ft)	870	870	1299	1299			812	812
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)					250	450		
Storage Blk Time (%)				0	0			
Queuing Penalty (veh)				0	0			

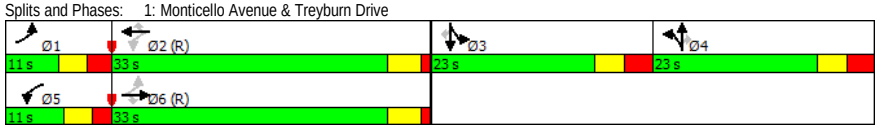
Network Summary

Network wide Queuing Penalty: 1719

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	434	37	17	407	40	3	0	3	70	22	32
Future Volume (vph)	26	434	37	17	407	40	3	0	3	70	22	32
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.950			0.963	
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509	0	1805	1615	0	1830	1615
Flt Permitted	0.258			0.232				0.950			0.963	
Satd. Flow (perm)	490	1881	1615	441	1881	1509	0	1805	1615	0	1830	1615
Satd. Flow (RTOR)			176			176			158			158
Adj. Flow (vph)	28	472	40	18	442	43	3	0	3	76	24	35
Lane Group Flow (vph)	28	472	40	18	442	43	0	3	3	0	100	35
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	11.0	33.0	33.0	11.0	33.0	33.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	36.3	35.1	35.1	37.0	35.1	35.1		26.3	26.3		10.2	10.2
Actuated g/C Ratio	0.40	0.39	0.39	0.41	0.39	0.39		0.29	0.29		0.11	0.11
v/c Ratio	0.10	0.64	0.05	0.07	0.60	0.06		0.01	0.01		0.48	0.11
Control Delay	16.0	29.2	0.1	13.1	26.8	0.6		26.7	0.0		44.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	16.0	29.2	0.1	13.1	26.8	0.6		26.7	0.0		44.5	0.7
LOS	B	C	A	B	C	A		C	A		D	A
Approach Delay		26.3			24.1			13.3			33.2	
Approach LOS		C			C			B			C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 67 (74%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 45.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	434	37	17	407	40	3	0	3	70	22	32
Future Volume (vph)	26	434	37	17	407	40	3	0	3	70	22	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.96	1.00
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509		1805	1615		1830	1615
Flt Permitted	0.26	1.00	1.00	0.23	1.00	1.00		0.95	1.00		0.96	1.00
Satd. Flow (perm)	491	1881	1615	440	1881	1509		1805	1615		1830	1615
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)	28	472	40	18	442	43	3	0	3	76	24	35
RTOR Reduction (vph)	0	0	26	0	0	28	0	0	2	0	0	32
Lane Group Flow (vph)	28	472	14	18	442	15	0	3	1	0	100	3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	33.1	30.9	30.9	33.0	30.6	30.6		26.3	26.3		8.9	8.9
Effective Green, g (s)	33.1	30.9	30.9	33.0	30.6	30.6		26.3	26.3		8.9	8.9
Actuated g/C Ratio	0.37	0.34	0.34	0.37	0.34	0.34		0.29	0.29		0.10	0.10
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	212	645	554	197	639	513		527	471		180	159
v/s Ratio Prot	c0.00	c0.25		0.00	0.23			c0.00			c0.05	
v/s Ratio Perm	0.05		0.01	0.03		0.01			0.00			0.00
v/c Ratio	0.13	0.73	0.02	0.09	0.69	0.03		0.01	0.00		0.56	0.02
Uniform Delay, d1	19.6	25.9	19.6	19.7	25.6	19.8		22.6	22.6		38.7	36.6
Progression Factor	1.00	1.00	1.00	0.85	0.96	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.3	7.2	0.1	0.2	5.9	0.1		0.0	0.0		3.7	0.1
Delay (s)	19.9	33.1	19.7	16.9	30.6	19.9		22.6	22.6		42.3	36.7
Level of Service	B	C	B	B	C	B		C	C		D	D
Approach Delay (s)		31.4			29.2			22.6			40.9	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	444	32	24	439	2	12	0	3	2	1	19
Future Volume (vph)	21	444	32	24	439	2	12	0	3	2	1	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.999			0.975			0.882	
Flt Protected	0.950			0.950				0.961			0.996	
Satd. Flow (prot)	1805	1864	0	1805	1843	0	0	1677	0	0	1669	0
Flt Permitted	0.950			0.950				0.961			0.996	
Satd. Flow (perm)	1805	1864	0	1805	1843	0	0	1677	0	0	1669	0
Adj. Flow (vph)	23	483	35	26	477	2	13	0	3	2	1	21
Lane Group Flow (vph)	23	518	0	26	479	0	0	16	0	0	24	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 36.4%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	444	32	24	439	2	12	0	3	2	1	19
Future Volume (Veh/h)	21	444	32	24	439	2	12	0	3	2	1	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	483	35	26	477	2	13	0	3	2	1	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.93			0.78			0.82	0.82	0.78	0.82	0.82	0.93
vC, conflicting volume	479			518			1097	1078	500	1062	1094	478
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	398			240			803	779	217	760	799	396
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	98			98			94	100	99	99	100	97
cM capacity (veh/h)	1085			1043			231	257	585	255	250	609

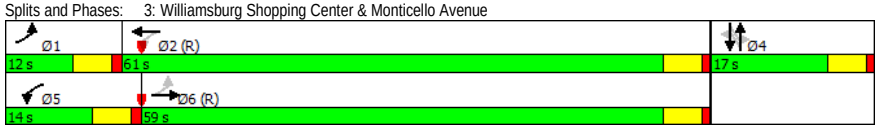
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	23	518	26	479	16	24
Volume Left	23	0	26	0	13	2
Volume Right	0	35	0	2	3	21
cSH	1085	1700	1043	1700	260	518
Volume to Capacity	0.02	0.30	0.02	0.28	0.06	0.05
Queue Length 95th (ft)	2	0	2	0	5	4
Control Delay (s)	8.4	0.0	8.5	0.0	19.7	12.3
Lane LOS	A		A		C	B
Approach Delay (s)	0.4		0.4		19.7	12.3
Approach LOS					C	B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	367	64	103	421	2	38	0	79	0	0	0
Future Volume (vph)	2	367	64	103	421	2	38	0	79	0	0	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.978			0.999			0.850				
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1805	1843	0	1805	1861	0	1805	1615	0	0	1900	0
Flt Permitted	0.498			0.426			0.757					
Satd. Flow (perm)	946	1843	0	809	1861	0	1438	1615	0	0	1900	0
Satd. Flow (RTOR)		18						536				
Adj. Flow (vph)	2	399	70	112	458	2	41	0	86	0	0	0
Lane Group Flow (vph)	2	469	0	112	460	0	41	86	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	12.0	59.0		14.0	61.0		17.0	17.0		17.0	17.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	68.8	65.4		73.5	72.9		8.1	8.1				
Actuated g/C Ratio	0.76	0.73		0.82	0.81		0.09	0.09				
v/c Ratio	0.00	0.35		0.15	0.31		0.32	0.14				
Control Delay	0.0	1.2		1.8	2.2		44.1	0.4				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	0.0	1.2		1.8	2.2		44.1	0.4				
LOS	A	A		A	A		D	A				
Approach Delay		1.2			2.1			14.5				
Approach LOS		A			A			B				

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 4 (4%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.35	
Intersection Signal Delay: 3.1	Intersection LOS: A
Intersection Capacity Utilization 46.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	367	64	103	421	2	38	0	79	0	0	0
Future Volume (vph)	2	367	64	103	421	2	38	0	79	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0				
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Frt	1.00	0.98		1.00	1.00		1.00	0.85				
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1805	1842		1805	1862		1805	1615				
Flt Permitted	0.50	1.00		0.43	1.00		0.76	1.00				
Satd. Flow (perm)	947	1842		809	1862		1439	1615				
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)	2	399	70	112	458	2	41	0	86	0	0	0
RTOR Reduction (vph)	0	6	0	0	0	0	0	79	0	0	0	0
Lane Group Flow (vph)	2	463	0	112	460	0	41	7	0	0	0	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	63.5	62.4		72.5	66.9		7.0	7.0				
Effective Green, g (s)	63.5	62.4		72.5	66.9		7.0	7.0				
Actuated g/C Ratio	0.71	0.69		0.81	0.74		0.08	0.08				
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	678	1277		713	1384		111	125				
v/s Ratio Prot	0.00	c0.25		c0.01	c0.25			0.00				
v/s Ratio Perm	0.00			0.12			c0.03					
v/c Ratio	0.00	0.36		0.16	0.33		0.37	0.05				
Uniform Delay, d1	3.9	5.7		2.4	3.9		39.4	38.4				
Progression Factor	0.02	0.09		0.62	0.44		1.00	1.00				
Incremental Delay, d2	0.0	0.7		0.1	0.6		2.1	0.2				
Delay (s)	0.1	1.2		1.5	2.4		41.5	38.6				
Level of Service	A	A		A	A		D	D				
Approach Delay (s)		1.2			2.2			39.5			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	444	527	2	3	11
Future Volume (vph)	8	444	527	2	3	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.892	
Flt Protected	0.950				0.990	
Satd. Flow (prot)	1805	1881	1863	0	1678	0
Flt Permitted	0.950				0.990	
Satd. Flow (perm)	1805	1881	1863	0	1678	0
Adj. Flow (vph)	9	483	573	2	3	12
Lane Group Flow (vph)	9	483	575	0	15	0
Sign Control		Free	Free		Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 37.9%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	444	527	2	3	11
Future Volume (Veh/h)	8	444	527	2	3	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	483	573	2	3	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		489	447			
pX, platoon unblocked	0.92				0.96	0.92
vC, conflicting volume	575				1075	574
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	499				880	498
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	98
cM capacity (veh/h)	994				305	533

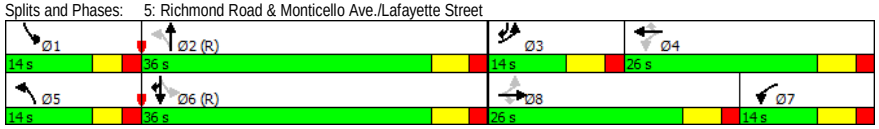
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	9	483	575	15
Volume Left	9	0	0	3
Volume Right	0	0	2	12
cSH	994	1700	1700	463
Volume to Capacity	0.01	0.28	0.34	0.03
Queue Length 95th (ft)	1	0	0	3
Control Delay (s)	8.7	0.0	0.0	13.0
Lane LOS	A			B
Approach Delay (s)	0.2		0.0	13.0
Approach LOS				B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	142	134	8	185	54	90	176	3	107	270	271
Future Volume (vph)	165	142	134	8	185	54	90	176	3	107	270	271
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3340	0	1805	1827	1599
Flt Permitted	0.316			0.659			0.490			0.628		
Satd. Flow (perm)	1142	1900	1583	1252	1845	1524	854	3340	0	1193	1827	1599
Satd. Flow (RTOR)			170			170		2				295
Adj. Flow (vph)	179	154	146	9	201	59	98	191	3	116	293	295
Lane Group Flow (vph)	179	154	146	9	201	59	98	194	0	116	293	295
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Total Split (s)	14.0	26.0	26.0	14.0	26.0	26.0	14.0	36.0		14.0	36.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Act Effct Green (s)	25.7	25.7	25.7	14.9	14.9	14.9	46.0	38.2		46.2	38.3	52.3
Actuated g/C Ratio	0.29	0.29	0.29	0.17	0.17	0.17	0.51	0.42		0.51	0.43	0.58
v/c Ratio	0.34	0.28	0.25	0.03	0.66	0.15	0.19	0.14		0.17	0.38	0.28
Control Delay	18.6	19.3	6.1	29.2	45.2	0.8	11.7	18.3		3.6	12.3	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.3	0.4
Total Delay	18.6	19.3	6.1	29.2	45.2	0.8	11.7	18.3		3.6	12.6	5.3
LOS	B	B	A	C	D	A	B	B		A	B	A
Approach Delay		15.0			34.9			16.1			8.1	
Approach LOS		B			C			B			A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 15 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 15.5	Intersection LOS: B
Intersection Capacity Utilization 56.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



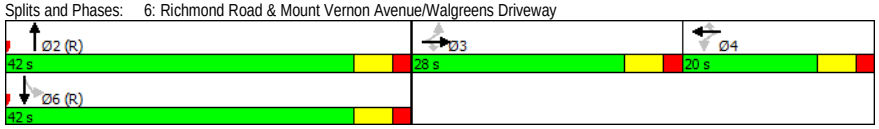
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	142	134	8	185	54	90	176	3	107	270	271
Future Volume (vph)	165	142	134	8	185	54	90	176	3	107	270	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3339		1805	1827	1599
Flt Permitted	0.32	1.00	1.00	0.66	1.00	1.00	0.49	1.00		0.63	1.00	1.00
Satd. Flow (perm)	1143	1900	1583	1252	1845	1524	854	3339		1193	1827	1599
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)	179	154	146	9	201	59	98	191	3	116	293	295
RTOR Reduction (vph)	0	0	104	0	0	46	0	1	0	0	0	143
Lane Group Flow (vph)	179	154	42	9	201	13	98	193	0	116	293	152
Heavy Vehicles (%)	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	25.7	25.7	25.7	19.7	19.7	19.7	39.2	32.4		39.4	32.5	46.5
Effective Green, g (s)	25.7	25.7	25.7	19.7	19.7	19.7	39.2	32.4		39.4	32.5	46.5
Actuated g/C Ratio	0.29	0.29	0.29	0.22	0.22	0.22	0.44	0.36		0.44	0.36	0.52
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	529	542	452	286	403	333	432	1202		569	659	826
v/s Ratio Prot	0.03	c0.08		0.00	c0.11		c0.02	0.06		0.02	c0.16	0.10
v/s Ratio Perm	0.07		0.03	0.01		0.01	0.08			0.07		
v/c Ratio	0.34	0.28	0.09	0.03	0.50	0.04	0.23	0.16		0.20	0.44	0.18
Uniform Delay, d1	24.7	25.0	23.6	27.7	30.8	27.7	15.4	19.6		15.2	21.9	11.6
Progression Factor	0.67	0.69	1.45	1.00	1.00	1.00	1.00	1.00		0.29	0.53	2.58
Incremental Delay, d2	0.4	0.3	0.1	0.0	1.0	0.0	0.3	0.3		0.2	2.1	0.1
Delay (s)	17.0	17.5	34.2	27.7	31.8	27.7	15.7	19.8		4.5	13.8	30.1
Level of Service	B	B	C	C	C	C	B	B		A	B	C
Approach Delay (s)		22.4			30.8			18.4			19.1	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	56.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	360	41	50	600	31
Future Volume (vph)	21	5	10	48	9	39	0	360	41	50	600	31
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.985			0.993	
Flt Protected		0.961			0.960					0.950		
Satd. Flow (prot)	0	1826	1615	0	1824	1615	0	3374	0	1805	3518	0
Flt Permitted		0.444			0.741					0.499		
Satd. Flow (perm)	0	844	1615	0	1408	1615	0	3374	0	948	3518	0
Satd. Flow (RTOR)			109			109		16			7	
Adj. Flow (vph)	23	5	11	52	10	42	0	391	45	54	652	34
Lane Group Flow (vph)	0	28	11	0	62	42	0	436	0	54	686	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	28.0	28.0	28.0	20.0	20.0	20.0		42.0		42.0	42.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		10.7	10.7		9.3	9.3		60.4		60.4	60.4	
Actuated g/C Ratio		0.12	0.12		0.10	0.10		0.67		0.67	0.67	
v/c Ratio		0.28	0.04		0.43	0.16		0.19		0.08	0.29	
Control Delay		40.8	0.2		45.8	1.3		8.6		10.4	8.4	
Queue Delay		0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay		40.8	0.2		45.8	1.3		8.6		10.4	8.4	
LOS		D	A		D	A		A		B	A	
Approach Delay		29.4			27.8			8.6			8.5	
Approach LOS		C			C			A			A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 87 (97%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 10.7	Intersection LOS: B
Intersection Capacity Utilization 46.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	360	41	50	600	31
Future Volume (vph)	21	5	10	48	9	39	0	360	41	50	600	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		0.98		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1825	1615		1824	1615		3373		1805	3516	
Flt Permitted		0.44	1.00		0.74	1.00		1.00		0.50	1.00	
Satd. Flow (perm)		844	1615		1408	1615		3373		948	3516	
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)	23	5	11	52	10	42	0	391	45	54	652	34
RTOR Reduction (vph)	0	0	10	0	0	38	0	6	0	0	3	0
Lane Group Flow (vph)	0	28	1	0	62	4	0	430	0	54	683	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		8.2	8.2		8.2	8.2		55.6		55.6	55.6	
Effective Green, g (s)		8.2	8.2		8.2	8.2		55.6		55.6	55.6	
Actuated g/C Ratio		0.09	0.09		0.09	0.09		0.62		0.62	0.62	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		76	147		128	147		2083		585	2172	
v/s Ratio Prot								0.13			c0.19	
v/s Ratio Perm		c0.03	0.00		c0.04	0.00				0.06		
v/c Ratio		0.37	0.01		0.48	0.03		0.21		0.09	0.31	
Uniform Delay, d1		38.5	37.2		38.9	37.3		7.5		7.0	8.2	
Progression Factor		1.00	1.00		1.00	1.00		0.94		0.92	0.83	
Incremental Delay, d2		3.0	0.0		2.9	0.1		0.2		0.3	0.4	
Delay (s)		41.5	37.2		41.8	37.3		7.3		6.7	7.1	
Level of Service		D	D		D	D		A		A	A	
Approach Delay (s)		40.3			40.0			7.3			7.1	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	1	266	0	2	394
Future Volume (vph)	1	1	266	0	2	394
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932					
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1728	0	1743	0	1805	1845
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1728	0	1743	0	1805	1845
Adj. Flow (vph)	1	1	289	0	2	428
Lane Group Flow (vph)	2	0	289	0	2	428
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 30.7%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	1	266	0	2	394
Future Volume (Veh/h)	1	1	266	0	2	394
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	289	0	2	428
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						658
pX, platoon unblocked	0.92					
vC, conflicting volume	721	289			289	
vC1, stage 1 conf vol	289					
vC2, stage 2 conf vol	432					
vCu, unblocked vol	656	289			289	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	589	755			1284	

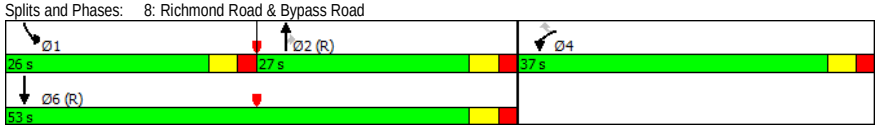
Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	2	289	2	428
Volume Left	1	0	2	0
Volume Right	1	0	0	0
cSH	662	1700	1284	1700
Volume to Capacity	0.00	0.17	0.00	0.25
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	10.5	0.0	7.8	0.0
Lane LOS	B		A	
Approach Delay (s)	10.5	0.0	0.0	
Approach LOS	B			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	296	378	209	198	328	375
Future Volume (vph)	296	378	209	198	328	375
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Satd. Flow (RTOR)		411		215		
Adj. Flow (vph)	322	411	227	215	357	408
Lane Group Flow (vph)	322	411	227	215	357	408
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	37.0	37.0	27.0	27.0	26.0	53.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	22.0	22.0	38.2	38.2	14.8	58.0
Actuated g/C Ratio	0.24	0.24	0.42	0.42	0.16	0.64
v/c Ratio	0.75	0.59	0.16	0.27	0.65	0.34
Control Delay	41.6	6.4	14.3	5.8	40.5	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	6.4	14.3	5.8	40.5	9.3
LOS	D	A	B	A	D	A
Approach Delay	21.9		10.1			23.9
Approach LOS	C		B			C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 18 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 20.0	Intersection LOS: B
Intersection Capacity Utilization 46.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	296	378	209	198	328	375
Future Volume (vph)	296	378	209	198	328	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	322	411	227	215	357	408
RTOR Reduction (vph)	0	311	0	124	0	0
Lane Group Flow (vph)	322	100	227	91	357	408
Heavy Vehicles (%)	2%	3%	9%	3%	4%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	22.0	22.0	38.2	38.2	14.8	58.0
Effective Green, g (s)	22.0	22.0	38.2	38.2	14.8	58.0
Actuated g/C Ratio	0.24	0.24	0.42	0.42	0.16	0.64
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	432	383	1405	665	553	1200
v/s Ratio Prot	c0.18		0.07		c0.11	c0.22
v/s Ratio Perm		0.06		0.06		
v/c Ratio	0.75	0.26	0.16	0.14	0.65	0.34
Uniform Delay, d1	31.4	27.4	16.0	15.8	35.1	7.3
Progression Factor	1.00	1.00	0.76	1.39	1.00	1.00
Incremental Delay, d2	6.9	0.4	0.2	0.4	2.6	0.8
Delay (s)	38.3	27.8	12.4	22.5	37.7	8.1
Level of Service	D	C	B	C	D	A
Approach Delay (s)	32.4		17.3			21.9
Approach LOS	C		B			C

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	21	29	241	367	29
Future Volume (vph)	21	21	29	241	367	29
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932				0.990	
Flt Protected	0.976			0.995		
Satd. Flow (prot)	1728	0	0	1765	1830	0
Flt Permitted	0.976			0.995		
Satd. Flow (perm)	1728	0	0	1765	1830	0
Adj. Flow (vph)	23	23	32	262	399	32
Lane Group Flow (vph)	46	0	0	294	431	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 47.0%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	21	29	241	367	29
Future Volume (Veh/h)	21	21	29	241	367	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	23	32	262	399	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					738	
pX, platoon unblocked	0.93	0.93	0.93			
vC, conflicting volume	741	415	431			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	685	335	352			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	97	97			
cM capacity (veh/h)	377	663	1134			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	46	294	431
Volume Left	23	32	0
Volume Right	23	0	32
cSH	481	1134	1700
Volume to Capacity	0.10	0.03	0.25
Queue Length 95th (ft)	8	2	0
Control Delay (s)	13.3	1.1	0.0
Lane LOS	B	A	
Approach Delay (s)	13.3	1.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	392	55	51	497	30	42
Future Volume (vph)	392	55	51	497	30	42
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983				0.921	
Flt Protected			0.950		0.980	
Satd. Flow (prot)	1851	0	1736	1863	1715	0
Flt Permitted			0.950		0.980	
Satd. Flow (perm)	1851	0	1736	1863	1715	0
Adj. Flow (vph)	426	60	55	540	33	46
Lane Group Flow (vph)	486	0	55	540	79	0
Sign Control	Free			Free	Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 41.5%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	392	55	51	497	30	42
Future Volume (Veh/h)	392	55	51	497	30	42
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	426	60	55	540	33	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	625			311		
pX, platoon unblocked			0.94		0.94	0.94
vC, conflicting volume			486		1106	456
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			416		927	384
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		88	93
cM capacity (veh/h)			1059		268	625

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	486	55	540	79
Volume Left	0	55	0	33
Volume Right	60	0	0	46
cSH	1700	1059	1700	402
Volume to Capacity	0.29	0.05	0.32	0.20
Queue Length 95th (ft)	0	4	0	18
Control Delay (s)	0.0	8.6	0.0	16.1
Lane LOS		A		C
Approach Delay (s)	0.0	0.8		16.1
Approach LOS				C

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	51	41	50	217	352	68
Future Volume (vph)	51	41	50	217	352	68
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.978	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1615	1770	1583	1790	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1615	1770	1583	1790	0
Adj. Flow (vph)	55	45	54	236	383	74
Lane Group Flow (vph)	55	45	54	236	457	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 39.3%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	51	41	50	217	352	68
Future Volume (Veh/h)	51	41	50	217	352	68
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	45	54	236	383	74
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					328	
pX, platoon unblocked	0.88	0.88	0.88			
vC, conflicting volume	764	420	457			
vC1, stage 1 conf vol	420					
vC2, stage 2 conf vol	344					
vCu, unblocked vol	663	272	314			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	93	95			
cM capacity (veh/h)	563	678	1096			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	55	45	54	236	457
Volume Left	55	0	54	0	0
Volume Right	0	45	0	0	74
cSH	563	678	1096	1700	1700
Volume to Capacity	0.10	0.07	0.05	0.14	0.27
Queue Length 95th (ft)	8	5	4	0	0
Control Delay (s)	12.1	10.7	8.5	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	11.5		1.6		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	130	365	150	173	338	100	24	27	121	48
Average Queue (ft)	21	176	27	19	158	22	2	2	60	18
95th Queue (ft)	77	294	105	87	280	80	14	14	106	43
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)					0					
Queuing Penalty (veh)					0					
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)	0	12	0	0	18	0				
Queuing Penalty (veh)	0	7	1	0	10	1				

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	37	4	38	5	56	41
Average Queue (ft)	8	0	8	0	16	16
95th Queue (ft)	31	3	31	5	45	41
Link Distance (ft)		452		399	311	426
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225		190			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	L	TR	L	TR	L	TR
Maximum Queue (ft)	13	54	83	107	101	72
Average Queue (ft)	1	5	31	22	35	36
95th Queue (ft)	8	26	66	73	78	67
Link Distance (ft)		399		432	399	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		200			75
Storage Blk Time (%)					2	0
Queuing Penalty (veh)					2	0

Intersection: 4: Monticello Avenue/Monticello Ave. & Garrison Drive

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	33	2	34
Average Queue (ft)	4	0	11
95th Queue (ft)	21	3	35
Link Distance (ft)		66	471
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	TR	L	T
Maximum Queue (ft)	122	135	166	98	72	218	78	111	96	89	114	201
Average Queue (ft)	23	61	66	43	9	107	27	45	37	31	32	86
95th Queue (ft)	70	106	126	80	43	181	57	89	80	72	77	170
Link Distance (ft)			245	245		430			236			282
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150	150			125		225	150		200	225	
Storage Blk Time (%)		0	0		0	7	0	0			0	0
Queuing Penalty (veh)		0	0		0	4	0	0			0	0

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	SB
Directions Served	R
Maximum Queue (ft)	190
Average Queue (ft)	63
95th Queue (ft)	142
Link Distance (ft)	282
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	64	34	86	50	72	113	74	170	153
Average Queue (ft)	22	9	45	33	16	25	20	53	37
95th Queue (ft)	52	31	89	64	51	74	57	134	100
Link Distance (ft)		530	71		282	282		1299	1299
Upstream Blk Time (%)			7						
Queuing Penalty (veh)			0						
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)	0		14	1			0	4	
Queuing Penalty (veh)	0		5	1			0	2	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	27	31	8
Average Queue (ft)	2	2	0
95th Queue (ft)	16	17	6
Link Distance (ft)	288	19	
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	L	T
Maximum Queue (ft)	246	18	113	111	57	187	228	234
Average Queue (ft)	130	1	57	50	4	74	131	100
95th Queue (ft)	213	20	100	93	37	168	199	184
Link Distance (ft)	870	870	1299	1299			812	812
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)					250	450		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 16: Richmond Road & Existing Access Driveway #3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	56	85	8
Average Queue (ft)	23	15	0
95th Queue (ft)	45	54	5
Link Distance (ft)	117	218	19
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: Existing Access Driveway #1 & Monticello Ave.

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	12	56	98	75
Average Queue (ft)	1	19	8	31
95th Queue (ft)	6	49	53	60
Link Distance (ft)	66		245	240
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		1	0	
Queuing Penalty (veh)		5	0	

Intersection: 22: Richmond Road & Existing Access Driveway #2

Movement	EB	EB	NB	SB
Directions Served	L	R	L	TR
Maximum Queue (ft)	58	51	62	13
Average Queue (ft)	24	22	17	1
95th Queue (ft)	49	47	46	7
Link Distance (ft)	135	135		236
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

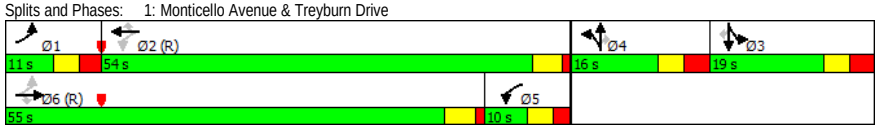
Network Summary

Network wide Queuing Penalty: 39

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	795	13	5	807	100	23	14	9	79	5	55
Future Volume (vph)	78	795	13	5	807	100	23	14	9	79	5	55
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.970			0.955	
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509	0	1843	1615	0	1814	1615
Flt Permitted	0.075			0.194				0.970			0.955	
Satd. Flow (perm)	142	1881	1615	369	1881	1509	0	1843	1615	0	1814	1615
Satd. Flow (RTOR)			153			158			196			196
Adj. Flow (vph)	85	864	14	5	877	109	25	15	10	86	5	60
Lane Group Flow (vph)	85	864	14	5	877	109	0	40	10	0	91	60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	11.0	55.0	55.0	10.0	54.0	54.0	16.0	16.0	16.0	19.0	19.0	19.0
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	62.9	63.9	63.9	55.8	56.3	56.3		10.0	10.0		10.1	10.1
Actuated g/C Ratio	0.63	0.64	0.64	0.56	0.56	0.56		0.10	0.10		0.10	0.10
v/c Ratio	0.44	0.72	0.01	0.02	0.83	0.12		0.22	0.03		0.50	0.18
Control Delay	18.0	19.3	0.0	18.2	27.5	3.2		44.6	0.1		51.5	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	18.0	19.3	0.0	18.2	27.5	3.2		44.6	0.1		51.5	1.1
LOS	B	B	A	B	C	A		D	A		D	A
Approach Delay		18.9			24.8			35.7			31.5	
Approach LOS		B			C			D			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 99 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 22.9	Intersection LOS: C
Intersection Capacity Utilization 71.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	795	13	5	807	100	23	14	9	79	5	55
Future Volume (vph)	78	795	13	5	807	100	23	14	9	79	5	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.95	1.00
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509		1842	1615		1814	1615
Flt Permitted	0.07	1.00	1.00	0.19	1.00	1.00		0.97	1.00		0.95	1.00
Satd. Flow (perm)	142	1881	1615	369	1881	1509		1842	1615		1814	1615
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)	85	864	14	5	877	109	25	15	10	86	5	60
RTOR Reduction (vph)	0	0	6	0	0	50	0	0	9	0	0	55
Lane Group Flow (vph)	85	864	8	5	877	59	0	40	1	0	91	5
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	58.7	58.7	58.7	54.0	54.0	54.0		10.0	10.0		8.8	8.8
Effective Green, g (s)	58.7	58.7	58.7	54.0	54.0	54.0		10.0	10.0		8.8	8.8
Actuated g/C Ratio	0.59	0.59	0.59	0.54	0.54	0.54		0.10	0.10		0.09	0.09
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	169	1104	948	213	1015	814		184	161		159	142
v/s Ratio Prot	0.03	c0.46		0.00	c0.47			c0.02			c0.05	
v/s Ratio Perm	0.27		0.01	0.01		0.04			0.00			0.00
v/c Ratio	0.50	0.78	0.01	0.02	0.86	0.07		0.22	0.01		0.57	0.04
Uniform Delay, d1	20.0	15.8	8.6	23.9	19.8	11.0		41.4	40.5		43.8	41.7
Progression Factor	1.00	1.00	1.00	1.33	0.94	3.97		1.00	1.00		1.00	1.00
Incremental Delay, d2	2.3	5.6	0.0	0.0	8.6	0.1		2.7	0.1		4.9	0.1
Delay (s)	22.4	21.3	8.6	31.9	27.2	43.9		44.1	40.6		48.7	41.8
Level of Service	C	C	A	C	C	D		D	D		D	D
Approach Delay (s)		21.2			29.1			43.4			46.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	814	28	9	840	11	17	1	24	10	1	48
Future Volume (vph)	51	814	28	9	840	11	17	1	24	10	1	48
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.998			0.922			0.890	
Flt Protected	0.950			0.950				0.980			0.991	
Satd. Flow (prot)	1805	1872	0	1805	1842	0	0	1442	0	0	1676	0
Flt Permitted	0.950			0.950				0.980			0.991	
Satd. Flow (perm)	1805	1872	0	1805	1842	0	0	1442	0	0	1676	0
Adj. Flow (vph)	55	885	30	10	913	12	18	1	26	11	1	52
Lane Group Flow (vph)	55	915	0	10	925	0	0	45	0	0	64	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 56.6%	ICU Level of Service B	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	814	28	9	840	11	17	1	24	10	1	48
Future Volume (Veh/h)	51	814	28	9	840	11	17	1	24	10	1	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	885	30	10	913	12	18	1	26	11	1	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.70			0.61			0.76	0.76	0.61	0.76	0.76	0.70
vC, conflicting volume	925			915			1996	1955	900	1960	1964	919
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	678			543			1263	1210	519	1217	1222	669
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	91			98			79	99	92	89	99	84
cM capacity (veh/h)	646			633			87	126	306	102	124	322

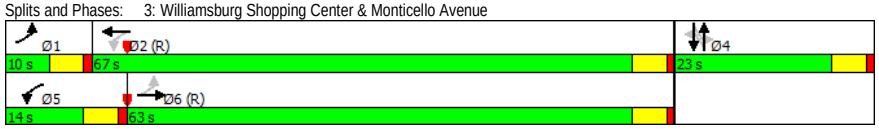
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	55	915	10	925	45	64
Volume Left	55	0	10	0	18	11
Volume Right	0	30	0	12	26	52
cSH	646	1700	633	1700	150	231
Volume to Capacity	0.09	0.54	0.02	0.54	0.30	0.28
Queue Length 95th (ft)	7	0	1	0	30	27
Control Delay (s)	11.1	0.0	10.8	0.0	39.0	26.5
Lane LOS	B		B		E	D
Approach Delay (s)	0.6		0.1		39.0	26.5
Approach LOS					E	D

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	680	112	163	710	18	106	1	162	12	8	35
Future Volume (vph)	30	680	112	163	710	18	106	1	162	12	8	35
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.996			0.851			0.914	
Flt Protected	0.950			0.950			0.950				0.989	
Satd. Flow (prot)	1805	1844	0	1805	1856	0	1805	1617	0	0	1717	0
Flt Permitted	0.279			0.180			0.794				0.830	
Satd. Flow (perm)	530	1844	0	342	1856	0	1509	1617	0	0	1441	0
Satd. Flow (RTOR)		14			2			176			38	
Adj. Flow (vph)	33	739	122	177	772	20	115	1	176	13	9	38
Lane Group Flow (vph)	33	861	0	177	792	0	115	177	0	0	60	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	10.0	63.0		14.0	67.0		23.0	23.0		23.0	23.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	69.7	64.0		75.7	70.5		13.1	13.1			13.1	
Actuated g/C Ratio	0.70	0.64		0.76	0.70		0.13	0.13			0.13	
v/c Ratio	0.07	0.73		0.47	0.61		0.58	0.49			0.27	
Control Delay	2.4	7.7		8.2	14.7		52.1	10.6			21.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	2.4	7.7		8.2	14.7		52.1	10.6			21.1	
LOS	A	A		A	B		D	B			C	
Approach Delay		7.5			13.5			26.9			21.1	
Approach LOS		A			B			C			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 5 (5%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 13.1	Intersection LOS: B
Intersection Capacity Utilization 78.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	680	112	163	710	18	106	1	162	12	8	35
Future Volume (vph)	30	680	112	163	710	18	106	1	162	12	8	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.85			0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1805	1844		1805	1857		1805	1617			1719	
Flt Permitted	0.28	1.00		0.18	1.00		0.79	1.00			0.83	
Satd. Flow (perm)	530	1844		343	1857		1508	1617			1442	
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)	33	739	122	177	772	20	115	1	176	13	9	38
RTOR Reduction (vph)	0	5	0	0	1	0	0	153	0	0	33	0
Lane Group Flow (vph)	33	856	0	177	791	0	115	24	0	0	27	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	67.4	64.0		76.4	68.5		13.1	13.1			13.1	
Effective Green, g (s)	67.4	64.0		76.4	68.5		13.1	13.1			13.1	
Actuated g/C Ratio	0.67	0.64		0.76	0.68		0.13	0.13			0.13	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	400	1180		377	1272		197	211			188	
v/s Ratio Prot	0.00	c0.46		c0.04	c0.43			0.01				
v/s Ratio Perm	0.05			0.32			c0.08				0.02	
v/c Ratio	0.08	0.73		0.47	0.62		0.58	0.11			0.14	
Uniform Delay, d1	6.6	12.1		10.3	8.6		40.9	38.3			38.5	
Progression Factor	0.56	0.33		1.34	1.32		1.00	1.00			1.00	
Incremental Delay, d2	0.1	3.0		0.8	1.9		4.4	0.2			0.4	
Delay (s)	3.8	7.0		14.6	13.3		45.2	38.6			38.8	
Level of Service	A	A		B	B		D	D			D	
Approach Delay (s)		6.9			13.5			41.2			38.8	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	22	864	902	37	17	15
Future Volume (vph)	22	864	902	37	17	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.936	
Flt Protected	0.950				0.974	
Satd. Flow (prot)	1805	1881	1855	0	1732	0
Flt Permitted	0.950				0.974	
Satd. Flow (perm)	1805	1881	1855	0	1732	0
Adj. Flow (vph)	24	939	980	40	18	16
Lane Group Flow (vph)	24	939	1020	0	34	0
Sign Control		Free	Free		Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 59.7%		ICU Level of Service B
Analysis Period (min) 15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	864	902	37	17	15
Future Volume (Veh/h)	22	864	902	37	17	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	939	980	40	18	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)		489	447			
pX, platoon unblocked	0.75				0.81	0.75
vC, conflicting volume	1020				1987	1000
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	861				1411	835
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				85	94
cM capacity (veh/h)	593				119	279

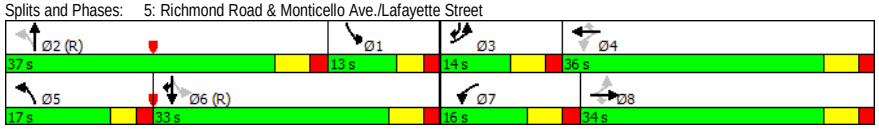
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	24	939	1020	34
Volume Left	24	0	0	18
Volume Right	0	0	40	16
cSH	593	1700	1700	163
Volume to Capacity	0.04	0.55	0.60	0.21
Queue Length 95th (ft)	3	0	0	19
Control Delay (s)	11.3	0.0	0.0	32.8
Lane LOS	B			D
Approach Delay (s)	0.3		0.0	32.8
Approach LOS				D

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	343	342	166	14	331	172	214	426	15	103	310	428
Future Volume (vph)	343	342	166	14	331	172	214	426	15	103	310	428
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3334	0	1805	1827	1599
Flt Permitted	0.271			0.415			0.211			0.478		
Satd. Flow (perm)	979	1900	1583	788	1845	1524	368	3334	0	908	1827	1599
Satd. Flow (RTOR)			218			218		4				210
Adj. Flow (vph)	373	372	180	15	360	187	233	463	16	112	337	465
Lane Group Flow (vph)	373	372	180	15	360	187	233	479	0	112	337	465
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Total Split (s)	14.0	34.0	34.0	16.0	36.0	36.0	17.0	37.0		13.0	33.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Act Effct Green (s)	36.4	33.2	33.2	32.8	24.8	24.8	37.2	36.2		31.6	30.6	44.6
Actuated g/C Ratio	0.36	0.33	0.33	0.33	0.25	0.25	0.37	0.36		0.32	0.31	0.45
v/c Ratio	0.68	0.59	0.27	0.04	0.79	0.35	0.75	0.40		0.31	0.60	0.56
Control Delay	22.3	26.4	2.4	17.1	47.5	4.1	42.0	25.9		31.9	35.5	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2		0.0	0.4	0.2
Total Delay	22.3	26.4	2.4	17.1	47.5	4.2	42.0	26.0		31.9	35.8	9.9
LOS	C	C	A	B	D	A	D	C		C	D	A
Approach Delay		20.1			32.2			31.3			22.2	
Approach LOS		C			C			C			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 94 (94%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 25.5	Intersection LOS: C
Intersection Capacity Utilization 74.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



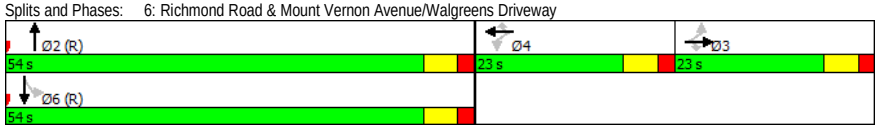
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	343	342	166	14	331	172	214	426	15	103	310	428
Future Volume (vph)	343	342	166	14	331	172	214	426	15	103	310	428
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3334		1805	1827	1599
Flt Permitted	0.27	1.00	1.00	0.41	1.00	1.00	0.21	1.00		0.48	1.00	1.00
Satd. Flow (perm)	981	1900	1583	788	1845	1524	367	3334		909	1827	1599
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)	373	372	180	15	360	187	233	463	16	112	337	465
RTOR Reduction (vph)	0	0	120	0	0	134	0	3	0	0	0	124
Lane Group Flow (vph)	373	372	60	15	360	53	233	476	0	112	337	341
Heavy Vehicles (%)	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	41.2	33.2	33.2	31.6	28.4	28.4	32.6	32.6		28.0	27.0	41.0
Effective Green, g (s)	41.2	33.2	33.2	31.6	28.4	28.4	32.6	32.6		28.0	27.0	41.0
Actuated g/C Ratio	0.41	0.33	0.33	0.32	0.28	0.28	0.33	0.33		0.28	0.27	0.41
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	600	630	525	281	523	432	294	1086		326	493	655
v/s Ratio Prot	0.05	c0.20		0.00	c0.20		c0.11	0.14		0.03	0.18	c0.21
v/s Ratio Perm	0.21		0.04	0.02		0.03	c0.15			0.07		
v/c Ratio	0.62	0.59	0.11	0.05	0.69	0.12	0.79	0.44		0.34	0.68	0.52
Uniform Delay, d1	21.1	27.8	23.2	23.8	31.9	26.6	27.7	26.5		29.6	32.7	22.1
Progression Factor	0.80	0.80	0.81	1.00	1.00	1.00	1.00	1.00		1.01	0.98	0.61
Incremental Delay, d2	1.7	1.2	0.1	0.1	3.8	0.1	13.6	1.3		0.6	6.9	0.7
Delay (s)	18.5	23.5	19.0	23.9	35.6	26.7	41.3	27.8		30.3	39.1	14.2
Level of Service	B	C	B	C	D	C	D	C		C	D	B
Approach Delay (s)		20.6			32.3			32.2			25.4	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	954	15	29	811	70
Future Volume (vph)	95	5	54	11	12	52	0	954	15	29	811	70
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.988	
Flt Protected		0.954			0.977					0.950		
Satd. Flow (prot)	0	1813	1615	0	1856	1615	0	3402	0	1805	3502	0
Flt Permitted		0.718			0.325					0.218		
Satd. Flow (perm)	0	1364	1615	0	618	1615	0	3402	0	414	3502	0
Satd. Flow (RTOR)			98			98		2			12	
Adj. Flow (vph)	103	5	59	12	13	57	0	1037	16	32	882	76
Lane Group Flow (vph)	0	108	59	0	25	57	0	1053	0	32	958	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	23.0	23.0	23.0	23.0	23.0	23.0		54.0		54.0	54.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		12.9	12.9		10.2	10.2		61.2		61.2	61.2	
Actuated g/C Ratio		0.13	0.13		0.10	0.10		0.61		0.61	0.61	
v/c Ratio		0.61	0.20		0.40	0.23		0.51		0.13	0.45	
Control Delay		55.4	3.9		58.5	4.2		14.6		13.1	10.9	
Queue Delay		0.0	0.0		0.0	0.0		0.8		0.0	0.0	
Total Delay		55.4	3.9		58.5	4.2		15.4		13.1	10.9	
LOS		E	A		E	A		B		B	B	
Approach Delay		37.2			20.7			15.4			11.0	
Approach LOS		D			C			B			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 15.2	Intersection LOS: B
Intersection Capacity Utilization 51.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	954	15	29	811	70
Future Volume (vph)	95	5	54	11	12	52	0	954	15	29	811	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		1.00		1.00	0.99	
Flt Protected		0.95	1.00		0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1814	1615		1855	1615		3401		1805	3503	
Flt Permitted		0.72	1.00		0.33	1.00		1.00		0.22	1.00	
Satd. Flow (perm)		1364	1615		618	1615		3401		415	3503	
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)	103	5	59	12	13	57	0	1037	16	32	882	76
RTOR Reduction (vph)	0	0	51	0	0	52	0	1	0	0	5	0
Lane Group Flow (vph)	0	108	8	0	25	5	0	1052	0	32	953	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		12.9	12.9		9.1	9.1		60.0		60.0	60.0	
Effective Green, g (s)		12.9	12.9		9.1	9.1		60.0		60.0	60.0	
Actuated g/C Ratio		0.13	0.13		0.09	0.09		0.60		0.60	0.60	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		175	208		56	146		2040		249	2101	
v/s Ratio Prot								c0.31			0.27	
v/s Ratio Perm		c0.08	0.00		c0.04	0.00				0.08		
v/c Ratio		0.62	0.04		0.45	0.04		0.52		0.13	0.45	
Uniform Delay, d1		41.2	38.1		43.1	41.4		11.6		8.7	11.0	
Progression Factor		1.00	1.00		1.00	1.00		1.03		0.94	0.83	
Incremental Delay, d2		6.3	0.1		5.6	0.1		0.8		0.8	0.6	
Delay (s)		47.5	38.2		48.6	41.5		12.8		9.0	9.7	
Level of Service		D	D		D	D		B		A	A	
Approach Delay (s)		44.2			43.7			12.8			9.7	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	5	606	4	10	439
Future Volume (vph)	2	5	606	4	10	439
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.904		0.999			
Flt Protected	0.986				0.950	
Satd. Flow (prot)	1694	0	1742	0	1805	1845
Flt Permitted	0.986				0.950	
Satd. Flow (perm)	1694	0	1742	0	1805	1845
Adj. Flow (vph)	2	5	659	4	11	477
Lane Group Flow (vph)	7	0	663	0	11	477
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 42.1%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	5	606	4	10	439
Future Volume (Veh/h)	2	5	606	4	10	439
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	5	659	4	11	477
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						658
pX, platoon unblocked	0.89					
vC, conflicting volume	1160	661			663	
vC1, stage 1 conf vol	661					
vC2, stage 2 conf vol	499					
vCu, unblocked vol	1119	661			663	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			99	
cM capacity (veh/h)	429	466			935	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	7	663	11	477
Volume Left	2	0	11	0
Volume Right	5	4	0	0
cSH	455	1700	935	1700
Volume to Capacity	0.02	0.39	0.01	0.28
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	13.0	0.0	8.9	0.0
Lane LOS	B		A	
Approach Delay (s)	13.0	0.0	0.2	
Approach LOS	B			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	408	684	668	419	634	536
Future Volume (vph)	408	684	668	419	634	536
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Satd. Flow (RTOR)		521		455		
Adj. Flow (vph)	443	743	726	455	689	583
Lane Group Flow (vph)	443	743	726	455	689	583
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	38.0	38.0	33.0	33.0	29.0	62.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	29.5	29.5	32.0	32.0	23.4	60.5
Actuated g/C Ratio	0.30	0.30	0.32	0.32	0.23	0.60
v/c Ratio	0.85	0.90	0.68	0.56	0.87	0.52
Control Delay	48.7	24.4	27.0	7.1	50.2	14.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.7	24.4	27.0	7.1	50.2	14.2
LOS	D	C	C	A	D	B
Approach Delay	33.5		19.3			33.7
Approach LOS	C		B			C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 26 (26%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 29.0	Intersection LOS: C
Intersection Capacity Utilization 71.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	408	684	668	419	634	536
Future Volume (vph)	408	684	668	419	634	536
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	443	743	726	455	689	583
RTOR Reduction (vph)	0	367	0	309	0	0
Lane Group Flow (vph)	443	376	726	146	689	583
Heavy Vehicles (%)	2%	3%	9%	3%	4%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	29.5	29.5	32.1	32.1	23.4	60.5
Effective Green, g (s)	29.5	29.5	32.1	32.1	23.4	60.5
Actuated g/C Ratio	0.29	0.29	0.32	0.32	0.23	0.60
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	522	462	1063	503	787	1127
v/s Ratio Prot	c0.25		c0.22		c0.20	0.31
v/s Ratio Perm		0.24		0.09		
v/c Ratio	0.85	0.81	0.68	0.29	0.88	0.52
Uniform Delay, d1	33.2	32.7	29.5	25.4	36.9	11.4
Progression Factor	1.00	1.00	0.76	1.55	1.00	1.00
Incremental Delay, d2	12.2	10.5	3.2	1.3	10.7	1.7
Delay (s)	45.4	43.2	25.7	40.7	47.6	13.1
Level of Service	D	D	C	D	D	B
Approach Delay (s)	44.0		31.5			31.8
Approach LOS	D		C			C

Intersection Summary			
HCM 2000 Control Delay	35.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	40	41	570	400	41
Future Volume (vph)	40	40	41	570	400	41
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932				0.987	
Flt Protected	0.976			0.997		
Satd. Flow (prot)	1728	0	0	1877	1842	0
Flt Permitted	0.976			0.997		
Satd. Flow (perm)	1728	0	0	1877	1842	0
Adj. Flow (vph)	43	43	45	620	435	45
Lane Group Flow (vph)	86	0	0	665	480	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 70.5%		ICU Level of Service C
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	40	41	570	400	41
Future Volume (Veh/h)	40	40	41	570	400	41
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	43	45	620	435	45
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					738	
pX, platoon unblocked	0.90	0.90	0.90			
vC, conflicting volume	1168	458	480			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1131	344	369			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	78	93	96			
cM capacity (veh/h)	196	634	1083			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	86	665	480
Volume Left	43	45	0
Volume Right	43	0	45
cSH	300	1083	1700
Volume to Capacity	0.29	0.04	0.28
Queue Length 95th (ft)	29	3	0
Control Delay (s)	21.8	1.1	0.0
Lane LOS	C	A	
Approach Delay (s)	21.8	1.1	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	767	114	89	891	48	79
Future Volume (vph)	767	114	89	891	48	79
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983				0.916	
Flt Protected			0.950		0.982	
Satd. Flow (prot)	1868	0	1805	1881	1709	0
Flt Permitted			0.950		0.982	
Satd. Flow (perm)	1868	0	1805	1881	1709	0
Adj. Flow (vph)	834	124	97	968	52	86
Lane Group Flow (vph)	958	0	97	968	138	0
Sign Control	Free			Free	Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 69.7%	ICU Level of Service C	
Analysis Period (min) 15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	767	114	89	891	48	79
Future Volume (Veh/h)	767	114	89	891	48	79
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	834	124	97	968	52	86
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	625			311		
pX, platoon unblocked			0.68		0.81	0.68
vC, conflicting volume			958		2058	896
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			706		1468	616
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			84		47	75
cM capacity (veh/h)			616		97	338

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	958	97	968	138
Volume Left	0	97	0	52
Volume Right	124	0	0	86
cSH	1700	616	1700	175
Volume to Capacity	0.56	0.16	0.57	0.79
Queue Length 95th (ft)	0	14	0	131
Control Delay (s)	0.0	11.9	0.0	75.9
Lane LOS		B		F
Approach Delay (s)	0.0	1.1		75.9
Approach LOS				F

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	123	80	90	521	369	116
Future Volume (vph)	123	80	90	521	369	116
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.968	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1568	1805	1881	1812	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1568	1805	1881	1812	0
Adj. Flow (vph)	134	87	98	566	401	126
Lane Group Flow (vph)	134	87	98	566	527	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 48.3%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	123	80	90	521	369	116
Future Volume (Veh/h)	123	80	90	521	369	116
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	134	87	98	566	401	126
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					328	
pX, platoon unblocked	0.84	0.84	0.84			
vC, conflicting volume	1226	464	527			
vC1, stage 1 conf vol	464					
vC2, stage 2 conf vol	762					
vCu, unblocked vol	1172	260	335			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	64	87	91			
cM capacity (veh/h)	372	649	1032			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	134	87	98	566	527
Volume Left	134	0	98	0	0
Volume Right	0	87	0	0	126
cSH	372	649	1032	1700	1700
Volume to Capacity	0.36	0.13	0.09	0.33	0.31
Queue Length 95th (ft)	40	12	8	0	0
Control Delay (s)	20.0	11.4	8.9	0.0	0.0
Lane LOS	C	B	A		
Approach Delay (s)	16.6		1.3		0.0
Approach LOS	C				

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	149	581	68	104	442	100	76	40	137	79
Average Queue (ft)	55	235	5	7	263	38	29	8	59	30
95th Queue (ft)	126	447	39	53	441	109	66	31	110	63
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)		0			1					
Queuing Penalty (veh)		0			6					
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)	0	13	0	0	25	0	0	0		
Queuing Penalty (veh)	0	12	0	0	26	3	0	0		

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	64	86	45	144	102	86
Average Queue (ft)	24	8	6	11	38	36
95th Queue (ft)	55	71	32	87	82	71
Link Distance (ft)		452		399	311	426
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225		190			
Storage Blk Time (%)		0	0	0		
Queuing Penalty (veh)		0	0	0		

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (ft)	116	341	193	291	283	75	95
Average Queue (ft)	17	151	73	123	116	65	36
95th Queue (ft)	66	304	145	235	227	90	73
Link Distance (ft)		399		432	399		182
Upstream Blk Time (%)		0		0			
Queuing Penalty (veh)		2		0			
Storage Bay Dist (ft)	200		200			75	
Storage Blk Time (%)	0	4	0	1	22	7	
Queuing Penalty (veh)	0	1	1	2	36	7	

Intersection: 4: Monticello Avenue/Monticello Ave. & Garrison Drive

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	62	251	52	100
Average Queue (ft)	15	25	4	31
95th Queue (ft)	47	140	26	84
Link Distance (ft)		432	66	471
Upstream Blk Time (%)		0	0	
Queuing Penalty (veh)		0	0	
Storage Bay Dist (ft)	200			
Storage Blk Time (%)		1		
Queuing Penalty (veh)		0		

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	TR	L	T
Maximum Queue (ft)	141	149	256	104	117	413	225	160	252	200	204	287
Average Queue (ft)	76	116	151	48	17	211	97	122	147	121	62	143
95th Queue (ft)	138	175	257	87	66	360	221	180	272	226	150	257
Link Distance (ft)			245	245		430			236			282
Upstream Blk Time (%)			2			1			7			1
Queuing Penalty (veh)			9			0			45			3
Storage Bay Dist (ft)	150	150			125		225	150		200	225	
Storage Blk Time (%)	0	1	8		0	26	0	14	4	1	0	2
Queuing Penalty (veh)	0	3	28		0	49	1	64	20	3	0	2

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	SB
Directions Served	R
Maximum Queue (ft)	286
Average Queue (ft)	147
95th Queue (ft)	267
Link Distance (ft)	282
Upstream Blk Time (%)	1
Queuing Penalty (veh)	4
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	98	145	77	50	210	236	71	168	194
Average Queue (ft)	63	34	28	35	51	80	19	63	72
95th Queue (ft)	102	86	68	63	152	184	51	136	155
Link Distance (ft)		530	71		282	282		1299	1299
Upstream Blk Time (%)			2		0	0			
Queuing Penalty (veh)			0		0	0			
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)	3	0	5	3			0	5	
Queuing Penalty (veh)	1	0	2	1			0	2	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	30	86	33
Average Queue (ft)	6	26	5
95th Queue (ft)	24	75	24
Link Distance (ft)	288	19	
Upstream Blk Time (%)		3	
Queuing Penalty (veh)		16	
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	L	T
Maximum Queue (ft)	450	594	339	333	249	338	373	301
Average Queue (ft)	204	239	160	155	63	202	244	155
95th Queue (ft)	388	601	258	264	210	307	346	262
Link Distance (ft)	870	870	1299	1299			812	812
Upstream Blk Time (%)	0	1						
Queuing Penalty (veh)	0	0						
Storage Bay Dist (ft)					250	450		
Storage Blk Time (%)				1	0			
Queuing Penalty (veh)				3	1			

Intersection: 16: Richmond Road & Existing Access Driveway #3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	95	172	18
Average Queue (ft)	38	39	1
95th Queue (ft)	75	130	9
Link Distance (ft)	117	218	19
Upstream Blk Time (%)	1	1	0
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: Existing Access Driveway #1 & Monticello Ave.

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	77	49	243	255
Average Queue (ft)	20	35	40	225
95th Queue (ft)	67	57	149	317
Link Distance (ft)	66		245	240
Upstream Blk Time (%)	2		1	68
Queuing Penalty (veh)	14		8	0
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		7	1	
Queuing Penalty (veh)		63	0	

Intersection: 22: Richmond Road & Existing Access Drivey #2

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	150	116	89	253	30
Average Queue (ft)	85	39	33	43	3
95th Queue (ft)	159	90	72	182	17
Link Distance (ft)	135	135		256	236
Upstream Blk Time (%)	19	2		2	
Queuing Penalty (veh)	0	0		11	
Storage Bay Dist (ft)			100		
Storage Blk Time (%)			0	5	
Queuing Penalty (veh)			1	4	

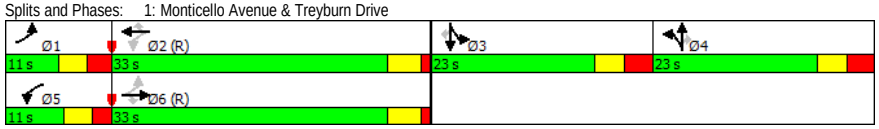
Network Summary

Network wide Queuing Penalty: 458

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	446	37	17	418	40	3	0	3	70	22	32
Future Volume (vph)	26	446	37	17	418	40	3	0	3	70	22	32
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.950			0.963	
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509	0	1805	1615	0	1830	1615
Flt Permitted	0.244			0.216				0.950			0.963	
Satd. Flow (perm)	464	1881	1615	410	1881	1509	0	1805	1615	0	1830	1615
Satd. Flow (RTOR)			176			176			158			158
Adj. Flow (vph)	28	485	40	18	454	43	3	0	3	76	24	35
Lane Group Flow (vph)	28	485	40	18	454	43	0	3	3	0	100	35
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	11.0	33.0	33.0	11.0	33.0	33.0	23.0	23.0	23.0	23.0	23.0	23.0
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	36.3	35.1	35.1	37.0	35.1	35.1		26.3	26.3		10.2	10.2
Actuated g/C Ratio	0.40	0.39	0.39	0.41	0.39	0.39		0.29	0.29		0.11	0.11
v/c Ratio	0.10	0.66	0.05	0.07	0.62	0.06		0.01	0.01		0.48	0.11
Control Delay	16.1	29.8	0.1	13.1	27.6	0.6		26.7	0.0		44.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	16.1	29.8	0.1	13.1	27.6	0.6		26.7	0.0		44.5	0.7
LOS	B	C	A	B	C	A		C	A		D	A
Approach Delay		27.0			24.8			13.3			33.2	
Approach LOS		C			C			B			C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 67 (74%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 26.7	Intersection LOS: C
Intersection Capacity Utilization 46.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	446	37	17	418	40	3	0	3	70	22	32
Future Volume (vph)	26	446	37	17	418	40	3	0	3	70	22	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.96	1.00
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509		1805	1615		1830	1615
Flt Permitted	0.24	1.00	1.00	0.22	1.00	1.00		0.95	1.00		0.96	1.00
Satd. Flow (perm)	464	1881	1615	411	1881	1509		1805	1615		1830	1615
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)	28	485	40	18	454	43	3	0	3	76	24	35
RTOR Reduction (vph)	0	0	26	0	0	28	0	0	2	0	0	32
Lane Group Flow (vph)	28	485	14	18	454	15	0	3	1	0	100	3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	33.1	30.9	30.9	33.0	30.6	30.6		26.3	26.3		8.9	8.9
Effective Green, g (s)	33.1	30.9	30.9	33.0	30.6	30.6		26.3	26.3		8.9	8.9
Actuated g/C Ratio	0.37	0.34	0.34	0.37	0.34	0.34		0.29	0.29		0.10	0.10
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	203	645	554	187	639	513		527	471		180	159
v/s Ratio Prot	c0.00	c0.26		0.00	0.24			c0.00			c0.05	
v/s Ratio Perm	0.05		0.01	0.03		0.01			0.00			0.00
v/c Ratio	0.14	0.75	0.02	0.10	0.71	0.03		0.01	0.00		0.56	0.02
Uniform Delay, d1	19.7	26.2	19.6	19.9	25.8	19.8		22.6	22.6		38.7	36.6
Progression Factor	1.00	1.00	1.00	0.84	0.97	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.3	7.9	0.1	0.2	6.4	0.1		0.0	0.0		3.7	0.1
Delay (s)	20.0	34.1	19.7	16.9	31.5	19.9		22.6	22.6		42.3	36.7
Level of Service	C	C	B	B	C	B		C	C		D	D
Approach Delay (s)		32.3			30.0			22.6			40.9	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	455	32	24	451	2	12	0	3	2	1	19
Future Volume (vph)	21	455	32	24	451	2	12	0	3	2	1	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.999			0.975			0.882	
Flt Protected	0.950			0.950				0.961			0.996	
Satd. Flow (prot)	1805	1864	0	1805	1843	0	0	1677	0	0	1669	0
Flt Permitted	0.950			0.950				0.961			0.996	
Satd. Flow (perm)	1805	1864	0	1805	1843	0	0	1677	0	0	1669	0
Adj. Flow (vph)	23	495	35	26	490	2	13	0	3	2	1	21
Lane Group Flow (vph)	23	530	0	26	492	0	0	16	0	0	24	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 37.0%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	455	32	24	451	2	12	0	3	2	1	19
Future Volume (Veh/h)	21	455	32	24	451	2	12	0	3	2	1	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	495	35	26	490	2	13	0	3	2	1	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.92			0.77			0.81	0.81	0.77	0.81	0.81	0.92
vC, conflicting volume	492			530			1122	1102	512	1087	1119	491
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	406			241			815	791	218	771	811	405
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	98			97			94	100	99	99	100	96
cM capacity (veh/h)	1072			1030			224	251	578	248	244	599

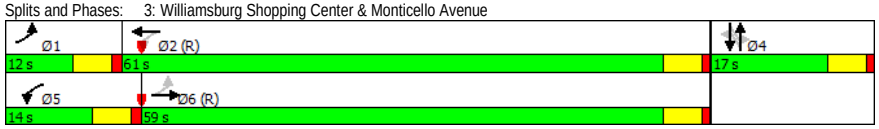
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	23	530	26	492	16	24
Volume Left	23	0	26	0	13	2
Volume Right	0	35	0	2	3	21
cSH	1072	1700	1030	1700	253	508
Volume to Capacity	0.02	0.31	0.03	0.29	0.06	0.05
Queue Length 95th (ft)	2	0	2	0	5	4
Control Delay (s)	8.4	0.0	8.6	0.0	20.2	12.4
Lane LOS	A		A		C	B
Approach Delay (s)	0.4		0.4		20.2	12.4
Approach LOS					C	B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	378	64	103	433	2	38	0	79	0	0	0
Future Volume (vph)	2	378	64	103	433	2	38	0	79	0	0	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.978			0.999			0.850				
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1805	1842	0	1805	1861	0	1805	1615	0	0	1900	0
Flt Permitted	0.492			0.419			0.757					
Satd. Flow (perm)	935	1842	0	796	1861	0	1438	1615	0	0	1900	0
Satd. Flow (RTOR)		17						525				
Adj. Flow (vph)	2	411	70	112	471	2	41	0	86	0	0	0
Lane Group Flow (vph)	2	481	0	112	473	0	41	86	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	12.0	59.0		14.0	61.0		17.0	17.0		17.0	17.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	68.8	65.4		73.5	72.9		8.1	8.1				
Actuated g/C Ratio	0.76	0.73		0.82	0.81		0.09	0.09				
v/c Ratio	0.00	0.36		0.15	0.31		0.32	0.14				
Control Delay	0.0	1.2		1.8	2.3		44.1	0.5				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	0.0	1.2		1.8	2.3		44.1	0.5				
LOS	A	A		A	A		D	A				
Approach Delay		1.2			2.2			14.6				
Approach LOS		A			A			B				

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 4 (4%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.36	
Intersection Signal Delay: 3.1	Intersection LOS: A
Intersection Capacity Utilization 46.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	378	64	103	433	2	38	0	79	0	0	0
Future Volume (vph)	2	378	64	103	433	2	38	0	79	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0				
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Frt	1.00	0.98		1.00	1.00		1.00	0.85				
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1805	1843		1805	1862		1805	1615				
Flt Permitted	0.49	1.00		0.42	1.00		0.76	1.00				
Satd. Flow (perm)	935	1843		796	1862		1439	1615				
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)	2	411	70	112	471	2	41	0	86	0	0	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	79	0	0	0	0
Lane Group Flow (vph)	2	476	0	112	473	0	41	7	0	0	0	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	63.5	62.4		72.5	66.9		7.0	7.0				
Effective Green, g (s)	63.5	62.4		72.5	66.9		7.0	7.0				
Actuated g/C Ratio	0.71	0.69		0.81	0.74		0.08	0.08				
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	670	1277		704	1384		111	125				
v/s Ratio Prot	0.00	c0.26		c0.01	c0.25			0.00				
v/s Ratio Perm	0.00			0.12			c0.03					
v/c Ratio	0.00	0.37		0.16	0.34		0.37	0.05				
Uniform Delay, d1	3.9	5.7		2.4	4.0		39.4	38.4				
Progression Factor	0.02	0.09		0.64	0.45		1.00	1.00				
Incremental Delay, d2	0.0	0.7		0.1	0.7		2.1	0.2				
Delay (s)	0.1	1.2		1.6	2.5		41.5	38.6				
Level of Service	A	A		A	A		D	D				
Approach Delay (s)		1.2			2.3			39.5			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	5.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	455	540	2	3	11
Future Volume (vph)	8	455	540	2	3	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.892	
Flt Protected	0.950				0.990	
Satd. Flow (prot)	1805	1881	1863	0	1678	0
Flt Permitted	0.950				0.990	
Satd. Flow (perm)	1805	1881	1863	0	1678	0
Adj. Flow (vph)	9	495	587	2	3	12
Lane Group Flow (vph)	9	495	589	0	15	0
Sign Control		Free	Free		Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 38.5%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	455	540	2	3	11
Future Volume (Veh/h)	8	455	540	2	3	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	495	587	2	3	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		489	447			
pX, platoon unblocked	0.92				0.96	0.92
vC, conflicting volume	589				1101	588
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	510				896	509
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	98
cM capacity (veh/h)	980				297	523

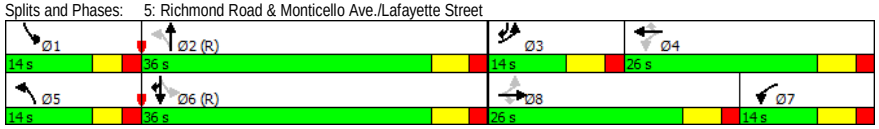
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	9	495	589	15
Volume Left	9	0	0	3
Volume Right	0	0	2	12
cSH	980	1700	1700	454
Volume to Capacity	0.01	0.29	0.35	0.03
Queue Length 95th (ft)	1	0	0	3
Control Delay (s)	8.7	0.0	0.0	13.2
Lane LOS	A			B
Approach Delay (s)	0.2		0.0	13.2
Approach LOS				B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	146	134	8	190	54	90	194	3	107	301	271
Future Volume (vph)	165	146	134	8	190	54	90	194	3	107	301	271
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3339	0	1805	1827	1599
Flt Permitted	0.310			0.656			0.446			0.616		
Satd. Flow (perm)	1120	1900	1583	1246	1845	1524	777	3339	0	1170	1827	1599
Satd. Flow (RTOR)			170			170		2				295
Adj. Flow (vph)	179	159	146	9	207	59	98	211	3	116	327	295
Lane Group Flow (vph)	179	159	146	9	207	59	98	214	0	116	327	295
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Total Split (s)	14.0	26.0	26.0	14.0	26.0	26.0	14.0	36.0		14.0	36.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Act Effct Green (s)	26.0	26.0	26.0	15.1	15.1	15.1	45.8	38.0		46.0	38.1	52.1
Actuated g/C Ratio	0.29	0.29	0.29	0.17	0.17	0.17	0.51	0.42		0.51	0.42	0.58
v/c Ratio	0.34	0.29	0.25	0.03	0.67	0.15	0.21	0.15		0.18	0.42	0.28
Control Delay	18.2	19.0	6.2	29.2	45.5	0.8	11.9	18.5		3.6	13.1	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.3	0.4
Total Delay	18.2	19.0	6.2	29.2	45.5	0.8	11.9	18.5		3.6	13.4	5.5
LOS	B	B	A	C	D	A	B	B		A	B	A
Approach Delay		14.8			35.4			16.5			8.7	
Approach LOS		B			D			B			A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 15 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 15.7	Intersection LOS: B
Intersection Capacity Utilization 58.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



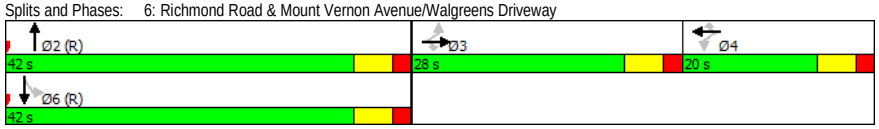
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	146	134	8	190	54	90	194	3	107	301	271
Future Volume (vph)	165	146	134	8	190	54	90	194	3	107	301	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3339		1805	1827	1599
Flt Permitted	0.31	1.00	1.00	0.66	1.00	1.00	0.45	1.00		0.62	1.00	1.00
Satd. Flow (perm)	1121	1900	1583	1247	1845	1524	777	3339		1170	1827	1599
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)	179	159	146	9	207	59	98	211	3	116	327	295
RTOR Reduction (vph)	0	0	104	0	0	46	0	1	0	0	0	143
Lane Group Flow (vph)	179	159	42	9	207	13	98	213	0	116	327	152
Heavy Vehicles (%)	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	26.0	26.0	26.0	19.9	19.9	19.9	39.0	32.2		39.2	32.3	46.3
Effective Green, g (s)	26.0	26.0	26.0	19.9	19.9	19.9	39.0	32.2		39.2	32.3	46.3
Actuated g/C Ratio	0.29	0.29	0.29	0.22	0.22	0.22	0.43	0.36		0.44	0.36	0.51
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	529	548	457	287	407	336	403	1194		558	655	822
v/s Ratio Prot	0.03	c0.08		0.00	c0.11		c0.02	0.06		0.02	c0.18	0.09
v/s Ratio Perm	0.07		0.03	0.01		0.01	0.09			0.07		
v/c Ratio	0.34	0.29	0.09	0.03	0.51	0.04	0.24	0.18		0.21	0.50	0.18
Uniform Delay, d1	24.5	24.8	23.4	27.5	30.8	27.5	15.6	19.8		15.3	22.5	11.7
Progression Factor	0.66	0.68	1.48	1.00	1.00	1.00	1.00	1.00		0.28	0.54	2.64
Incremental Delay, d2	0.4	0.3	0.1	0.0	1.0	0.0	0.3	0.3		0.2	2.6	0.1
Delay (s)	16.6	17.2	34.8	27.5	31.8	27.6	16.0	20.2		4.4	14.9	31.0
Level of Service	B	B	C	C	C	C	B	C		A	B	C
Approach Delay (s)		22.3			30.7			18.8			19.7	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	395	41	50	660	31
Future Volume (vph)	21	5	10	48	9	39	0	395	41	50	660	31
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.986			0.993	
Flt Protected		0.961			0.960					0.950		
Satd. Flow (prot)	0	1826	1615	0	1824	1615	0	3376	0	1805	3518	0
Flt Permitted		0.444			0.741					0.481		
Satd. Flow (perm)	0	844	1615	0	1408	1615	0	3376	0	914	3518	0
Satd. Flow (RTOR)			109			109		15			6	
Adj. Flow (vph)	23	5	11	52	10	42	0	429	45	54	717	34
Lane Group Flow (vph)	0	28	11	0	62	42	0	474	0	54	751	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	28.0	28.0	28.0	20.0	20.0	20.0		42.0		42.0	42.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		10.7	10.7		9.3	9.3		60.4		60.4	60.4	
Actuated g/C Ratio		0.12	0.12		0.10	0.10		0.67		0.67	0.67	
v/c Ratio		0.28	0.04		0.43	0.16		0.21		0.09	0.32	
Control Delay		40.8	0.2		45.8	1.3		8.7		11.2	9.2	
Queue Delay		0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay		40.8	0.2		45.8	1.3		8.7		11.2	9.2	
LOS		D	A		D	A		A		B	A	
Approach Delay		29.4			27.8			8.7			9.3	
Approach LOS		C			C			A			A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 87 (97%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 47.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	395	41	50	660	31
Future Volume (vph)	21	5	10	48	9	39	0	395	41	50	660	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		0.99		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1825	1615		1824	1615		3375		1805	3518	
Flt Permitted		0.44	1.00		0.74	1.00		1.00		0.48	1.00	
Satd. Flow (perm)		844	1615		1408	1615		3375		913	3518	
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)	23	5	11	52	10	42	0	429	45	54	717	34
RTOR Reduction (vph)	0	0	10	0	0	38	0	6	0	0	2	0
Lane Group Flow (vph)	0	28	1	0	62	4	0	468	0	54	749	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		8.2	8.2		8.2	8.2		55.6		55.6	55.6	
Effective Green, g (s)		8.2	8.2		8.2	8.2		55.6		55.6	55.6	
Actuated g/C Ratio		0.09	0.09		0.09	0.09		0.62		0.62	0.62	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		76	147		128	147		2085		564	2173	
v/s Ratio Prot								0.14			c0.21	
v/s Ratio Perm		c0.03	0.00		c0.04	0.00				0.06		
v/c Ratio		0.37	0.01		0.48	0.03		0.22		0.10	0.34	
Uniform Delay, d1		38.5	37.2		38.9	37.3		7.6		7.0	8.4	
Progression Factor		1.00	1.00		1.00	1.00		0.93		0.98	0.89	
Incremental Delay, d2		3.0	0.0		2.9	0.1		0.2		0.3	0.4	
Delay (s)		41.5	37.2		41.8	37.3		7.4		7.2	7.8	
Level of Service		D	D		D	D		A		A	A	
Approach Delay (s)		40.3			40.0			7.4			7.8	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	1	291	0	2	437
Future Volume (vph)	1	1	291	0	2	437
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932					
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1728	0	1743	0	1805	1845
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1728	0	1743	0	1805	1845
Adj. Flow (vph)	1	1	316	0	2	475
Lane Group Flow (vph)	2	0	316	0	2	475
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 33.0%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	1	291	0	2	437
Future Volume (Veh/h)	1	1	291	0	2	437
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	316	0	2	475
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						658
pX, platoon unblocked	0.90					
vC, conflicting volume	795	316			316	
vC1, stage 1 conf vol	316					
vC2, stage 2 conf vol	479					
vCu, unblocked vol	715	316			316	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	558	729			1256	

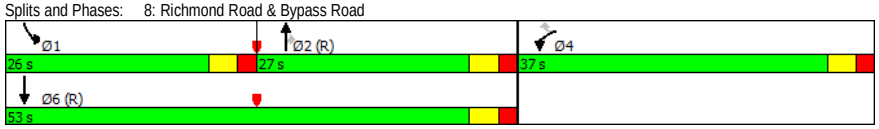
Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	2	316	2	475
Volume Left	1	0	2	0
Volume Right	1	0	0	0
cSH	632	1700	1256	1700
Volume to Capacity	0.00	0.19	0.00	0.28
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	10.7	0.0	7.9	0.0
Lane LOS	B		A	
Approach Delay (s)	10.7	0.0	0.0	
Approach LOS	B			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	33.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	296	378	229	198	328	414
Future Volume (vph)	296	378	229	198	328	414
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Satd. Flow (RTOR)		411		215		
Adj. Flow (vph)	322	411	249	215	357	450
Lane Group Flow (vph)	322	411	249	215	357	450
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	37.0	37.0	27.0	27.0	26.0	53.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	22.0	22.0	38.2	38.2	14.8	58.0
Actuated g/C Ratio	0.24	0.24	0.42	0.42	0.16	0.64
v/c Ratio	0.75	0.59	0.18	0.27	0.65	0.38
Control Delay	41.6	6.4	15.3	5.9	40.5	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	6.4	15.3	5.9	40.5	9.7
LOS	D	A	B	A	D	A
Approach Delay	21.9		10.9			23.3
Approach LOS	C		B			C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 18 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 19.9	Intersection LOS: B
Intersection Capacity Utilization 46.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	296	378	229	198	328	414
Future Volume (vph)	296	378	229	198	328	414
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	322	411	249	215	357	450
RTOR Reduction (vph)	0	311	0	124	0	0
Lane Group Flow (vph)	322	100	249	91	357	450
Heavy Vehicles (%)	2%	3%	9%	3%	4%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	22.0	22.0	38.2	38.2	14.8	58.0
Effective Green, g (s)	22.0	22.0	38.2	38.2	14.8	58.0
Actuated g/C Ratio	0.24	0.24	0.42	0.42	0.16	0.64
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	432	383	1405	665	553	1200
v/s Ratio Prot	c0.18		0.08		c0.11	c0.24
v/s Ratio Perm		0.06		0.06		
v/c Ratio	0.75	0.26	0.18	0.14	0.65	0.38
Uniform Delay, d1	31.4	27.4	16.1	15.8	35.1	7.5
Progression Factor	1.00	1.00	0.81	1.42	1.00	1.00
Incremental Delay, d2	6.9	0.4	0.3	0.4	2.6	0.9
Delay (s)	38.3	27.8	13.3	23.0	37.7	8.4
Level of Service	D	C	B	C	D	A
Approach Delay (s)	32.4		17.8			21.4
Approach LOS	C		B			C

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	21	29	266	410	29
Future Volume (vph)	21	21	29	266	410	29
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932				0.991	
Flt Protected	0.976			0.995		
Satd. Flow (prot)	1728	0	0	1763	1832	0
Flt Permitted	0.976			0.995		
Satd. Flow (perm)	1728	0	0	1763	1832	0
Adj. Flow (vph)	23	23	32	289	446	32
Lane Group Flow (vph)	46	0	0	321	478	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 48.2%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	21	29	266	410	29
Future Volume (Veh/h)	21	21	29	266	410	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	23	32	289	446	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					738	
pX, platoon unblocked	0.90	0.90	0.90			
vC, conflicting volume	815	462	478			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	743	353	370			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	96	97			
cM capacity (veh/h)	339	629	1085			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	46	321	478
Volume Left	23	32	0
Volume Right	23	0	32
cSH	440	1085	1700
Volume to Capacity	0.10	0.03	0.28
Queue Length 95th (ft)	9	2	0
Control Delay (s)	14.1	1.1	0.0
Lane LOS	B	A	
Approach Delay (s)	14.1	1.1	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	48.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	403	55	51	510	30	42
Future Volume (vph)	403	55	51	510	30	42
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984				0.921	
Flt Protected			0.950		0.980	
Satd. Flow (prot)	1853	0	1736	1863	1715	0
Flt Permitted			0.950		0.980	
Satd. Flow (perm)	1853	0	1736	1863	1715	0
Adj. Flow (vph)	438	60	55	554	33	46
Lane Group Flow (vph)	498	0	55	554	79	0
Sign Control	Free			Free	Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 42.1%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	403	55	51	510	30	42
Future Volume (Veh/h)	403	55	51	510	30	42
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	438	60	55	554	33	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	625			311		
pX, platoon unblocked			0.93		0.94	0.93
vC, conflicting volume			498		1132	468
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			422		940	390
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		87	93
cM capacity (veh/h)			1047		263	616

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	498	55	554	79
Volume Left	0	55	0	33
Volume Right	60	0	0	46
cSH	1700	1047	1700	395
Volume to Capacity	0.29	0.05	0.33	0.20
Queue Length 95th (ft)	0	4	0	18
Control Delay (s)	0.0	8.6	0.0	16.4
Lane LOS		A		C
Approach Delay (s)	0.0	0.8		16.4
Approach LOS				C

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	51	41	50	242	395	68
Future Volume (vph)	51	41	50	242	395	68
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.980	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1615	1770	1759	1795	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1615	1770	1759	1795	0
Adj. Flow (vph)	55	45	54	263	429	74
Lane Group Flow (vph)	55	45	54	263	503	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 41.6%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	51	41	50	242	395	68
Future Volume (Veh/h)	51	41	50	242	395	68
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	45	54	263	429	74
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					328	
pX, platoon unblocked	0.86	0.86	0.86			
vC, conflicting volume	837	466	503			
vC1, stage 1 conf vol	466					
vC2, stage 2 conf vol	371					
vCu, unblocked vol	730	298	341			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	93	95			
cM capacity (veh/h)	533	642	1048			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	55	45	54	263	503
Volume Left	55	0	54	0	0
Volume Right	0	45	0	0	74
cSH	533	642	1048	1700	1700
Volume to Capacity	0.10	0.07	0.05	0.15	0.30
Queue Length 95th (ft)	9	6	4	0	0
Control Delay (s)	12.5	11.0	8.6	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	11.9		1.5		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	149	394	149	126	344	100	26	27	136	47
Average Queue (ft)	24	187	27	15	172	24	2	2	62	17
95th Queue (ft)	88	330	103	65	293	86	13	14	109	42
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)	0	14	0	0	21	0				
Queuing Penalty (veh)	0	9	0	0	12	1				

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	LTR	LTR
Maximum Queue (ft)	31	8	40	60	42
Average Queue (ft)	8	0	8	14	16
95th Queue (ft)	30	6	31	44	41
Link Distance (ft)		452		311	426
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	225		190		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	L	TR	L	TR	L	TR
Maximum Queue (ft)	13	49	88	112	95	73
Average Queue (ft)	1	4	31	24	34	40
95th Queue (ft)	8	26	67	76	75	70
Link Distance (ft)		399		432	399	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		200			75
Storage Blk Time (%)					1	0
Queuing Penalty (veh)					1	0

Intersection: 4: Monticello Avenue/Monticello Ave. & Garrison Drive

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	33	7	34
Average Queue (ft)	4	0	11
95th Queue (ft)	21	5	34
Link Distance (ft)		66	471
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	TR	L	T
Maximum Queue (ft)	113	145	174	98	73	247	138	118	117	102	160	238
Average Queue (ft)	22	61	65	43	9	114	31	46	43	35	39	98
95th Queue (ft)	70	112	125	76	41	197	87	92	92	76	105	197
Link Distance (ft)			245	245		430			236			282
Upstream Blk Time (%)			0									0
Queuing Penalty (veh)			0									0
Storage Bay Dist (ft)	150	150			125		225	150		200	225	
Storage Blk Time (%)	0	0	0		0	7	0	0	0		0	0
Queuing Penalty (veh)	0	0	1		0	5	0	0	0		0	1

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	SB
Directions Served	R
Maximum Queue (ft)	193
Average Queue (ft)	71
95th Queue (ft)	159
Link Distance (ft)	282
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	62	32	86	50	77	100	69	180	156
Average Queue (ft)	21	8	48	32	16	25	19	61	47
95th Queue (ft)	52	29	91	63	51	72	54	145	117
Link Distance (ft)		530	71		282	282		1299	1299
Upstream Blk Time (%)			8						
Queuing Penalty (veh)			0						
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)			16	1			0	5	
Queuing Penalty (veh)			6	1			0	2	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	25	22	8
Average Queue (ft)	2	1	0
95th Queue (ft)	13	13	4
Link Distance (ft)	288	19	
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	L	T
Maximum Queue (ft)	254	14	118	117	57	180	216	254
Average Queue (ft)	135	1	59	52	2	72	128	106
95th Queue (ft)	218	15	102	103	30	166	194	201
Link Distance (ft)	870	870	1299	1299			812	812
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)					250	450		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 16: Richmond Road & Existing Access Driveway #3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	56	110	11
Average Queue (ft)	21	16	1
95th Queue (ft)	45	62	7
Link Distance (ft)	117	218	19
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: Existing Access Driveway #1 & Monticello Ave.

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	17	55	56	70
Average Queue (ft)	1	17	5	32
95th Queue (ft)	9	46	31	57
Link Distance (ft)	66		245	240
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		1	0	
Queuing Penalty (veh)		4	0	

Intersection: 22: Richmond Road & Existing Access Driveway #2

Movement	EB	EB	NB	SB
Directions Served	L	R	L	TR
Maximum Queue (ft)	58	49	51	10
Average Queue (ft)	24	22	15	0
95th Queue (ft)	48	46	43	5
Link Distance (ft)	135	135		236
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	
Storage Blk Time (%)				
Queuing Penalty (veh)				

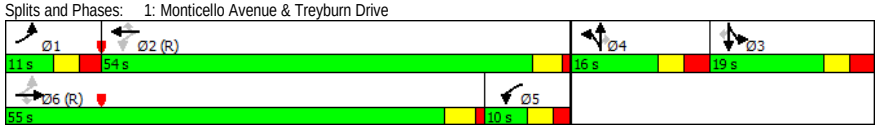
Network Summary

Network wide Queuing Penalty: 43

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	817	13	5	829	100	23	14	9	79	5	55
Future Volume (vph)	78	817	13	5	829	100	23	14	9	79	5	55
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.970			0.955	
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509	0	1843	1615	0	1814	1615
Flt Permitted	0.075			0.177				0.970			0.955	
Satd. Flow (perm)	142	1881	1615	336	1881	1509	0	1843	1615	0	1814	1615
Satd. Flow (RTOR)			153			158			196			196
Adj. Flow (vph)	85	888	14	5	901	109	25	15	10	86	5	60
Lane Group Flow (vph)	85	888	14	5	901	109	0	40	10	0	91	60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	11.0	55.0	55.0	10.0	54.0	54.0	16.0	16.0	16.0	19.0	19.0	19.0
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	62.9	63.9	63.9	55.8	56.3	56.3		10.0	10.0		10.1	10.1
Actuated g/C Ratio	0.63	0.64	0.64	0.56	0.56	0.56		0.10	0.10		0.10	0.10
v/c Ratio	0.44	0.74	0.01	0.02	0.85	0.12		0.22	0.03		0.50	0.18
Control Delay	18.0	20.0	0.0	19.4	29.5	3.6		44.6	0.1		51.5	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	18.0	20.0	0.0	19.4	29.5	3.6		44.6	0.1		51.5	1.1
LOS	B	C	A	B	C	A		D	A		D	A
Approach Delay		19.6			26.7			35.7			31.5	
Approach LOS		B			C			D			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 99 (99%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 24.0	Intersection LOS: C
Intersection Capacity Utilization 72.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	817	13	5	829	100	23	14	9	79	5	55
Future Volume (vph)	78	817	13	5	829	100	23	14	9	79	5	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.95	1.00
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509		1842	1615		1814	1615
Flt Permitted	0.07	1.00	1.00	0.18	1.00	1.00		0.97	1.00		0.95	1.00
Satd. Flow (perm)	142	1881	1615	336	1881	1509		1842	1615		1814	1615
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)	85	888	14	5	901	109	25	15	10	86	5	60
RTOR Reduction (vph)	0	0	6	0	0	50	0	0	9	0	0	55
Lane Group Flow (vph)	85	888	8	5	901	59	0	40	1	0	91	5
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	58.7	58.7	58.7	54.0	54.0	54.0		10.0	10.0		8.8	8.8
Effective Green, g (s)	58.7	58.7	58.7	54.0	54.0	54.0		10.0	10.0		8.8	8.8
Actuated g/C Ratio	0.59	0.59	0.59	0.54	0.54	0.54		0.10	0.10		0.09	0.09
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	169	1104	948	196	1015	814		184	161		159	142
v/s Ratio Prot	0.03	c0.47		0.00	c0.48			c0.02			c0.05	
v/s Ratio Perm	0.27		0.01	0.01		0.04			0.00			0.00
v/c Ratio	0.50	0.80	0.01	0.03	0.89	0.07		0.22	0.01		0.57	0.04
Uniform Delay, d1	20.9	16.2	8.6	25.4	20.3	11.0		41.4	40.5		43.8	41.7
Progression Factor	1.00	1.00	1.00	1.42	0.97	4.50		1.00	1.00		1.00	1.00
Incremental Delay, d2	2.3	6.3	0.0	0.0	10.0	0.1		2.7	0.1		4.9	0.1
Delay (s)	23.2	22.4	8.6	36.1	29.7	49.7		44.1	40.6		48.7	41.8
Level of Service	C	C	A	D	C	D		D	D		D	D
Approach Delay (s)		22.3			31.9			43.4			46.0	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	836	28	9	863	11	17	1	24	10	1	48
Future Volume (vph)	51	836	28	9	863	11	17	1	24	10	1	48
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.998			0.922			0.890	
Flt Protected	0.950			0.950				0.980			0.991	
Satd. Flow (prot)	1805	1872	0	1805	1842	0	0	1442	0	0	1676	0
Flt Permitted	0.950			0.950				0.980			0.991	
Satd. Flow (perm)	1805	1872	0	1805	1842	0	0	1442	0	0	1676	0
Adj. Flow (vph)	55	909	30	10	938	12	18	1	26	11	1	52
Lane Group Flow (vph)	55	939	0	10	950	0	0	45	0	0	64	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 57.8%	ICU Level of Service B	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	836	28	9	863	11	17	1	24	10	1	48
Future Volume (Veh/h)	51	836	28	9	863	11	17	1	24	10	1	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	909	30	10	938	12	18	1	26	11	1	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.68			0.59			0.75	0.75	0.59	0.75	0.75	0.68
vC, conflicting volume	950			939			2044	2004	924	2010	2013	944
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	696			545			1276	1222	520	1230	1234	687
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	91			98			78	99	91	89	99	83
cM capacity (veh/h)	622			608			82	121	294	97	119	308

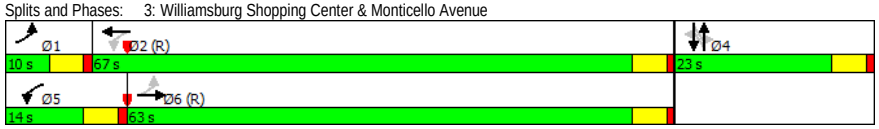
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	55	939	10	950	45	64
Volume Left	55	0	10	0	18	11
Volume Right	0	30	0	12	26	52
cSH	622	1700	608	1700	142	220
Volume to Capacity	0.09	0.55	0.02	0.56	0.32	0.29
Queue Length 95th (ft)	7	0	1	0	31	29
Control Delay (s)	11.3	0.0	11.0	0.0	41.5	27.9
Lane LOS	B		B		E	D
Approach Delay (s)	0.6		0.1		41.5	27.9
Approach LOS					E	D

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	701	112	163	731	18	106	1	162	12	8	35
Future Volume (vph)	30	701	112	163	731	18	106	1	162	12	8	35
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.996			0.851			0.914	
Flt Protected	0.950			0.950			0.950				0.989	
Satd. Flow (prot)	1805	1844	0	1805	1856	0	1805	1617	0	0	1717	0
Flt Permitted	0.266			0.168			0.794				0.830	
Satd. Flow (perm)	505	1844	0	319	1856	0	1509	1617	0	0	1441	0
Satd. Flow (RTOR)		14			2			176			38	
Adj. Flow (vph)	33	762	122	177	795	20	115	1	176	13	9	38
Lane Group Flow (vph)	33	884	0	177	815	0	115	177	0	0	60	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	10.0	63.0		14.0	67.0		23.0	23.0		23.0	23.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	69.7	64.0		75.7	70.5		13.1	13.1			13.1	
Actuated g/C Ratio	0.70	0.64		0.76	0.70		0.13	0.13			0.13	
v/c Ratio	0.08	0.75		0.49	0.62		0.58	0.49			0.27	
Control Delay	2.4	8.3		8.9	15.2		52.1	10.6			21.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	2.4	8.3		8.9	15.2		52.1	10.6			21.1	
LOS	A	A		A	B		D	B			C	
Approach Delay		8.1			14.1			26.9			21.1	
Approach LOS		A			B			C			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 5 (5%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 13.5	Intersection LOS: B
Intersection Capacity Utilization 79.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	701	112	163	731	18	106	1	162	12	8	35
Future Volume (vph)	30	701	112	163	731	18	106	1	162	12	8	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.85			0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1805	1845		1805	1857		1805	1617			1719	
Flt Permitted	0.27	1.00		0.17	1.00		0.79	1.00			0.83	
Satd. Flow (perm)	505	1845		319	1857		1508	1617			1442	
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)	33	762	122	177	795	20	115	1	176	13	9	38
RTOR Reduction (vph)	0	5	0	0	1	0	0	153	0	0	33	0
Lane Group Flow (vph)	33	879	0	177	814	0	115	24	0	0	27	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	67.4	64.0		76.4	68.5		13.1	13.1			13.1	
Effective Green, g (s)	67.4	64.0		76.4	68.5		13.1	13.1			13.1	
Actuated g/C Ratio	0.67	0.64		0.76	0.68		0.13	0.13			0.13	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	384	1180		361	1272		197	211			188	
v/s Ratio Prot	0.00	c0.48		c0.04	c0.44			0.01				
v/s Ratio Perm	0.05			0.34			c0.08				0.02	
v/c Ratio	0.09	0.74		0.49	0.64		0.58	0.11			0.14	
Uniform Delay, d1	6.9	12.4		11.2	8.8		40.9	38.3			38.5	
Progression Factor	0.56	0.33		1.41	1.32		1.00	1.00			1.00	
Incremental Delay, d2	0.1	3.2		0.9	2.0		4.4	0.2			0.4	
Delay (s)	3.9	7.3		16.6	13.7		45.2	38.6			38.8	
Level of Service	A	A		B	B		D	D			D	
Approach Delay (s)		7.2			14.2			41.2			38.8	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	22	886	924	37	17	15
Future Volume (vph)	22	886	924	37	17	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.936	
Flt Protected	0.950				0.974	
Satd. Flow (prot)	1805	1881	1855	0	1732	0
Flt Permitted	0.950				0.974	
Satd. Flow (perm)	1805	1881	1855	0	1732	0
Adj. Flow (vph)	24	963	1004	40	18	16
Lane Group Flow (vph)	24	963	1044	0	34	0
Sign Control		Free	Free		Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 60.9%	ICU Level of Service B	
Analysis Period (min) 15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	886	924	37	17	15
Future Volume (Veh/h)	22	886	924	37	17	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	963	1004	40	18	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)		489	447			
pX, platoon unblocked	0.75				0.79	0.75
vC, conflicting volume	1044				2035	1024
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	888				1451	861
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				84	94
cM capacity (veh/h)	575				110	267

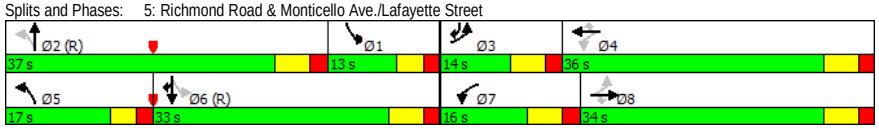
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	24	963	1044	34
Volume Left	24	0	0	18
Volume Right	0	0	40	16
cSH	575	1700	1700	152
Volume to Capacity	0.04	0.57	0.61	0.22
Queue Length 95th (ft)	3	0	0	20
Control Delay (s)	11.5	0.0	0.0	35.3
Lane LOS	B			E
Approach Delay (s)	0.3		0.0	35.3
Approach LOS				E

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	343	352	166	14	341	172	214	470	15	103	344	428
Future Volume (vph)	343	352	166	14	341	172	214	470	15	103	344	428
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3333	0	1805	1827	1599
Flt Permitted	0.263			0.402			0.213			0.456		
Satd. Flow (perm)	950	1900	1583	764	1845	1524	371	3333	0	866	1827	1599
Satd. Flow (RTOR)			218			218		3				202
Adj. Flow (vph)	373	383	180	15	371	187	233	511	16	112	374	465
Lane Group Flow (vph)	373	383	180	15	371	187	233	527	0	112	374	465
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Total Split (s)	14.0	34.0	34.0	16.0	36.0	36.0	17.0	37.0		13.0	33.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Act Effct Green (s)	36.8	33.6	33.6	33.2	25.2	25.2	36.8	35.8		31.4	30.4	44.4
Actuated g/C Ratio	0.37	0.34	0.34	0.33	0.25	0.25	0.37	0.36		0.31	0.30	0.44
v/c Ratio	0.68	0.60	0.27	0.04	0.80	0.34	0.76	0.44		0.32	0.67	0.57
Control Delay	22.3	26.5	2.4	17.0	47.9	4.1	43.1	26.8		19.8	27.0	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.6	0.3
Total Delay	22.3	26.5	2.4	17.0	47.9	4.1	43.1	26.9		19.8	27.6	9.6
LOS	C	C	A	B	D	A	D	C		B	C	A
Approach Delay		20.2			32.8			31.8			17.9	
Approach LOS		C			C			C			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 94 (94%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 24.5	Intersection LOS: C
Intersection Capacity Utilization 76.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



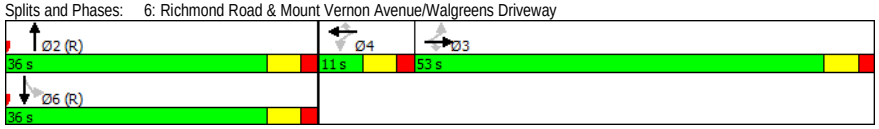
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	343	352	166	14	341	172	214	470	15	103	344	428
Future Volume (vph)	343	352	166	14	341	172	214	470	15	103	344	428
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3335		1805	1827	1599
Flt Permitted	0.26	1.00	1.00	0.40	1.00	1.00	0.21	1.00		0.46	1.00	1.00
Satd. Flow (perm)	949	1900	1583	764	1845	1524	371	3335		867	1827	1599
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)	373	383	180	15	371	187	233	511	16	112	374	465
RTOR Reduction (vph)	0	0	120	0	0	133	0	2	0	0	0	120
Lane Group Flow (vph)	373	383	60	15	371	54	233	525	0	112	374	345
Heavy Vehicles (%)	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	41.6	33.6	33.6	32.0	28.8	28.8	32.2	32.2		27.8	26.8	40.8
Effective Green, g (s)	41.6	33.6	33.6	32.0	28.8	28.8	32.2	32.2		27.8	26.8	40.8
Actuated g/C Ratio	0.42	0.34	0.34	0.32	0.29	0.29	0.32	0.32		0.28	0.27	0.41
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	593	638	531	277	531	438	291	1073		316	489	652
v/s Ratio Prot	0.05	c0.20		0.00	c0.20		c0.11	0.16		0.03	c0.20	c0.22
v/s Ratio Perm	0.21		0.04	0.02		0.04	0.15			0.07		
v/c Ratio	0.63	0.60	0.11	0.05	0.70	0.12	0.80	0.49		0.35	0.76	0.53
Uniform Delay, d1	21.0	27.6	22.9	23.6	31.7	26.3	28.0	27.3		29.9	33.7	22.4
Progression Factor	0.80	0.80	0.82	1.00	1.00	1.00	1.00	1.00		0.58	0.63	0.55
Incremental Delay, d2	1.7	1.3	0.1	0.1	4.0	0.1	14.5	1.6		0.6	10.1	0.7
Delay (s)	18.5	23.5	18.9	23.7	35.7	26.4	42.6	28.9		18.1	31.5	13.0
Level of Service	B	C	B	C	D	C	D	C		B	C	B
Approach Delay (s)		20.6			32.4			33.1			20.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	1053	15	29	891	70
Future Volume (vph)	95	5	54	11	12	52	0	1053	15	29	891	70
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.989	
Flt Protected		0.954			0.977					0.950		
Satd. Flow (prot)	0	1813	1615	0	1856	1615	0	3402	0	1805	3505	0
Flt Permitted		0.718			0.740					0.198		
Satd. Flow (perm)	0	1364	1615	0	1406	1615	0	3402	0	376	3505	0
Satd. Flow (RTOR)			98			98		1			8	
Adj. Flow (vph)	103	5	59	12	13	57	0	1145	16	32	968	76
Lane Group Flow (vph)	0	108	59	0	25	57	0	1161	0	32	1044	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	53.0	53.0	53.0	11.0	11.0	11.0		36.0		36.0	36.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		13.3	13.3		5.0	5.0		65.9		65.9	65.9	
Actuated g/C Ratio		0.13	0.13		0.05	0.05		0.66		0.66	0.66	
v/c Ratio		0.60	0.20		0.36	0.33		0.52		0.13	0.45	
Control Delay		53.6	3.7		60.3	7.7		10.9		13.1	11.7	
Queue Delay		0.0	0.0		0.0	0.0		0.3		0.0	0.0	
Total Delay		53.6	3.7		60.3	7.7		11.2		13.1	11.7	
LOS		D	A		E	A		B		B	B	
Approach Delay		36.0			23.8			11.2			11.7	
Approach LOS		D			C			B			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 13.5	Intersection LOS: B
Intersection Capacity Utilization 54.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	1053	15	29	891	70
Future Volume (vph)	95	5	54	11	12	52	0	1053	15	29	891	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		1.00		1.00	0.99	
Flt Protected		0.95	1.00		0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1814	1615		1855	1615		3401		1805	3506	
Flt Permitted		0.72	1.00		0.74	1.00		1.00		0.20	1.00	
Satd. Flow (perm)		1364	1615		1406	1615		3401		377	3506	
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)	103	5	59	12	13	57	0	1145	16	32	968	76
RTOR Reduction (vph)	0	0	51	0	0	55	0	0	0	0	3	0
Lane Group Flow (vph)	0	108	8	0	25	2	0	1161	0	32	1041	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		13.3	13.3		4.0	4.0		64.7		64.7	64.7	
Effective Green, g (s)		13.3	13.3		4.0	4.0		64.7		64.7	64.7	
Actuated g/C Ratio		0.13	0.13		0.04	0.04		0.65		0.65	0.65	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		181	214		56	64		2200		243	2268	
v/s Ratio Prot								c0.34			0.30	
v/s Ratio Perm		c0.08	0.00		c0.02	0.00				0.08		
v/c Ratio		0.60	0.04		0.45	0.04		0.53		0.13	0.46	
Uniform Delay, d1		40.8	37.8		46.9	46.1		9.5		6.8	8.9	
Progression Factor		1.00	1.00		1.00	1.00		0.99		1.32	1.18	
Incremental Delay, d2		5.2	0.1		5.6	0.2		0.8		0.9	0.5	
Delay (s)		46.0	37.8		52.5	46.4		10.2		9.9	10.9	
Level of Service		D	D		D	D		B		A	B	
Approach Delay (s)		43.1			48.2			10.2			10.9	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	5	670	4	10	482
Future Volume (vph)	2	5	670	4	10	482
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.904		0.999			
Flt Protected	0.986				0.950	
Satd. Flow (prot)	1694	0	1742	0	1805	1845
Flt Permitted	0.986				0.950	
Satd. Flow (perm)	1694	0	1742	0	1805	1845
Adj. Flow (vph)	2	5	728	4	11	524
Lane Group Flow (vph)	7	0	732	0	11	524
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 45.5%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	5	670	4	10	482
Future Volume (Veh/h)	2	5	670	4	10	482
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	5	728	4	11	524
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						658
pX, platoon unblocked	0.86					
vC, conflicting volume	1276	730			732	
vC1, stage 1 conf vol	730					
vC2, stage 2 conf vol	546					
vCu, unblocked vol	1240	730			732	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			99	
cM capacity (veh/h)	394	426			882	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	7	732	11	524
Volume Left	2	0	11	0
Volume Right	5	4	0	0
cSH	416	1700	882	1700
Volume to Capacity	0.02	0.43	0.01	0.31
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	13.8	0.0	9.1	0.0
Lane LOS	B		A	
Approach Delay (s)	13.8	0.0	0.2	
Approach LOS	B			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	408	684	740	419	634	591
Future Volume (vph)	408	684	740	419	634	591
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Satd. Flow (RTOR)		492		455		
Adj. Flow (vph)	443	743	804	455	689	642
Lane Group Flow (vph)	443	743	804	455	689	642
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	40.0	40.0	33.0	33.0	27.0	60.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	30.3	30.3	31.6	31.6	23.1	59.7
Actuated g/C Ratio	0.30	0.30	0.32	0.32	0.23	0.60
v/c Ratio	0.83	0.91	0.77	0.56	0.89	0.58
Control Delay	45.6	27.0	22.9	4.3	52.5	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.6	27.0	22.9	4.3	52.5	16.1
LOS	D	C	C	A	D	B
Approach Delay	34.0		16.2			34.9
Approach LOS	C		B			C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 15 (15%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 28.4	Intersection LOS: C
Intersection Capacity Utilization 73.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	408	684	740	419	634	591
Future Volume (vph)	408	684	740	419	634	591
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	443	743	804	455	689	642
RTOR Reduction (vph)	0	343	0	311	0	0
Lane Group Flow (vph)	443	400	804	144	689	642
Heavy Vehicles (%)	2%	3%	9%	3%	4%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	30.3	30.3	31.6	31.6	23.1	59.7
Effective Green, g (s)	30.3	30.3	31.6	31.6	23.1	59.7
Actuated g/C Ratio	0.30	0.30	0.32	0.32	0.23	0.60
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	536	475	1046	495	777	1112
v/s Ratio Prot	0.25		c0.24		c0.20	0.34
v/s Ratio Perm		c0.26		0.09		
v/c Ratio	0.83	0.84	0.77	0.29	0.89	0.58
Uniform Delay, d1	32.4	32.6	30.9	25.8	37.2	12.4
Progression Factor	1.00	1.00	0.53	0.57	1.00	1.00
Incremental Delay, d2	10.1	12.8	4.9	1.3	11.9	2.2
Delay (s)	42.5	45.4	21.3	16.1	49.1	14.6
Level of Service	D	D	C	B	D	B
Approach Delay (s)	44.3		19.4			32.4
Approach LOS	D		B			C

Intersection Summary			
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	40	41	634	443	41
Future Volume (vph)	40	40	41	634	443	41
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932				0.988	
Flt Protected	0.976			0.997		
Satd. Flow (prot)	1728	0	0	1877	1843	0
Flt Permitted	0.976			0.997		
Satd. Flow (perm)	1728	0	0	1877	1843	0
Adj. Flow (vph)	43	43	45	689	482	45
Lane Group Flow (vph)	86	0	0	734	527	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 76.1%		ICU Level of Service D
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	40	41	634	443	41
Future Volume (Veh/h)	40	40	41	634	443	41
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	43	45	689	482	45
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					738	
pX, platoon unblocked	0.87	0.87	0.87			
vC, conflicting volume	1284	504	527			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1250	352	378			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	73	93	96			
cM capacity (veh/h)	160	604	1033			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	86	734	527
Volume Left	43	45	0
Volume Right	43	0	45
cSH	253	1033	1700
Volume to Capacity	0.34	0.04	0.31
Queue Length 95th (ft)	36	3	0
Control Delay (s)	26.4	1.1	0.0
Lane LOS	D	A	
Approach Delay (s)	26.4	1.1	0.0
Approach LOS	D		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	787	114	89	915	48	79
Future Volume (vph)	787	114	89	915	48	79
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983				0.916	
Flt Protected			0.950		0.982	
Satd. Flow (prot)	1868	0	1805	1881	1696	0
Flt Permitted			0.950		0.982	
Satd. Flow (perm)	1868	0	1805	1881	1696	0
Adj. Flow (vph)	855	124	97	995	52	86
Lane Group Flow (vph)	979	0	97	995	138	0
Sign Control	Free			Free	Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 70.8%	ICU Level of Service C	
Analysis Period (min) 15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	787	114	89	915	48	79
Future Volume (Veh/h)	787	114	89	915	48	79
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	855	124	97	995	52	86
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	625			311		
pX, platoon unblocked			0.66		0.80	0.66
vC, conflicting volume			979		2106	917
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			715		1508	621
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			84		41	74
cM capacity (veh/h)			594		89	326

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	979	97	995	138
Volume Left	0	97	0	52
Volume Right	124	0	0	86
cSH	1700	594	1700	162
Volume to Capacity	0.58	0.16	0.59	0.85
Queue Length 95th (ft)	0	15	0	146
Control Delay (s)	0.0	12.2	0.0	91.7
Lane LOS		B		F
Approach Delay (s)	0.0	1.1		91.7
Approach LOS				F

Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	123	80	90	585	414	116
Future Volume (vph)	123	80	90	585	414	116
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.970	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1568	1805	1881	1815	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1568	1805	1881	1815	0
Adj. Flow (vph)	134	87	98	636	450	126
Lane Group Flow (vph)	134	87	98	636	576	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 50.6%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	123	80	90	585	414	116
Future Volume (Veh/h)	123	80	90	585	414	116
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	134	87	98	636	450	126
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					328	
pX, platoon unblocked	0.81	0.81	0.81			
vC, conflicting volume	1345	513	576			
vC1, stage 1 conf vol	513					
vC2, stage 2 conf vol	832					
vCu, unblocked vol	1309	282	359			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	61	86	90			
cM capacity (veh/h)	340	611	981			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	134	87	98	636	576
Volume Left	134	0	98	0	0
Volume Right	0	87	0	0	126
cSH	340	611	981	1700	1700
Volume to Capacity	0.39	0.14	0.10	0.37	0.34
Queue Length 95th (ft)	46	12	8	0	0
Control Delay (s)	22.3	11.9	9.1	0.0	0.0
Lane LOS	C	B	A		
Approach Delay (s)	18.2		1.2		0.0
Approach LOS	C				

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	149	510	115	89	462	100	83	48	131	84
Average Queue (ft)	61	261	6	6	292	32	30	9	64	31
95th Queue (ft)	138	475	47	45	473	100	67	34	113	66
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)		0			1					
Queuing Penalty (veh)		0			13					
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)	0	15	0	0	28	0	0	0		
Queuing Penalty (veh)	1	14	0	0	30	3	0	0		

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	70	99	49	211	107	97
Average Queue (ft)	27	7	6	23	40	39
95th Queue (ft)	60	60	31	137	89	84
Link Distance (ft)		452		399	311	426
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				1		
Storage Bay Dist (ft)	225		190			
Storage Blk Time (%)		0	0	1		
Queuing Penalty (veh)		0	0	0		

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (ft)	101	380	188	292	258	75	91
Average Queue (ft)	18	168	75	130	108	64	35
95th Queue (ft)	66	333	151	243	215	91	72
Link Distance (ft)		399		432	399		182
Upstream Blk Time (%)		0					
Queuing Penalty (veh)		3					
Storage Bay Dist (ft)	200		200			75	
Storage Blk Time (%)	0	6	0	1	20	8	
Queuing Penalty (veh)	0	2	1	2	33	9	

Intersection: 4: Monticello Avenue/Monticello Ave. & Garrison Drive

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	66	303	34	91
Average Queue (ft)	14	32	3	31
95th Queue (ft)	46	158	21	69
Link Distance (ft)		432	66	471
Upstream Blk Time (%)		0	0	
Queuing Penalty (veh)		0	0	
Storage Bay Dist (ft)	200			
Storage Blk Time (%)		1		
Queuing Penalty (veh)		0		

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	TR	L	T
Maximum Queue (ft)	140	150	256	111	116	420	225	161	250	200	224	299
Average Queue (ft)	81	118	161	50	19	209	97	125	145	120	78	182
95th Queue (ft)	142	174	271	91	74	354	228	176	259	215	198	301
Link Distance (ft)			245	245		430			236			282
Upstream Blk Time (%)			3			1			4			2
Queuing Penalty (veh)			14			0			27			11
Storage Bay Dist (ft)	150	150			125		225	150		200	225	
Storage Blk Time (%)	0	1	10		0	26	0	11	4	0	0	6
Queuing Penalty (veh)	1	4	35		0	48	1	55	18	2	0	6

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	SB
Directions Served	R
Maximum Queue (ft)	292
Average Queue (ft)	169
95th Queue (ft)	284
Link Distance (ft)	282
Upstream Blk Time (%)	2
Queuing Penalty (veh)	8
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	98	153	80	50	185	210	74	251	274
Average Queue (ft)	64	38	28	35	78	109	18	118	118
95th Queue (ft)	107	98	68	63	152	185	53	222	228
Link Distance (ft)		530	71		282	282		1299	1299
Upstream Blk Time (%)			2			0			
Queuing Penalty (veh)			0			0			
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)	4	0	4	3			0	13	
Queuing Penalty (veh)	2	0	2	1			0	4	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (ft)	28	84	35	4
Average Queue (ft)	6	27	5	0
95th Queue (ft)	25	76	25	3
Link Distance (ft)	288	19		256
Upstream Blk Time (%)		1		
Queuing Penalty (veh)		9		
Storage Bay Dist (ft)			100	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	L	T
Maximum Queue (ft)	483	691	330	374	250	399	456	369
Average Queue (ft)	206	267	193	194	119	220	269	201
95th Queue (ft)	386	620	288	316	280	351	406	331
Link Distance (ft)	870	870	1299	1299			812	812
Upstream Blk Time (%)	0	0						
Queuing Penalty (veh)	0	0						
Storage Bay Dist (ft)					250	450		
Storage Blk Time (%)				2	0	0	0	
Queuing Penalty (veh)				7	1	0	1	

Intersection: 16: Richmond Road & Existing Access Driveway #3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	102	188	22
Average Queue (ft)	40	37	1
95th Queue (ft)	79	122	11
Link Distance (ft)	117	218	19
Upstream Blk Time (%)	1	0	0
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: Existing Access Driveway #1 & Monticello Ave.

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	81	87	72	270
Average Queue (ft)	23	40	4	242
95th Queue (ft)	74	76	58	297
Link Distance (ft)	66		245	240
Upstream Blk Time (%)	3		0	86
Queuing Penalty (veh)	22		3	0
Storage Bay Dist (ft)		100		
Storage Blk Time (%)		1	0	
Queuing Penalty (veh)		6	0	

Intersection: 22: Richmond Road & Existing Access Driveway #2

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	148	121	91	205	28
Average Queue (ft)	86	44	35	26	2
95th Queue (ft)	162	96	74	123	15
Link Distance (ft)	135	135		256	236
Upstream Blk Time (%)	21	2		0	
Queuing Penalty (veh)	0	0		2	
Storage Bay Dist (ft)			100		
Storage Blk Time (%)			0	2	
Queuing Penalty (veh)			1	2	

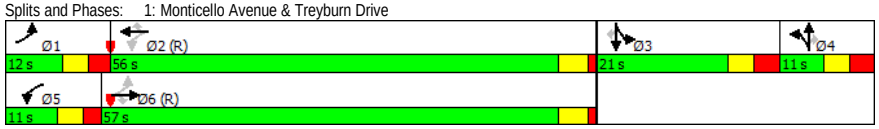
Network Summary

Network wide Queuing Penalty: 406

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	426	37	17	416	42	3	0	3	68	22	32
Future Volume (vph)	26	426	37	17	416	42	3	0	3	68	22	32
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.950			0.964	
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509	0	1805	1615	0	1832	1615
Flt Permitted	0.382			0.410				0.950			0.964	
Satd. Flow (perm)	726	1881	1615	779	1881	1509	0	1805	1615	0	1832	1615
Satd. Flow (RTOR)			153			153			136			136
Adj. Flow (vph)	28	463	40	18	452	46	3	0	3	74	24	35
Lane Group Flow (vph)	28	463	40	18	452	46	0	3	3	0	98	35
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	12.0	57.0	57.0	11.0	56.0	56.0	11.0	11.0	11.0	21.0	21.0	21.0
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	60.7	59.1	59.1	59.5	56.4	56.4		11.9	11.9		10.7	10.7
Actuated g/C Ratio	0.61	0.59	0.59	0.60	0.56	0.56		0.12	0.12		0.11	0.11
v/c Ratio	0.06	0.42	0.04	0.03	0.43	0.05		0.01	0.01		0.50	0.12
Control Delay	7.5	13.6	0.1	8.8	16.0	0.3		44.3	0.0		50.4	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	7.5	13.6	0.1	8.8	16.0	0.3		44.3	0.0		50.4	0.8
LOS	A	B	A	A	B	A		D	A		D	A
Approach Delay		12.2			14.3			22.2			37.4	
Approach LOS		B			B			C			D	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 74 (74%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 16.0	Intersection LOS: B
Intersection Capacity Utilization 45.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	426	37	17	416	42	3	0	3	68	22	32
Future Volume (vph)	26	426	37	17	416	42	3	0	3	68	22	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.96	1.00
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509		1805	1615		1831	1615
Flt Permitted	0.38	1.00	1.00	0.41	1.00	1.00		0.95	1.00		0.96	1.00
Satd. Flow (perm)	725	1881	1615	780	1881	1509		1805	1615		1831	1615
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)	28	463	40	18	452	46	3	0	3	74	24	35
RTOR Reduction (vph)	0	0	18	0	0	22	0	0	3	0	0	32
Lane Group Flow (vph)	28	463	22	18	452	24	0	3	0	0	98	3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	58.7	54.9	54.9	55.4	53.0	53.0		11.9	11.9		9.3	9.3
Effective Green, g (s)	58.7	54.9	54.9	55.4	53.0	53.0		11.9	11.9		9.3	9.3
Actuated g/C Ratio	0.59	0.55	0.55	0.55	0.53	0.53		0.12	0.12		0.09	0.09
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	466	1032	886	456	996	799		214	192		170	150
v/s Ratio Prot	c0.00	c0.25		0.00	0.24			c0.00			c0.05	
v/s Ratio Perm	0.03		0.01	0.02		0.02			0.00			0.00
v/c Ratio	0.06	0.45	0.02	0.04	0.45	0.03		0.01	0.00		0.58	0.02
Uniform Delay, d1	9.6	13.5	10.3	10.5	14.5	11.2		38.9	38.8		43.5	41.2
Progression Factor	1.00	1.00	1.00	1.21	1.06	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	1.4	0.1	0.0	1.5	0.1		0.1	0.0		4.7	0.1
Delay (s)	9.6	14.9	10.4	12.7	16.9	11.3		39.0	38.8		48.1	41.3
Level of Service	A	B	B	B	B	B		D	D		D	D
Approach Delay (s)		14.3			16.2			38.9			46.3	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	434	32	24	450	2	12	0	3	2	1	19
Future Volume (vph)	21	434	32	24	450	2	12	0	3	2	1	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.999			0.975			0.882	
Flt Protected	0.950			0.950				0.961			0.996	
Satd. Flow (prot)	1805	1864	0	1805	1843	0	0	1677	0	0	1669	0
Flt Permitted	0.950			0.950				0.961			0.996	
Satd. Flow (perm)	1805	1864	0	1805	1843	0	0	1677	0	0	1669	0
Adj. Flow (vph)	23	472	35	26	489	2	13	0	3	2	1	21
Lane Group Flow (vph)	23	507	0	26	491	0	0	16	0	0	24	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 35.9%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	434	32	24	450	2	12	0	3	2	1	19
Future Volume (Veh/h)	21	434	32	24	450	2	12	0	3	2	1	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	472	35	26	489	2	13	0	3	2	1	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.93			0.85			0.89	0.89	0.85	0.89	0.89	0.93
vC, conflicting volume	491			507			1098	1078	490	1063	1095	490
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	414			338			868	846	317	829	865	413
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	98			98			94	100	99	99	100	96
cM capacity (veh/h)	1074			1053			227	256	561	250	250	598

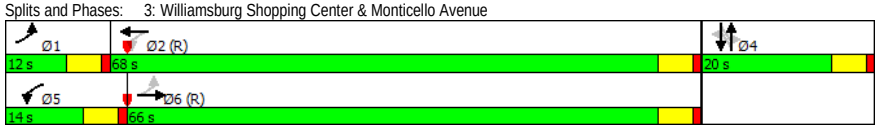
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	23	507	26	491	16	24
Volume Left	23	0	26	0	13	2
Volume Right	0	35	0	2	3	21
cSH	1074	1700	1053	1700	256	509
Volume to Capacity	0.02	0.30	0.02	0.29	0.06	0.05
Queue Length 95th (ft)	2	0	2	0	5	4
Control Delay (s)	8.4	0.0	8.5	0.0	20.0	12.4
Lane LOS	A		A		C	B
Approach Delay (s)	0.4		0.4		20.0	12.4
Approach LOS					C	B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	390	32	60	425	2	46	0	58	0	0	0
Future Volume (vph)	2	390	32	60	425	2	46	0	58	0	0	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.999			0.850				
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1805	1862	0	1805	1861	0	1805	1615	0	0	1900	0
Flt Permitted	0.496			0.443			0.757					
Satd. Flow (perm)	942	1862	0	842	1861	0	1438	1615	0	0	1900	0
Satd. Flow (RTOR)		8						512				
Adj. Flow (vph)	2	424	35	65	462	2	50	0	63	0	0	0
Lane Group Flow (vph)	2	459	0	65	464	0	50	63	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	12.0	66.0		14.0	68.0		20.0	20.0		20.0	20.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	78.5	75.1		82.5	82.1		8.9	8.9				
Actuated g/C Ratio	0.78	0.75		0.82	0.82		0.09	0.09				
v/c Ratio	0.00	0.33		0.09	0.30		0.39	0.10				
Control Delay	2.0	3.2		1.9	2.9		51.1	0.3				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	2.0	3.2		1.9	2.9		51.1	0.3				
LOS	A	A		A	A		D	A				
Approach Delay		3.2			2.8			22.8				
Approach LOS		A			A			C				

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 98 (98%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.39	
Intersection Signal Delay: 5.0	Intersection LOS: A
Intersection Capacity Utilization 43.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	390	32	60	425	2	46	0	58	0	0	0
Future Volume (vph)	2	390	32	60	425	2	46	0	58	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0				
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Frt	1.00	0.99		1.00	1.00		1.00	0.85				
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1805	1861		1805	1862		1805	1615				
Flt Permitted	0.50	1.00		0.44	1.00		0.76	1.00				
Satd. Flow (perm)	943	1861		841	1862		1439	1615				
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)	2	424	35	65	462	2	50	0	63	0	0	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	58	0	0	0	0
Lane Group Flow (vph)	2	457	0	65	464	0	50	5	0	0	0	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	73.2	72.1		81.2	76.1		7.8	7.8				
Effective Green, g (s)	73.2	72.1		81.2	76.1		7.8	7.8				
Actuated g/C Ratio	0.73	0.72		0.81	0.76		0.08	0.08				
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	699	1341		732	1416		112	125				
v/s Ratio Prot	0.00	c0.25		c0.00	c0.25			0.00				
v/s Ratio Perm	0.00			0.07			c0.03					
v/c Ratio	0.00	0.34		0.09	0.33		0.45	0.04				
Uniform Delay, d1	3.6	5.2		2.2	3.8		44.0	42.6				
Progression Factor	0.86	0.44		0.75	0.65		1.00	1.00				
Incremental Delay, d2	0.0	0.6		0.1	0.6		2.8	0.1				
Delay (s)	3.1	2.9		1.7	3.1		46.9	42.8				
Level of Service	A	A		A	A		D	D				
Approach Delay (s)		2.9			2.9			44.6			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	387	53	63	461	2	27	0	81	3	0	11
Future Volume (vph)	8	387	53	63	461	2	27	0	81	3	0	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.999			0.898			0.892	
Flt Protected	0.950			0.950				0.988			0.990	
Satd. Flow (prot)	1805	1845	0	1770	1861	0	0	1686	0	0	1678	0
Flt Permitted	0.950			0.950				0.988			0.990	
Satd. Flow (perm)	1805	1845	0	1770	1861	0	0	1686	0	0	1678	0
Adj. Flow (vph)	9	421	58	68	501	2	29	0	88	3	0	12
Lane Group Flow (vph)	9	479	0	68	503	0	0	117	0	0	15	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 46.9%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	387	53	63	461	2	27	0	81	3	0	11
Future Volume (Veh/h)	8	387	53	63	461	2	27	0	81	3	0	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	421	58	68	501	2	29	0	88	3	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		489			447							
pX, platoon unblocked	0.92			0.92			0.96	0.96	0.92	0.96	0.96	0.92
vC, conflicting volume	503			479			1117	1107	450	1165	1135	502
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	421			392			922	912	360	972	941	420
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			87	100	86	98	100	98
cM capacity (veh/h)	1062			1075			225	246	635	183	236	589

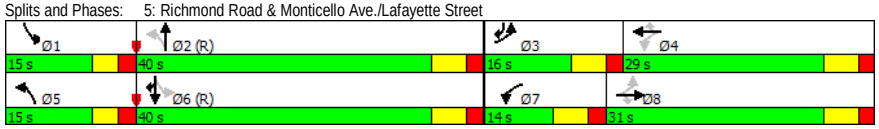
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	9	479	68	503	117	15
Volume Left	9	0	68	0	29	3
Volume Right	0	58	0	2	88	12
cSH	1062	1700	1075	1700	437	408
Volume to Capacity	0.01	0.28	0.06	0.30	0.27	0.04
Queue Length 95th (ft)	1	0	5	0	27	3
Control Delay (s)	8.4	0.0	8.6	0.0	16.2	14.2
Lane LOS	A		A		C	B
Approach Delay (s)	0.2		1.0		16.2	14.2
Approach LOS					C	B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	144	134	8	183	54	89	180	3	107	268	251
Future Volume (vph)	176	144	134	8	183	54	89	180	3	107	268	251
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3340	0	1805	1827	1599
Flt Permitted	0.399			0.657			0.523			0.598		
Satd. Flow (perm)	1442	1900	1583	1248	1845	1524	912	3340	0	1136	1827	1599
Satd. Flow (RTOR)			153			153		2				273
Adj. Flow (vph)	191	157	146	9	199	59	97	196	3	116	291	273
Lane Group Flow (vph)	191	157	146	9	199	59	97	199	0	116	291	273
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Total Split (s)	16.0	31.0	31.0	14.0	29.0	29.0	15.0	40.0		15.0	40.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Act Effct Green (s)	30.4	28.4	28.4	24.0	16.0	16.0	52.6	42.7		53.9	45.5	60.7
Actuated g/C Ratio	0.30	0.28	0.28	0.24	0.16	0.16	0.53	0.43		0.54	0.46	0.61
v/c Ratio	0.31	0.29	0.26	0.03	0.68	0.16	0.18	0.14		0.17	0.35	0.25
Control Delay	26.8	30.4	8.4	21.4	50.6	0.9	11.8	19.2		10.3	16.2	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.3	0.2
Total Delay	26.8	30.4	8.4	21.4	50.6	0.9	11.8	19.2		10.3	16.5	1.8
LOS	C	C	A	C	D	A	B	B		B	B	A
Approach Delay		22.5			38.7			16.8			9.6	
Approach LOS		C			D			B			A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 56.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



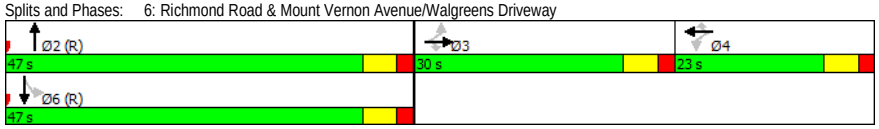
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	144	134	8	183	54	89	180	3	107	268	251
Future Volume (vph)	176	144	134	8	183	54	89	180	3	107	268	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3339		1805	1827	1599
Flt Permitted	0.40	1.00	1.00	0.66	1.00	1.00	0.52	1.00		0.60	1.00	1.00
Satd. Flow (perm)	1442	1900	1583	1249	1845	1524	912	3339		1137	1827	1599
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)	191	157	146	9	199	59	97	196	3	116	291	273
RTOR Reduction (vph)	0	0	105	0	0	47	0	1	0	0	0	123
Lane Group Flow (vph)	191	157	41	9	199	12	97	198	0	116	291	150
Heavy Vehicles (%)	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	36.0	28.4	28.4	22.3	20.7	20.7	45.2	37.9		48.8	39.7	55.0
Effective Green, g (s)	36.0	28.4	28.4	22.3	20.7	20.7	45.2	37.9		48.8	39.7	55.0
Actuated g/C Ratio	0.36	0.28	0.28	0.22	0.21	0.21	0.45	0.38		0.49	0.40	0.55
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	704	539	449	287	381	315	466	1265		615	725	879
v/s Ratio Prot	c0.03	0.08		0.00	c0.11		0.02	0.06		c0.02	c0.16	0.09
v/s Ratio Perm	0.07		0.03	0.01		0.01	0.08			0.07		
v/c Ratio	0.27	0.29	0.09	0.03	0.52	0.04	0.21	0.16		0.19	0.40	0.17
Uniform Delay, d1	22.2	27.9	26.3	30.3	35.3	31.7	16.0	20.5		14.0	21.6	11.2
Progression Factor	1.06	1.03	1.60	1.00	1.00	1.00	1.00	1.00		0.89	0.73	0.67
Incremental Delay, d2	0.2	0.3	0.1	0.0	1.3	0.1	0.2	0.3		0.1	1.6	0.1
Delay (s)	23.8	29.0	42.2	30.4	36.5	31.7	16.3	20.8		12.6	17.3	7.5
Level of Service	C	C	D	C	D	C	B	C		B	B	A
Approach Delay (s)		30.9			35.3			19.3			12.6	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	374	41	50	579	31
Future Volume (vph)	21	5	10	48	9	39	0	374	41	50	579	31
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.985			0.992	
Flt Protected		0.961			0.960					0.950		
Satd. Flow (prot)	0	1826	1615	0	1824	1615	0	3374	0	1805	3514	0
Flt Permitted		0.424			0.741					0.491		
Satd. Flow (perm)	0	806	1615	0	1408	1615	0	3374	0	933	3514	0
Satd. Flow (RTOR)			98			98		14			7	
Adj. Flow (vph)	23	5	11	52	10	42	0	407	45	54	629	34
Lane Group Flow (vph)	0	28	11	0	62	42	0	452	0	54	663	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	30.0	30.0	30.0	23.0	23.0	23.0		47.0		47.0	47.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		11.2	11.2		9.7	9.7		69.5		69.5	69.5	
Actuated g/C Ratio		0.11	0.11		0.10	0.10		0.70		0.70	0.70	
v/c Ratio		0.31	0.04		0.45	0.17		0.19		0.08	0.27	
Control Delay		47.3	0.3		52.1	1.5		4.9		6.1	5.1	
Queue Delay		0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay		47.3	0.3		52.1	1.5		4.9		6.1	5.1	
LOS		D	A		D	A		A		A	A	
Approach Delay		34.0			31.7			4.9			5.2	
Approach LOS		C			C			A			A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 74 (74%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 8.0	Intersection LOS: A
Intersection Capacity Utilization 46.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	374	41	50	579	31
Future Volume (vph)	21	5	10	48	9	39	0	374	41	50	579	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		0.99		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1825	1615		1824	1615		3374		1805	3516	
Flt Permitted		0.42	1.00		0.74	1.00		1.00		0.49	1.00	
Satd. Flow (perm)		805	1615		1408	1615		3374		933	3516	
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)	23	5	11	52	10	42	0	407	45	54	629	34
RTOR Reduction (vph)	0	0	10	0	0	38	0	5	0	0	2	0
Lane Group Flow (vph)	0	28	1	0	62	4	0	447	0	54	661	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		8.6	8.6		8.6	8.6		64.8		64.8	64.8	
Effective Green, g (s)		8.6	8.6		8.6	8.6		64.8		64.8	64.8	
Actuated g/C Ratio		0.09	0.09		0.09	0.09		0.65		0.65	0.65	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		69	138		121	138		2186		604	2278	
v/s Ratio Prot								0.13			c0.19	
v/s Ratio Perm		c0.03	0.00		c0.04	0.00				0.06		
v/c Ratio		0.41	0.01		0.51	0.03		0.20		0.09	0.29	
Uniform Delay, d1		43.3	41.8		43.7	41.9		7.1		6.6	7.6	
Progression Factor		1.00	1.00		1.00	1.00		0.55		0.55	0.52	
Incremental Delay, d2		3.9	0.0		3.6	0.1		0.2		0.3	0.3	
Delay (s)		47.1	41.8		47.3	41.9		4.1		3.9	4.3	
Level of Service		D	D		D	D		A		A	A	
Approach Delay (s)		45.6			45.2			4.1			4.3	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	1	260	0	2	401
Future Volume (vph)	1	1	260	0	2	401
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932					
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1728	0	1743	0	1805	1845
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1728	0	1743	0	1805	1845
Adj. Flow (vph)	1	1	283	0	2	436
Lane Group Flow (vph)	2	0	283	0	2	436
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 31.1%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	1	260	0	2	401
Future Volume (Veh/h)	1	1	260	0	2	401
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	283	0	2	436
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						658
pX, platoon unblocked	0.92					
vC, conflicting volume	723	283			283	
vC1, stage 1 conf vol	283					
vC2, stage 2 conf vol	440					
vCu, unblocked vol	656	283			283	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	587	761			1291	

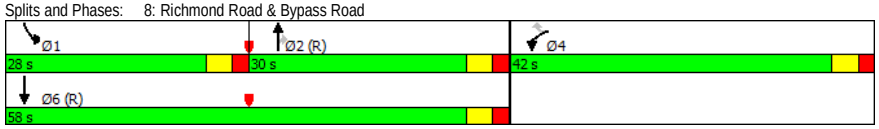
Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	2	283	2	436
Volume Left	1	0	2	0
Volume Right	1	0	0	0
cSH	663	1700	1291	1700
Volume to Capacity	0.00	0.17	0.00	0.26
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	10.4	0.0	7.8	0.0
Lane LOS	B		A	
Approach Delay (s)	10.4	0.0	0.0	
Approach LOS	B			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	31.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	286	378	217	204	328	363
Future Volume (vph)	286	378	217	204	328	363
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Satd. Flow (RTOR)		411		222		
Adj. Flow (vph)	311	411	236	222	357	395
Lane Group Flow (vph)	311	411	236	222	357	395
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	42.0	42.0	30.0	30.0	28.0	58.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	23.4	23.4	45.8	45.8	15.8	66.6
Actuated g/C Ratio	0.23	0.23	0.46	0.46	0.16	0.67
v/c Ratio	0.75	0.60	0.16	0.26	0.67	0.32
Control Delay	46.7	6.9	14.3	4.0	45.8	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.7	6.9	14.3	4.0	45.8	8.9
LOS	D	A	B	A	D	A
Approach Delay	24.0		9.3			26.4
Approach LOS	C		A			C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 92 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 21.5	Intersection LOS: C
Intersection Capacity Utilization 46.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	286	378	217	204	328	363
Future Volume (vph)	286	378	217	204	328	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	311	411	236	222	357	395
RTOR Reduction (vph)	0	315	0	120	0	0
Lane Group Flow (vph)	311	96	236	102	357	395
Heavy Vehicles (%)	2%	3%	9%	3%	4%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	23.4	23.4	45.8	45.8	15.8	66.6
Effective Green, g (s)	23.4	23.4	45.8	45.8	15.8	66.6
Actuated g/C Ratio	0.23	0.23	0.46	0.46	0.16	0.67
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	414	366	1516	718	531	1240
v/s Ratio Prot	c0.18		0.07		c0.11	c0.21
v/s Ratio Perm		0.06		0.06		
v/c Ratio	0.75	0.26	0.16	0.14	0.67	0.32
Uniform Delay, d1	35.6	31.3	15.8	15.7	39.7	7.1
Progression Factor	1.00	1.00	0.77	0.99	1.00	1.00
Incremental Delay, d2	7.5	0.4	0.2	0.4	3.3	0.7
Delay (s)	43.1	31.6	12.5	15.9	43.0	7.8
Level of Service	D	C	B	B	D	A
Approach Delay (s)	36.6		14.1			24.5
Approach LOS	D		B			C

Intersection Summary			
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	22	24	22	239	382	21
Future Volume (vph)	22	24	22	239	382	21
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.930				0.993	
Flt Protected	0.977			0.996		
Satd. Flow (prot)	1726	0	0	1763	1835	0
Flt Permitted	0.977			0.996		
Satd. Flow (perm)	1726	0	0	1763	1835	0
Adj. Flow (vph)	24	26	24	260	415	23
Lane Group Flow (vph)	50	0	0	284	438	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 40.8%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	24	22	239	382	21
Future Volume (Veh/h)	22	24	22	239	382	21
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	26	24	260	415	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					738	
pX, platoon unblocked	0.93	0.93	0.93			
vC, conflicting volume	734	426	438			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	674	342	354			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	96	98			
cM capacity (veh/h)	384	654	1127			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	50	284	438
Volume Left	24	24	0
Volume Right	26	0	23
cSH	489	1127	1700
Volume to Capacity	0.10	0.02	0.26
Queue Length 95th (ft)	8	2	0
Control Delay (s)	13.2	0.9	0.0
Lane LOS	B	A	
Approach Delay (s)	13.2	0.9	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	53	44	38	224	361	55
Future Volume (vph)	53	44	38	224	361	55
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.982	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1615	1752	1759	1800	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1615	1752	1759	1800	0
Adj. Flow (vph)	58	48	41	243	392	60
Lane Group Flow (vph)	58	48	41	243	452	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 39.0%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	53	44	38	224	361	55
Future Volume (Veh/h)	53	44	38	224	361	55
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	48	41	243	392	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					328	
pX, platoon unblocked	0.89	0.89	0.89			
vC, conflicting volume	747	422	452			
vC1, stage 1 conf vol	422					
vC2, stage 2 conf vol	325					
vCu, unblocked vol	651	285	319			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	93	96			
cM capacity (veh/h)	573	673	1096			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	58	48	41	243	452
Volume Left	58	0	41	0	0
Volume Right	0	48	0	0	60
cSH	573	673	1096	1700	1700
Volume to Capacity	0.10	0.07	0.04	0.14	0.27
Queue Length 95th (ft)	8	6	3	0	0
Control Delay (s)	12.0	10.8	8.4	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	11.4		1.2		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	49	294	143	24	195	100	29	30	137	52
Average Queue (ft)	14	107	12	6	79	10	3	3	73	18
95th Queue (ft)	40	190	58	23	169	48	18	17	135	43
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)		2	0		4	0				
Queuing Penalty (veh)		1	0		2	0				

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	42	42	52	65
Average Queue (ft)	9	9	10	18
95th Queue (ft)	34	33	38	47
Link Distance (ft)			311	426
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	225	190		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	TR	L	TR
Maximum Queue (ft)	85	50	100	117	75
Average Queue (ft)	25	19	36	35	33
95th Queue (ft)	76	46	92	81	64
Link Distance (ft)	399		424	399	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		200			75
Storage Blk Time (%)				3	0
Queuing Penalty (veh)				2	0

Intersection: 4: Existing Access Driveway #1/Garrison Drive & Monticello Avenue/Monticello Ave.

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	LTR	LTR
Maximum Queue (ft)	30	15	51	80	26
Average Queue (ft)	2	1	18	38	9
95th Queue (ft)	12	9	47	62	28
Link Distance (ft)		424		178	466
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	200		200		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	TR	L	T
Maximum Queue (ft)	133	149	166	110	76	235	58	106	113	91	94	184
Average Queue (ft)	45	83	75	42	11	128	20	44	39	32	33	91
95th Queue (ft)	108	137	144	77	45	222	49	85	84	72	71	167
Link Distance (ft)			372	372		430			236			282
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150	150			125		225	150		200	225	
Storage Blk Time (%)	0	0	1		0	10						
Queuing Penalty (veh)	0	0	1		0	6						

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	SB
Directions Served	R
Maximum Queue (ft)	149
Average Queue (ft)	52
95th Queue (ft)	118
Link Distance (ft)	282
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	68	31	86	50	103	124	74	121	118
Average Queue (ft)	23	7	51	31	15	49	22	41	26
95th Queue (ft)	61	26	96	64	56	102	58	103	76
Link Distance (ft)		530	71		282	282		1299	1299
Upstream Blk Time (%)			11						
Queuing Penalty (veh)			0						
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)	0		18	1			0	2	
Queuing Penalty (veh)	0		7	1			0	1	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	28	15
Average Queue (ft)	1	1
95th Queue (ft)	10	7
Link Distance (ft)	288	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	T	R	L	L	T
Maximum Queue (ft)	242	138	132	92	199	235	218
Average Queue (ft)	141	56	45	2	88	139	102
95th Queue (ft)	224	107	93	23	182	209	184
Link Distance (ft)	870	1299	1299			812	812
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				250	450		
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 16: Richmond Road & Existing Access Driveway #3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	40	52	12
Average Queue (ft)	21	8	1
95th Queue (ft)	42	35	7
Link Distance (ft)	117	218	19
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 22: Richmond Road & Existing Access Driveway #2

Movement	EB	EB	NB
Directions Served	L	R	L
Maximum Queue (ft)	57	55	50
Average Queue (ft)	26	22	10
95th Queue (ft)	48	47	35
Link Distance (ft)	135	135	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

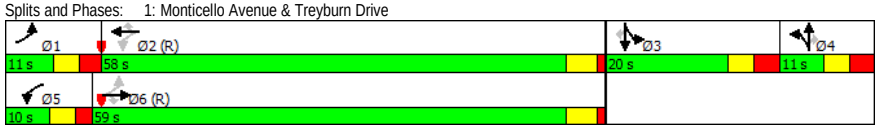
Network Summary

Network wide Queuing Penalty: 23

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	748	13	5	764	89	23	14	9	66	5	55
Future Volume (vph)	78	748	13	5	764	89	23	14	9	66	5	55
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.970			0.955	
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509	0	1843	1615	0	1814	1615
Flt Permitted	0.111			0.179				0.970			0.955	
Satd. Flow (perm)	211	1881	1615	340	1881	1509	0	1843	1615	0	1814	1615
Satd. Flow (RTOR)			153			153			136			136
Adj. Flow (vph)	85	813	14	5	830	97	25	15	10	72	5	60
Lane Group Flow (vph)	85	813	14	5	830	97	0	40	10	0	77	60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	11.0	59.0	59.0	10.0	58.0	58.0	11.0	11.0	11.0	20.0	20.0	20.0
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	62.6	62.5	62.5	59.2	55.7	55.7		11.8	11.8		9.6	9.6
Actuated g/C Ratio	0.63	0.62	0.62	0.59	0.56	0.56		0.12	0.12		0.10	0.10
v/c Ratio	0.39	0.69	0.01	0.02	0.79	0.11		0.18	0.03		0.44	0.22
Control Delay	12.3	17.3	0.0	7.2	21.5	1.0		46.1	0.2		49.9	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	12.3	17.3	0.0	7.2	21.5	1.0		46.1	0.2		49.9	1.8
LOS	B	B	A	A	C	A		D	A		D	A
Approach Delay		16.5			19.3			37.0			28.8	
Approach LOS		B			B			D			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 77 (77%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 19.1	Intersection LOS: B
Intersection Capacity Utilization 68.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	748	13	5	764	89	23	14	9	66	5	55
Future Volume (vph)	78	748	13	5	764	89	23	14	9	66	5	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509		1842	1615		1815	1615
Flt Permitted	0.11	1.00	1.00	0.18	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (perm)	211	1881	1615	340	1881	1509		1842	1615		1815	1615
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)	85	813	14	5	830	97	25	15	10	72	5	60
RTOR Reduction (vph)	0	0	6	0	0	45	0	0	9	0	0	55
Lane Group Flow (vph)	85	813	8	5	830	52	0	40	1	0	77	5
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	61.7	57.3	57.3	54.4	53.4	53.4		11.8	11.8		8.4	8.4
Effective Green, g (s)	61.7	57.3	57.3	54.4	53.4	53.4		11.8	11.8		8.4	8.4
Actuated g/C Ratio	0.62	0.57	0.57	0.54	0.53	0.53		0.12	0.12		0.08	0.08
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	200	1077	925	199	1004	805		217	190		152	135
v/s Ratio Prot	c0.02	c0.43		0.00	c0.44			c0.02			c0.04	
v/s Ratio Perm	0.24		0.00	0.01		0.03			0.00			0.00
v/c Ratio	0.42	0.75	0.01	0.03	0.83	0.06		0.18	0.01		0.51	0.04
Uniform Delay, d1	16.5	16.1	9.2	14.0	19.4	11.2		39.8	38.9		43.8	42.1
Progression Factor	1.00	1.00	1.00	1.05	0.82	1.71		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.5	4.9	0.0	0.0	7.1	0.1		1.9	0.1		2.6	0.1
Delay (s)	18.0	21.0	9.2	14.7	22.9	19.4		41.6	39.0		46.5	42.2
Level of Service	B	C	A	B	C	B		D	D		D	D
Approach Delay (s)		20.5			22.5			41.1			44.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	753	28	9	786	11	17	1	24	10	1	48
Future Volume (vph)	51	753	28	9	786	11	17	1	24	10	1	48
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.998			0.922			0.890	
Flt Protected	0.950			0.950				0.980			0.991	
Satd. Flow (prot)	1805	1872	0	1805	1842	0	0	1442	0	0	1676	0
Flt Permitted	0.950			0.950				0.980			0.991	
Satd. Flow (perm)	1805	1872	0	1805	1842	0	0	1442	0	0	1676	0
Adj. Flow (vph)	55	818	30	10	854	12	18	1	26	11	1	52
Lane Group Flow (vph)	55	848	0	10	866	0	0	45	0	0	64	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 54.1%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	753	28	9	786	11	17	1	24	10	1	48
Future Volume (Veh/h)	51	753	28	9	786	11	17	1	24	10	1	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	818	30	10	854	12	18	1	26	11	1	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.77			0.65			0.76	0.76	0.65	0.76	0.76	0.77
vC, conflicting volume	866			848			1870	1829	833	1834	1838	860
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	679			492			1311	1258	469	1265	1269	671
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	92			99			78	99	92	89	99	85
cM capacity (veh/h)	712			700			82	119	346	96	117	355

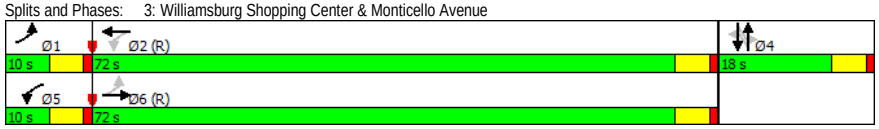
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	55	848	10	866	45	64
Volume Left	55	0	10	0	18	11
Volume Right	0	30	0	12	26	52
cSH	712	1700	700	1700	149	237
Volume to Capacity	0.08	0.50	0.01	0.51	0.30	0.27
Queue Length 95th (ft)	6	0	1	0	30	26
Control Delay (s)	10.5	0.0	10.2	0.0	39.3	25.7
Lane LOS	B		B		E	D
Approach Delay (s)	0.6		0.1		39.3	25.7
Approach LOS					E	D

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	687	44	60	694	18	69	1	58	12	8	35
Future Volume (vph)	30	687	44	60	694	18	69	1	58	12	8	35
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.996			0.852			0.914	
Flt Protected	0.950			0.950			0.950				0.989	
Satd. Flow (prot)	1805	1865	0	1805	1856	0	1805	1619	0	0	1717	0
Flt Permitted	0.298			0.271			0.808				0.913	
Satd. Flow (perm)	566	1865	0	515	1856	0	1535	1619	0	0	1586	0
Satd. Flow (RTOR)		7			3			63			38	
Adj. Flow (vph)	33	747	48	65	754	20	75	1	63	13	9	38
Lane Group Flow (vph)	33	795	0	65	774	0	75	64	0	0	60	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	10.0	72.0		10.0	72.0		18.0	18.0		18.0	18.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	78.1	74.6		79.3	76.9		10.0	10.0			10.0	
Actuated g/C Ratio	0.78	0.75		0.79	0.77		0.10	0.10			0.10	
v/c Ratio	0.06	0.57		0.13	0.54		0.49	0.29			0.31	
Control Delay	3.1	7.2		1.9	5.8		52.9	14.5			24.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	3.1	7.2		1.9	5.8		52.9	14.5			24.3	
LOS	A	A		A	A		D	B			C	
Approach Delay		7.0			5.5			35.2			24.3	
Approach LOS		A			A			D			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 75 (75%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 9.0	Intersection LOS: A
Intersection Capacity Utilization 66.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	687	44	60	694	18	69	1	58	12	8	35
Future Volume (vph)	30	687	44	60	694	18	69	1	58	12	8	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1805	1865		1805	1856		1805	1619			1719	
Flt Permitted	0.30	1.00		0.27	1.00		0.81	1.00			0.91	
Satd. Flow (perm)	566	1865		516	1856		1536	1619			1587	
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)	33	747	48	65	754	20	75	1	63	13	9	38
RTOR Reduction (vph)	0	2	0	0	1	0	0	57	0	0	35	0
Lane Group Flow (vph)	33	793	0	65	773	0	75	7	0	0	25	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	75.0	71.6		77.4	72.8		8.8	8.8			8.8	
Effective Green, g (s)	75.0	71.6		77.4	72.8		8.8	8.8			8.8	
Actuated g/C Ratio	0.75	0.72		0.77	0.73		0.09	0.09			0.09	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	466	1335		458	1351		135	142			139	
v/s Ratio Prot	0.00	c0.43		c0.01	0.42			0.00				
v/s Ratio Perm	0.05			0.10			c0.05				0.02	
v/c Ratio	0.07	0.59		0.14	0.57		0.56	0.05			0.18	
Uniform Delay, d1	4.3	7.0		4.6	6.3		43.7	41.8			42.3	
Progression Factor	1.13	0.71		0.52	0.61		1.00	1.00			1.00	
Incremental Delay, d2	0.1	1.5		0.1	1.6		4.9	0.1			0.6	
Delay (s)	4.8	6.6		2.5	5.4		48.6	41.9			42.9	
Level of Service	A	A		A	A		D	D			D	
Approach Delay (s)		6.5			5.2			45.5			42.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	741	24	30	768	37	15	0	42	17	0	15
Future Volume (vph)	22	741	24	30	768	37	15	0	42	17	0	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.993			0.900			0.936	
Flt Protected	0.950			0.950				0.987			0.974	
Satd. Flow (prot)	1805	1871	0	1770	1851	0	0	1688	0	0	1732	0
Flt Permitted	0.950			0.950				0.987			0.974	
Satd. Flow (perm)	1805	1871	0	1770	1851	0	0	1688	0	0	1732	0
Adj. Flow (vph)	24	805	26	33	835	40	16	0	46	18	0	16
Lane Group Flow (vph)	24	831	0	33	875	0	0	62	0	0	34	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 52.9%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	741	24	30	768	37	15	0	42	17	0	15
Future Volume (Veh/h)	22	741	24	30	768	37	15	0	42	17	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	805	26	33	835	40	16	0	46	18	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)		489			447							
pX, platoon unblocked	0.76			0.77			0.87	0.87	0.77	0.87	0.87	0.76
vC, conflicting volume	875			831			1783	1807	818	1820	1800	855
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	678			634			1239	1267	618	1282	1259	652
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			95			87	100	88	83	100	96
cM capacity (veh/h)	702			733			121	137	381	104	138	359

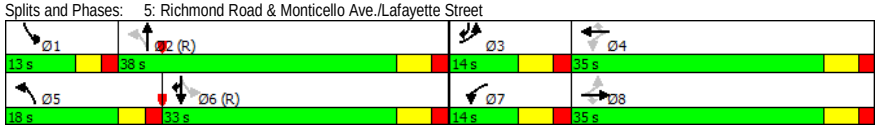
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	24	831	33	875	62	34
Volume Left	24	0	33	0	16	18
Volume Right	0	26	0	40	46	16
cSH	702	1700	733	1700	245	156
Volume to Capacity	0.03	0.49	0.05	0.51	0.25	0.22
Queue Length 95th (ft)	3	0	4	0	24	20
Control Delay (s)	10.3	0.0	10.1	0.0	24.6	34.4
Lane LOS	B		B		C	D
Approach Delay (s)	0.3		0.4		24.6	34.4
Approach LOS					C	D

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	331	120	14	318	172	196	375	15	103	288	332
Future Volume (vph)	288	331	120	14	318	172	196	375	15	103	288	332
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.994				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3332	0	1805	1827	1599
Flt Permitted	0.277			0.424			0.364			0.502		
Satd. Flow (perm)	1001	1900	1583	806	1845	1524	634	3332	0	954	1827	1599
Satd. Flow (RTOR)			153			187		4				261
Adj. Flow (vph)	313	360	130	15	346	187	213	408	16	112	313	361
Lane Group Flow (vph)	313	360	130	15	346	187	213	424	0	112	313	361
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Total Split (s)	14.0	35.0	35.0	14.0	35.0	35.0	18.0	38.0		13.0	33.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Act Effct Green (s)	35.4	32.2	32.2	31.8	23.8	23.8	49.5	36.9		42.8	33.5	47.5
Actuated g/C Ratio	0.35	0.32	0.32	0.32	0.24	0.24	0.50	0.37		0.43	0.34	0.48
v/c Ratio	0.57	0.59	0.21	0.04	0.79	0.37	0.49	0.34		0.23	0.51	0.40
Control Delay	16.1	23.2	3.9	17.6	48.5	6.4	19.2	24.7		9.2	17.8	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.4	0.2
Total Delay	16.1	23.2	3.9	17.6	48.5	6.4	19.2	24.7		9.2	18.2	3.7
LOS	B	C	A	B	D	A	B	C		A	B	A
Approach Delay		17.3			33.3			22.8			10.2	
Approach LOS		B			C			C			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 92 (92%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 19.7	Intersection LOS: B
Intersection Capacity Utilization 70.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



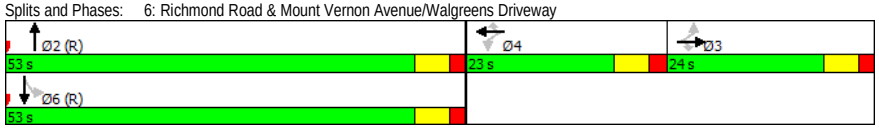
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	331	120	14	318	172	196	375	15	103	288	332
Future Volume (vph)	288	331	120	14	318	172	196	375	15	103	288	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3333		1805	1827	1599
Flt Permitted	0.28	1.00	1.00	0.42	1.00	1.00	0.36	1.00		0.50	1.00	1.00
Satd. Flow (perm)	1001	1900	1583	805	1845	1524	635	3333		954	1827	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	313	360	130	15	346	187	213	408	16	112	313	361
RTOR Reduction (vph)	0	0	88	0	0	136	0	3	0	0	0	146
Lane Group Flow (vph)	313	360	42	15	346	51	213	421	0	112	313	215
Heavy Vehicles (%)	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	40.2	32.2	32.2	30.6	27.4	27.4	44.9	33.3		38.3	30.0	44.0
Effective Green, g (s)	40.2	32.2	32.2	30.6	27.4	27.4	44.9	33.3		38.3	30.0	44.0
Actuated g/C Ratio	0.40	0.32	0.32	0.31	0.27	0.27	0.45	0.33		0.38	0.30	0.44
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	596	611	509	278	505	417	403	1109		436	548	703
v/s Ratio Prot	c0.04	c0.19		0.00	c0.19		c0.06	0.13		0.02	0.17	0.13
v/s Ratio Perm	0.17		0.03	0.01		0.03	c0.18			0.08		
v/c Ratio	0.53	0.59	0.08	0.05	0.69	0.12	0.53	0.38		0.26	0.57	0.31
Uniform Delay, d1	21.2	28.4	23.6	24.5	32.4	27.3	18.3	25.5		20.3	29.6	18.1
Progression Factor	0.59	0.66	1.01	1.00	1.00	1.00	1.00	1.00		0.55	0.51	0.37
Incremental Delay, d2	0.7	1.3	0.1	0.1	3.8	0.1	1.3	1.0		0.3	4.1	0.2
Delay (s)	13.2	20.1	23.8	24.6	36.3	27.4	19.6	26.5		11.5	19.1	6.9
Level of Service	B	C	C	C	D	C	B	C		B	B	A
Approach Delay (s)		18.0			32.9			24.2			12.4	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	848	15	29	693	70
Future Volume (vph)	95	5	54	11	12	52	0	848	15	29	693	70
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.997			0.986	
Flt Protected		0.954			0.977					0.950		
Satd. Flow (prot)	0	1813	1615	0	1856	1615	0	3399	0	1805	3496	0
Flt Permitted		0.718			0.325					0.258		
Satd. Flow (perm)	0	1364	1615	0	618	1615	0	3399	0	490	3496	0
Satd. Flow (RTOR)			98			98		2			14	
Adj. Flow (vph)	103	5	59	12	13	57	0	922	16	32	753	76
Lane Group Flow (vph)	0	108	59	0	25	57	0	938	0	32	829	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	24.0	24.0	24.0	23.0	23.0	23.0		53.0		53.0	53.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		13.1	13.1		10.2	10.2		61.0		61.0	61.0	
Actuated g/C Ratio		0.13	0.13		0.10	0.10		0.61		0.61	0.61	
v/c Ratio		0.60	0.20		0.40	0.23		0.45		0.11	0.39	
Control Delay		54.3	3.8		58.5	4.2		13.9		16.4	13.7	
Queue Delay		0.0	0.0		0.0	0.0		0.1		0.0	0.0	
Total Delay		54.3	3.8		58.5	4.2		14.1		16.4	13.7	
LOS		D	A		E	A		B		B	B	
Approach Delay		36.4			20.7			14.1			13.8	
Approach LOS		D			C			B			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 80 (80%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 16.1	Intersection LOS: B
Intersection Capacity Utilization 48.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	848	15	29	693	70
Future Volume (vph)	95	5	54	11	12	52	0	848	15	29	693	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		1.00		1.00	0.99	
Flt Protected		0.95	1.00		0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1814	1615		1855	1615		3400		1805	3497	
Flt Permitted		0.72	1.00		0.33	1.00		1.00		0.26	1.00	
Satd. Flow (perm)		1364	1615		618	1615		3400		490	3497	
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)	103	5	59	12	13	57	0	922	16	32	753	76
RTOR Reduction (vph)	0	0	51	0	0	52	0	1	0	0	6	0
Lane Group Flow (vph)	0	108	8	0	25	5	0	937	0	32	823	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		13.1	13.1		9.1	9.1		59.8		59.8	59.8	
Effective Green, g (s)		13.1	13.1		9.1	9.1		59.8		59.8	59.8	
Actuated g/C Ratio		0.13	0.13		0.09	0.09		0.60		0.60	0.60	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		178	211		56	146		2033		293	2091	
v/s Ratio Prot								c0.28			0.24	
v/s Ratio Perm		c0.08	0.00		c0.04	0.00				0.07		
v/c Ratio		0.61	0.04		0.45	0.04		0.46		0.11	0.39	
Uniform Delay, d1		41.0	37.9		43.1	41.4		11.2		8.6	10.6	
Progression Factor		1.00	1.00		1.00	1.00		1.03		1.22	1.11	
Incremental Delay, d2		5.7	0.1		5.6	0.1		0.7		0.6	0.5	
Delay (s)		46.8	38.0		48.6	41.5		12.2		11.2	12.2	
Level of Service		D	D		D	D		B		B	B	
Approach Delay (s)		43.7			43.7			12.2			12.1	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	5	547	4	10	382
Future Volume (vph)	2	5	547	4	10	382
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.904		0.999			
Flt Protected	0.986				0.950	
Satd. Flow (prot)	1694	0	1742	0	1805	1845
Flt Permitted	0.986				0.950	
Satd. Flow (perm)	1694	0	1742	0	1805	1845
Adj. Flow (vph)	2	5	595	4	11	415
Lane Group Flow (vph)	7	0	599	0	11	415
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 39.0%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	5	547	4	10	382
Future Volume (Veh/h)	2	5	547	4	10	382
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	5	595	4	11	415
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						658
pX, platoon unblocked	0.89					
vC, conflicting volume	1034	597			599	
vC1, stage 1 conf vol	597					
vC2, stage 2 conf vol	437					
vCu, unblocked vol	976	597			599	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			99	
cM capacity (veh/h)	469	507			988	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	7	599	11	415
Volume Left	2	0	11	0
Volume Right	5	4	0	0
cSH	495	1700	988	1700
Volume to Capacity	0.01	0.35	0.01	0.24
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	12.4	0.0	8.7	0.0
Lane LOS	B		A	
Approach Delay (s)	12.4	0.0	0.2	
Approach LOS	B			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	355	684	610	371	634	470
Future Volume (vph)	355	684	610	371	634	470
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Satd. Flow (RTOR)		542		403		
Adj. Flow (vph)	386	743	663	403	689	511
Lane Group Flow (vph)	386	743	663	403	689	511
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	40.0	40.0	31.0	31.0	29.0	60.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	28.6	28.6	32.9	32.9	23.5	61.4
Actuated g/C Ratio	0.29	0.29	0.33	0.33	0.24	0.61
v/c Ratio	0.76	0.89	0.61	0.51	0.87	0.45
Control Delay	42.4	22.6	20.1	4.0	49.7	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.4	22.6	20.1	4.0	49.7	13.0
LOS	D	C	C	A	D	B
Approach Delay	29.4		14.0			34.1
Approach LOS	C		B			C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 19 (19%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 26.2	Intersection LOS: C
Intersection Capacity Utilization 67.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	355	684	610	371	634	470
Future Volume (vph)	355	684	610	371	634	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	386	743	663	403	689	511
RTOR Reduction (vph)	0	387	0	270	0	0
Lane Group Flow (vph)	386	356	663	133	689	511
Heavy Vehicles (%)	2%	3%	9%	3%	4%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	28.6	28.6	32.9	32.9	23.5	61.4
Effective Green, g (s)	28.6	28.6	32.9	32.9	23.5	61.4
Actuated g/C Ratio	0.29	0.29	0.33	0.33	0.24	0.61
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	506	448	1089	515	791	1143
v/s Ratio Prot	0.22		c0.20		c0.20	0.27
v/s Ratio Perm		c0.23		0.08		
v/c Ratio	0.76	0.79	0.61	0.26	0.87	0.45
Uniform Delay, d1	32.6	33.0	28.2	24.6	36.8	10.3
Progression Factor	1.00	1.00	0.59	0.56	1.00	1.00
Incremental Delay, d2	6.7	9.4	2.3	1.1	10.3	1.3
Delay (s)	39.3	42.4	18.9	14.9	47.1	11.5
Level of Service	D	D	B	B	D	B
Approach Delay (s)	41.3		17.4			32.0
Approach LOS	D		B			C

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	14	12	541	375	9
Future Volume (vph)	11	14	12	541	375	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.925				0.997	
Flt Protected	0.978			0.999		
Satd. Flow (prot)	1719	0	0	1880	1858	0
Flt Permitted	0.978			0.999		
Satd. Flow (perm)	1719	0	0	1880	1858	0
Adj. Flow (vph)	12	15	13	588	408	10
Lane Group Flow (vph)	27	0	0	601	418	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 48.1%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	14	12	541	375	9
Future Volume (Veh/h)	11	14	12	541	375	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	15	13	588	408	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					738	
pX, platoon unblocked	0.89	0.89	0.89			
vC, conflicting volume	1027	413	418			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	971	284	290			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	98	99			
cM capacity (veh/h)	250	679	1148			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	27	601	418
Volume Left	12	13	0
Volume Right	15	0	10
cSH	385	1148	1700
Volume to Capacity	0.07	0.01	0.25
Queue Length 95th (ft)	6	1	0
Control Delay (s)	15.0	0.3	0.0
Lane LOS	C	A	
Approach Delay (s)	15.0	0.3	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	48.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	61	26	23	529	367	56
Future Volume (vph)	61	26	23	529	367	56
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.982	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1495	1805	1881	1834	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1495	1805	1881	1834	0
Adj. Flow (vph)	66	28	25	575	399	61
Lane Group Flow (vph)	66	28	25	575	460	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 37.9%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	61	26	23	529	367	56
Future Volume (Veh/h)	61	26	23	529	367	56
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	66	28	25	575	399	61
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					328	
pX, platoon unblocked	0.86	0.86	0.86			
vC, conflicting volume	1054	430	460			
vC1, stage 1 conf vol	430					
vC2, stage 2 conf vol	625					
vCu, unblocked vol	979	249	285			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4	2.2			
p0 queue free %	85	96	98			
cM capacity (veh/h)	455	663	1103			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	66	28	25	575	460
Volume Left	66	0	25	0	0
Volume Right	0	28	0	0	61
cSH	455	663	1103	1700	1700
Volume to Capacity	0.15	0.04	0.02	0.34	0.27
Queue Length 95th (ft)	13	3	2	0	0
Control Delay (s)	14.3	10.7	8.3	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	13.2		0.3		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	149	445	136	54	453	100	84	40	114	76
Average Queue (ft)	53	207	8	3	253	35	30	9	54	30
95th Queue (ft)	124	366	58	26	425	106	69	33	97	61
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)					1					
Queuing Penalty (veh)					9					
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)	0	12	0	0	25	0	0	0		
Queuing Penalty (veh)	0	11	0	0	24	3	0	0		

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	70	8	33	174	102	92
Average Queue (ft)	24	0	6	14	37	37
95th Queue (ft)	57	5	26	101	85	74
Link Distance (ft)		452		399	311	426
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				0		
Storage Bay Dist (ft)	225		190			
Storage Blk Time (%)				1		
Queuing Penalty (veh)				0		

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (ft)	61	237	74	188	170	75	89
Average Queue (ft)	17	100	25	64	65	41	36
95th Queue (ft)	48	201	58	148	136	82	73
Link Distance (ft)		399		424	399		182
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200		200			75	
Storage Blk Time (%)		1	0	0	11	1	
Queuing Penalty (veh)		0	0	0	7	0	

Intersection: 4: Monticello Avenue/Monticello Ave. & Garrison Drive

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	41	104	51	9	107	67
Average Queue (ft)	12	7	13	0	37	24
95th Queue (ft)	37	71	41	4	82	54
Link Distance (ft)		424		372	178	466
Upstream Blk Time (%)					0	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	200		200			
Storage Blk Time (%)		0				
Queuing Penalty (veh)		0				

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	TR	L	T
Maximum Queue (ft)	136	150	355	76	124	363	225	159	234	186	192	263
Average Queue (ft)	62	108	159	35	18	192	84	103	106	89	44	118
95th Queue (ft)	128	172	300	68	68	314	199	167	202	169	115	223
Link Distance (ft)			372	372		430			236			282
Upstream Blk Time (%)			0			0			1			0
Queuing Penalty (veh)			2			0			5			1
Storage Bay Dist (ft)	150	150			125		225	150		200	225	
Storage Blk Time (%)	0	1	7		0	23	0	4	2	0	0	1
Queuing Penalty (veh)	0	2	20		0	43	1	15	9	1	0	1

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	SB
Directions Served	R
Maximum Queue (ft)	254
Average Queue (ft)	106
95th Queue (ft)	206
Link Distance (ft)	282
Upstream Blk Time (%)	0
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	98	139	83	50	183	204	74	229	221
Average Queue (ft)	62	36	28	36	66	97	20	88	91
95th Queue (ft)	101	94	69	62	144	177	56	173	180
Link Distance (ft)		530	71		282	282		1299	1299
Upstream Blk Time (%)			2						
Queuing Penalty (veh)			0						
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)	3	0	5	2			0	8	
Queuing Penalty (veh)	2	0	2	1			0	2	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	28	75	33
Average Queue (ft)	6	24	4
95th Queue (ft)	25	69	22
Link Distance (ft)	288	19	
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		5	
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	L	T
Maximum Queue (ft)	395	574	286	310	250	332	397	290
Average Queue (ft)	163	209	169	166	104	189	238	143
95th Queue (ft)	312	539	253	262	253	291	342	252
Link Distance (ft)	870	870	1299	1299			812	812
Upstream Blk Time (%)	0	0						
Queuing Penalty (veh)	0	0						
Storage Bay Dist (ft)					250	450		
Storage Blk Time (%)				1	0		0	
Queuing Penalty (veh)				2	1		0	

Intersection: 16: Richmond Road & Existing Access Driveway #3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	39	79	15
Average Queue (ft)	15	6	1
95th Queue (ft)	38	38	7
Link Distance (ft)	117	218	19
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 22: Richmond Road & Existing Access Driveway #2

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	92	64	35	80	4
Average Queue (ft)	33	19	9	6	0
95th Queue (ft)	69	50	32	53	4
Link Distance (ft)	135	135		256	236
Upstream Blk Time (%)	0			0	
Queuing Penalty (veh)	0			0	
Storage Bay Dist (ft)			100		
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

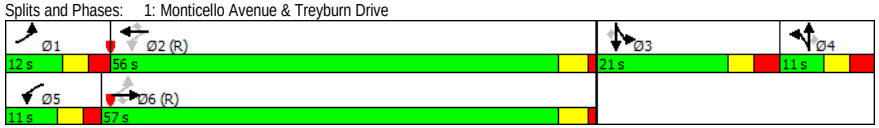
Network Summary

Network wide Queuing Penalty: 170

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	438	37	17	427	42	3	0	3	68	22	32
Future Volume (vph)	26	438	37	17	427	42	3	0	3	68	22	32
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.950			0.964	
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509	0	1805	1615	0	1832	1615
Flt Permitted	0.372			0.400				0.950			0.964	
Satd. Flow (perm)	707	1881	1615	760	1881	1509	0	1805	1615	0	1832	1615
Satd. Flow (RTOR)			153			153			136			136
Adj. Flow (vph)	28	476	40	18	464	46	3	0	3	74	24	35
Lane Group Flow (vph)	28	476	40	18	464	46	0	3	3	0	98	35
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	12.0	57.0	57.0	11.0	56.0	56.0	11.0	11.0	11.0	21.0	21.0	21.0
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	60.7	59.1	59.1	59.5	56.4	56.4		11.9	11.9		10.7	10.7
Actuated g/C Ratio	0.61	0.59	0.59	0.60	0.56	0.56		0.12	0.12		0.11	0.11
v/c Ratio	0.06	0.43	0.04	0.04	0.44	0.05		0.01	0.01		0.50	0.12
Control Delay	7.5	13.7	0.1	8.8	16.1	0.2		44.3	0.0		50.4	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	7.5	13.7	0.1	8.8	16.1	0.2		44.3	0.0		50.4	0.8
LOS	A	B	A	A	B	A		D	A		D	A
Approach Delay		12.4			14.4			22.2			37.4	
Approach LOS		B			B			C			D	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 74 (74%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 16.1	Intersection LOS: B
Intersection Capacity Utilization 45.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	438	37	17	427	42	3	0	3	68	22	32
Future Volume (vph)	26	438	37	17	427	42	3	0	3	68	22	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.96	1.00
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509		1805	1615		1831	1615
Flt Permitted	0.37	1.00	1.00	0.40	1.00	1.00		0.95	1.00		0.96	1.00
Satd. Flow (perm)	707	1881	1615	760	1881	1509		1805	1615		1831	1615
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)	28	476	40	18	464	46	3	0	3	74	24	35
RTOR Reduction (vph)	0	0	18	0	0	22	0	0	3	0	0	32
Lane Group Flow (vph)	28	476	22	18	464	24	0	3	0	0	98	3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	58.7	54.9	54.9	55.4	53.0	53.0		11.9	11.9		9.3	9.3
Effective Green, g (s)	58.7	54.9	54.9	55.4	53.0	53.0		11.9	11.9		9.3	9.3
Actuated g/C Ratio	0.59	0.55	0.55	0.55	0.53	0.53		0.12	0.12		0.09	0.09
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	456	1032	886	446	996	799		214	192		170	150
v/s Ratio Prot	c0.00	c0.25		0.00	0.25			c0.00			c0.05	
v/s Ratio Perm	0.03		0.01	0.02		0.02			0.00			0.00
v/c Ratio	0.06	0.46	0.02	0.04	0.47	0.03		0.01	0.00		0.58	0.02
Uniform Delay, d1	9.6	13.6	10.3	10.5	14.7	11.2		38.9	38.8		43.5	41.2
Progression Factor	1.00	1.00	1.00	1.22	1.05	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	1.5	0.1	0.0	1.5	0.1		0.1	0.0		4.7	0.1
Delay (s)	9.7	15.1	10.4	12.9	17.0	11.3		39.0	38.8		48.1	41.3
Level of Service	A	B	B	B	B	B		D	D		D	D
Approach Delay (s)		14.5			16.3			38.9			46.3	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	445	32	24	462	2	12	0	3	2	1	19
Future Volume (vph)	21	445	32	24	462	2	12	0	3	2	1	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.999			0.975			0.882	
Flt Protected	0.950			0.950				0.961			0.996	
Satd. Flow (prot)	1805	1864	0	1805	1843	0	0	1677	0	0	1669	0
Flt Permitted	0.950			0.950				0.961			0.996	
Satd. Flow (perm)	1805	1864	0	1805	1843	0	0	1677	0	0	1669	0
Adj. Flow (vph)	23	484	35	26	502	2	13	0	3	2	1	21
Lane Group Flow (vph)	23	519	0	26	504	0	0	16	0	0	24	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 36.5%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	445	32	24	462	2	12	0	3	2	1	19
Future Volume (Veh/h)	21	445	32	24	462	2	12	0	3	2	1	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	484	35	26	502	2	13	0	3	2	1	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.92			0.85			0.89	0.89	0.85	0.89	0.89	0.92
vC, conflicting volume	504			519			1123	1104	502	1088	1120	503
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	423			343			882	860	323	843	879	422
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	98			98			94	100	99	99	100	96
cM capacity (veh/h)	1061			1041			221	250	553	243	244	588

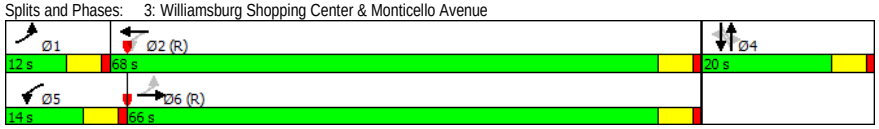
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	23	519	26	504	16	24
Volume Left	23	0	26	0	13	2
Volume Right	0	35	0	2	3	21
cSH	1061	1700	1041	1700	249	500
Volume to Capacity	0.02	0.31	0.02	0.30	0.06	0.05
Queue Length 95th (ft)	2	0	2	0	5	4
Control Delay (s)	8.5	0.0	8.5	0.0	20.5	12.6
Lane LOS	A		A		C	B
Approach Delay (s)	0.4		0.4		20.5	12.6
Approach LOS					C	B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	401	32	60	437	2	46	0	58	0	0	0
Future Volume (vph)	2	401	32	60	437	2	46	0	58	0	0	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.999			0.850				
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1805	1862	0	1805	1861	0	1805	1615	0	0	1900	0
Flt Permitted	0.490			0.436			0.757					
Satd. Flow (perm)	931	1862	0	828	1861	0	1438	1615	0	0	1900	0
Satd. Flow (RTOR)		7						502				
Adj. Flow (vph)	2	436	35	65	475	2	50	0	63	0	0	0
Lane Group Flow (vph)	2	471	0	65	477	0	50	63	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	12.0	66.0		14.0	68.0		20.0	20.0		20.0	20.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	78.5	75.1		82.5	82.1		8.9	8.9				
Actuated g/C Ratio	0.78	0.75		0.82	0.82		0.09	0.09				
v/c Ratio	0.00	0.34		0.09	0.31		0.39	0.10				
Control Delay	2.0	3.2		1.9	2.9		51.1	0.3				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	2.0	3.2		1.9	2.9		51.1	0.3				
LOS	A	A		A	A		D	A				
Approach Delay		3.2			2.8			22.8				
Approach LOS		A			A			C				

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 98 (98%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.39	
Intersection Signal Delay: 4.9	Intersection LOS: A
Intersection Capacity Utilization 44.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	401	32	60	437	2	46	0	58	0	0	0
Future Volume (vph)	2	401	32	60	437	2	46	0	58	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0				
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Frt	1.00	0.99		1.00	1.00		1.00	0.85				
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1805	1862		1805	1862		1805	1615				
Flt Permitted	0.49	1.00		0.44	1.00		0.76	1.00				
Satd. Flow (perm)	932	1862		828	1862		1439	1615				
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)	2	436	35	65	475	2	50	0	63	0	0	0
RTOR Reduction (vph)	0	2	0	0	0	0	0	58	0	0	0	0
Lane Group Flow (vph)	2	469	0	65	477	0	50	5	0	0	0	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	73.2	72.1		81.2	76.1		7.8	7.8				
Effective Green, g (s)	73.2	72.1		81.2	76.1		7.8	7.8				
Actuated g/C Ratio	0.73	0.72		0.81	0.76		0.08	0.08				
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	691	1342		722	1416		112	125				
v/s Ratio Prot	0.00	c0.25		c0.00	c0.26			0.00				
v/s Ratio Perm	0.00			0.07			c0.03					
v/c Ratio	0.00	0.35		0.09	0.34		0.45	0.04				
Uniform Delay, d1	3.6	5.2		2.3	3.8		44.0	42.6				
Progression Factor	0.81	0.42		0.73	0.64		1.00	1.00				
Incremental Delay, d2	0.0	0.7		0.1	0.6		2.8	0.1				
Delay (s)	2.9	2.9		1.7	3.1		46.9	42.8				
Level of Service	A	A		A	A		D	D				
Approach Delay (s)		2.9			2.9			44.6			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	398	53	63	474	2	27	0	81	3	0	11
Future Volume (vph)	8	398	53	63	474	2	27	0	81	3	0	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.999			0.898			0.892	
Flt Protected	0.950			0.950				0.988			0.990	
Satd. Flow (prot)	1805	1845	0	1770	1861	0	0	1686	0	0	1678	0
Flt Permitted	0.950			0.950				0.988			0.990	
Satd. Flow (perm)	1805	1845	0	1770	1861	0	0	1686	0	0	1678	0
Adj. Flow (vph)	9	433	58	68	515	2	29	0	88	3	0	12
Lane Group Flow (vph)	9	491	0	68	517	0	0	117	0	0	15	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 47.6%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	398	53	63	474	2	27	0	81	3	0	11
Future Volume (Veh/h)	8	398	53	63	474	2	27	0	81	3	0	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	433	58	68	515	2	29	0	88	3	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		489			447							
pX, platoon unblocked	0.92			0.92			0.96	0.96	0.92	0.96	0.96	0.92
vC, conflicting volume	517			491			1143	1133	462	1191	1161	516
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	432			399			940	930	368	990	959	431
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			87	100	86	98	100	98
cM capacity (veh/h)	1048			1063			217	239	625	176	228	579

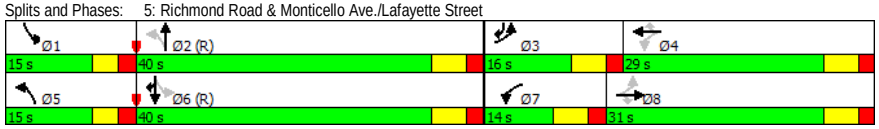
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	9	491	68	517	117	15
Volume Left	9	0	68	0	29	3
Volume Right	0	58	0	2	88	12
cSH	1048	1700	1063	1700	427	397
Volume to Capacity	0.01	0.29	0.06	0.30	0.27	0.04
Queue Length 95th (ft)	1	0	5	0	28	3
Control Delay (s)	8.5	0.0	8.6	0.0	16.6	14.4
Lane LOS	A		A		C	B
Approach Delay (s)	0.2		1.0		16.6	14.4
Approach LOS					C	B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	148	134	8	188	54	89	198	3	107	299	251
Future Volume (vph)	176	148	134	8	188	54	89	198	3	107	299	251
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3339	0	1805	1827	1599
Flt Permitted	0.394			0.655			0.479			0.589		
Satd. Flow (perm)	1424	1900	1583	1244	1845	1524	835	3339	0	1119	1827	1599
Satd. Flow (RTOR)			153			153		1				273
Adj. Flow (vph)	191	161	146	9	204	59	97	215	3	116	325	273
Lane Group Flow (vph)	191	161	146	9	204	59	97	218	0	116	325	273
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Total Split (s)	16.0	31.0	31.0	14.0	29.0	29.0	15.0	40.0		15.0	40.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Act Effct Green (s)	30.7	28.7	28.7	24.2	16.2	16.2	52.4	42.5		53.6	45.2	60.5
Actuated g/C Ratio	0.31	0.29	0.29	0.24	0.16	0.16	0.52	0.42		0.54	0.45	0.60
v/c Ratio	0.31	0.30	0.26	0.03	0.68	0.16	0.19	0.15		0.18	0.39	0.25
Control Delay	26.7	30.3	8.5	21.2	50.6	0.9	12.1	19.5		10.6	17.0	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.3	0.2
Total Delay	26.7	30.3	8.5	21.2	50.6	0.9	12.1	19.5		10.6	17.2	1.8
LOS	C	C	A	C	D	A	B	B		B	B	A
Approach Delay		22.5			38.9			17.2			10.3	
Approach LOS		C			D			B			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 58.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



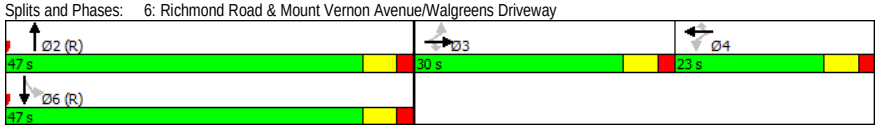
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	176	148	134	8	188	54	89	198	3	107	299	251
Future Volume (vph)	176	148	134	8	188	54	89	198	3	107	299	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3339		1805	1827	1599
Flt Permitted	0.39	1.00	1.00	0.66	1.00	1.00	0.48	1.00		0.59	1.00	1.00
Satd. Flow (perm)	1425	1900	1583	1245	1845	1524	836	3339		1119	1827	1599
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)	191	161	146	9	204	59	97	215	3	116	325	273
RTOR Reduction (vph)	0	0	104	0	0	47	0	1	0	0	0	124
Lane Group Flow (vph)	191	161	42	9	204	12	97	217	0	116	325	149
Heavy Vehicles (%)	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	36.3	28.7	28.7	22.6	21.0	21.0	45.0	37.7		48.4	39.4	54.7
Effective Green, g (s)	36.3	28.7	28.7	22.6	21.0	21.0	45.0	37.7		48.4	39.4	54.7
Actuated g/C Ratio	0.36	0.29	0.29	0.23	0.21	0.21	0.45	0.38		0.48	0.39	0.55
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	704	545	454	290	387	320	436	1258		603	719	874
v/s Ratio Prot	c0.03	c0.08		0.00	c0.11		0.02	0.07		c0.02	c0.18	0.09
v/s Ratio Perm	0.07		0.03	0.01		0.01	0.08			0.08		
v/c Ratio	0.27	0.30	0.09	0.03	0.53	0.04	0.22	0.17		0.19	0.45	0.17
Uniform Delay, d1	22.0	27.8	26.1	30.1	35.1	31.5	16.2	20.8		14.2	22.3	11.3
Progression Factor	1.07	1.03	1.63	1.00	1.00	1.00	1.00	1.00		0.90	0.73	0.66
Incremental Delay, d2	0.2	0.3	0.1	0.0	1.3	0.0	0.3	0.3		0.2	2.0	0.1
Delay (s)	23.7	28.9	42.6	30.1	36.4	31.5	16.5	21.1		12.9	18.3	7.5
Level of Service	C	C	D	C	D	C	B	C		B	B	A
Approach Delay (s)		30.9			35.1			19.7			13.3	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	409	41	50	639	31
Future Volume (vph)	21	5	10	48	9	39	0	409	41	50	639	31
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.986			0.993	
Flt Protected		0.961			0.960					0.950		
Satd. Flow (prot)	0	1826	1615	0	1824	1615	0	3376	0	1805	3518	0
Flt Permitted		0.424			0.741					0.473		
Satd. Flow (perm)	0	806	1615	0	1408	1615	0	3376	0	899	3518	0
Satd. Flow (RTOR)			98			98		13			6	
Adj. Flow (vph)	23	5	11	52	10	42	0	445	45	54	695	34
Lane Group Flow (vph)	0	28	11	0	62	42	0	490	0	54	729	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	30.0	30.0	30.0	23.0	23.0	23.0		47.0		47.0	47.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		11.2	11.2		9.7	9.7		69.5		69.5	69.5	
Actuated g/C Ratio		0.11	0.11		0.10	0.10		0.70		0.70	0.70	
v/c Ratio		0.31	0.04		0.45	0.17		0.21		0.09	0.30	
Control Delay		47.3	0.3		52.1	1.5		4.9		6.9	5.9	
Queue Delay		0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay		47.3	0.3		52.1	1.5		4.9		6.9	5.9	
LOS		D	A		D	A		A		A	A	
Approach Delay		34.0			31.7			4.9			5.9	
Approach LOS		C			C			A			A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 74 (74%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 8.2	Intersection LOS: A
Intersection Capacity Utilization 47.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	409	41	50	639	31
Future Volume (vph)	21	5	10	48	9	39	0	409	41	50	639	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		0.99		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1825	1615		1824	1615		3376		1805	3518	
Flt Permitted		0.42	1.00		0.74	1.00		1.00		0.47	1.00	
Satd. Flow (perm)		805	1615		1408	1615		3376		899	3518	
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)	23	5	11	52	10	42	0	445	45	54	695	34
RTOR Reduction (vph)	0	0	10	0	0	38	0	5	0	0	2	0
Lane Group Flow (vph)	0	28	1	0	62	4	0	485	0	54	727	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		8.6	8.6		8.6	8.6		64.8		64.8	64.8	
Effective Green, g (s)		8.6	8.6		8.6	8.6		64.8		64.8	64.8	
Actuated g/C Ratio		0.09	0.09		0.09	0.09		0.65		0.65	0.65	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		69	138		121	138		2187		582	2279	
v/s Ratio Prot								0.14			c0.21	
v/s Ratio Perm		c0.03	0.00		c0.04	0.00				0.06		
v/c Ratio		0.41	0.01		0.51	0.03		0.22		0.09	0.32	
Uniform Delay, d1		43.3	41.8		43.7	41.9		7.2		6.6	7.8	
Progression Factor		1.00	1.00		1.00	1.00		0.54		0.62	0.59	
Incremental Delay, d2		3.9	0.0		3.6	0.1		0.2		0.3	0.3	
Delay (s)		47.1	41.8		47.3	41.9		4.1		4.4	5.0	
Level of Service		D	D		D	D		A		A	A	
Approach Delay (s)		45.6			45.2			4.1			4.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	1	285	0	2	444
Future Volume (vph)	1	1	285	0	2	444
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932					
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1728	0	1743	0	1805	1845
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1728	0	1743	0	1805	1845
Adj. Flow (vph)	1	1	310	0	2	483
Lane Group Flow (vph)	2	0	310	0	2	483
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 33.4%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	1	285	0	2	444
Future Volume (Veh/h)	1	1	285	0	2	444
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	310	0	2	483
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						658
pX, platoon unblocked	0.90					
vC, conflicting volume	797	310			310	
vC1, stage 1 conf vol	310					
vC2, stage 2 conf vol	487					
vCu, unblocked vol	717	310			310	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	555	735			1262	

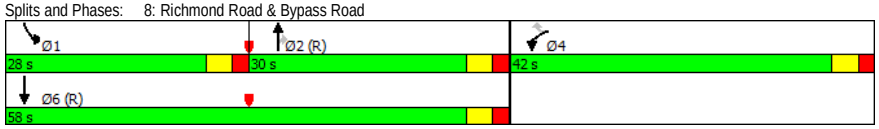
Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	2	310	2	483
Volume Left	1	0	2	0
Volume Right	1	0	0	0
cSH	633	1700	1262	1700
Volume to Capacity	0.00	0.18	0.00	0.28
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	10.7	0.0	7.9	0.0
Lane LOS	B		A	
Approach Delay (s)	10.7	0.0	0.0	
Approach LOS	B			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	33.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	286	378	237	204	328	402
Future Volume (vph)	286	378	237	204	328	402
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Satd. Flow (RTOR)		411		222		
Adj. Flow (vph)	311	411	258	222	357	437
Lane Group Flow (vph)	311	411	258	222	357	437
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	42.0	42.0	30.0	30.0	28.0	58.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	23.4	23.4	45.8	45.8	15.8	66.6
Actuated g/C Ratio	0.23	0.23	0.46	0.46	0.16	0.67
v/c Ratio	0.75	0.60	0.17	0.26	0.67	0.35
Control Delay	46.7	6.9	14.2	3.6	45.8	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.7	6.9	14.2	3.6	45.8	9.3
LOS	D	A	B	A	D	A
Approach Delay	24.0		9.3			25.7
Approach LOS	C		A			C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 92 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 21.2	Intersection LOS: C
Intersection Capacity Utilization 46.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	286	378	237	204	328	402
Future Volume (vph)	286	378	237	204	328	402
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	311	411	258	222	357	437
RTOR Reduction (vph)	0	315	0	120	0	0
Lane Group Flow (vph)	311	96	258	102	357	437
Heavy Vehicles (%)	2%	3%	9%	3%	4%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	23.4	23.4	45.8	45.8	15.8	66.6
Effective Green, g (s)	23.4	23.4	45.8	45.8	15.8	66.6
Actuated g/C Ratio	0.23	0.23	0.46	0.46	0.16	0.67
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	414	366	1516	718	531	1240
v/s Ratio Prot	c0.18		0.08		c0.11	c0.23
v/s Ratio Perm		0.06		0.06		
v/c Ratio	0.75	0.26	0.17	0.14	0.67	0.35
Uniform Delay, d1	35.6	31.3	15.9	15.7	39.7	7.3
Progression Factor	1.00	1.00	0.77	0.86	1.00	1.00
Incremental Delay, d2	7.5	0.4	0.2	0.4	3.3	0.8
Delay (s)	43.1	31.6	12.5	14.0	43.0	8.1
Level of Service	D	C	B	B	D	A
Approach Delay (s)	36.6		13.2			23.8
Approach LOS	D		B			C

Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	22	24	22	264	425	21
Future Volume (vph)	22	24	22	264	425	21
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.930				0.994	
Flt Protected	0.977			0.996		
Satd. Flow (prot)	1726	0	0	1762	1836	0
Flt Permitted	0.977			0.996		
Satd. Flow (perm)	1726	0	0	1762	1836	0
Adj. Flow (vph)	24	26	24	287	462	23
Lane Group Flow (vph)	50	0	0	311	485	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 42.1%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	24	22	264	425	21
Future Volume (Veh/h)	22	24	22	264	425	21
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	26	24	287	462	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					738	
pX, platoon unblocked	0.90	0.90	0.90			
vC, conflicting volume	808	474	485			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	734	363	376			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	96	98			
cM capacity (veh/h)	344	620	1078			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	50	311	485
Volume Left	24	24	0
Volume Right	26	0	23
cSH	448	1078	1700
Volume to Capacity	0.11	0.02	0.29
Queue Length 95th (ft)	9	2	0
Control Delay (s)	14.0	0.9	0.0
Lane LOS	B	A	
Approach Delay (s)	14.0	0.9	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	53	44	38	249	404	55
Future Volume (vph)	53	44	38	249	404	55
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.984	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1615	1752	1759	1805	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1615	1752	1759	1805	0
Adj. Flow (vph)	58	48	41	271	439	60
Lane Group Flow (vph)	58	48	41	271	499	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 41.3%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	53	44	38	249	404	55
Future Volume (Veh/h)	53	44	38	249	404	55
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	48	41	271	439	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					328	
pX, platoon unblocked	0.87	0.87	0.87			
vC, conflicting volume	822	469	499			
vC1, stage 1 conf vol	469					
vC2, stage 2 conf vol	353					
vCu, unblocked vol	720	314	348			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	92	96			
cM capacity (veh/h)	542	636	1047			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	58	48	41	271	499
Volume Left	58	0	41	0	0
Volume Right	0	48	0	0	60
cSH	542	636	1047	1700	1700
Volume to Capacity	0.11	0.08	0.04	0.16	0.29
Queue Length 95th (ft)	9	6	3	0	0
Control Delay (s)	12.4	11.1	8.6	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	11.8		1.1		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	90	237	88	52	230	91	26	27	142	45
Average Queue (ft)	15	107	13	6	74	10	2	3	65	19
95th Queue (ft)	52	197	62	24	152	50	15	18	117	43
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)	0	2	0		4	0				
Queuing Penalty (veh)	0	1	0		3	0				

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	LTR	LTR
Maximum Queue (ft)	38	2	39	56	43
Average Queue (ft)	7	0	9	15	16
95th Queue (ft)	30	3	33	44	42
Link Distance (ft)		452		311	426
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	225		190		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	L	TR	L	TR	L	TR
Maximum Queue (ft)	17	100	54	122	131	74
Average Queue (ft)	1	27	18	34	46	35
95th Queue (ft)	7	79	46	94	96	71
Link Distance (ft)		399		424	399	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		200			75
Storage Blk Time (%)				0	5	0
Queuing Penalty (veh)				0	3	0

Intersection: 4: Existing Access Driveway #1/Garrison Drive & Monticello Avenue/Monticello Ave.

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	LTR	LTR
Maximum Queue (ft)	30	17	59	118	30
Average Queue (ft)	4	1	19	39	10
95th Queue (ft)	20	8	49	76	30
Link Distance (ft)		424		178	466
Upstream Blk Time (%)				0	
Queuing Penalty (veh)				0	
Storage Bay Dist (ft)	200		200		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	TR	L	T
Maximum Queue (ft)	125	147	198	98	88	264	94	107	140	122	149	223
Average Queue (ft)	39	74	79	39	12	122	26	45	45	37	34	92
95th Queue (ft)	99	129	154	74	54	206	70	90	103	89	89	180
Link Distance (ft)			372	372		430			236			282
Upstream Blk Time (%)									0			0
Queuing Penalty (veh)									0			0
Storage Bay Dist (ft)	150	150			125		225	150		200	225	
Storage Blk Time (%)	0	0	1		0	9	0	0	0	0	0	0
Queuing Penalty (veh)	0	0	2		0	6	0	0	0	0	0	0

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	SB
Directions Served	R
Maximum Queue (ft)	132
Average Queue (ft)	43
95th Queue (ft)	100
Link Distance (ft)	282
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	74	33	86	50	102	135	70	175	132
Average Queue (ft)	25	8	47	31	19	48	20	47	30
95th Queue (ft)	60	29	92	63	66	110	51	118	86
Link Distance (ft)		530	71		282	282		1299	1299
Upstream Blk Time (%)			8						
Queuing Penalty (veh)			0						
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)	0		17	1			0	3	
Queuing Penalty (veh)	0		7	1			0	1	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	25	25	6
Average Queue (ft)	2	2	0
95th Queue (ft)	14	18	5
Link Distance (ft)	288	19	
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	L	T
Maximum Queue (ft)	279	25	112	114	81	224	267	286
Average Queue (ft)	144	1	55	52	4	98	148	110
95th Queue (ft)	239	26	100	100	39	199	229	213
Link Distance (ft)	870	870	1299	1299			812	812
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)					250	450		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 16: Richmond Road & Existing Access Driveway #3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	50	66	7
Average Queue (ft)	22	10	0
95th Queue (ft)	44	44	5
Link Distance (ft)	117	218	19
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 22: Richmond Road & Existing Access Driveway #2

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	66	48	52	5	9
Average Queue (ft)	26	24	15	0	0
95th Queue (ft)	54	48	44	5	3
Link Distance (ft)	135	135		256	236
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100		
Storage Blk Time (%)					
Queuing Penalty (veh)					

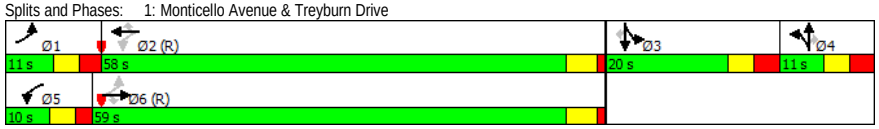
Network Summary

Network wide Queuing Penalty: 26

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	770	13	5	786	89	23	14	9	66	5	55
Future Volume (vph)	78	770	13	5	786	89	23	14	9	66	5	55
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.970			0.955	
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509	0	1843	1615	0	1814	1615
Flt Permitted	0.095			0.162				0.970			0.955	
Satd. Flow (perm)	180	1881	1615	308	1881	1509	0	1843	1615	0	1814	1615
Satd. Flow (RTOR)			153			153			136			136
Adj. Flow (vph)	85	837	14	5	854	97	25	15	10	72	5	60
Lane Group Flow (vph)	85	837	14	5	854	97	0	40	10	0	77	60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	11.0	59.0	59.0	10.0	58.0	58.0	11.0	11.0	11.0	20.0	20.0	20.0
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	62.6	62.5	62.5	59.2	55.7	55.7		11.8	11.8		9.6	9.6
Actuated g/C Ratio	0.63	0.62	0.62	0.59	0.56	0.56		0.12	0.12		0.10	0.10
v/c Ratio	0.42	0.71	0.01	0.02	0.82	0.11		0.18	0.03		0.44	0.22
Control Delay	13.7	18.0	0.0	7.4	22.9	1.0		46.1	0.2		49.9	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	13.7	18.0	0.0	7.4	22.9	1.0		46.1	0.2		49.9	1.8
LOS	B	B	A	A	C	A		D	A		D	A
Approach Delay		17.4			20.6			37.0			28.8	
Approach LOS		B			C			D			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 77 (77%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 20.1	Intersection LOS: C
Intersection Capacity Utilization 69.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	770	13	5	786	89	23	14	9	66	5	55
Future Volume (vph)	78	770	13	5	786	89	23	14	9	66	5	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509		1842	1615		1815	1615
Flt Permitted	0.10	1.00	1.00	0.16	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (perm)	181	1881	1615	308	1881	1509		1842	1615		1815	1615
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)	85	837	14	5	854	97	25	15	10	72	5	60
RTOR Reduction (vph)	0	0	6	0	0	45	0	0	9	0	0	55
Lane Group Flow (vph)	85	837	8	5	854	52	0	40	1	0	77	5
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	61.7	57.3	57.3	54.4	53.4	53.4		11.8	11.8		8.4	8.4
Effective Green, g (s)	61.7	57.3	57.3	54.4	53.4	53.4		11.8	11.8		8.4	8.4
Actuated g/C Ratio	0.62	0.57	0.57	0.54	0.53	0.53		0.12	0.12		0.08	0.08
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	183	1077	925	182	1004	805		217	190		152	135
v/s Ratio Prot	c0.02	c0.44		0.00	c0.45			c0.02			c0.04	
v/s Ratio Perm	0.27		0.00	0.01		0.03			0.00			0.00
v/c Ratio	0.46	0.78	0.01	0.03	0.85	0.06		0.18	0.01		0.51	0.04
Uniform Delay, d1	17.6	16.4	9.2	14.6	19.9	11.2		39.8	38.9		43.8	42.1
Progression Factor	1.00	1.00	1.00	1.10	0.82	1.72		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.9	5.5	0.0	0.1	8.1	0.1		1.9	0.1		2.6	0.1
Delay (s)	19.4	22.0	9.2	16.0	24.5	19.5		41.6	39.0		46.5	42.2
Level of Service	B	C	A	B	C	B		D	D		D	D
Approach Delay (s)		21.5			24.0			41.1			44.6	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	775	28	9	809	11	17	1	24	10	1	48
Future Volume (vph)	51	775	28	9	809	11	17	1	24	10	1	48
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.998			0.922			0.890	
Flt Protected	0.950			0.950				0.980			0.991	
Satd. Flow (prot)	1805	1872	0	1805	1842	0	0	1442	0	0	1676	0
Flt Permitted	0.950			0.950				0.980			0.991	
Satd. Flow (perm)	1805	1872	0	1805	1842	0	0	1442	0	0	1676	0
Adj. Flow (vph)	55	842	30	10	879	12	18	1	26	11	1	52
Lane Group Flow (vph)	55	872	0	10	891	0	0	45	0	0	64	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 55.0%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	775	28	9	809	11	17	1	24	10	1	48
Future Volume (Veh/h)	51	775	28	9	809	11	17	1	24	10	1	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	842	30	10	879	12	18	1	26	11	1	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.76			0.63			0.75	0.75	0.63	0.75	0.75	0.76
vC, conflicting volume	891			872			1918	1878	857	1884	1887	885
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	697			496			1332	1278	472	1285	1290	689
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	92			99			77	99	92	88	99	85
cM capacity (veh/h)	689			674			77	113	334	91	112	341

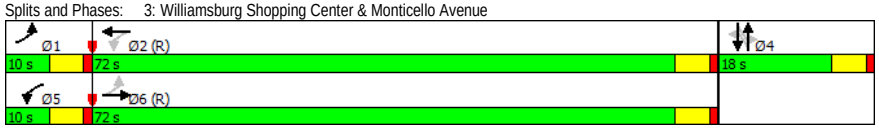
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	55	872	10	891	45	64
Volume Left	55	0	10	0	18	11
Volume Right	0	30	0	12	26	52
cSH	689	1700	674	1700	141	226
Volume to Capacity	0.08	0.51	0.01	0.52	0.32	0.28
Queue Length 95th (ft)	6	0	1	0	32	28
Control Delay (s)	10.7	0.0	10.4	0.0	42.1	27.1
Lane LOS	B		B		E	D
Approach Delay (s)	0.6		0.1		42.1	27.1
Approach LOS					E	D

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	708	44	60	715	18	69	1	58	12	8	35
Future Volume (vph)	30	708	44	60	715	18	69	1	58	12	8	35
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.996			0.852			0.914	
Flt Protected	0.950			0.950			0.950				0.989	
Satd. Flow (prot)	1805	1865	0	1805	1856	0	1805	1619	0	0	1717	0
Flt Permitted	0.286			0.260			0.808				0.913	
Satd. Flow (perm)	543	1865	0	494	1856	0	1535	1619	0	0	1586	0
Satd. Flow (RTOR)		7			3			63			38	
Adj. Flow (vph)	33	770	48	65	777	20	75	1	63	13	9	38
Lane Group Flow (vph)	33	818	0	65	797	0	75	64	0	0	60	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	10.0	72.0		10.0	72.0		18.0	18.0		18.0	18.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	78.1	74.6		79.3	76.9		10.0	10.0			10.0	
Actuated g/C Ratio	0.78	0.75		0.79	0.77		0.10	0.10			0.10	
v/c Ratio	0.07	0.59		0.14	0.56		0.49	0.29			0.31	
Control Delay	3.1	7.3		1.9	5.9		52.9	14.5			24.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	3.1	7.3		1.9	5.9		52.9	14.5			24.3	
LOS	A	A		A	A		D	B			C	
Approach Delay		7.1			5.6			35.2			24.3	
Approach LOS		A			A			D			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 75 (75%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 9.0	Intersection LOS: A
Intersection Capacity Utilization 67.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	708	44	60	715	18	69	1	58	12	8	35
Future Volume (vph)	30	708	44	60	715	18	69	1	58	12	8	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1805	1866		1805	1857		1805	1619			1719	
Flt Permitted	0.29	1.00		0.26	1.00		0.81	1.00			0.91	
Satd. Flow (perm)	543	1866		494	1857		1536	1619			1587	
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)	33	770	48	65	777	20	75	1	63	13	9	38
RTOR Reduction (vph)	0	2	0	0	1	0	0	57	0	0	35	0
Lane Group Flow (vph)	33	816	0	65	796	0	75	7	0	0	25	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	75.0	71.6		77.4	72.8		8.8	8.8			8.8	
Effective Green, g (s)	75.0	71.6		77.4	72.8		8.8	8.8			8.8	
Actuated g/C Ratio	0.75	0.72		0.77	0.73		0.09	0.09			0.09	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	450	1336		442	1351		135	142			139	
v/s Ratio Prot	0.00	c0.44		c0.01	0.43			0.00				
v/s Ratio Perm	0.05			0.11			c0.05				0.02	
v/c Ratio	0.07	0.61		0.15	0.59		0.56	0.05			0.18	
Uniform Delay, d1	4.4	7.2		4.8	6.5		43.7	41.8			42.3	
Progression Factor	1.12	0.70		0.53	0.61		1.00	1.00			1.00	
Incremental Delay, d2	0.1	1.6		0.1	1.6		4.9	0.1			0.6	
Delay (s)	5.0	6.6		2.7	5.6		48.6	41.9			42.9	
Level of Service	A	A		A	A		D	D			D	
Approach Delay (s)		6.6			5.4			45.5			42.9	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	763	24	30	790	37	15	0	42	17	0	15
Future Volume (vph)	22	763	24	30	790	37	15	0	42	17	0	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.993			0.900			0.936	
Flt Protected	0.950			0.950				0.987			0.974	
Satd. Flow (prot)	1805	1871	0	1770	1851	0	0	1688	0	0	1732	0
Flt Permitted	0.950			0.950				0.987			0.974	
Satd. Flow (perm)	1805	1871	0	1770	1851	0	0	1688	0	0	1732	0
Adj. Flow (vph)	24	829	26	33	859	40	16	0	46	18	0	16
Lane Group Flow (vph)	24	855	0	33	899	0	0	62	0	0	34	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 54.1%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	763	24	30	790	37	15	0	42	17	0	15
Future Volume (Veh/h)	22	763	24	30	790	37	15	0	42	17	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	829	26	33	859	40	16	0	46	18	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)		489			447							
pX, platoon unblocked	0.75			0.76			0.87	0.87	0.76	0.87	0.87	0.75
vC, conflicting volume	899			855			1831	1855	842	1868	1848	879
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	700			650			1257	1285	633	1300	1277	673
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			95			86	100	87	82	100	95
cM capacity (veh/h)	681			710			116	133	367	100	133	344

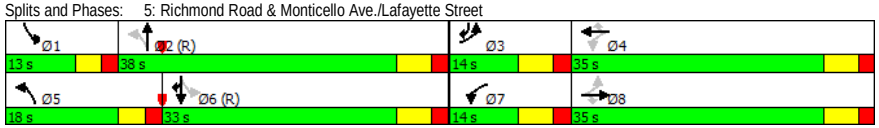
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	24	855	33	899	62	34
Volume Left	24	0	33	0	16	18
Volume Right	0	26	0	40	46	16
cSH	681	1700	710	1700	236	150
Volume to Capacity	0.04	0.50	0.05	0.53	0.26	0.23
Queue Length 95th (ft)	3	0	4	0	26	21
Control Delay (s)	10.5	0.0	10.3	0.0	25.6	35.9
Lane LOS	B		B		D	E
Approach Delay (s)	0.3		0.4		25.6	35.9
Approach LOS					D	E

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	341	120	14	328	172	196	419	15	103	322	332
Future Volume (vph)	288	341	120	14	328	172	196	419	15	103	322	332
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3334	0	1805	1827	1599
Flt Permitted	0.272			0.413			0.307			0.460		
Satd. Flow (perm)	983	1900	1583	785	1845	1524	535	3334	0	874	1827	1599
Satd. Flow (RTOR)			153			187		4				245
Adj. Flow (vph)	313	371	130	15	357	187	213	455	16	112	350	361
Lane Group Flow (vph)	313	371	130	15	357	187	213	471	0	112	350	361
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Total Split (s)	14.0	35.0	35.0	14.0	35.0	35.0	18.0	38.0		13.0	33.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Act Effct Green (s)	36.1	32.9	32.9	32.5	24.5	24.5	48.9	36.4		42.1	33.0	47.0
Actuated g/C Ratio	0.36	0.33	0.33	0.32	0.24	0.24	0.49	0.36		0.42	0.33	0.47
v/c Ratio	0.57	0.59	0.21	0.04	0.79	0.36	0.54	0.39		0.25	0.58	0.41
Control Delay	15.6	22.8	3.8	17.5	48.2	6.3	20.9	25.5		9.1	18.8	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.5	0.3
Total Delay	15.6	22.8	3.8	17.5	48.2	6.3	20.9	25.6		9.1	19.3	3.7
LOS	B	C	A	B	D	A	C	C		A	B	A
Approach Delay		17.0			33.4			24.1			11.1	
Approach LOS		B			C			C			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 92 (92%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 20.2	Intersection LOS: C
Intersection Capacity Utilization 72.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	288	341	120	14	328	172	196	419	15	103	322	332
Future Volume (vph)	288	341	120	14	328	172	196	419	15	103	322	332
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3334		1805	1827	1599
Flt Permitted	0.27	1.00	1.00	0.41	1.00	1.00	0.31	1.00		0.46	1.00	1.00
Satd. Flow (perm)	981	1900	1583	785	1845	1524	536	3334		874	1827	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	313	371	130	15	357	187	213	455	16	112	350	361
RTOR Reduction (vph)	0	0	87	0	0	134	0	3	0	0	0	139
Lane Group Flow (vph)	313	371	43	15	357	53	213	468	0	112	350	222
Heavy Vehicles (%)	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	40.9	32.9	32.9	31.3	28.1	28.1	44.3	32.7		37.5	29.3	43.3
Effective Green, g (s)	40.9	32.9	32.9	31.3	28.1	28.1	44.3	32.7		37.5	29.3	43.3
Actuated g/C Ratio	0.41	0.33	0.33	0.31	0.28	0.28	0.44	0.33		0.38	0.29	0.43
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	597	625	520	278	518	428	367	1090		404	535	692
v/s Ratio Prot	c0.04	c0.20		0.00	c0.19		c0.07	0.14		0.02	c0.19	0.14
v/s Ratio Perm	0.17		0.03	0.02		0.03	0.19			0.08		
v/c Ratio	0.52	0.59	0.08	0.05	0.69	0.12	0.58	0.43		0.28	0.65	0.32
Uniform Delay, d1	20.9	28.0	23.1	24.0	32.1	26.8	19.1	26.3		20.8	30.9	18.7
Progression Factor	0.58	0.66	0.98	1.00	1.00	1.00	1.00	1.00		0.52	0.49	0.33
Incremental Delay, d2	0.7	1.3	0.1	0.1	3.8	0.1	2.3	1.2		0.3	5.7	0.3
Delay (s)	12.8	19.7	22.8	24.1	35.9	26.9	21.5	27.6		11.2	21.0	6.3
Level of Service	B	B	C	C	D	C	C	C		B	C	A
Approach Delay (s)		17.5			32.6			25.7			13.2	
Approach LOS		B			C			C			B	

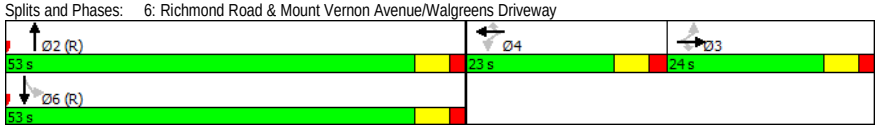
Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	947	15	29	773	70
Future Volume (vph)	95	5	54	11	12	52	0	947	15	29	773	70
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.988	
Flt Protected		0.954			0.977					0.950		
Satd. Flow (prot)	0	1813	1615	0	1856	1615	0	3402	0	1805	3502	0
Flt Permitted		0.718			0.325					0.220		
Satd. Flow (perm)	0	1364	1615	0	618	1615	0	3402	0	418	3502	0
Satd. Flow (RTOR)			98			98		2			13	
Adj. Flow (vph)	103	5	59	12	13	57	0	1029	16	32	840	76
Lane Group Flow (vph)	0	108	59	0	25	57	0	1045	0	32	916	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	24.0	24.0	24.0	23.0	23.0	23.0		53.0		53.0	53.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		13.1	13.1		10.2	10.2		61.0		61.0	61.0	
Actuated g/C Ratio		0.13	0.13		0.10	0.10		0.61		0.61	0.61	
v/c Ratio		0.60	0.20		0.40	0.23		0.50		0.13	0.43	
Control Delay		54.3	3.8		58.5	4.2		13.7		17.7	15.0	
Queue Delay		0.0	0.0		0.0	0.0		0.1		0.0	0.0	
Total Delay		54.3	3.8		58.5	4.2		13.9		17.7	15.0	
LOS		D	A		E	A		B		B	B	
Approach Delay		36.4			20.7			13.9			15.0	
Approach LOS		D			C			B			B	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 80 (80%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 16.3 — Intersection LOS: B
Intersection Capacity Utilization 51.3% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	947	15	29	773	70
Future Volume (vph)	95	5	54	11	12	52	0	947	15	29	773	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		1.00		1.00	0.99	
Flt Protected		0.95	1.00		0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1814	1615		1855	1615		3401		1805	3501	
Flt Permitted		0.72	1.00		0.33	1.00		1.00		0.22	1.00	
Satd. Flow (perm)		1364	1615		618	1615		3401		419	3501	
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)	103	5	59	12	13	57	0	1029	16	32	840	76
RTOR Reduction (vph)	0	0	51	0	0	52	0	1	0	0	5	0
Lane Group Flow (vph)	0	108	8	0	25	5	0	1044	0	32	911	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		13.1	13.1		9.1	9.1		59.8		59.8	59.8	
Effective Green, g (s)		13.1	13.1		9.1	9.1		59.8		59.8	59.8	
Actuated g/C Ratio		0.13	0.13		0.09	0.09		0.60		0.60	0.60	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		178	211		56	146		2033		250	2093	
v/s Ratio Prot								c0.31			0.26	
v/s Ratio Perm		c0.08	0.00		c0.04	0.00				0.08		
v/c Ratio		0.61	0.04		0.45	0.04		0.51		0.13	0.44	
Uniform Delay, d1		41.0	37.9		43.1	41.4		11.7		8.7	10.9	
Progression Factor		1.00	1.00		1.00	1.00		0.96		1.27	1.16	
Incremental Delay, d2		5.7	0.1		5.6	0.1		0.9		0.9	0.6	
Delay (s)		46.8	38.0		48.6	41.5		12.0		12.0	13.2	
Level of Service		D	D		D	D		B		B	B	
Approach Delay (s)		43.7			43.7			12.0			13.2	
Approach LOS		D			D			B			B	

Intersection Summary

HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	5	611	4	10	425
Future Volume (vph)	2	5	611	4	10	425
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.904		0.999			
Flt Protected	0.986				0.950	
Satd. Flow (prot)	1694	0	1742	0	1805	1845
Flt Permitted	0.986				0.950	
Satd. Flow (perm)	1694	0	1742	0	1805	1845
Adj. Flow (vph)	2	5	664	4	11	462
Lane Group Flow (vph)	7	0	668	0	11	462
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 42.4%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	5	611	4	10	425
Future Volume (Veh/h)	2	5	611	4	10	425
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	5	664	4	11	462
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						658
pX, platoon unblocked	0.86					
vC, conflicting volume	1150	666			668	
vC1, stage 1 conf vol	666					
vC2, stage 2 conf vol	484					
vCu, unblocked vol	1093	666			668	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			99	
cM capacity (veh/h)	431	463			931	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	7	668	11	462
Volume Left	2	0	11	0
Volume Right	5	4	0	0
cSH	453	1700	931	1700
Volume to Capacity	0.02	0.39	0.01	0.27
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	13.1	0.0	8.9	0.0
Lane LOS	B		A	
Approach Delay (s)	13.1	0.0	0.2	
Approach LOS	B			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	355	684	682	371	634	525
Future Volume (vph)	355	684	682	371	634	525
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Satd. Flow (RTOR)		535		403		
Adj. Flow (vph)	386	743	741	403	689	571
Lane Group Flow (vph)	386	743	741	403	689	571
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	40.0	40.0	31.0	31.0	29.0	60.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	28.6	28.6	32.9	32.9	23.5	61.4
Actuated g/C Ratio	0.29	0.29	0.33	0.33	0.24	0.61
v/c Ratio	0.76	0.90	0.68	0.51	0.87	0.50
Control Delay	42.4	23.5	23.5	4.3	49.7	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.4	23.5	23.5	4.3	49.7	13.9
LOS	D	C	C	A	D	B
Approach Delay	30.0		16.7			33.5
Approach LOS	C		B			C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 19 (19%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 26.9	Intersection LOS: C
Intersection Capacity Utilization 69.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	355	684	682	371	634	525
Future Volume (vph)	355	684	682	371	634	525
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	386	743	741	403	689	571
RTOR Reduction (vph)	0	382	0	270	0	0
Lane Group Flow (vph)	386	361	741	133	689	571
Heavy Vehicles (%)	2%	3%	9%	3%	4%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	28.6	28.6	32.9	32.9	23.5	61.4
Effective Green, g (s)	28.6	28.6	32.9	32.9	23.5	61.4
Actuated g/C Ratio	0.29	0.29	0.33	0.33	0.24	0.61
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	506	448	1089	515	791	1143
v/s Ratio Prot	0.22		c0.22		c0.20	0.31
v/s Ratio Perm		c0.23		0.08		
v/c Ratio	0.76	0.81	0.68	0.26	0.87	0.50
Uniform Delay, d1	32.6	33.1	29.0	24.6	36.8	10.7
Progression Factor	1.00	1.00	0.63	0.66	1.00	1.00
Incremental Delay, d2	6.7	10.2	3.1	1.1	10.3	1.6
Delay (s)	39.3	43.3	21.5	17.4	47.1	12.3
Level of Service	D	D	C	B	D	B
Approach Delay (s)	41.9		20.0			31.3
Approach LOS	D		C			C

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	14	12	605	418	9
Future Volume (vph)	11	14	12	605	418	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.925				0.997	
Flt Protected	0.978			0.999		
Satd. Flow (prot)	1719	0	0	1880	1858	0
Flt Permitted	0.978			0.999		
Satd. Flow (perm)	1719	0	0	1880	1858	0
Adj. Flow (vph)	12	15	13	658	454	10
Lane Group Flow (vph)	27	0	0	671	464	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 51.5%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	14	12	605	418	9
Future Volume (Veh/h)	11	14	12	605	418	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	15	13	658	454	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					738	
pX, platoon unblocked	0.87	0.87	0.87			
vC, conflicting volume	1143	459	464			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1087	297	302			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	98	99			
cM capacity (veh/h)	206	647	1099			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	27	671	464
Volume Left	12	13	0
Volume Right	15	0	10
cSH	332	1099	1700
Volume to Capacity	0.08	0.01	0.27
Queue Length 95th (ft)	7	1	0
Control Delay (s)	16.8	0.3	0.0
Lane LOS	C	A	
Approach Delay (s)	16.8	0.3	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	61	26	23	593	412	56
Future Volume (vph)	61	26	23	593	412	56
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.984	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1495	1805	1881	1837	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1495	1805	1881	1837	0
Adj. Flow (vph)	66	28	25	645	448	61
Lane Group Flow (vph)	66	28	25	645	509	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 41.3%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	61	26	23	593	412	56
Future Volume (Veh/h)	61	26	23	593	412	56
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	66	28	25	645	448	61
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					328	
pX, platoon unblocked	0.83	0.83	0.83			
vC, conflicting volume	1174	478	509			
vC1, stage 1 conf vol	478					
vC2, stage 2 conf vol	695					
vCu, unblocked vol	1107	272	309			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4	2.2			
p0 queue free %	84	96	98			
cM capacity (veh/h)	417	626	1051			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	66	28	25	645	509
Volume Left	66	0	25	0	0
Volume Right	0	28	0	0	61
cSH	417	626	1051	1700	1700
Volume to Capacity	0.16	0.04	0.02	0.38	0.30
Queue Length 95th (ft)	14	4	2	0	0
Control Delay (s)	15.3	11.0	8.5	0.0	0.0
Lane LOS	C	B	A		
Approach Delay (s)	14.0		0.3		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	149	500	98	59	444	100	74	37	126	70
Average Queue (ft)	57	226	5	6	253	31	30	9	55	30
95th Queue (ft)	133	392	42	47	408	100	65	33	105	62
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)					0					
Queuing Penalty (veh)					3					
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)	0	14	0	0	25	0	0	0		
Queuing Penalty (veh)	0	13	0	0	23	2	0	0		

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	63	7	46	132	104	84
Average Queue (ft)	25	0	5	8	37	35
95th Queue (ft)	55	8	31	62	82	66
Link Distance (ft)		452		399	311	426
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225		190			
Storage Blk Time (%)				0		
Queuing Penalty (veh)				0		

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (ft)	110	239	75	219	149	75	83
Average Queue (ft)	19	109	28	71	58	38	36
95th Queue (ft)	63	214	65	163	119	77	70
Link Distance (ft)		399		424	399		182
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200		200			75	
Storage Blk Time (%)	0	1	0	0	11	0	
Queuing Penalty (veh)	0	0	0	0	6	0	

Intersection: 4: Monticello Avenue/Monticello Ave. & Garrison Drive

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	39	50	45	6	98	63
Average Queue (ft)	11	3	14	0	38	22
95th Queue (ft)	36	34	40	4	82	52
Link Distance (ft)		424		372	178	466
Upstream Blk Time (%)					0	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	200		200			
Storage Blk Time (%)		0				
Queuing Penalty (veh)		0				

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	TR	L	T
Maximum Queue (ft)	132	149	343	94	109	402	225	154	246	200	224	296
Average Queue (ft)	64	106	158	38	18	206	92	105	118	96	55	151
95th Queue (ft)	129	172	292	76	68	346	221	167	219	181	155	275
Link Distance (ft)			372	372		430			236			282
Upstream Blk Time (%)			0			1			1			1
Queuing Penalty (veh)			0			0			9			5
Storage Bay Dist (ft)	150	150			125		225	150		200	225	
Storage Blk Time (%)	0	1	7		0	26	0	4	2	0	0	3
Queuing Penalty (veh)	0	2	19		0	49	1	18	11	1	0	3

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	SB
Directions Served	R
Maximum Queue (ft)	251
Average Queue (ft)	113
95th Queue (ft)	215
Link Distance (ft)	282
Upstream Blk Time (%)	0
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	98	163	77	50	178	186	72	248	235
Average Queue (ft)	64	40	28	35	71	96	16	106	97
95th Queue (ft)	102	105	68	62	145	171	48	205	193
Link Distance (ft)		530	71		282	282		1299	1299
Upstream Blk Time (%)			2						
Queuing Penalty (veh)			0						
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)	4	0	5	3			0	11	
Queuing Penalty (veh)	2	0	2	1			0	3	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	30	81	31
Average Queue (ft)	7	25	5
95th Queue (ft)	27	70	24
Link Distance (ft)	288	19	
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		6	
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	L	T
Maximum Queue (ft)	420	570	365	410	250	352	397	319
Average Queue (ft)	170	213	202	207	121	201	246	169
95th Queue (ft)	297	514	313	345	287	306	357	285
Link Distance (ft)	870	870	1299	1299			812	812
Upstream Blk Time (%)	0	0						
Queuing Penalty (veh)	0	0						
Storage Bay Dist (ft)					250	450		
Storage Blk Time (%)				2	0	0	0	
Queuing Penalty (veh)				9	2	0	0	

Intersection: 16: Richmond Road & Existing Access Driveway #3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	53	115	9
Average Queue (ft)	17	11	0
95th Queue (ft)	42	63	6
Link Distance (ft)	117	218	19
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 22: Richmond Road & Existing Access Driveway #2

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	83	55	46	131	9
Average Queue (ft)	34	19	9	11	0
95th Queue (ft)	69	48	34	72	5
Link Distance (ft)	135	135		256	236
Upstream Blk Time (%)	0			0	
Queuing Penalty (veh)	0			0	
Storage Bay Dist (ft)			100		
Storage Blk Time (%)				1	
Queuing Penalty (veh)				0	

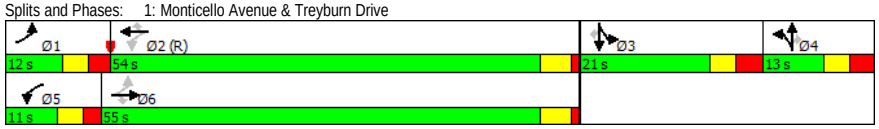
Network Summary

Network wide Queuing Penalty: 196

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	427	37	17	420	43	3	0	3	68	22	32
Future Volume (vph)	26	427	37	17	420	43	3	0	3	68	22	32
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.950			0.964	
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509	0	1805	1615	0	1832	1615
Flt Permitted	0.367			0.399				0.950			0.964	
Satd. Flow (perm)	697	1881	1615	758	1881	1509	0	1805	1615	0	1832	1615
Satd. Flow (RTOR)			153			153			136			136
Adj. Flow (vph)	28	464	40	18	457	47	3	0	3	74	24	35
Lane Group Flow (vph)	28	464	40	18	457	47	0	3	3	0	98	35
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	12.0	55.0	55.0	11.0	54.0	54.0	13.0	13.0	13.0	21.0	21.0	21.0
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	58.7	57.1	57.1	57.4	54.4	54.4		13.9	13.9		10.7	10.7
Actuated g/C Ratio	0.59	0.57	0.57	0.57	0.54	0.54		0.14	0.14		0.11	0.11
v/c Ratio	0.06	0.43	0.04	0.04	0.45	0.05		0.01	0.01		0.50	0.12
Control Delay	8.3	14.9	0.1	5.6	11.7	0.1		42.3	0.0		50.4	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	8.3	14.9	0.1	5.6	11.7	0.1		42.3	0.0		50.4	0.8
LOS	A	B	A	A	B	A		D	A		D	A
Approach Delay		13.4			10.4			21.2			37.4	
Approach LOS		B			B			C			D	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 50 (50%), Referenced to phase 2:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 14.8	Intersection LOS: B
Intersection Capacity Utilization 45.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	427	37	17	420	43	3	0	3	68	22	32
Future Volume (vph)	26	427	37	17	420	43	3	0	3	68	22	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.96	1.00
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509		1805	1615		1831	1615
Flt Permitted	0.37	1.00	1.00	0.40	1.00	1.00		0.95	1.00		0.96	1.00
Satd. Flow (perm)	697	1881	1615	759	1881	1509		1805	1615		1831	1615
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)	28	464	40	18	457	47	3	0	3	74	24	35
RTOR Reduction (vph)	0	0	19	0	0	23	0	0	3	0	0	32
Lane Group Flow (vph)	28	464	21	18	457	24	0	3	0	0	98	3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	56.7	52.9	52.9	53.4	51.0	51.0		13.9	13.9		9.3	9.3
Effective Green, g (s)	56.7	52.9	52.9	53.4	51.0	51.0		13.9	13.9		9.3	9.3
Actuated g/C Ratio	0.57	0.53	0.53	0.53	0.51	0.51		0.14	0.14		0.09	0.09
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	437	995	854	430	959	769		250	224		170	150
v/s Ratio Prot	c0.00	c0.25		0.00	0.24			c0.00			c0.05	
v/s Ratio Perm	0.03		0.01	0.02		0.02			0.00			0.00
v/c Ratio	0.06	0.47	0.02	0.04	0.48	0.03		0.01	0.00		0.58	0.02
Uniform Delay, d1	10.5	14.7	11.2	11.5	15.9	12.2		37.1	37.1		43.5	41.2
Progression Factor	1.00	1.00	1.00	0.70	0.68	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.3	0.0	0.0	1.7	0.1		0.1	0.0		4.7	0.1
Delay (s)	10.6	15.1	11.3	8.0	12.4	12.3		37.2	37.1		48.1	41.3
Level of Service	B	B	B	A	B	B		D	D		D	D
Approach Delay (s)		14.5			12.2			37.2			46.3	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	435	32	24	454	2	12	0	3	2	1	19
Future Volume (vph)	21	435	32	24	454	2	12	0	3	2	1	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.999			0.975			0.882	
Flt Protected	0.950			0.950				0.961			0.996	
Satd. Flow (prot)	1805	1864	0	1805	1843	0	0	1677	0	0	1669	0
Flt Permitted	0.950			0.950				0.961			0.996	
Satd. Flow (perm)	1805	1864	0	1805	1843	0	0	1677	0	0	1669	0
Adj. Flow (vph)	23	473	35	26	493	2	13	0	3	2	1	21
Lane Group Flow (vph)	23	508	0	26	495	0	0	16	0	0	24	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 35.9%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	435	32	24	454	2	12	0	3	2	1	19
Future Volume (Veh/h)	21	435	32	24	454	2	12	0	3	2	1	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	473	35	26	493	2	13	0	3	2	1	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.93			0.85			0.88	0.88	0.85	0.88	0.88	0.93
vC, conflicting volume	495			508			1103	1084	490	1068	1100	494
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	416			329			865	843	308	825	862	415
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	98			98			94	100	99	99	100	96
cM capacity (veh/h)	1070			1052			226	255	563	249	249	595

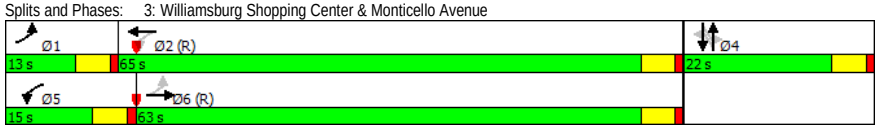
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	23	508	26	495	16	24
Volume Left	23	0	26	0	13	2
Volume Right	0	35	0	2	3	21
cSH	1070	1700	1052	1700	255	507
Volume to Capacity	0.02	0.30	0.02	0.29	0.06	0.05
Queue Length 95th (ft)	2	0	2	0	5	4
Control Delay (s)	8.4	0.0	8.5	0.0	20.1	12.5
Lane LOS	A		A		C	B
Approach Delay (s)	0.4		0.4		20.1	12.5
Approach LOS					C	B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	378	43	68	426	2	50	0	68	0	0	0
Future Volume (vph)	2	378	43	68	426	2	50	0	68	0	0	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.999			0.850				
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1805	1855	0	1805	1861	0	1805	1615	0	0	1900	0
Flt Permitted	0.496			0.441			0.757					
Satd. Flow (perm)	942	1855	0	838	1861	0	1438	1615	0	0	1900	0
Satd. Flow (RTOR)		10						517				
Adj. Flow (vph)	2	411	47	74	463	2	54	0	74	0	0	0
Lane Group Flow (vph)	2	458	0	74	465	0	54	74	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	13.0	63.0		15.0	65.0		22.0	22.0		22.0	22.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	78.1	74.7		82.3	81.8		9.2	9.2				
Actuated g/C Ratio	0.78	0.75		0.82	0.82		0.09	0.09				
v/c Ratio	0.00	0.33		0.10	0.31		0.41	0.12				
Control Delay	2.0	4.6		1.7	3.2		51.3	0.4				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	2.0	4.6		1.7	3.2		51.3	0.4				
LOS	A	A		A	A		D	A				
Approach Delay		4.6			3.0			21.9				
Approach LOS		A			A			C				

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 61 (61%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.41	
Intersection Signal Delay: 5.8	Intersection LOS: A
Intersection Capacity Utilization 43.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	378	43	68	426	2	50	0	68	0	0	0
Future Volume (vph)	2	378	43	68	426	2	50	0	68	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0				
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Frt	1.00	0.98		1.00	1.00		1.00	0.85				
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1805	1854		1805	1862		1805	1615				
Flt Permitted	0.50	1.00		0.44	1.00		0.76	1.00				
Satd. Flow (perm)	942	1854		837	1862		1439	1615				
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)	2	411	47	74	463	2	54	0	74	0	0	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	68	0	0	0	0
Lane Group Flow (vph)	2	455	0	74	465	0	54	6	0	0	0	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	72.7	71.6		81.1	75.8		8.1	8.1				
Effective Green, g (s)	72.7	71.6		81.1	75.8		8.1	8.1				
Actuated g/C Ratio	0.73	0.72		0.81	0.76		0.08	0.08				
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	694	1327		730	1411		116	130				
v/s Ratio Prot	0.00	c0.25		c0.01	c0.25			0.00				
v/s Ratio Perm	0.00			0.08			c0.04					
v/c Ratio	0.00	0.34		0.10	0.33		0.47	0.05				
Uniform Delay, d1	3.7	5.3		2.3	3.9		43.9	42.4				
Progression Factor	0.81	0.65		0.63	0.71		1.00	1.00				
Incremental Delay, d2	0.0	0.7		0.1	0.6		2.9	0.1				
Delay (s)	3.0	4.1		1.5	3.4		46.8	42.5				
Level of Service	A	A		A	A		D	D				
Approach Delay (s)		4.1			3.1			44.3			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	438	497	2	3	11
Future Volume (vph)	8	438	497	2	3	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.892	
Flt Protected	0.950				0.990	
Satd. Flow (prot)	1805	1881	1863	0	1678	0
Flt Permitted	0.950				0.990	
Satd. Flow (perm)	1805	1881	1863	0	1678	0
Adj. Flow (vph)	9	476	540	2	3	12
Lane Group Flow (vph)	9	476	542	0	15	0
Sign Control		Free	Free		Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 36.3%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	438	497	2	3	11
Future Volume (Veh/h)	8	438	497	2	3	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	476	540	2	3	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		489	447			
pX, platoon unblocked	0.92				0.96	0.92
vC, conflicting volume	542				1035	541
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	464				839	463
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	98
cM capacity (veh/h)	1024				322	558

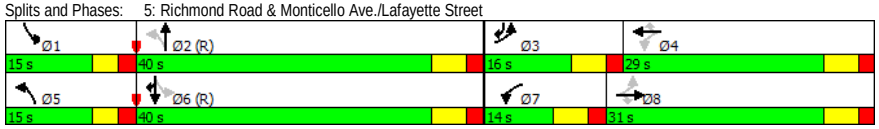
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	9	476	542	15
Volume Left	9	0	0	3
Volume Right	0	0	2	12
cSH	1024	1700	1700	487
Volume to Capacity	0.01	0.28	0.32	0.03
Queue Length 95th (ft)	1	0	0	2
Control Delay (s)	8.5	0.0	0.0	12.6
Lane LOS	A			B
Approach Delay (s)	0.2		0.0	12.6
Approach LOS				B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	145	139	8	183	54	88	184	3	107	265	257
Future Volume (vph)	181	145	139	8	183	54	88	184	3	107	265	257
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3340	0	1805	1827	1599
Flt Permitted	0.400			0.657			0.526			0.596		
Satd. Flow (perm)	1445	1900	1583	1248	1845	1524	917	3340	0	1132	1827	1599
Satd. Flow (RTOR)			153			153		2				279
Adj. Flow (vph)	197	158	151	9	199	59	96	200	3	116	288	279
Lane Group Flow (vph)	197	158	151	9	199	59	96	203	0	116	288	279
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Total Split (s)	16.0	31.0	31.0	14.0	29.0	29.0	15.0	40.0		15.0	40.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Act Effct Green (s)	30.5	28.5	28.5	24.0	16.0	16.0	52.5	42.6		53.9	45.4	60.7
Actuated g/C Ratio	0.30	0.28	0.28	0.24	0.16	0.16	0.52	0.43		0.54	0.45	0.61
v/c Ratio	0.32	0.29	0.27	0.03	0.68	0.16	0.18	0.14		0.17	0.35	0.26
Control Delay	17.3	21.1	5.0	21.4	50.6	0.9	11.8	19.3		10.6	16.4	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.3	0.2
Total Delay	17.3	21.1	5.0	21.4	50.6	0.9	11.8	19.3		10.6	16.7	1.7
LOS	B	C	A	C	D	A	B	B		B	B	A
Approach Delay		14.8			38.7			16.9			9.5	
Approach LOS		B			D			B			A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 66 (66%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 16.7	Intersection LOS: B
Intersection Capacity Utilization 56.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



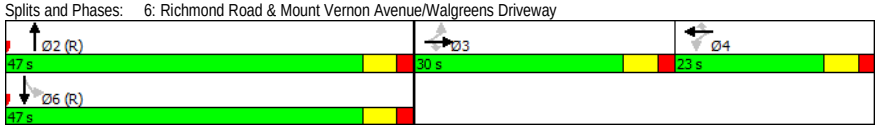
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	145	139	8	183	54	88	184	3	107	265	257
Future Volume (vph)	181	145	139	8	183	54	88	184	3	107	265	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3339		1805	1827	1599
Flt Permitted	0.40	1.00	1.00	0.66	1.00	1.00	0.53	1.00		0.60	1.00	1.00
Satd. Flow (perm)	1447	1900	1583	1248	1845	1524	917	3339		1132	1827	1599
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)	197	158	151	9	199	59	96	200	3	116	288	279
RTOR Reduction (vph)	0	0	108	0	0	47	0	1	0	0	0	126
Lane Group Flow (vph)	197	158	43	9	199	12	96	202	0	116	288	153
Heavy Vehicles (%)	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	36.1	28.5	28.5	22.4	20.8	20.8	45.1	37.8		48.7	39.6	54.9
Effective Green, g (s)	36.1	28.5	28.5	22.4	20.8	20.8	45.1	37.8		48.7	39.6	54.9
Actuated g/C Ratio	0.36	0.28	0.28	0.22	0.21	0.21	0.45	0.38		0.49	0.40	0.55
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	707	541	451	288	383	316	467	1262		612	723	877
v/s Ratio Prot	c0.03	0.08		0.00	c0.11		0.01	0.06		c0.02	c0.16	0.10
v/s Ratio Perm	0.07		0.03	0.01		0.01	0.08			0.07		
v/c Ratio	0.28	0.29	0.10	0.03	0.52	0.04	0.21	0.16		0.19	0.40	0.17
Uniform Delay, d1	22.2	27.9	26.3	30.3	35.2	31.6	16.1	20.6		14.1	21.7	11.2
Progression Factor	0.66	0.70	0.77	1.00	1.00	1.00	1.00	1.00		0.91	0.73	0.61
Incremental Delay, d2	0.2	0.3	0.1	0.0	1.2	0.1	0.2	0.3		0.1	1.6	0.1
Delay (s)	15.0	19.7	20.4	30.3	36.4	31.7	16.3	20.9		12.9	17.5	6.9
Level of Service	B	B	C	C	D	C	B	C		B	B	A
Approach Delay (s)		18.1			35.1			19.4			12.4	
Approach LOS		B			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	383	41	50	581	31
Future Volume (vph)	21	5	10	48	9	39	0	383	41	50	581	31
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.985			0.992	
Flt Protected		0.961			0.960					0.950		
Satd. Flow (prot)	0	1826	1615	0	1824	1615	0	3373	0	1805	3514	0
Flt Permitted		0.424			0.741					0.487		
Satd. Flow (perm)	0	806	1615	0	1408	1615	0	3373	0	925	3514	0
Satd. Flow (RTOR)			98			98		14			7	
Adj. Flow (vph)	23	5	11	52	10	42	0	416	45	54	632	34
Lane Group Flow (vph)	0	28	11	0	62	42	0	461	0	54	666	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	30.0	30.0	30.0	23.0	23.0	23.0		47.0		47.0	47.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		11.2	11.2		9.7	9.7		69.5		69.5	69.5	
Actuated g/C Ratio		0.11	0.11		0.10	0.10		0.70		0.70	0.70	
v/c Ratio		0.31	0.04		0.45	0.17		0.20		0.08	0.27	
Control Delay		47.3	0.3		52.1	1.5		5.5		6.1	5.2	
Queue Delay		0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay		47.3	0.3		52.1	1.5		5.5		6.1	5.2	
LOS		D	A		D	A		A		A	A	
Approach Delay		34.0			31.7			5.5			5.2	
Approach LOS		C			C			A			A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 80 (80%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 8.3	Intersection LOS: A
Intersection Capacity Utilization 46.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	383	41	50	581	31
Future Volume (vph)	21	5	10	48	9	39	0	383	41	50	581	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		0.99		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1825	1615		1824	1615		3374		1805	3516	
Flt Permitted		0.42	1.00		0.74	1.00		1.00		0.49	1.00	
Satd. Flow (perm)		805	1615		1408	1615		3374		925	3516	
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)	23	5	11	52	10	42	0	416	45	54	632	34
RTOR Reduction (vph)	0	0	10	0	0	38	0	5	0	0	2	0
Lane Group Flow (vph)	0	28	1	0	62	4	0	456	0	54	664	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		8.6	8.6		8.6	8.6		64.8		64.8	64.8	
Effective Green, g (s)		8.6	8.6		8.6	8.6		64.8		64.8	64.8	
Actuated g/C Ratio		0.09	0.09		0.09	0.09		0.65		0.65	0.65	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		69	138		121	138		2186		599	2278	
v/s Ratio Prot								0.14			c0.19	
v/s Ratio Perm		c0.03	0.00		c0.04	0.00				0.06		
v/c Ratio		0.41	0.01		0.51	0.03		0.21		0.09	0.29	
Uniform Delay, d1		43.3	41.8		43.7	41.9		7.2		6.6	7.6	
Progression Factor		1.00	1.00		1.00	1.00		0.62		0.55	0.53	
Incremental Delay, d2		3.9	0.0		3.6	0.1		0.2		0.3	0.3	
Delay (s)		47.1	41.8		47.3	41.9		4.6		3.9	4.4	
Level of Service		D	D		D	D		A		A	A	
Approach Delay (s)		45.6			45.2			4.6			4.3	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	1	261	0	2	404
Future Volume (vph)	1	1	261	0	2	404
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932					
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1728	0	1743	0	1805	1845
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1728	0	1743	0	1805	1845
Adj. Flow (vph)	1	1	284	0	2	439
Lane Group Flow (vph)	2	0	284	0	2	439
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 31.3%		ICU Level of Service A
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	1	261	0	2	404
Future Volume (Veh/h)	1	1	261	0	2	404
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	284	0	2	439
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						658
pX, platoon unblocked	0.92					
vC, conflicting volume	727	284			284	
vC1, stage 1 conf vol	284					
vC2, stage 2 conf vol	443					
vCu, unblocked vol	662	284			284	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	585	760			1290	

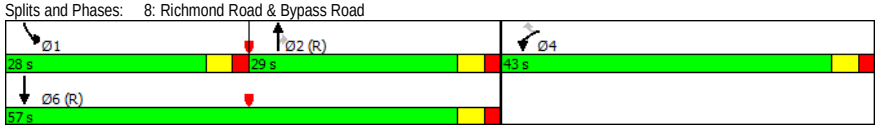
Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	2	284	2	439
Volume Left	1	0	2	0
Volume Right	1	0	0	0
cSH	661	1700	1290	1700
Volume to Capacity	0.00	0.17	0.00	0.26
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	10.5	0.0	7.8	0.0
Lane LOS	B		A	
Approach Delay (s)	10.5	0.0	0.0	
Approach LOS	B			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	287	378	222	208	328	365
Future Volume (vph)	287	378	222	208	328	365
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Satd. Flow (RTOR)		411		226		
Adj. Flow (vph)	312	411	241	226	357	397
Lane Group Flow (vph)	312	411	241	226	357	397
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	43.0	43.0	29.0	29.0	28.0	57.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	23.5	23.5	45.7	45.7	15.8	66.5
Actuated g/C Ratio	0.24	0.24	0.46	0.46	0.16	0.66
v/c Ratio	0.75	0.60	0.16	0.27	0.67	0.32
Control Delay	46.4	6.8	14.5	4.3	45.8	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.4	6.8	14.5	4.3	45.8	9.0
LOS	D	A	B	A	D	A
Approach Delay	23.9		9.5			26.4
Approach LOS	C		A			C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 98 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 21.4	Intersection LOS: C
Intersection Capacity Utilization 46.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	287	378	222	208	328	365
Future Volume (vph)	287	378	222	208	328	365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	312	411	241	226	357	397
RTOR Reduction (vph)	0	314	0	123	0	0
Lane Group Flow (vph)	312	97	241	103	357	397
Heavy Vehicles (%)	2%	3%	9%	3%	4%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	23.5	23.5	45.7	45.7	15.8	66.5
Effective Green, g (s)	23.5	23.5	45.7	45.7	15.8	66.5
Actuated g/C Ratio	0.24	0.24	0.46	0.46	0.16	0.66
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	415	368	1513	716	531	1238
v/s Ratio Prot	c0.18		0.07		c0.11	c0.21
v/s Ratio Perm		0.06		0.07		
v/c Ratio	0.75	0.26	0.16	0.14	0.67	0.32
Uniform Delay, d1	35.5	31.2	15.9	15.8	39.7	7.1
Progression Factor	1.00	1.00	0.78	1.06	1.00	1.00
Incremental Delay, d2	7.5	0.4	0.2	0.4	3.3	0.7
Delay (s)	43.0	31.6	12.6	17.2	43.0	7.8
Level of Service	D	C	B	B	D	A
Approach Delay (s)	36.5		14.8			24.5
Approach LOS	D		B			C

Intersection Summary			
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	27	24	237	383	23
Future Volume (vph)	25	27	24	237	383	23
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.930				0.992	
Flt Protected	0.976			0.995		
Satd. Flow (prot)	1725	0	0	1762	1833	0
Flt Permitted	0.976			0.995		
Satd. Flow (perm)	1725	0	0	1762	1833	0
Adj. Flow (vph)	27	29	26	258	416	25
Lane Group Flow (vph)	56	0	0	284	441	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 42.4%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	27	24	237	383	23
Future Volume (Veh/h)	25	27	24	237	383	23
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	29	26	258	416	25
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					738	
pX, platoon unblocked	0.93	0.93	0.93			
vC, conflicting volume	738	428	441			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	681	347	360			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	96	98			
cM capacity (veh/h)	381	651	1124			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	56	284	441
Volume Left	27	26	0
Volume Right	29	0	25
cSH	485	1124	1700
Volume to Capacity	0.12	0.02	0.26
Queue Length 95th (ft)	10	2	0
Control Delay (s)	13.4	1.0	0.0
Lane LOS	B	A	
Approach Delay (s)	13.4	1.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	382	59	64	465	35	87
Future Volume (vph)	382	59	64	465	35	87
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.982				0.904	
Flt Protected			0.950		0.986	
Satd. Flow (prot)	1850	0	1736	1863	1694	0
Flt Permitted			0.950		0.986	
Satd. Flow (perm)	1850	0	1736	1863	1694	0
Adj. Flow (vph)	415	64	70	505	38	95
Lane Group Flow (vph)	479	0	70	505	133	0
Sign Control	Free			Free	Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 44.5%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	382	59	64	465	35	87
Future Volume (Veh/h)	382	59	64	465	35	87
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	415	64	70	505	38	95
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	625			311		
pX, platoon unblocked			0.93		0.94	0.93
vC, conflicting volume			479		1092	447
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			406		908	371
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		86	85
cM capacity (veh/h)			1066		272	633

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	479	70	505	133
Volume Left	0	70	0	38
Volume Right	64	0	0	95
cSH	1700	1066	1700	459
Volume to Capacity	0.28	0.07	0.30	0.29
Queue Length 95th (ft)	0	5	0	30
Control Delay (s)	0.0	8.6	0.0	16.0
Lane LOS		A		C
Approach Delay (s)	0.0	1.0		16.0
Approach LOS				C

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	49	41	221	359	57
Future Volume (vph)	60	49	41	221	359	57
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.981	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1615	1770	1759	1798	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1615	1770	1759	1798	0
Adj. Flow (vph)	65	53	45	240	390	62
Lane Group Flow (vph)	65	53	45	240	452	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 39.0%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	49	41	221	359	57
Future Volume (Veh/h)	60	49	41	221	359	57
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	53	45	240	390	62
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					328	
pX, platoon unblocked	0.89	0.89	0.89			
vC, conflicting volume	751	421	452			
vC1, stage 1 conf vol	421					
vC2, stage 2 conf vol	330					
vCu, unblocked vol	657	286	320			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	92	96			
cM capacity (veh/h)	570	674	1101			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	65	53	45	240	452
Volume Left	65	0	45	0	0
Volume Right	0	53	0	0	62
cSH	570	674	1101	1700	1700
Volume to Capacity	0.11	0.08	0.04	0.14	0.27
Queue Length 95th (ft)	10	6	3	0	0
Control Delay (s)	12.1	10.8	8.4	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	11.5		1.3		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	109	246	92	69	243	100	31	27	143	51
Average Queue (ft)	18	115	10	9	106	17	3	3	66	19
95th Queue (ft)	61	203	46	42	199	72	19	17	116	44
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)	0	3	0	0	8	0				
Queuing Penalty (veh)	0	2	0	0	5	1				

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	33	37	50	37
Average Queue (ft)	9	8	12	16
95th Queue (ft)	32	31	38	41
Link Distance (ft)			311	426
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	225	190		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	L	TR	L	TR	L	TR
Maximum Queue (ft)	11	144	52	108	123	74
Average Queue (ft)	0	40	17	33	48	38
95th Queue (ft)	6	102	44	85	101	74
Link Distance (ft)		399		432	399	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		200			75
Storage Blk Time (%)					5	0
Queuing Penalty (veh)					3	0

Intersection: 4: Monticello Avenue/Monticello Ave. & Garrison Drive

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	33	8	34
Average Queue (ft)	4	0	10
95th Queue (ft)	20	3	33
Link Distance (ft)		66	471
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	TR	L	T
Maximum Queue (ft)	121	146	163	91	77	229	147	100	115	95	84	192
Average Queue (ft)	30	69	71	40	7	119	29	40	39	34	32	75
95th Queue (ft)	86	121	135	72	38	196	86	80	85	75	68	151
Link Distance (ft)			245	245		430			236			282
Upstream Blk Time (%)			0									0
Queuing Penalty (veh)			0									0
Storage Bay Dist (ft)	150	150			125		225	150		200	225	
Storage Blk Time (%)	0	0	0		0	8	0		0			0
Queuing Penalty (veh)	0	0	0		0	5	0		0			0

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	SB
Directions Served	R
Maximum Queue (ft)	138
Average Queue (ft)	47
95th Queue (ft)	109
Link Distance (ft)	282
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	68	40	86	50	99	140	65	134	102
Average Queue (ft)	24	9	51	32	21	53	17	38	25
95th Queue (ft)	59	33	96	64	68	117	46	99	73
Link Distance (ft)		530	71		282	282		1299	1299
Upstream Blk Time (%)			10						
Queuing Penalty (veh)			0						
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)	0		19	1			0	2	
Queuing Penalty (veh)	0		7	1			0	1	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	28	14	6
Average Queue (ft)	2	1	0
95th Queue (ft)	15	10	4
Link Distance (ft)	288	19	
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	L	T
Maximum Queue (ft)	266	32	115	111	60	213	248	276
Average Queue (ft)	135	1	53	48	3	90	142	98
95th Queue (ft)	227	23	100	94	32	187	214	212
Link Distance (ft)	870	870	1299	1299			812	812
Upstream Blk Time (%)								0
Queuing Penalty (veh)								0
Storage Bay Dist (ft)					250	450		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 16: Richmond Road & Existing Access Driveway #3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	55	73	7
Average Queue (ft)	23	12	0
95th Queue (ft)	44	45	4
Link Distance (ft)	117	218	19
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: Existing Access Driveway #1 & Monticello Ave.

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	24	48	66	104
Average Queue (ft)	2	18	5	41
95th Queue (ft)	16	46	35	79
Link Distance (ft)	66		245	240
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		0	0	
Queuing Penalty (veh)		2	0	

Intersection: 22: Richmond Road & Existing Access Driveway #2

Movement	EB	EB	NB	SB
Directions Served	L	R	L	TR
Maximum Queue (ft)	60	58	47	12
Average Queue (ft)	27	26	13	0
95th Queue (ft)	49	50	39	6
Link Distance (ft)	135	135		236
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	
Storage Blk Time (%)				
Queuing Penalty (veh)				

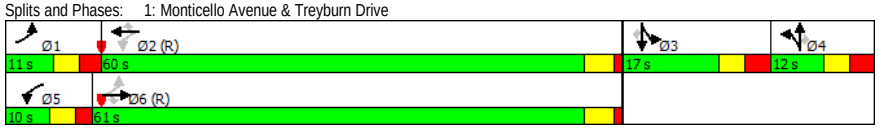
Network Summary

Network wide Queuing Penalty: 28

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	742	13	5	761	88	23	14	9	65	5	55
Future Volume (vph)	78	742	13	5	761	88	23	14	9	65	5	55
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.970			0.955	
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509	0	1843	1615	0	1814	1615
Flt Permitted	0.131			0.200				0.970			0.955	
Satd. Flow (perm)	249	1881	1615	380	1881	1509	0	1843	1615	0	1814	1615
Satd. Flow (RTOR)			153			153			136			136
Adj. Flow (vph)	85	807	14	5	827	96	25	15	10	71	5	60
Lane Group Flow (vph)	85	807	14	5	827	96	0	40	10	0	76	60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	11.0	61.0	61.0	10.0	60.0	60.0	12.0	12.0	12.0	17.0	17.0	17.0
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	64.6	64.5	64.5	61.2	57.7	57.7		10.3	10.3		9.1	9.1
Actuated g/C Ratio	0.65	0.64	0.64	0.61	0.58	0.58		0.10	0.10		0.09	0.09
v/c Ratio	0.35	0.67	0.01	0.02	0.76	0.10		0.21	0.03		0.46	0.22
Control Delay	10.3	15.3	0.0	6.6	19.1	1.0		47.8	0.2		51.8	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	10.3	15.3	0.0	6.6	19.1	1.0		47.8	0.2		51.8	1.9
LOS	B	B	A	A	B	A		D	A		D	A
Approach Delay		14.6			17.1			38.2			29.8	
Approach LOS		B			B			D			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 95 (95%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 17.4	Intersection LOS: B
Intersection Capacity Utilization 68.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	742	13	5	761	88	23	14	9	65	5	55
Future Volume (vph)	78	742	13	5	761	88	23	14	9	65	5	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509		1842	1615		1815	1615
Flt Permitted	0.13	1.00	1.00	0.20	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (perm)	250	1881	1615	380	1881	1509		1842	1615		1815	1615
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)	85	807	14	5	827	96	25	15	10	71	5	60
RTOR Reduction (vph)	0	0	6	0	0	43	0	0	9	0	0	55
Lane Group Flow (vph)	85	807	8	5	827	53	0	40	1	0	76	5
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	63.7	59.3	59.3	56.4	55.4	55.4		10.3	10.3		7.9	7.9
Effective Green, g (s)	63.7	59.3	59.3	56.4	55.4	55.4		10.3	10.3		7.9	7.9
Actuated g/C Ratio	0.64	0.59	0.59	0.56	0.55	0.55		0.10	0.10		0.08	0.08
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	227	1115	957	228	1042	835		189	166		143	127
v/s Ratio Prot	c0.02	c0.43		0.00	c0.44			c0.02			c0.04	
v/s Ratio Perm	0.22		0.01	0.01		0.04			0.00			0.00
v/c Ratio	0.37	0.72	0.01	0.02	0.79	0.06		0.21	0.01		0.53	0.04
Uniform Delay, d1	14.9	14.5	8.3	12.6	17.8	10.3		41.1	40.3		44.3	42.5
Progression Factor	1.00	1.00	1.00	1.07	0.82	2.05		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.0	4.1	0.0	0.0	5.6	0.1		2.5	0.1		3.8	0.1
Delay (s)	15.9	18.6	8.3	13.6	20.2	21.3		43.7	40.3		48.0	42.7
Level of Service	B	B	A	B	C	C		D	D		D	D
Approach Delay (s)		18.2			20.3			43.0			45.7	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	748	28	9	782	11	17	1	24	10	1	48
Future Volume (vph)	51	748	28	9	782	11	17	1	24	10	1	48
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.998			0.922			0.890	
Flt Protected	0.950			0.950				0.980			0.991	
Satd. Flow (prot)	1805	1872	0	1805	1842	0	0	1442	0	0	1676	0
Flt Permitted	0.950			0.950				0.980			0.991	
Satd. Flow (perm)	1805	1872	0	1805	1842	0	0	1442	0	0	1676	0
Adj. Flow (vph)	55	813	30	10	850	12	18	1	26	11	1	52
Lane Group Flow (vph)	55	843	0	10	862	0	0	45	0	0	64	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 54.1%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	748	28	9	782	11	17	1	24	10	1	48
Future Volume (Veh/h)	51	748	28	9	782	11	17	1	24	10	1	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	813	30	10	850	12	18	1	26	11	1	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.77			0.67			0.78	0.78	0.67	0.78	0.78	0.77
vC, conflicting volume	862			843			1860	1820	828	1826	1829	856
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	675			515			1309	1257	493	1264	1269	667
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	92			99			79	99	92	89	99	85
cM capacity (veh/h)	716			708			85	123	346	99	121	357

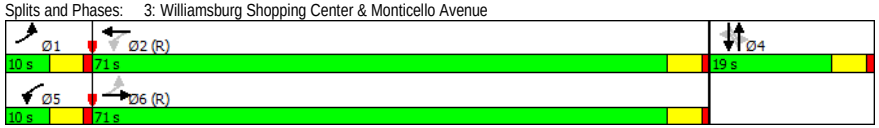
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	55	843	10	862	45	64
Volume Left	55	0	10	0	18	11
Volume Right	0	30	0	12	26	52
cSH	716	1700	708	1700	152	241
Volume to Capacity	0.08	0.50	0.01	0.51	0.30	0.27
Queue Length 95th (ft)	6	0	1	0	29	26
Control Delay (s)	10.4	0.0	10.2	0.0	38.2	25.2
Lane LOS	B		B		E	D
Approach Delay (s)	0.6		0.1		38.2	25.2
Approach LOS					E	D

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	680	46	56	693	18	67	1	57	12	8	35
Future Volume (vph)	30	680	46	56	693	18	67	1	57	12	8	35
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.996			0.852			0.914	
Flt Protected	0.950			0.950			0.950				0.989	
Satd. Flow (prot)	1805	1864	0	1805	1856	0	1805	1619	0	0	1717	0
Flt Permitted	0.298			0.273			0.808				0.914	
Satd. Flow (perm)	566	1864	0	519	1856	0	1535	1619	0	0	1587	0
Satd. Flow (RTOR)		7			3			62			38	
Adj. Flow (vph)	33	739	50	61	753	20	73	1	62	13	9	38
Lane Group Flow (vph)	33	789	0	61	773	0	73	63	0	0	60	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	10.0	71.0		10.0	71.0		19.0	19.0		19.0	19.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	77.9	74.4		79.3	76.7		10.1	10.1			10.1	
Actuated g/C Ratio	0.78	0.74		0.79	0.77		0.10	0.10			0.10	
v/c Ratio	0.06	0.57		0.13	0.54		0.47	0.29			0.31	
Control Delay	3.1	7.0		1.9	6.1		51.7	14.3			23.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	3.1	7.0		1.9	6.1		51.7	14.3			23.9	
LOS	A	A		A	A		D	B			C	
Approach Delay		6.8			5.8			34.4			23.9	
Approach LOS		A			A			C			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 96 (96%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 8.9	Intersection LOS: A
Intersection Capacity Utilization 65.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	680	46	56	693	18	67	1	57	12	8	35
Future Volume (vph)	30	680	46	56	693	18	67	1	57	12	8	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1805	1864		1805	1856		1805	1620			1719	
Flt Permitted	0.30	1.00		0.27	1.00		0.81	1.00			0.91	
Satd. Flow (perm)	567	1864		519	1856		1535	1620			1589	
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)	33	739	50	61	753	20	73	1	62	13	9	38
RTOR Reduction (vph)	0	2	0	0	1	0	0	56	0	0	35	0
Lane Group Flow (vph)	33	787	0	61	772	0	73	7	0	0	25	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	74.8	71.4		77.4	72.7		8.9	8.9			8.9	
Effective Green, g (s)	74.8	71.4		77.4	72.7		8.9	8.9			8.9	
Actuated g/C Ratio	0.75	0.71		0.77	0.73		0.09	0.09			0.09	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	466	1330		462	1349		136	144			141	
v/s Ratio Prot	0.00	c0.42		c0.01	0.42			0.00				
v/s Ratio Perm	0.05			0.10			c0.05				0.02	
v/c Ratio	0.07	0.59		0.13	0.57		0.54	0.05			0.18	
Uniform Delay, d1	4.3	7.1		4.5	6.4		43.6	41.7			42.2	
Progression Factor	1.08	0.67		0.53	0.63		1.00	1.00			1.00	
Incremental Delay, d2	0.1	1.6		0.1	1.6		4.0	0.1			0.6	
Delay (s)	4.7	6.3		2.5	5.6		47.6	41.8			42.8	
Level of Service	A	A		A	A		D	D			D	
Approach Delay (s)		6.3			5.4			44.9			42.8	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	22	757	778	37	17	15
Future Volume (vph)	22	757	778	37	17	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.936	
Flt Protected	0.950				0.974	
Satd. Flow (prot)	1805	1881	1853	0	1732	0
Flt Permitted	0.950				0.974	
Satd. Flow (perm)	1805	1881	1853	0	1732	0
Adj. Flow (vph)	24	823	846	40	18	16
Lane Group Flow (vph)	24	823	886	0	34	0
Sign Control		Free	Free		Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 53.2%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	757	778	37	17	15
Future Volume (Veh/h)	22	757	778	37	17	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	823	846	40	18	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)		489	447			
pX, platoon unblocked	0.76				0.88	0.76
vC, conflicting volume	886				1737	866
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	696				1194	670
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				90	95
cM capacity (veh/h)	694				176	352

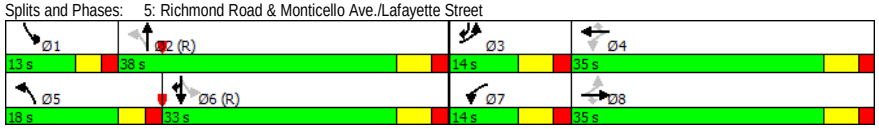
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	24	823	886	34
Volume Left	24	0	0	18
Volume Right	0	0	40	16
cSH	694	1700	1700	230
Volume to Capacity	0.03	0.48	0.52	0.15
Queue Length 95th (ft)	3	0	0	13
Control Delay (s)	10.4	0.0	0.0	23.3
Lane LOS	B			C
Approach Delay (s)	0.3		0.0	23.3
Approach LOS				C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	284	330	122	14	317	172	193	373	15	103	282	328
Future Volume (vph)	284	330	122	14	317	172	193	373	15	103	282	328
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.994				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3332	0	1805	1827	1599
Flt Permitted	0.278			0.425			0.371			0.506		
Satd. Flow (perm)	1005	1900	1583	808	1845	1524	647	3332	0	961	1827	1599
Satd. Flow (RTOR)			153			187		4				263
Adj. Flow (vph)	309	359	133	15	345	187	210	405	16	112	307	357
Lane Group Flow (vph)	309	359	133	15	345	187	210	421	0	112	307	357
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Total Split (s)	14.0	35.0	35.0	14.0	35.0	35.0	18.0	38.0		13.0	33.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Act Effct Green (s)	35.4	32.2	32.2	31.8	23.8	23.8	49.5	36.9		42.8	33.6	47.6
Actuated g/C Ratio	0.35	0.32	0.32	0.32	0.24	0.24	0.50	0.37		0.43	0.34	0.48
v/c Ratio	0.56	0.59	0.22	0.04	0.79	0.37	0.48	0.34		0.23	0.50	0.40
Control Delay	16.1	23.6	4.2	17.6	48.3	6.4	18.9	24.6		9.4	17.9	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.4	0.2
Total Delay	16.1	23.6	4.2	17.6	48.3	6.4	18.9	24.6		9.4	18.3	3.6
LOS	B	C	A	B	D	A	B	C		A	B	A
Approach Delay		17.5			33.1			22.7			10.3	
Approach LOS		B			C			C			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 12 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 19.8	Intersection LOS: B
Intersection Capacity Utilization 69.5%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



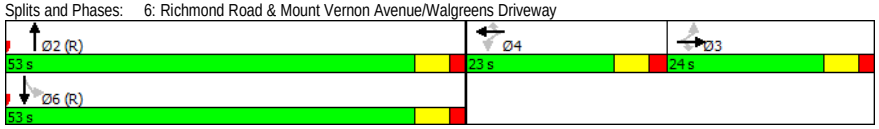
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	284	330	122	14	317	172	193	373	15	103	282	328
Future Volume (vph)	284	330	122	14	317	172	193	373	15	103	282	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3333		1805	1827	1599
Flt Permitted	0.28	1.00	1.00	0.43	1.00	1.00	0.37	1.00		0.51	1.00	1.00
Satd. Flow (perm)	1006	1900	1583	808	1845	1524	647	3333		961	1827	1599
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)	309	359	133	15	345	187	210	405	16	112	307	357
RTOR Reduction (vph)	0	0	90	0	0	136	0	3	0	0	0	147
Lane Group Flow (vph)	309	359	43	15	345	51	210	418	0	112	307	210
Heavy Vehicles (%)	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	40.2	32.2	32.2	30.6	27.4	27.4	45.0	33.4		38.2	30.0	44.0
Effective Green, g (s)	40.2	32.2	32.2	30.6	27.4	27.4	45.0	33.4		38.2	30.0	44.0
Actuated g/C Ratio	0.40	0.32	0.32	0.31	0.27	0.27	0.45	0.33		0.38	0.30	0.44
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	598	611	509	279	505	417	408	1113		436	548	703
v/s Ratio Prot	c0.04	c0.19		0.00	c0.19		c0.06	0.13		0.02	c0.17	0.13
v/s Ratio Perm	0.17		0.03	0.01		0.03	0.17			0.08		
v/c Ratio	0.52	0.59	0.08	0.05	0.68	0.12	0.51	0.38		0.26	0.56	0.30
Uniform Delay, d1	21.2	28.3	23.6	24.5	32.4	27.3	18.2	25.4		20.4	29.4	18.0
Progression Factor	0.60	0.68	1.02	1.00	1.00	1.00	1.00	1.00		0.56	0.52	0.37
Incremental Delay, d2	0.7	1.3	0.1	0.1	3.8	0.1	1.1	1.0		0.3	3.9	0.2
Delay (s)	13.4	20.6	24.2	24.6	36.2	27.4	19.3	26.3		11.8	19.2	7.0
Level of Service	B	C	C	C	D	C	B	C		B	B	A
Approach Delay (s)		18.4			32.9			24.0			12.5	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	842	15	29	683	70
Future Volume (vph)	95	5	54	11	12	52	0	842	15	29	683	70
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.997			0.986	
Flt Protected		0.954			0.977					0.950		
Satd. Flow (prot)	0	1813	1615	0	1856	1615	0	3399	0	1805	3496	0
Flt Permitted		0.718			0.325					0.261		
Satd. Flow (perm)	0	1364	1615	0	618	1615	0	3399	0	496	3496	0
Satd. Flow (RTOR)			98			98		2			15	
Adj. Flow (vph)	103	5	59	12	13	57	0	915	16	32	742	76
Lane Group Flow (vph)	0	108	59	0	25	57	0	931	0	32	818	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	24.0	24.0	24.0	23.0	23.0	23.0		53.0		53.0	53.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		13.1	13.1		10.2	10.2		61.0		61.0	61.0	
Actuated g/C Ratio		0.13	0.13		0.10	0.10		0.61		0.61	0.61	
v/c Ratio		0.60	0.20		0.40	0.23		0.45		0.11	0.38	
Control Delay		54.3	3.8		58.5	4.2		14.0		16.2	13.6	
Queue Delay		0.0	0.0		0.0	0.0		0.1		0.0	0.0	
Total Delay		54.3	3.8		58.5	4.2		14.1		16.2	13.6	
LOS		D	A		E	A		B		B	B	
Approach Delay		36.4			20.7			14.1			13.7	
Approach LOS		D			C			B			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 16.0	Intersection LOS: B
Intersection Capacity Utilization 48.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	842	15	29	683	70
Future Volume (vph)	95	5	54	11	12	52	0	842	15	29	683	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		1.00		1.00	0.99	
Flt Protected		0.95	1.00		0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1814	1615		1855	1615		3400		1805	3496	
Flt Permitted		0.72	1.00		0.33	1.00		1.00		0.26	1.00	
Satd. Flow (perm)		1364	1615		618	1615		3400		495	3496	
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)	103	5	59	12	13	57	0	915	16	32	742	76
RTOR Reduction (vph)	0	0	51	0	0	52	0	1	0	0	6	0
Lane Group Flow (vph)	0	108	8	0	25	5	0	930	0	32	812	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		13.1	13.1		9.1	9.1		59.8		59.8	59.8	
Effective Green, g (s)		13.1	13.1		9.1	9.1		59.8		59.8	59.8	
Actuated g/C Ratio		0.13	0.13		0.09	0.09		0.60		0.60	0.60	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		178	211		56	146		2033		296	2090	
v/s Ratio Prot								c0.27			0.23	
v/s Ratio Perm		c0.08	0.00		c0.04	0.00				0.06		
v/c Ratio		0.61	0.04		0.45	0.04		0.46		0.11	0.39	
Uniform Delay, d1		41.0	37.9		43.1	41.4		11.1		8.6	10.5	
Progression Factor		1.00	1.00		1.00	1.00		1.03		1.20	1.10	
Incremental Delay, d2		5.7	0.1		5.6	0.1		0.7		0.6	0.5	
Delay (s)		46.8	38.0		48.6	41.5		12.2		11.0	12.0	
Level of Service		D	D		D	D		B		B	B	
Approach Delay (s)		43.7			43.7			12.2			12.0	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	5	542	4	10	379
Future Volume (vph)	2	5	542	4	10	379
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.904		0.999			
Flt Protected	0.986				0.950	
Satd. Flow (prot)	1694	0	1742	0	1805	1845
Flt Permitted	0.986				0.950	
Satd. Flow (perm)	1694	0	1742	0	1805	1845
Adj. Flow (vph)	2	5	589	4	11	412
Lane Group Flow (vph)	7	0	593	0	11	412
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 38.8%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	5	542	4	10	379
Future Volume (Veh/h)	2	5	542	4	10	379
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	5	589	4	11	412
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						658
pX, platoon unblocked	0.89					
vC, conflicting volume	1025	591			593	
vC1, stage 1 conf vol	591					
vC2, stage 2 conf vol	434					
vCu, unblocked vol	968	591			593	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			99	
cM capacity (veh/h)	472	511			993	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	7	593	11	412
Volume Left	2	0	11	0
Volume Right	5	4	0	0
cSH	499	1700	993	1700
Volume to Capacity	0.01	0.35	0.01	0.24
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	12.3	0.0	8.7	0.0
Lane LOS	B		A	
Approach Delay (s)	12.3	0.0	0.2	
Approach LOS	B			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	351	684	606	369	634	465
Future Volume (vph)	351	684	606	369	634	465
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Satd. Flow (RTOR)		542		401		
Adj. Flow (vph)	382	743	659	401	689	505
Lane Group Flow (vph)	382	743	659	401	689	505
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	40.0	40.0	31.0	31.0	29.0	60.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	28.5	28.5	33.0	33.0	23.5	61.5
Actuated g/C Ratio	0.28	0.28	0.33	0.33	0.24	0.62
v/c Ratio	0.76	0.89	0.60	0.51	0.87	0.44
Control Delay	42.1	22.7	19.2	4.0	49.7	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	22.7	19.2	4.0	49.7	12.9
LOS	D	C	B	A	D	B
Approach Delay	29.3		13.4			34.2
Approach LOS	C		B			C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 40 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 26.0	Intersection LOS: C
Intersection Capacity Utilization 67.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	351	684	606	369	634	465
Future Volume (vph)	351	684	606	369	634	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	382	743	659	401	689	505
RTOR Reduction (vph)	0	388	0	269	0	0
Lane Group Flow (vph)	382	355	659	132	689	505
Heavy Vehicles (%)	2%	3%	9%	3%	4%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	28.5	28.5	33.0	33.0	23.5	61.5
Effective Green, g (s)	28.5	28.5	33.0	33.0	23.5	61.5
Actuated g/C Ratio	0.28	0.28	0.33	0.33	0.24	0.62
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	504	446	1092	517	791	1145
v/s Ratio Prot	0.22		c0.20		c0.20	0.27
v/s Ratio Perm		c0.23		0.08		
v/c Ratio	0.76	0.80	0.60	0.26	0.87	0.44
Uniform Delay, d1	32.6	33.1	28.0	24.5	36.8	10.2
Progression Factor	1.00	1.00	0.56	0.54	1.00	1.00
Incremental Delay, d2	6.4	9.6	2.3	1.1	10.3	1.2
Delay (s)	39.0	42.6	18.0	14.2	47.1	11.4
Level of Service	D	D	B	B	D	B
Approach Delay (s)	41.4		16.6			32.0
Approach LOS	D		B			C

Intersection Summary			
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	12	15	13	535	371	10
Future Volume (vph)	12	15	13	535	371	10
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926				0.996	
Flt Protected	0.978			0.999		
Satd. Flow (prot)	1721	0	0	1880	1856	0
Flt Permitted	0.978			0.999		
Satd. Flow (perm)	1721	0	0	1880	1856	0
Adj. Flow (vph)	13	16	14	582	403	11
Lane Group Flow (vph)	29	0	0	596	414	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 48.6%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	15	13	535	371	10
Future Volume (Veh/h)	12	15	13	535	371	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	16	14	582	403	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					738	
pX, platoon unblocked	0.90	0.90	0.90			
vC, conflicting volume	1018	408	414			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	964	284	290			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	98	99			
cM capacity (veh/h)	253	682	1152			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	29	596	414
Volume Left	13	14	0
Volume Right	16	0	11
cSH	388	1152	1700
Volume to Capacity	0.07	0.01	0.24
Queue Length 95th (ft)	6	1	0
Control Delay (s)	15.0	0.3	0.0
Lane LOS	C	A	
Approach Delay (s)	15.0	0.3	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	713	73	34	809	15	31
Future Volume (vph)	713	73	34	809	15	31
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988				0.908	
Flt Protected			0.950		0.984	
Satd. Flow (prot)	1877	0	1805	1881	1698	0
Flt Permitted			0.950		0.984	
Satd. Flow (perm)	1877	0	1805	1881	1698	0
Adj. Flow (vph)	775	79	37	879	16	34
Lane Group Flow (vph)	854	0	37	879	50	0
Sign Control	Free			Free	Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 52.6%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	713	73	34	809	15	31
Future Volume (Veh/h)	713	73	34	809	15	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	775	79	37	879	16	34
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	625			311		
pX, platoon unblocked			0.77		0.87	0.77
vC, conflicting volume			854		1768	814
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			664		1219	613
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		90	91
cM capacity (veh/h)			722		165	383

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	854	37	879	50
Volume Left	0	37	0	16
Volume Right	79	0	0	34
cSH	1700	722	1700	269
Volume to Capacity	0.50	0.05	0.52	0.19
Queue Length 95th (ft)	0	4	0	17
Control Delay (s)	0.0	10.3	0.0	21.4
Lane LOS		B		C
Approach Delay (s)	0.0	0.4		21.4
Approach LOS				C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	61	25	22	525	365	55
Future Volume (vph)	61	25	22	525	365	55
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.982	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1495	1805	1881	1834	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1495	1805	1881	1834	0
Adj. Flow (vph)	66	27	24	571	397	60
Lane Group Flow (vph)	66	27	24	571	457	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 37.7%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	61	25	22	525	365	55
Future Volume (Veh/h)	61	25	22	525	365	55
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	66	27	24	571	397	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					328	
pX, platoon unblocked	0.86	0.86	0.86			
vC, conflicting volume	1046	427	457			
vC1, stage 1 conf vol	427					
vC2, stage 2 conf vol	619					
vCu, unblocked vol	972	251	286			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4	2.2			
p0 queue free %	86	96	98			
cM capacity (veh/h)	458	664	1106			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	66	27	24	571	457
Volume Left	66	0	24	0	0
Volume Right	0	27	0	0	60
cSH	458	664	1106	1700	1700
Volume to Capacity	0.14	0.04	0.02	0.34	0.27
Queue Length 95th (ft)	12	3	2	0	0
Control Delay (s)	14.2	10.6	8.3	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	13.2		0.3		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	149	393	98	43	442	100	80	50	130	77
Average Queue (ft)	53	181	7	3	241	29	28	8	57	30
95th Queue (ft)	125	325	48	26	400	95	65	35	109	62
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)					0					
Queuing Penalty (veh)					1					
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)	0	9	0	0	23	0	0	0		
Queuing Penalty (veh)	0	8	0	0	21	2	0	0		

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	WB	WB	NB	SB
Directions Served	L	L	TR	LTR	LTR
Maximum Queue (ft)	62	35	72	95	90
Average Queue (ft)	25	5	4	35	35
95th Queue (ft)	54	23	44	76	72
Link Distance (ft)			399	311	426
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	225	190			
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (ft)	93	223	64	218	151	75	80
Average Queue (ft)	17	93	24	74	60	39	37
95th Queue (ft)	53	187	53	167	115	81	74
Link Distance (ft)		399		432	399		182
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200		200			75	
Storage Blk Time (%)	0	0		0	10	1	
Queuing Penalty (veh)	0	0		0	6	1	

Intersection: 4: Monticello Avenue/Monticello Ave. & Garrison Drive

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	76	140	32	73
Average Queue (ft)	13	11	2	24
95th Queue (ft)	50	87	17	58
Link Distance (ft)		432	66	471
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)	200			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	0	0		

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	TR	L	T
Maximum Queue (ft)	128	149	249	103	124	410	225	158	238	199	183	257
Average Queue (ft)	58	102	141	37	21	190	84	103	110	94	44	120
95th Queue (ft)	118	167	249	78	81	331	200	168	205	180	116	222
Link Distance (ft)			245	245		430			236			282
Upstream Blk Time (%)			1	0		0			0			0
Queuing Penalty (veh)			4	0		0			3			0
Storage Bay Dist (ft)	150	150			125		225	150		200	225	
Storage Blk Time (%)	0	0	6		0	24	0	4	2	0	0	1
Queuing Penalty (veh)	0	1	17		0	44	1	14	7	0	0	1

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	SB
Directions Served	R
Maximum Queue (ft)	241
Average Queue (ft)	110
95th Queue (ft)	202
Link Distance (ft)	282
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	97	156	79	50	181	192	74	214	216
Average Queue (ft)	61	34	28	36	65	92	19	91	86
95th Queue (ft)	99	87	68	62	138	169	55	173	172
Link Distance (ft)		530	71		282	282		1299	1299
Upstream Blk Time (%)			2		0	0			
Queuing Penalty (veh)			0		0	0			
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)	2	0	5	2			0	9	
Queuing Penalty (veh)	1	0	2	1			1	3	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (ft)	30	78	35	2
Average Queue (ft)	6	23	4	0
95th Queue (ft)	24	66	22	2
Link Distance (ft)	288	19		256
Upstream Blk Time (%)		1		
Queuing Penalty (veh)		4		
Storage Bay Dist (ft)			100	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	L	T
Maximum Queue (ft)	321	489	297	333	250	340	387	292
Average Queue (ft)	160	176	166	161	88	194	239	148
95th Queue (ft)	265	430	254	262	235	293	340	250
Link Distance (ft)	870	870	1299	1299			812	812
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)					250	450		
Storage Blk Time (%)				1	0		0	
Queuing Penalty (veh)				2	1		0	

Intersection: 16: Richmond Road & Existing Access Driveway #3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	45	97	7
Average Queue (ft)	17	9	0
95th Queue (ft)	41	50	2
Link Distance (ft)	117	218	19
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: Existing Access Driveway #1 & Monticello Ave.

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	77	46	78	94
Average Queue (ft)	12	16	5	30
95th Queue (ft)	52	43	45	70
Link Distance (ft)	66		245	240
Upstream Blk Time (%)	1		0	
Queuing Penalty (veh)	6		0	
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		1	0	
Queuing Penalty (veh)		5	0	

Intersection: 22: Richmond Road & Existing Access Driveway #2

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	74	53	37	65	14
Average Queue (ft)	30	18	10	4	1
95th Queue (ft)	60	46	34	44	8
Link Distance (ft)	135	135		256	236
Upstream Blk Time (%)				0	
Queuing Penalty (veh)				0	
Storage Bay Dist (ft)			100		
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

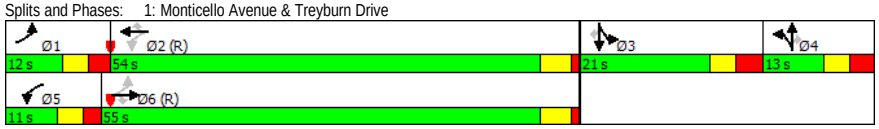
Network Summary

Network wide Queuing Penalty: 160

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	439	37	17	431	43	3	0	3	68	22	32
Future Volume (vph)	26	439	37	17	431	43	3	0	3	68	22	32
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.950			0.964	
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509	0	1805	1615	0	1832	1615
Flt Permitted	0.358			0.389				0.950			0.964	
Satd. Flow (perm)	680	1881	1615	739	1881	1509	0	1805	1615	0	1832	1615
Satd. Flow (RTOR)			153			153			136			136
Adj. Flow (vph)	28	477	40	18	468	47	3	0	3	74	24	35
Lane Group Flow (vph)	28	477	40	18	468	47	0	3	3	0	98	35
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	12.0	55.0	55.0	11.0	54.0	54.0	13.0	13.0	13.0	21.0	21.0	21.0
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	58.7	57.1	57.1	57.4	54.4	54.4		13.9	13.9		10.7	10.7
Actuated g/C Ratio	0.59	0.57	0.57	0.57	0.54	0.54		0.14	0.14		0.11	0.11
v/c Ratio	0.06	0.44	0.04	0.04	0.46	0.05		0.01	0.01		0.50	0.12
Control Delay	8.3	15.1	0.1	6.2	12.0	0.1		42.3	0.0		50.4	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	8.3	15.1	0.1	6.2	12.0	0.1		42.3	0.0		50.4	0.8
LOS	A	B	A	A	B	A		D	A		D	A
Approach Delay		13.6			10.7			21.2			37.4	
Approach LOS		B			B			C			D	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 50 (50%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 15.0	Intersection LOS: B
Intersection Capacity Utilization 45.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	439	37	17	431	43	3	0	3	68	22	32
Future Volume (vph)	26	439	37	17	431	43	3	0	3	68	22	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.96	1.00
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509		1805	1615		1831	1615
Flt Permitted	0.36	1.00	1.00	0.39	1.00	1.00		0.95	1.00		0.96	1.00
Satd. Flow (perm)	680	1881	1615	739	1881	1509		1805	1615		1831	1615
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)	28	477	40	18	468	47	3	0	3	74	24	35
RTOR Reduction (vph)	0	0	19	0	0	23	0	0	3	0	0	32
Lane Group Flow (vph)	28	477	21	18	468	24	0	3	0	0	98	3
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	56.7	52.9	52.9	53.4	51.0	51.0		13.9	13.9		9.3	9.3
Effective Green, g (s)	56.7	52.9	52.9	53.4	51.0	51.0		13.9	13.9		9.3	9.3
Actuated g/C Ratio	0.57	0.53	0.53	0.53	0.51	0.51		0.14	0.14		0.09	0.09
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	428	995	854	420	959	769		250	224		170	150
v/s Ratio Prot	c0.00	c0.25		0.00	0.25			c0.00			c0.05	
v/s Ratio Perm	0.03		0.01	0.02		0.02			0.00			0.00
v/c Ratio	0.07	0.48	0.02	0.04	0.49	0.03		0.01	0.00		0.58	0.02
Uniform Delay, d1	10.6	14.9	11.2	11.5	16.0	12.2		37.1	37.1		43.5	41.2
Progression Factor	1.00	1.00	1.00	0.76	0.69	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	1.7	0.1	0.0	1.7	0.1		0.1	0.0		4.7	0.1
Delay (s)	10.7	16.5	11.3	8.8	12.7	12.3		37.2	37.1		48.1	41.3
Level of Service	B	B	B	A	B	B		D	D		D	D
Approach Delay (s)		15.8			12.5			37.2			46.3	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	446	32	24	466	2	12	0	3	2	1	19
Future Volume (vph)	21	446	32	24	466	2	12	0	3	2	1	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.999			0.975			0.882	
Flt Protected	0.950			0.950				0.961			0.996	
Satd. Flow (prot)	1805	1864	0	1805	1843	0	0	1677	0	0	1669	0
Flt Permitted	0.950			0.950				0.961			0.996	
Satd. Flow (perm)	1805	1864	0	1805	1843	0	0	1677	0	0	1669	0
Adj. Flow (vph)	23	485	35	26	507	2	13	0	3	2	1	21
Lane Group Flow (vph)	23	520	0	26	509	0	0	16	0	0	24	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 36.5%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	446	32	24	466	2	12	0	3	2	1	19
Future Volume (Veh/h)	21	446	32	24	466	2	12	0	3	2	1	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	485	35	26	507	2	13	0	3	2	1	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.92			0.84			0.88	0.88	0.84	0.88	0.88	0.92
vC, conflicting volume	509			520			1129	1110	502	1094	1126	508
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	426			334			880	858	313	841	877	425
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	98			97			94	100	99	99	100	96
cM capacity (veh/h)	1056			1039			220	249	555	242	242	585

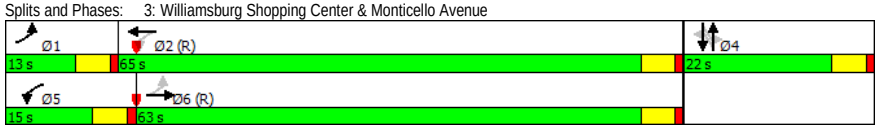
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	23	520	26	509	16	24
Volume Left	23	0	26	0	13	2
Volume Right	0	35	0	2	3	21
cSH	1056	1700	1039	1700	248	497
Volume to Capacity	0.02	0.31	0.03	0.30	0.06	0.05
Queue Length 95th (ft)	2	0	2	0	5	4
Control Delay (s)	8.5	0.0	8.6	0.0	20.5	12.6
Lane LOS	A		A		C	B
Approach Delay (s)	0.4		0.4		20.5	12.6
Approach LOS					C	B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	389	43	68	438	2	50	0	68	0	0	0
Future Volume (vph)	2	389	43	68	438	2	50	0	68	0	0	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.999			0.850				
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1805	1855	0	1805	1861	0	1805	1615	0	0	1900	0
Flt Permitted	0.490			0.433			0.757					
Satd. Flow (perm)	931	1855	0	823	1861	0	1438	1615	0	0	1900	0
Satd. Flow (RTOR)		10						506				
Adj. Flow (vph)	2	423	47	74	476	2	54	0	74	0	0	0
Lane Group Flow (vph)	2	470	0	74	478	0	54	74	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	13.0	63.0		15.0	65.0		22.0	22.0		22.0	22.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	78.1	74.7		82.3	81.8		9.2	9.2				
Actuated g/C Ratio	0.78	0.75		0.82	0.82		0.09	0.09				
v/c Ratio	0.00	0.34		0.10	0.31		0.41	0.12				
Control Delay	2.0	4.6		1.9	3.5		51.3	0.4				
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0				
Total Delay	2.0	4.6		1.9	3.5		51.3	0.4				
LOS	A	A		A	A		D	A				
Approach Delay		4.6			3.3			21.9				
Approach LOS		A			A			C				

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 61 (61%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.41	
Intersection Signal Delay: 5.9	Intersection LOS: A
Intersection Capacity Utilization 44.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	389	43	68	438	2	50	0	68	0	0	0
Future Volume (vph)	2	389	43	68	438	2	50	0	68	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0				
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00				
Frt	1.00	0.98		1.00	1.00		1.00	0.85				
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00				
Satd. Flow (prot)	1805	1855		1805	1862		1805	1615				
Flt Permitted	0.49	1.00		0.43	1.00		0.76	1.00				
Satd. Flow (perm)	931	1855		824	1862		1439	1615				
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)	2	423	47	74	476	2	54	0	74	0	0	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	68	0	0	0	0
Lane Group Flow (vph)	2	467	0	74	478	0	54	6	0	0	0	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA				
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	72.7	71.6		81.1	75.8		8.1	8.1				
Effective Green, g (s)	72.7	71.6		81.1	75.8		8.1	8.1				
Actuated g/C Ratio	0.73	0.72		0.81	0.76		0.08	0.08				
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0				
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0				
Lane Grp Cap (vph)	686	1328		720	1411		116	130				
v/s Ratio Prot	0.00	c0.25		c0.01	c0.26			0.00				
v/s Ratio Perm	0.00			0.08			c0.04					
v/c Ratio	0.00	0.35		0.10	0.34		0.47	0.05				
Uniform Delay, d1	3.7	5.4		2.3	3.9		43.9	42.4				
Progression Factor	0.79	0.64		0.69	0.77		1.00	1.00				
Incremental Delay, d2	0.0	0.7		0.1	0.6		2.9	0.1				
Delay (s)	2.9	4.1		1.7	3.6		46.8	42.5				
Level of Service	A	A		A	A		D	D				
Approach Delay (s)		4.1			3.4			44.3			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	449	510	2	3	11
Future Volume (vph)	8	449	510	2	3	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.892	
Flt Protected	0.950				0.990	
Satd. Flow (prot)	1805	1881	1863	0	1678	0
Flt Permitted	0.950				0.990	
Satd. Flow (perm)	1805	1881	1863	0	1678	0
Adj. Flow (vph)	9	488	554	2	3	12
Lane Group Flow (vph)	9	488	556	0	15	0
Sign Control		Free	Free		Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 37.0%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	449	510	2	3	11
Future Volume (Veh/h)	8	449	510	2	3	11
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	488	554	2	3	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		489	447			
pX, platoon unblocked	0.92				0.96	0.92
vC, conflicting volume	556				1061	555
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	476				857	474
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	98
cM capacity (veh/h)	1011				314	548

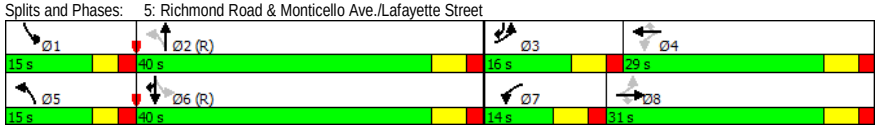
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	9	488	556	15
Volume Left	9	0	0	3
Volume Right	0	0	2	12
cSH	1011	1700	1700	476
Volume to Capacity	0.01	0.29	0.33	0.03
Queue Length 95th (ft)	1	0	0	2
Control Delay (s)	8.6	0.0	0.0	12.8
Lane LOS	A			B
Approach Delay (s)	0.2		0.0	12.8
Approach LOS				B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	149	139	8	188	54	88	202	3	107	296	257
Future Volume (vph)	181	149	139	8	188	54	88	202	3	107	296	257
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3339	0	1805	1827	1599
Flt Permitted	0.394			0.654			0.483			0.586		
Satd. Flow (perm)	1424	1900	1583	1243	1845	1524	842	3339	0	1113	1827	1599
Satd. Flow (RTOR)			153			153		1				279
Adj. Flow (vph)	197	162	151	9	204	59	96	220	3	116	322	279
Lane Group Flow (vph)	197	162	151	9	204	59	96	223	0	116	322	279
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Total Split (s)	16.0	31.0	31.0	14.0	29.0	29.0	15.0	40.0		15.0	40.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Act Effct Green (s)	30.7	28.7	28.7	24.2	16.2	16.2	52.3	42.5		53.6	45.2	60.5
Actuated g/C Ratio	0.31	0.29	0.29	0.24	0.16	0.16	0.52	0.42		0.54	0.45	0.60
v/c Ratio	0.32	0.30	0.27	0.03	0.68	0.16	0.19	0.16		0.18	0.39	0.26
Control Delay	17.0	20.8	4.9	21.2	50.6	0.9	12.1	19.6		10.9	17.2	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.3	0.2
Total Delay	17.0	20.8	4.9	21.2	50.6	0.9	12.1	19.6		10.9	17.4	1.8
LOS	B	C	A	C	D	A	B	B		B	B	A
Approach Delay		14.6			38.9			17.3			10.3	
Approach LOS		B			D			B			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 66 (66%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 17.0	Intersection LOS: B
Intersection Capacity Utilization 58.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



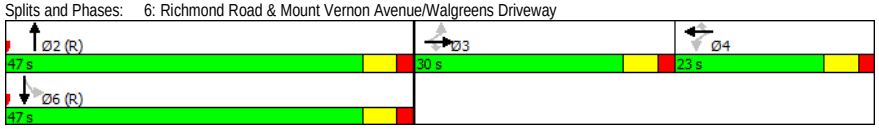
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	149	139	8	188	54	88	202	3	107	296	257
Future Volume (vph)	181	149	139	8	188	54	88	202	3	107	296	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3339		1805	1827	1599
Flt Permitted	0.39	1.00	1.00	0.65	1.00	1.00	0.48	1.00		0.59	1.00	1.00
Satd. Flow (perm)	1425	1900	1583	1243	1845	1524	842	3339		1114	1827	1599
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)	197	162	151	9	204	59	96	220	3	116	322	279
RTOR Reduction (vph)	0	0	108	0	0	47	0	1	0	0	0	126
Lane Group Flow (vph)	197	162	43	9	204	12	96	222	0	116	322	153
Heavy Vehicles (%)	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	36.3	28.7	28.7	22.6	21.0	21.0	45.0	37.7		48.4	39.4	54.7
Effective Green, g (s)	36.3	28.7	28.7	22.6	21.0	21.0	45.0	37.7		48.4	39.4	54.7
Actuated g/C Ratio	0.36	0.29	0.29	0.23	0.21	0.21	0.45	0.38		0.48	0.39	0.55
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	704	545	454	289	387	320	438	1258		601	719	874
v/s Ratio Prot	c0.03	0.09		0.00	c0.11		0.02	0.07		c0.02	c0.18	0.10
v/s Ratio Perm	0.08		0.03	0.01		0.01	0.08			0.08		
v/c Ratio	0.28	0.30	0.10	0.03	0.53	0.04	0.22	0.18		0.19	0.45	0.17
Uniform Delay, d1	22.1	27.8	26.1	30.1	35.1	31.5	16.2	20.8		14.2	22.3	11.3
Progression Factor	0.66	0.69	0.76	1.00	1.00	1.00	1.00	1.00		0.92	0.74	0.63
Incremental Delay, d2	0.2	0.3	0.1	0.0	1.3	0.0	0.3	0.3		0.2	2.0	0.1
Delay (s)	14.7	19.4	20.1	30.1	36.4	31.5	16.5	21.1		13.2	18.4	7.3
Level of Service	B	B	C	C	D	C	B	C		B	B	A
Approach Delay (s)		17.8			35.1			19.7			13.3	
Approach LOS		B			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	418	41	50	641	31
Future Volume (vph)	21	5	10	48	9	39	0	418	41	50	641	31
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.986			0.993	
Flt Protected		0.961			0.960					0.950		
Satd. Flow (prot)	0	1826	1615	0	1824	1615	0	3375	0	1805	3518	0
Flt Permitted		0.424			0.741					0.469		
Satd. Flow (perm)	0	806	1615	0	1408	1615	0	3375	0	891	3518	0
Satd. Flow (RTOR)			98			98		13			6	
Adj. Flow (vph)	23	5	11	52	10	42	0	454	45	54	697	34
Lane Group Flow (vph)	0	28	11	0	62	42	0	499	0	54	731	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	30.0	30.0	30.0	23.0	23.0	23.0		47.0		47.0	47.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		11.2	11.2		9.7	9.7		69.5		69.5	69.5	
Actuated g/C Ratio		0.11	0.11		0.10	0.10		0.70		0.70	0.70	
v/c Ratio		0.31	0.04		0.45	0.17		0.21		0.09	0.30	
Control Delay		47.3	0.3		52.1	1.5		5.5		6.7	5.8	
Queue Delay		0.0	0.0		0.0	0.0		0.0		0.0	0.0	
Total Delay		47.3	0.3		52.1	1.5		5.5		6.7	5.8	
LOS		D	A		D	A		A		A	A	
Approach Delay		34.0			31.7			5.5			5.9	
Approach LOS		C			C			A			A	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 80 (80%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 8.4	Intersection LOS: A
Intersection Capacity Utilization 47.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	10	48	9	39	0	418	41	50	641	31
Future Volume (vph)	21	5	10	48	9	39	0	418	41	50	641	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		0.99		1.00	0.99	
Flt Protected		0.96	1.00		0.96	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1825	1615		1824	1615		3377		1805	3518	
Flt Permitted		0.42	1.00		0.74	1.00		1.00		0.47	1.00	
Satd. Flow (perm)		805	1615		1408	1615		3377		891	3518	
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)	23	5	11	52	10	42	0	454	45	54	697	34
RTOR Reduction (vph)	0	0	10	0	0	38	0	5	0	0	2	0
Lane Group Flow (vph)	0	28	1	0	62	4	0	494	0	54	729	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		8.6	8.6		8.6	8.6		64.8		64.8	64.8	
Effective Green, g (s)		8.6	8.6		8.6	8.6		64.8		64.8	64.8	
Actuated g/C Ratio		0.09	0.09		0.09	0.09		0.65		0.65	0.65	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		69	138		121	138		2188		577	2279	
v/s Ratio Prot								0.15			c0.21	
v/s Ratio Perm		c0.03	0.00		c0.04	0.00				0.06		
v/c Ratio		0.41	0.01		0.51	0.03		0.23		0.09	0.32	
Uniform Delay, d1		43.3	41.8		43.7	41.9		7.3		6.6	7.8	
Progression Factor		1.00	1.00		1.00	1.00		0.61		0.61	0.58	
Incremental Delay, d2		3.9	0.0		3.6	0.1		0.2		0.3	0.3	
Delay (s)		47.1	41.8		47.3	41.9		4.6		4.3	4.9	
Level of Service		D	D		D	D		A		A	A	
Approach Delay (s)		45.6			45.2			4.6			4.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	1	286	0	2	447
Future Volume (vph)	1	1	286	0	2	447
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932					
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1728	0	1743	0	1805	1845
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1728	0	1743	0	1805	1845
Adj. Flow (vph)	1	1	311	0	2	486
Lane Group Flow (vph)	2	0	311	0	2	486
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 33.5%		ICU Level of Service A
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	1	286	0	2	447
Future Volume (Veh/h)	1	1	286	0	2	447
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	311	0	2	486
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						658
pX, platoon unblocked	0.90					
vC, conflicting volume	801	311			311	
vC1, stage 1 conf vol	311					
vC2, stage 2 conf vol	490					
vCu, unblocked vol	723	311			311	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	553	734			1261	

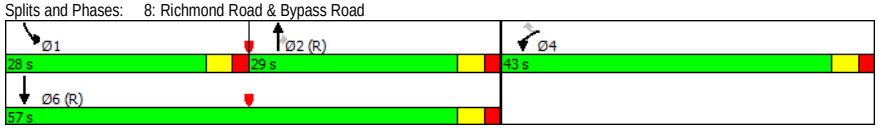
Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	2	311	2	486
Volume Left	1	0	2	0
Volume Right	1	0	0	0
cSH	631	1700	1261	1700
Volume to Capacity	0.00	0.18	0.00	0.29
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	10.7	0.0	7.9	0.0
Lane LOS	B		A	
Approach Delay (s)	10.7	0.0	0.0	
Approach LOS	B			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	287	378	242	208	328	404
Future Volume (vph)	287	378	242	208	328	404
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Satd. Flow (RTOR)		411		226		
Adj. Flow (vph)	312	411	263	226	357	439
Lane Group Flow (vph)	312	411	263	226	357	439
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	43.0	43.0	29.0	29.0	28.0	57.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	23.5	23.5	45.7	45.7	15.8	66.5
Actuated g/C Ratio	0.24	0.24	0.46	0.46	0.16	0.66
v/c Ratio	0.75	0.60	0.17	0.27	0.67	0.35
Control Delay	46.4	6.8	14.7	3.8	45.8	9.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.4	6.8	14.7	3.8	45.8	9.3
LOS	D	A	B	A	D	A
Approach Delay	23.9		9.7			25.7
Approach LOS	C		A			C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 98 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 21.2	Intersection LOS: C
Intersection Capacity Utilization 46.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	287	378	242	208	328	404
Future Volume (vph)	287	378	242	208	328	404
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	312	411	263	226	357	439
RTOR Reduction (vph)	0	314	0	123	0	0
Lane Group Flow (vph)	312	97	263	103	357	439
Heavy Vehicles (%)	2%	3%	9%	3%	4%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	23.5	23.5	45.7	45.7	15.8	66.5
Effective Green, g (s)	23.5	23.5	45.7	45.7	15.8	66.5
Actuated g/C Ratio	0.24	0.24	0.46	0.46	0.16	0.66
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	415	368	1513	716	531	1238
v/s Ratio Prot	c0.18		0.08		c0.11	c0.24
v/s Ratio Perm		0.06		0.07		
v/c Ratio	0.75	0.26	0.17	0.14	0.67	0.35
Uniform Delay, d1	35.5	31.2	16.0	15.8	39.7	7.3
Progression Factor	1.00	1.00	0.79	0.93	1.00	1.00
Incremental Delay, d2	7.5	0.4	0.2	0.4	3.3	0.8
Delay (s)	43.0	31.6	12.9	15.2	43.0	8.1
Level of Service	D	C	B	B	D	A
Approach Delay (s)	36.5		13.9			23.8
Approach LOS	D		B			C

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	27	24	262	426	23
Future Volume (vph)	25	27	24	262	426	23
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.930				0.993	
Flt Protected	0.976			0.996		
Satd. Flow (prot)	1725	0	0	1763	1834	0
Flt Permitted	0.976			0.996		
Satd. Flow (perm)	1725	0	0	1763	1834	0
Adj. Flow (vph)	27	29	26	285	463	25
Lane Group Flow (vph)	56	0	0	311	488	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 43.7%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	27	24	262	426	23
Future Volume (Veh/h)	25	27	24	262	426	23
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	29	26	285	463	25
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					738	
pX, platoon unblocked	0.91	0.91	0.91			
vC, conflicting volume	812	476	488			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	741	368	382			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	95	98			
cM capacity (veh/h)	342	617	1075			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	56	311	488
Volume Left	27	26	0
Volume Right	29	0	25
cSH	444	1075	1700
Volume to Capacity	0.13	0.02	0.29
Queue Length 95th (ft)	11	2	0
Control Delay (s)	14.3	0.9	0.0
Lane LOS	B	A	
Approach Delay (s)	14.3	0.9	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	393	59	64	478	35	87
Future Volume (vph)	393	59	64	478	35	87
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.982				0.904	
Flt Protected			0.950		0.986	
Satd. Flow (prot)	1850	0	1752	1863	1694	0
Flt Permitted			0.950		0.986	
Satd. Flow (perm)	1850	0	1752	1863	1694	0
Adj. Flow (vph)	427	64	70	520	38	95
Lane Group Flow (vph)	491	0	70	520	133	0
Sign Control	Free			Free	Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 45.1%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	393	59	64	478	35	87
Future Volume (Veh/h)	393	59	64	478	35	87
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	427	64	70	520	38	95
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	625			311		
pX, platoon unblocked			0.93		0.94	0.93
vC, conflicting volume			491		1119	459
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			412		924	378
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		86	85
cM capacity (veh/h)			1059		266	625

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	491	70	520	133
Volume Left	0	70	0	38
Volume Right	64	0	0	95
cSH	1700	1059	1700	451
Volume to Capacity	0.29	0.07	0.31	0.30
Queue Length 95th (ft)	0	5	0	30
Control Delay (s)	0.0	8.6	0.0	16.3
Lane LOS		A		C
Approach Delay (s)	0.0	1.0		16.3
Approach LOS				C

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	49	41	246	402	57
Future Volume (vph)	60	49	41	246	402	57
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.983	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1615	1770	1759	1802	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1615	1770	1759	1802	0
Adj. Flow (vph)	65	53	45	267	437	62
Lane Group Flow (vph)	65	53	45	267	499	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 41.3%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	49	41	246	402	57
Future Volume (Veh/h)	60	49	41	246	402	57
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	65	53	45	267	437	62
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					328	
pX, platoon unblocked	0.87	0.87	0.87			
vC, conflicting volume	825	468	499			
vC1, stage 1 conf vol	468					
vC2, stage 2 conf vol	357					
vCu, unblocked vol	725	315	350			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	92	96			
cM capacity (veh/h)	539	636	1052			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	65	53	45	267	499
Volume Left	65	0	45	0	0
Volume Right	0	53	0	0	62
cSH	539	636	1052	1700	1700
Volume to Capacity	0.12	0.08	0.04	0.16	0.29
Queue Length 95th (ft)	10	7	3	0	0
Control Delay (s)	12.6	11.2	8.6	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	12.0		1.2		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	107	312	126	83	293	91	28	27	144	50
Average Queue (ft)	19	133	15	10	117	14	3	3	64	19
95th Queue (ft)	65	241	68	48	223	60	17	16	116	44
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)					0					
Queuing Penalty (veh)					0					
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)	0	5	0	0	9	0				
Queuing Penalty (veh)	0	3	0	0	5	0				

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (ft)	37	2	45	3	48	48
Average Queue (ft)	9	0	9	0	14	17
95th Queue (ft)	33	2	34	3	41	43
Link Distance (ft)		452		399	311	426
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225		190			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	L	TR	L	TR	L	TR
Maximum Queue (ft)	20	131	52	119	130	74
Average Queue (ft)	1	41	20	32	45	38
95th Queue (ft)	10	104	46	86	95	77
Link Distance (ft)		399		432	399	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200		200			75
Storage Blk Time (%)					3	0
Queuing Penalty (veh)					2	0

Intersection: 4: Monticello Avenue/Monticello Ave. & Garrison Drive

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	30	7	3	36
Average Queue (ft)	2	0	0	11
95th Queue (ft)	15	8	3	35
Link Distance (ft)		432	66	471
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	200			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	TR	L	T
Maximum Queue (ft)	127	144	186	86	81	249	140	117	117	114	101	205
Average Queue (ft)	30	68	74	39	9	129	29	46	41	36	33	85
95th Queue (ft)	89	123	141	71	44	213	84	93	90	84	72	164
Link Distance (ft)			245	245		430			236			282
Upstream Blk Time (%)			0									0
Queuing Penalty (veh)			0									0
Storage Bay Dist (ft)	150	150			125		225	150		200	225	
Storage Blk Time (%)	0	0	0		0	11	0	0	0	0		0
Queuing Penalty (veh)	0	0	1		0	7	0	0	0	0		0

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	SB
Directions Served	R
Maximum Queue (ft)	141
Average Queue (ft)	52
95th Queue (ft)	118
Link Distance (ft)	282
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	67	31	86	50	99	130	67	156	125
Average Queue (ft)	25	7	51	33	22	57	19	46	34
95th Queue (ft)	56	28	95	65	67	119	48	116	90
Link Distance (ft)		530	71		282	282		1299	1299
Upstream Blk Time (%)			10						
Queuing Penalty (veh)			0						
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)	0		20	1			0	3	
Queuing Penalty (veh)	0		8	1			0	1	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	28	23	21
Average Queue (ft)	3	1	1
95th Queue (ft)	17	11	10
Link Distance (ft)	288	19	
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	L	T
Maximum Queue (ft)	243	38	119	115	87	201	239	269
Average Queue (ft)	141	2	55	50	4	93	145	109
95th Queue (ft)	226	34	100	100	38	191	215	207
Link Distance (ft)	870	870	1299	1299			812	812
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)					250	450		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 16: Richmond Road & Existing Access Driveway #3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	54	76	5
Average Queue (ft)	24	13	0
95th Queue (ft)	47	51	3
Link Distance (ft)	117	218	19
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: Existing Access Driveway #1 & Monticello Ave.

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	25	54	85	118
Average Queue (ft)	1	19	8	43
95th Queue (ft)	13	49	46	85
Link Distance (ft)	66		245	240
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		1	0	
Queuing Penalty (veh)		3	0	

Intersection: 22: Richmond Road & Existing Access Driveway #2

Movement	EB	EB	NB	SB
Directions Served	L	R	L	TR
Maximum Queue (ft)	69	54	49	18
Average Queue (ft)	28	25	14	1
95th Queue (ft)	56	49	42	7
Link Distance (ft)	135	135		236
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	
Storage Blk Time (%)				
Queuing Penalty (veh)				

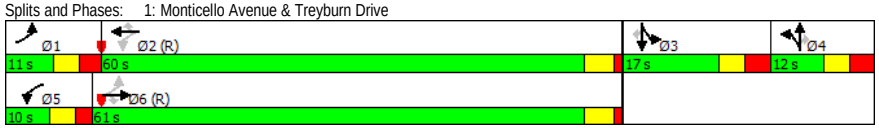
Network Summary

Network wide Queuing Penalty: 33

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	764	13	5	783	88	23	14	9	65	5	55
Future Volume (vph)	78	764	13	5	783	88	23	14	9	65	5	55
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.970			0.955	
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509	0	1843	1615	0	1814	1615
Flt Permitted	0.116			0.185				0.970			0.955	
Satd. Flow (perm)	220	1881	1615	352	1881	1509	0	1843	1615	0	1814	1615
Satd. Flow (RTOR)			153			153			136			136
Adj. Flow (vph)	85	830	14	5	851	96	25	15	10	71	5	60
Lane Group Flow (vph)	85	830	14	5	851	96	0	40	10	0	76	60
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Total Split (s)	11.0	61.0	61.0	10.0	60.0	60.0	12.0	12.0	12.0	17.0	17.0	17.0
Total Lost Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Act Effct Green (s)	64.6	64.5	64.5	61.2	57.7	57.7		10.3	10.3		9.1	9.1
Actuated g/C Ratio	0.65	0.64	0.64	0.61	0.58	0.58		0.10	0.10		0.09	0.09
v/c Ratio	0.37	0.68	0.01	0.02	0.79	0.10		0.21	0.03		0.46	0.22
Control Delay	11.0	15.9	0.0	6.8	20.2	1.1		47.8	0.2		51.8	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	11.0	15.9	0.0	6.8	20.2	1.1		47.8	0.2		51.8	1.9
LOS	B	B	A	A	C	A		D	A		D	A
Approach Delay		15.2			18.2			38.2			29.8	
Approach LOS		B			B			D			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 95 (95%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 18.1	Intersection LOS: B
Intersection Capacity Utilization 69.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Monticello Avenue & Treyburn Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	764	13	5	783	88	23	14	9	65	5	55
Future Volume (vph)	78	764	13	5	783	88	23	14	9	65	5	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1805	1881	1615	1805	1881	1509		1842	1615		1815	1615
Flt Permitted	0.12	1.00	1.00	0.18	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (perm)	221	1881	1615	351	1881	1509		1842	1615		1815	1615
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)	85	830	14	5	851	96	25	15	10	71	5	60
RTOR Reduction (vph)	0	0	6	0	0	43	0	0	9	0	0	55
Lane Group Flow (vph)	85	830	8	5	851	53	0	40	1	0	76	5
Heavy Vehicles (%)	0%	1%	0%	0%	1%	7%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases	6		6	2		2			4			3
Actuated Green, G (s)	63.7	59.3	59.3	56.4	55.4	55.4		10.3	10.3		7.9	7.9
Effective Green, g (s)	63.7	59.3	59.3	56.4	55.4	55.4		10.3	10.3		7.9	7.9
Actuated g/C Ratio	0.64	0.59	0.59	0.56	0.55	0.55		0.10	0.10		0.08	0.08
Clearance Time (s)	5.5	4.5	4.5	5.0	4.5	4.5		6.0	6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	210	1115	957	212	1042	835		189	166		143	127
v/s Ratio Prot	c0.02	c0.44		0.00	c0.45			c0.02			c0.04	
v/s Ratio Perm	0.24		0.01	0.01		0.04			0.00			0.00
v/c Ratio	0.40	0.74	0.01	0.02	0.82	0.06		0.21	0.01		0.53	0.04
Uniform Delay, d1	15.8	14.8	8.3	13.0	18.2	10.3		41.1	40.3		44.3	42.5
Progression Factor	1.00	1.00	1.00	1.11	0.83	2.39		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.3	4.5	0.0	0.0	6.4	0.1		2.5	0.1		3.8	0.1
Delay (s)	17.1	19.4	8.3	14.5	21.5	24.8		43.7	40.3		48.0	42.7
Level of Service	B	B	A	B	C	C		D	D		D	D
Approach Delay (s)		19.0			21.8			43.0			45.7	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	770	28	9	805	11	17	1	24	10	1	48
Future Volume (vph)	51	770	28	9	805	11	17	1	24	10	1	48
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.998			0.922			0.890	
Flt Protected	0.950			0.950				0.980			0.991	
Satd. Flow (prot)	1805	1872	0	1805	1842	0	0	1442	0	0	1676	0
Flt Permitted	0.950			0.950				0.980			0.991	
Satd. Flow (perm)	1805	1872	0	1805	1842	0	0	1442	0	0	1676	0
Adj. Flow (vph)	55	837	30	10	875	12	18	1	26	11	1	52
Lane Group Flow (vph)	55	867	0	10	887	0	0	45	0	0	64	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 54.7%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	770	28	9	805	11	17	1	24	10	1	48
Future Volume (Veh/h)	51	770	28	9	805	11	17	1	24	10	1	48
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	837	30	10	875	12	18	1	26	11	1	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		532			464							
pX, platoon unblocked	0.76			0.65			0.77	0.77	0.65	0.77	0.77	0.76
vC, conflicting volume	887			867			1910	1869	852	1874	1878	881
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	694			523			1330	1278	499	1285	1289	686
tC, single (s)	4.1			4.1			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	92			99			77	99	92	88	99	85
cM capacity (veh/h)	693			683			80	117	333	93	115	343

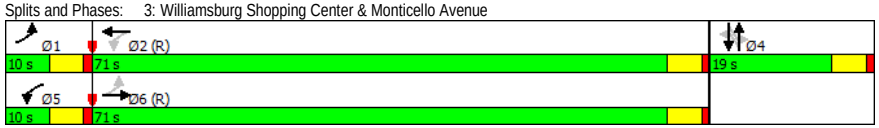
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	55	867	10	887	45	64
Volume Left	55	0	10	0	18	11
Volume Right	0	30	0	12	26	52
cSH	693	1700	683	1700	144	230
Volume to Capacity	0.08	0.51	0.01	0.52	0.31	0.28
Queue Length 95th (ft)	6	0	1	0	31	27
Control Delay (s)	10.6	0.0	10.4	0.0	40.9	26.6
Lane LOS	B		B		E	D
Approach Delay (s)	0.6		0.1		40.9	26.6
Approach LOS					E	D

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	701	46	56	714	18	67	1	57	12	8	35
Future Volume (vph)	30	701	46	56	714	18	67	1	57	12	8	35
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.996			0.852			0.914	
Flt Protected	0.950			0.950			0.950				0.989	
Satd. Flow (prot)	1805	1865	0	1805	1856	0	1805	1619	0	0	1717	0
Flt Permitted	0.286			0.261			0.808				0.914	
Satd. Flow (perm)	543	1865	0	496	1856	0	1535	1619	0	0	1587	0
Satd. Flow (RTOR)		7			3			62			38	
Adj. Flow (vph)	33	762	50	61	776	20	73	1	62	13	9	38
Lane Group Flow (vph)	33	812	0	61	796	0	73	63	0	0	60	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Total Split (s)	10.0	71.0		10.0	71.0		19.0	19.0		19.0	19.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Act Effct Green (s)	77.9	74.4		79.3	76.7		10.1	10.1			10.1	
Actuated g/C Ratio	0.78	0.74		0.79	0.77		0.10	0.10			0.10	
v/c Ratio	0.07	0.58		0.13	0.56		0.47	0.29			0.31	
Control Delay	3.2	7.2		1.9	6.2		51.7	14.3			23.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	3.2	7.2		1.9	6.2		51.7	14.3			23.9	
LOS	A	A		A	A		D	B			C	
Approach Delay		7.1			5.9			34.4			23.9	
Approach LOS		A			A			C			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 96 (96%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 9.0	Intersection LOS: A
Intersection Capacity Utilization 65.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Williamsburg Shopping Center & Monticello Avenue



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	701	46	56	714	18	67	1	57	12	8	35
Future Volume (vph)	30	701	46	56	714	18	67	1	57	12	8	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.85			0.91	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.99	
Satd. Flow (prot)	1805	1865		1805	1857		1805	1620			1719	
Flt Permitted	0.29	1.00		0.26	1.00		0.81	1.00			0.91	
Satd. Flow (perm)	544	1865		497	1857		1535	1620			1589	
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)	33	762	50	61	776	20	73	1	62	13	9	38
RTOR Reduction (vph)	0	2	0	0	1	0	0	56	0	0	35	0
Lane Group Flow (vph)	33	810	0	61	795	0	73	7	0	0	25	0
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	1	6		5	2			4			4	
Permitted Phases	6			2			4			4		
Actuated Green, G (s)	74.8	71.4		77.4	72.7		8.9	8.9			8.9	
Effective Green, g (s)	74.8	71.4		77.4	72.7		8.9	8.9			8.9	
Actuated g/C Ratio	0.75	0.71		0.77	0.73		0.09	0.09			0.09	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	449	1331		446	1350		136	144			141	
v/s Ratio Prot	0.00	c0.43		c0.01	0.43			0.00				
v/s Ratio Perm	0.05			0.10			c0.05				0.02	
v/c Ratio	0.07	0.61		0.14	0.59		0.54	0.05			0.18	
Uniform Delay, d1	4.5	7.2		4.8	6.5		43.6	41.7			42.2	
Progression Factor	1.10	0.68		0.52	0.62		1.00	1.00			1.00	
Incremental Delay, d2	0.1	1.6		0.1	1.7		4.0	0.1			0.6	
Delay (s)	5.0	6.5		2.6	5.7		47.6	41.8			42.8	
Level of Service	A	A		A	A		D	D			D	
Approach Delay (s)		6.5			5.5			44.9			42.8	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	22	779	800	37	17	15
Future Volume (vph)	22	779	800	37	17	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.936	
Flt Protected	0.950				0.974	
Satd. Flow (prot)	1805	1881	1853	0	1732	0
Flt Permitted	0.950				0.974	
Satd. Flow (perm)	1805	1881	1853	0	1732	0
Adj. Flow (vph)	24	847	870	40	18	16
Lane Group Flow (vph)	24	847	910	0	34	0
Sign Control		Free	Free		Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 54.3%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	22	779	800	37	17	15
Future Volume (Veh/h)	22	779	800	37	17	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	24	847	870	40	18	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)		489	447			
pX, platoon unblocked	0.76				0.88	0.76
vC, conflicting volume	910				1785	890
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	721				1214	695
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				89	95
cM capacity (veh/h)	674				171	338

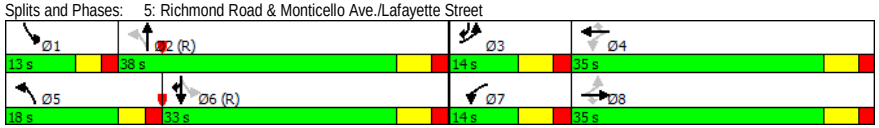
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	24	847	910	34
Volume Left	24	0	0	18
Volume Right	0	0	40	16
cSH	674	1700	1700	223
Volume to Capacity	0.04	0.50	0.54	0.15
Queue Length 95th (ft)	3	0	0	13
Control Delay (s)	10.5	0.0	0.0	24.0
Lane LOS	B			C
Approach Delay (s)	0.3		0.0	24.0
Approach LOS				C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	284	340	122	14	327	172	193	417	15	103	316	328
Future Volume (vph)	284	340	122	14	327	172	193	417	15	103	316	328
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3334	0	1805	1827	1599
Flt Permitted	0.273			0.414			0.320			0.460		
Satd. Flow (perm)	987	1900	1583	787	1845	1524	558	3334	0	874	1827	1599
Satd. Flow (RTOR)			153			187		4				249
Adj. Flow (vph)	309	370	133	15	355	187	210	453	16	112	343	357
Lane Group Flow (vph)	309	370	133	15	355	187	210	469	0	112	343	357
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Total Split (s)	14.0	35.0	35.0	14.0	35.0	35.0	18.0	38.0		13.0	33.0	
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Act Effct Green (s)	36.0	32.8	32.8	32.4	24.4	24.4	48.9	36.4		42.3	33.1	47.1
Actuated g/C Ratio	0.36	0.33	0.33	0.32	0.24	0.24	0.49	0.36		0.42	0.33	0.47
v/c Ratio	0.56	0.59	0.21	0.04	0.79	0.36	0.53	0.39		0.25	0.57	0.40
Control Delay	15.7	23.4	4.1	17.5	48.0	6.3	20.3	25.5		9.3	18.7	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.4	0.3
Total Delay	15.7	23.4	4.1	17.5	48.0	6.3	20.3	25.5		9.3	19.2	3.6
LOS	B	C	A	B	D	A	C	C		A	B	A
Approach Delay		17.3			33.2			23.9			11.0	
Approach LOS		B			C			C			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 12 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 20.2	Intersection LOS: C
Intersection Capacity Utilization 71.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Richmond Road & Monticello Ave./Lafayette Street



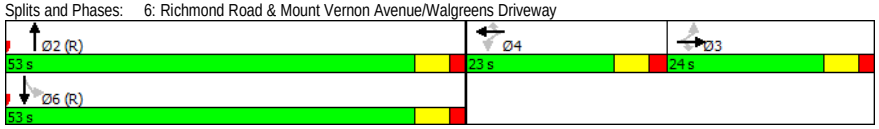
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	284	340	122	14	327	172	193	417	15	103	316	328
Future Volume (vph)	284	340	122	14	327	172	193	417	15	103	316	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1900	1583	1805	1845	1524	1656	3334		1805	1827	1599
Flt Permitted	0.27	1.00	1.00	0.41	1.00	1.00	0.32	1.00		0.46	1.00	1.00
Satd. Flow (perm)	986	1900	1583	786	1845	1524	557	3334		875	1827	1599
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)	309	370	133	15	355	187	210	453	16	112	343	357
RTOR Reduction (vph)	0	0	89	0	0	135	0	3	0	0	0	141
Lane Group Flow (vph)	309	370	44	15	355	52	210	466	0	112	343	216
Heavy Vehicles (%)	2%	0%	2%	0%	3%	6%	9%	8%	0%	0%	4%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	pt+ov
Protected Phases	3	8		7	4		5	2		1	6	6 3
Permitted Phases	8		8	4		4	2			6		
Actuated Green, G (s)	40.8	32.8	32.8	31.2	28.0	28.0	44.3	32.8		37.7	29.5	43.5
Effective Green, g (s)	40.8	32.8	32.8	31.2	28.0	28.0	44.3	32.8		37.7	29.5	43.5
Actuated g/C Ratio	0.41	0.33	0.33	0.31	0.28	0.28	0.44	0.33		0.38	0.29	0.44
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	598	623	519	277	516	426	373	1093		406	538	695
v/s Ratio Prot	c0.04	c0.19		0.00	c0.19		c0.06	0.14		0.02	c0.19	0.14
v/s Ratio Perm	0.17		0.03	0.02		0.03	0.18			0.08		
v/c Ratio	0.52	0.59	0.08	0.05	0.69	0.12	0.56	0.43		0.28	0.64	0.31
Uniform Delay, d1	20.9	28.0	23.2	24.1	32.1	26.8	19.0	26.3		20.7	30.6	18.5
Progression Factor	0.59	0.68	1.02	1.00	1.00	1.00	1.00	1.00		0.53	0.50	0.33
Incremental Delay, d2	0.7	1.3	0.1	0.1	3.8	0.1	1.9	1.2		0.3	5.3	0.2
Delay (s)	13.0	20.3	23.9	24.2	35.9	27.0	20.9	27.5		11.3	20.7	6.3
Level of Service	B	C	C	C	D	C	C	C		B	C	A
Approach Delay (s)		18.1			32.6			25.5			13.1	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	941	15	29	763	70
Future Volume (vph)	95	5	54	11	12	52	0	941	15	29	763	70
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.998			0.987	
Flt Protected		0.954			0.977					0.950		
Satd. Flow (prot)	0	1813	1615	0	1856	1615	0	3402	0	1805	3499	0
Flt Permitted		0.718			0.325					0.222		
Satd. Flow (perm)	0	1364	1615	0	618	1615	0	3402	0	422	3499	0
Satd. Flow (RTOR)			98			98		2			13	
Adj. Flow (vph)	103	5	59	12	13	57	0	1023	16	32	829	76
Lane Group Flow (vph)	0	108	59	0	25	57	0	1039	0	32	905	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Total Split (s)	24.0	24.0	24.0	23.0	23.0	23.0		53.0		53.0	53.0	
Total Lost Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Act Effct Green (s)		13.1	13.1		10.2	10.2		61.0		61.0	61.0	
Actuated g/C Ratio		0.13	0.13		0.10	0.10		0.61		0.61	0.61	
v/c Ratio		0.60	0.20		0.40	0.23		0.50		0.12	0.42	
Control Delay		54.3	3.8		58.5	4.2		13.8		17.3	14.7	
Queue Delay		0.0	0.0		0.0	0.0		0.1		0.0	0.0	
Total Delay		54.3	3.8		58.5	4.2		13.9		17.3	14.7	
LOS		D	A		E	A		B		B	B	
Approach Delay		36.4			20.7			13.9			14.8	
Approach LOS		D			C			B			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 16.2	Intersection LOS: B
Intersection Capacity Utilization 51.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	5	54	11	12	52	0	941	15	29	763	70
Future Volume (vph)	95	5	54	11	12	52	0	941	15	29	763	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00	1.00		0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85		1.00		1.00	0.99	
Flt Protected		0.95	1.00		0.98	1.00		1.00		0.95	1.00	
Satd. Flow (prot)		1814	1615		1855	1615		3401		1805	3500	
Flt Permitted		0.72	1.00		0.33	1.00		1.00		0.22	1.00	
Satd. Flow (perm)		1364	1615		618	1615		3401		423	3500	
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)	103	5	59	12	13	57	0	1023	16	32	829	76
RTOR Reduction (vph)	0	0	51	0	0	52	0	1	0	0	5	0
Lane Group Flow (vph)	0	108	8	0	25	5	0	1038	0	32	900	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm		NA		Perm	NA	
Protected Phases		3			4			2			6	
Permitted Phases	3		3	4		4				6		
Actuated Green, G (s)		13.1	13.1		9.1	9.1		59.8		59.8	59.8	
Effective Green, g (s)		13.1	13.1		9.1	9.1		59.8		59.8	59.8	
Actuated g/C Ratio		0.13	0.13		0.09	0.09		0.60		0.60	0.60	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)		178	211		56	146		2033		252	2093	
v/s Ratio Prot								c0.31			0.26	
v/s Ratio Perm		c0.08	0.00		c0.04	0.00				0.08		
v/c Ratio		0.61	0.04		0.45	0.04		0.51		0.13	0.43	
Uniform Delay, d1		41.0	37.9		43.1	41.4		11.6		8.7	10.9	
Progression Factor		1.00	1.00		1.00	1.00		0.96		1.24	1.15	
Incremental Delay, d2		5.7	0.1		5.6	0.1		0.9		0.9	0.5	
Delay (s)		46.8	38.0		48.6	41.5		12.1		11.7	13.0	
Level of Service		D	D		D	D		B		B	B	
Approach Delay (s)		43.7			43.7			12.1			13.0	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	2	5	606	4	10	422
Future Volume (vph)	2	5	606	4	10	422
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.904		0.999			
Flt Protected	0.986				0.950	
Satd. Flow (prot)	1694	0	1742	0	1805	1845
Flt Permitted	0.986				0.950	
Satd. Flow (perm)	1694	0	1742	0	1805	1845
Adj. Flow (vph)	2	5	659	4	11	459
Lane Group Flow (vph)	7	0	663	0	11	459
Sign Control	Stop		Free			Free

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 42.1%		ICU Level of Service A
Analysis Period (min) 15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	5	606	4	10	422
Future Volume (Veh/h)	2	5	606	4	10	422
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	5	659	4	11	459
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						658
pX, platoon unblocked	0.87					
vC, conflicting volume	1142	661			663	
vC1, stage 1 conf vol	661					
vC2, stage 2 conf vol	481					
vCu, unblocked vol	1086	661			663	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			99	
cM capacity (veh/h)	433	466			935	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	7	663	11	459
Volume Left	2	0	11	0
Volume Right	5	4	0	0
cSH	456	1700	935	1700
Volume to Capacity	0.02	0.39	0.01	0.27
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	13.0	0.0	8.9	0.0
Lane LOS	B		A	
Approach Delay (s)	13.0	0.0	0.2	
Approach LOS	B			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	351	684	678	369	634	520
Future Volume (vph)	351	684	678	369	634	520
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Satd. Flow (RTOR)		536		401		
Adj. Flow (vph)	382	743	737	401	689	565
Lane Group Flow (vph)	382	743	737	401	689	565
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Total Split (s)	40.0	40.0	31.0	31.0	29.0	60.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Act Effct Green (s)	28.5	28.5	33.0	33.0	23.5	61.5
Actuated g/C Ratio	0.28	0.28	0.33	0.33	0.24	0.62
v/c Ratio	0.76	0.90	0.67	0.51	0.87	0.49
Control Delay	42.1	23.5	22.6	4.2	49.7	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	23.5	22.6	4.2	49.7	13.7
LOS	D	C	C	A	D	B
Approach Delay	29.8		16.1			33.5
Approach LOS	C		B			C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 40 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 26.7	Intersection LOS: C
Intersection Capacity Utilization 69.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: Richmond Road & Bypass Road

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	351	684	678	369	634	520
Future Volume (vph)	351	684	678	369	634	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	1.00	1.00	0.95	1.00	0.97	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1568	3312	1568	3367	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1568	3312	1568	3367	1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	382	743	737	401	689	565
RTOR Reduction (vph)	0	383	0	269	0	0
Lane Group Flow (vph)	382	360	737	132	689	565
Heavy Vehicles (%)	2%	3%	9%	3%	4%	2%
Turn Type	Prot	Perm	NA	Perm	Prot	NA
Protected Phases	4		2		1	6
Permitted Phases		4		2		
Actuated Green, G (s)	28.5	28.5	33.0	33.0	23.5	61.5
Effective Green, g (s)	28.5	28.5	33.0	33.0	23.5	61.5
Actuated g/C Ratio	0.28	0.28	0.33	0.33	0.24	0.62
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	504	446	1092	517	791	1145
v/s Ratio Prot	0.22		c0.22		c0.20	0.30
v/s Ratio Perm		c0.23		0.08		
v/c Ratio	0.76	0.81	0.67	0.26	0.87	0.49
Uniform Delay, d1	32.6	33.2	28.9	24.5	36.8	10.6
Progression Factor	1.00	1.00	0.61	0.62	1.00	1.00
Incremental Delay, d2	6.4	10.2	3.0	1.1	10.3	1.5
Delay (s)	39.0	43.4	20.7	16.2	47.1	12.2
Level of Service	D	D	C	B	D	B
Approach Delay (s)	41.9		19.1			31.4
Approach LOS	D		B			C

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	12	15	13	599	414	10
Future Volume (vph)	12	15	13	599	414	10
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926				0.997	
Flt Protected	0.978			0.999		
Satd. Flow (prot)	1721	0	0	1880	1858	0
Flt Permitted	0.978			0.999		
Satd. Flow (perm)	1721	0	0	1880	1858	0
Adj. Flow (vph)	13	16	14	651	450	11
Lane Group Flow (vph)	29	0	0	665	461	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 52.0%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	15	13	599	414	10
Future Volume (Veh/h)	12	15	13	599	414	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	16	14	651	450	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					738	
pX, platoon unblocked	0.87	0.87	0.87			
vC, conflicting volume	1134	456	461			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1080	299	306			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	98	99			
cM capacity (veh/h)	209	648	1102			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	29	665	461
Volume Left	13	14	0
Volume Right	16	0	11
cSH	334	1102	1700
Volume to Capacity	0.09	0.01	0.27
Queue Length 95th (ft)	7	1	0
Control Delay (s)	16.8	0.3	0.0
Lane LOS	C	A	
Approach Delay (s)	16.8	0.3	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	733	73	34	833	15	31
Future Volume (vph)	733	73	34	833	15	31
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.988				0.908	
Flt Protected			0.950		0.984	
Satd. Flow (prot)	1877	0	1805	1881	1698	0
Flt Permitted			0.950		0.984	
Satd. Flow (perm)	1877	0	1805	1881	1698	0
Adj. Flow (vph)	797	79	37	905	16	34
Lane Group Flow (vph)	876	0	37	905	50	0
Sign Control	Free			Free	Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 53.8%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	733	73	34	833	15	31
Future Volume (Veh/h)	733	73	34	833	15	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	797	79	37	905	16	34
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	625			311		
pX, platoon unblocked			0.76		0.87	0.76
vC, conflicting volume			876		1816	836
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			677		1237	625
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		90	91
cM capacity (veh/h)			701		161	370

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	876	37	905	50
Volume Left	0	37	0	16
Volume Right	79	0	0	34
cSH	1700	701	1700	262
Volume to Capacity	0.52	0.05	0.53	0.19
Queue Length 95th (ft)	0	4	0	17
Control Delay (s)	0.0	10.4	0.0	22.0
Lane LOS		B		C
Approach Delay (s)	0.0	0.4		22.0
Approach LOS				C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	61	25	22	589	410	55
Future Volume (vph)	61	25	22	589	410	55
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.984	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1805	1495	1805	1881	1837	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1805	1495	1805	1881	1837	0
Adj. Flow (vph)	66	27	24	640	446	60
Lane Group Flow (vph)	66	27	24	640	506	0
Sign Control	Stop			Free	Free	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 41.0%	ICU Level of Service A	
Analysis Period (min) 15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	61	25	22	589	410	55
Future Volume (Veh/h)	61	25	22	589	410	55
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	66	27	24	640	446	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)					328	
pX, platoon unblocked	0.84	0.84	0.84			
vC, conflicting volume	1164	476	506			
vC1, stage 1 conf vol	476					
vC2, stage 2 conf vol	688					
vCu, unblocked vol	1098	276	312			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.4	2.2			
p0 queue free %	84	96	98			
cM capacity (veh/h)	420	626	1054			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	66	27	24	640	506
Volume Left	66	0	24	0	0
Volume Right	0	27	0	0	60
cSH	420	626	1054	1700	1700
Volume to Capacity	0.16	0.04	0.02	0.38	0.30
Queue Length 95th (ft)	14	3	2	0	0
Control Delay (s)	15.2	11.0	8.5	0.0	0.0
Lane LOS	C	B	A		
Approach Delay (s)	14.0		0.3		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection: 1: Monticello Avenue & Treyburn Drive

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	LT	R	LT	R
Maximum Queue (ft)	149	444	111	111	446	100	98	54	122	68
Average Queue (ft)	57	216	5	7	241	29	29	9	52	28
95th Queue (ft)	132	388	39	51	397	94	70	36	98	58
Link Distance (ft)		792			452		193			604
Upstream Blk Time (%)					0					
Queuing Penalty (veh)					2					
Storage Bay Dist (ft)	150		150	200		100		100	400	
Storage Blk Time (%)	0	11	0	0	23	0	0	0		
Queuing Penalty (veh)	0	10	0	0	21	2	0	0		

Intersection: 2: Mount Vernon Avenue & Monticello Avenue

Movement	EB	WB	WB	NB	SB
Directions Served	L	L	TR	LTR	LTR
Maximum Queue (ft)	62	33	126	109	97
Average Queue (ft)	25	6	8	38	38
95th Queue (ft)	55	25	66	86	78
Link Distance (ft)			399	311	426
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			0		
Storage Bay Dist (ft)	225	190			
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 3: Williamsburg Shopping Center & Monticello Avenue

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (ft)	56	261	74	212	132	74	82
Average Queue (ft)	18	106	25	77	52	38	35
95th Queue (ft)	48	214	58	169	101	77	68
Link Distance (ft)		399		432	399		182
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200		200			75	
Storage Blk Time (%)		1		0	6	1	
Queuing Penalty (veh)		0		0	4	1	

Intersection: 4: Monticello Avenue/Monticello Ave. & Garrison Drive

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	42	123	24	57
Average Queue (ft)	11	12	1	24
95th Queue (ft)	36	76	13	54
Link Distance (ft)		432	66	471
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)	200			
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	R	L	T	R	L	T	TR	L	T
Maximum Queue (ft)	132	149	254	86	117	393	225	156	246	200	194	290
Average Queue (ft)	64	102	144	39	17	202	101	107	129	105	47	145
95th Queue (ft)	125	165	249	73	68	336	234	173	237	200	127	258
Link Distance (ft)			245	245		430			236			282
Upstream Blk Time (%)			1			0			2			1
Queuing Penalty (veh)			4			0			13			4
Storage Bay Dist (ft)	150	150			125		225	150		200	225	
Storage Blk Time (%)	0	1	6		0	26	0	5	4	0	0	2
Queuing Penalty (veh)	0	2	18		0	48	1	20	16	1	0	3

Intersection: 5: Richmond Road & Monticello Ave./Lafayette Street

Movement	SB
Directions Served	R
Maximum Queue (ft)	247
Average Queue (ft)	118
95th Queue (ft)	222
Link Distance (ft)	282
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Richmond Road & Mount Vernon Avenue/Walgreens Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	TR	L	T	TR
Maximum Queue (ft)	98	158	84	50	184	206	74	235	225
Average Queue (ft)	61	35	28	34	73	102	22	103	95
95th Queue (ft)	101	89	67	62	146	183	58	198	187
Link Distance (ft)		530	71		282	282		1299	1299
Upstream Blk Time (%)			2			0			
Queuing Penalty (veh)			0			0			
Storage Bay Dist (ft)	100			50			75		
Storage Blk Time (%)	3	0	5	2			0	10	
Queuing Penalty (veh)	1	0	2	0			0	3	

Intersection: 7: Richmond Road & Bacon Avenue

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	28	79	33
Average Queue (ft)	6	26	5
95th Queue (ft)	24	72	24
Link Distance (ft)	288	19	
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		6	
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Richmond Road & Bypass Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	L	T
Maximum Queue (ft)	400	686	397	436	250	363	378	312
Average Queue (ft)	186	249	200	206	110	195	242	172
95th Queue (ft)	435	631	315	354	278	304	343	293
Link Distance (ft)	870	870	1299	1299			812	812
Upstream Blk Time (%)	1	2						
Queuing Penalty (veh)	0	0						
Storage Bay Dist (ft)					250	450		
Storage Blk Time (%)				3	1			
Queuing Penalty (veh)				10	2			

Intersection: 16: Richmond Road & Existing Access Driveway #3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	56	136	20
Average Queue (ft)	18	10	1
95th Queue (ft)	44	61	11
Link Distance (ft)	117	218	19
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: Existing Access Driveway #1 & Monticello Ave.

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	78	48	117	114
Average Queue (ft)	13	19	6	34
95th Queue (ft)	56	46	53	91
Link Distance (ft)	66		245	240
Upstream Blk Time (%)	1		0	1
Queuing Penalty (veh)	8		0	0
Storage Bay Dist (ft)		50		
Storage Blk Time (%)		1	0	
Queuing Penalty (veh)		6	0	

Intersection: 22: Richmond Road & Existing Access Driveway #2

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	87	66	42	155	7
Average Queue (ft)	33	19	8	15	0
95th Queue (ft)	68	50	32	91	6
Link Distance (ft)	135	135		256	236
Upstream Blk Time (%)	0			0	
Queuing Penalty (veh)	0			1	
Storage Bay Dist (ft)			100		
Storage Blk Time (%)				1	
Queuing Penalty (veh)				0	

Network Summary

Network wide Queuing Penalty: 214

For Public and Private
Sector Clients

Midtown Row

Fiscal Impact Study

City of Williamsburg, Virginia

Prepared by

Ted Figura Consulting

For

BSV Colonial Owner, LLC

Bethesda, Maryland

August 1 2017

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Midtown Row: Fiscal Impact Analysis

Executive Summary

The applicant, BSV Colonial Owner, LLC, is seeking a special use permit to enable the redevelopment of the Williamsburg Shopping Center as a mixed-use development, Midtown Row, which would include high-quality retail and restaurants and student housing. The developer's preferred scenario, referred to as Option 1, would also include a hotel and parking deck. Under both Option 1 and Option 2, a portion of the existing shopping center would be preserved, retaining three current tenants—Food Lion, the ABC store and Sal's by Victor. Under Option 2, a larger portion of the existing shopping center would be retained.

As proposed, this development is projected to have a very positive fiscal impact on both the general fund and the enterprise funds of the City of Williamsburg ("the City") over an initial ten-year analysis period and in its stabilization year. Revenues currently received by the City and costs currently incurred by the City from the existing shopping center have been subtracted from the projected revenues and costs attributed to Midtown Row.

Net annual cash flow for the City is projected to be almost $850,000 under Option 1 and more than $700,000 annually under Option 2, with more than 80% entering the City's general fund under both scenarios (the remainder being earned by the City's enterprise fund). Over the ten-year analysis period, cumulative cash flow is projected to be more than $6.4 million under Option 1 and more than $5.3 million under Option 2. The annual revenue surplus from the proposed development can be expected to be received by the City each year after the proposed development is built out.

Under Option 1, 240 units of student housing containing 624 beds would be developed, together with 58,000 square feet of ground-floor retail space (and about 71,000 square feet of retained existing shopping center space). The proposed limited service hotel is expected to have 140 rooms. Under Option 2, 208 units of student housing (528 beds) are projected, with more than 45,000 square feet of new retail space and more than 117,000 square feet of retail space in the existing shopping center. Under both options, the commercial portion of Midtown Row is expected to be a mix of restaurants, food establishments offering lighter fun foods, boutique-style retail, and consumer services. Option 2 would also include some neighborhood retail.

It is important to note that Midtown Row would add no new students to the Williamsburg-James City County school system. Although a few one-bedroom units may be rented by young professionals, those, too, would have no school children living at Midtown Row.

Besides the positive fiscal impact that Midtown Row would have on the City, the redevelopment of the Williamsburg Shopping Center would be a catalyst for the revitalization and transformation of the City's Midtown neighborhood—a high-priority goal of the City's Comprehensive Plan. Not only will Midtown Row upgrade the built environment of the Midtown area (including cosmetic refurbishments to the remaining portion of the existing shopping center), but the public square proposed by the developer as a central feature of Midtown Row's common area will complement the public improvements that are contemplated by the City for Midtown.

The table below summarizes the fiscal impact measures for the proposed development.

Midtown Row, Options 1 & 2 Fiscal Impact Measures, General and Enterprise Funds		
	Option 1	Option 2
Stabilization Year		
Cash Flow		
General Fund	$ 684,775	$595,400
Enterprise Funds	$ 162,550	$123,200
Total	$ 847,325	$718,600
Benefit-to-Cost Ratio		
General Fund*	3.19-to-1	3.25-to-1
Enterprise Funds	22.39-to-1	25.28-to-1
Combined	3.65-to-1	3.67-to-1
Ten-Year Total		
Cumulative Cash Flow		
General Fund	$4,912,850	$4,132,575
Enterprise Funds	$1,169,225	$ 847,575
Value of Public Improvements	$ 350,000	$ 350,000
Total	$6,432,075	$5,330,150
Benefit-to-Cost Ratio		
General Fund*	3.14-to-1	3.13-to-1
Enterprise Funds	22.12-to-1	25.03-to-1
Combined	3.73-to-1	3.7-to-1

Figures rounded to the nearest $25

A more detailed analysis follows.

Background

BSV Colonial Owner, LLC (the "developer" or "applicant"), has proposed a redevelopment of the Williamsburg Shopping Center as a mixed-use development to be known as Midtown Row. Two mixed-use options are being offered for Midtown Row. The fiscal impact of each option has been calculated separately. Option 1 includes six new buildings—a residential building, three mixed-use buildings with residential above ground-floor retail, a hotel, and a parking deck—plus the retention of four existing structures from the current shopping center configuration. All residential units are planned for student housing. Option 2 modifies the configuration of Option 1 by not including the hotel and parking deck, reducing the size of one of the new mixed-use buildings, and retaining more of the existing shopping center, while adding 3,200 square feet of new space to one of the existing shopping center buildings.

The Midtown Row will be located on a 19.44 acre parcel (19.58 acres according to the City's assessment records) located at the corner of Richmond Road and Monticello Avenue in the City of Williamsburg (the "site"). The site is comprised of tax parcels 433-01-00-001.2, 434-02-00-002A, and 433-01-00-001(BO). The applicant is requesting a special use permit in order to undertake the proposed development.

Altogether, Option 1 would total more than 578,750 square feet and contain 240 residential units with 624 bedrooms, about 58,000 square feet of new retail space, and more than 71,000 square feet of existing retail space. Each bedroom will be leased separately so that units essentially provide living space for one, two, three or four-students to share a unit. The hotel in Option 1 is planned to be a mid-range limited service hotel with 140 rooms. Option 2 would total more than 462,300 square feet and contain 208 residential units with 528 bedrooms, 45,850 square feet of retail space in the mixed-use buildings, and more than 117,000 square feet of space in the existing shopping center (which includes the 3,200 square foot addition). Each option would retain three of the existing tenants—Food Lion, the ABC store and Sal's by Victor and most likely see a move of Ace Hardware, Kocha and Tuesday Morning to the Monticello Shopping Center across the street (which BSV Colonial Owner, LLC is in the process of purchasing). New tenants at Midtown Row would be a mix of restaurants, light/entertainment food establishments (such as coffee shops and ice cream parlors), boutique-style retail and consumer services. Neighborhood retail would be added with Option 2, which would likely see fewer boutique retail stores and more consumer service establishments, as well. Both options are described in more detail in the Appendix.

Construction of Midtown Row would likely begin in late 2017 or early 2018 with demolition of a portion of the existing shopping center and site work. The new retail buildings and hotel are expected to be completed in the summer of 2019. The first tenants in the retail space are expected to open by July 2019, with the retail component being 70% preleased by August 2019. All prelease tenants are expected to be open by April 2020. The remaining retail space, less a 5% vacancy, is expected to be leased by February 2021, with all stores open by October 2021. The student housing component is expected to be 90% preleased by August 2019, with the remaining 5% leased by the end of the first semester of the 2019-2020 school year, leaving a 5% vacancy.

These parameters are best estimates of the scope of the proposed development made by the applicant at this point in time. The specifics of the proposed development are subject to change based upon final determinations of site constraints and/or market conditions. Descriptions of the proposed development contained herein are not guarantees by the applicant that the proposed development will be constructed exactly as described above. However, the basic elements of the proposed development are those outlined above. Any change in the fiscal impact of the proposed development on the City due to minor changes in the scope of the proposed development are expected to be similar in magnitude to the revenues and costs projected in this fiscal impact analysis and revenues and costs are expected to be in practically the same proportion of revenues to costs as estimated in the fiscal impact analysis report.

Methodology

The fiscal impact of Midtown Row on the City was calculated using the methodology described below. Fiscal impact is defined as the difference between all revenues to the City generated by the development and all costs to the City attributable to the development. Revenues and costs are described in further detail below.

The fiscal impact was calculated over a 10-year period (FY 2018-FY 2027). This period was chosen for convenience being three years in addition to the stabilization year. The stabilization year is the year following the completion of all phases of a project (the year beyond which the fiscal cash flow from the development does not change). Thus, neither costs nor revenues change beyond the stabilization year. The stabilization year for the proposed development occurs in FY 2024.

All fiscal impacts are presented in constant 2018 dollars, (i.e., inflation is not applied to either revenues or costs throughout the analysis period). A constant in 2018 dollars was chosen because the analysis is substantially based on the revenue, cost and tax rate assumptions contained in the *City of Williamsburg Adopted Budget, Fiscal Year 2018.* ("the *Budget*").

The constant dollar approach means that no assumptions are made about rates of increase in real estate assessments in the City. Also, no assumptions are made about increasing tax revenues from sales, meals or business license taxes based upon retail price increases. Neither are assumptions made about future increases in the unit costs of government. The practical implication of this approach is that any future systemic imbalances between rising revenues and rising costs are assumed to be adjusted through changes in the City's tax rate, either upward or downward.

A marginal revenue/marginal cost approach was used to calculate expected revenues and costs to the City attributable to the development. This is opposed to an average revenue/average cost approach, in which estimates of a project's revenues and costs are based upon a jurisdiction's per-capita revenues and costs. The marginal revenue/marginal cost methodology counts only variable costs and revenues and, thus, does not count fixed costs and revenues that would be spent or received by the City whether additional development occurs or not. It counts only revenues and costs attributable to an increase in the number of households from the development being analyzed.

It is, thus, a more accurate estimate of future revenues and costs resulting from a development than is the average revenue/average cost approach. The average revenue/average cost approach actually calculates a project's "fair share" of public costs, rather than the incremental impact of a project on a locality's fiscal position. A more detailed description of the methodology used in this analysis is presented in the Appendix.

Revenues estimated for the Midtown Row fall into three categories: one-time direct revenues, annual direct revenues and additional tax revenues generated by households. The methodology does not use multipliers to calculate revenues that could be generated through a project's secondary impacts, as such multipliers are considered to be unreliable for small geographic areas. The methodology does not include revenues generated from spending by construction workers at the Midtown Row, as such spending cannot reliably be said to occur within the City.

One-time direct revenues are revenues to the City derived from the construction of the Midtown Row. They include all plan review fees, building permit and associated fees (electrical, mechanical and plumbing), other development fees, including certificate of occupancy fees. One-time revenues also include the avoided cost of a public square proposed by the developer which will function as a privately-owned public urban park for the Midtown area of the City.

Annual direct revenues consist of real estate property taxes, personal property taxes (car tax), cigarette tax, car rental tax, water charges, utility taxes, and other fees paid by households and businesses to the City. Annual direct revenues also consist of business personal property taxes and the local option sales tax, meals taxes, room taxes and business license fees paid to the City by Midtown Row businesses, adjusted for estimated retail redirection. These are all taxes and fees paid directly to the City by households, businesses and/or property owners. Taxes currently paid by the owner of the Williamsburg Shopping Center and its tenants were deducted from Midtown Row tax estimates. Taxes were calculated based upon estimates of the assessed property values, estimates of business sales and gross receipts, the City's per-household user fees or other methodologies explained in the Appendix.

Additional tax revenues generated by households are estimates of taxes paid by City businesses due to purchases made by Midtown Row residents. These include the local option sales tax, meals tax, and the business license fees paid by businesses on gross receipts from these sales. The methodology for estimating net new sales and gross receipts is presented in the Appendix.

Purchases by Midtown Row residents are estimated based upon spending patterns attributable to a college student population. Spending patterns were constructed from data in the most recent U.S. Bureau of Labor Statistics Consumer Expenditure Survey. An adjustment was made for purchases made outside the City. Special considerations relating to Midtown Row's college student population were also employed in estimating the amount of personal property (car) tax revenue to be derived from the proposed development. The methodology for estimating these revenues is presented in the Appendix.

No generated taxes were estimated for construction workers or employees of businesses located in City, as these employees were assumed either to be already living and spending in City or living outside the City and, thus, spending most of their income outside the City.

Costs were divided into three categories: variable operating costs of government per household and business, general government capital costs (if any) and public utilities costs. Cost data and assumptions were derived from the *Budget*. No capital costs were identified as attributable to the proposed development. Also, since Midtown Row will be inhabited primarily by college students and possibly some young professionals, no school children are expected to reside there and the City will incur no education costs, whether operating or capital costs.

Per household and per business costs were calculated for various budget line items. State and federal revenues supporting various budget line items were deducted to leave only the City's operating cost. Certain government functions, such as public assistance and public health services, that would not serve the Midtown Row population were not included in the calculations. Chief executive, legislative and administrative functions, which would be performed regardless of population size, were not included in the calculations. A percentage of certain administrative support services, to the extent that they support operations which would be provided independent of population size, were not included in the calculations. Per household costs were adjusted for household size. Given the unique nature of the residential component of Midtown Row, each bedroom was counted as a separate household. The per capita expenditures associated with certain shared or regional services were converted to a per household measure and included as variable costs. The methodology for estimating the cost of government, including, public utility costs (the per-customer cost of billing and water treatment), is presented in more detail in the Appendix.

Three measures of fiscal impact were used—cash flow, cumulative cash flow and the benefit-to-cost ratio. Cash flow shows the annual surplus or deficit of revenues less costs for a sample of ramp up years through the stabilization year. Because revenues and costs are reported in constant dollars, there is no change in the projected cash flow after the stabilization year.

Cumulative cash flow is the sum of annual cash flows over the analysis period. Another way of explaining cumulative cash flow is that it is derived by subtracting total costs to the City attributable to a project from total revenues to the City derived from a project over the analysis period, leaving the City's total net revenue from a project.

Finally, the benefit-to-cost ratio is the ratio of total project revenues to the City and total project costs to the City. A benefit-to-cost ratio greater than 1.0-to-1 signals a net fiscal benefit. The magnitude of the benefit-to-cost ratio signals the strength of the fiscal impact on the City. For instance, a benefit-to-cost ratio of 1.5-to-1 indicates that for every additional dollar of spending a project costs the City, the City is expected to receive $1.50 in additional revenue.

Fiscal Impact of Midtown Row

BSV Colonial Owner, LLC is seeking a special use permit to allow the redevelopment described above to occur. The derivation of the revenues and costs attributed to Midtown Row are described in the Methodology section, above, and in the Appendix. The fiscal impact of Options 1 and 2 are shown separately. The revenues projected for Midtown Row are listed in the Table 1 on page 11 for Option 1 and in Table 5 on page 14 for Option 2. Costs generated by Midtown Row are displayed in Table 2, located on page 12 for Option 1 and in Table 6 on page 15 for Option 2. Both revenues and costs are shown for the stabilization year and the total for the ten-year analysis period (FY 2018-FY 2027).

Subtracting projected costs from revenues yields a positive overall cash flow (or revenues net of costs) for both options. In the stabilization year, the City is expected to receive more than $1.1 million annually in revenue from the development of Midtown Row Option 1 while incurring less than $325,000 in annual costs. For Option 2, annual revenues in the stabilization year are projected to be almost $1 million which annual costs are projected to be less than $275,000.

Annual cash flow from the Midtown Row is shown in Table 3 on page 12 for Option 1 and in Table 7 on page 15 for Option 2. Cash flow is shown for the general fund and the City's enterprise funds separately. In the stabilization year, the City is expected to see net revenues (revenues less costs) of almost $850,000 for Option 1 and more than $700,000 for Option 2. Of this revenue surplus, more than 80% is projected to enter the City's general fund with the remainder projected to be earned by the City's enterprise fund. The enterprise funds, though separate for accounting purposes, ultimately impact the City's general fund. Surpluses are either transferred into the general fund or the funds would be used to enable a faster repayment of debt service, which would result in larger surpluses transferred to the general fund in the future.

Table 4 on page 13 and Table 8 on page 16 show the fiscal impact measures for Midtown Row Options 1 and 2, respectively. Both are positive. Under Option 1, the City can expect to receive more than $6.4 million in surplus revenue from the proposed development during the ten-year analysis period. Benefit-to-cost ratios in the stabilization year exceed 3-to-1 for the City's general and combined funds, while being extremely positive for the City's enterprise funds. The City's combined general and enterprise funds are expected to receive $3.65 in revenue annually after the stabilization year for every dollar of cost attributed to the development. Under Option 2, the City can expect to receive more than $5.3 million in surplus revenue from the proposed development during the ten-year analysis, with benefit-to-cost ratios similar to those under Option 1. Finally, Table 9 on page 16 compares the fiscal impact measures for Options 1 and 2.

Table 1 Midtown Row, Option 1 Projected Revenues		
Revenue Type	Annual Revenues, Stabilization Year (FY 2024)	Ten-Year Total (FY 2018-2027)
Real Estate Property Tax	$ 343,300	$2,621,825
Business Personal Property Tax	$ 56,250	$ 348,900
Local Sales Tax	$ 26,525	$ (15,275)
Meals Tax	$ 388,100	$2,680,750
Room Tax	$ 81,375	$ 621,800
Business License Fee	$ 18,575	$ 91,150
Personal Property (Car) Tax, Car Rental Tax	$ 7,775	$ 57,600
Other fees	$ 12,175	$ 89,150
Utility Taxes	$ 10,075	$ 62,650
Subtotal Direct Taxes	*$ 944,150*	*$6,558,550*
Additional Revenues Derived from Households	$ 53,275	$ 394,600
General Fund Annual Revenues	***$ 997,425***	***$6,953,150***
Water Fees	$ 170,150	$1,224,575
Enterprise Fund Annual Revenues	***$ 170,150***	***$1,224,575***
Subtotal Annual Revenues	**$1,167,575**	**$8,177,725**
Building Permit and Review Fees		$ 227,650
Development Review and Other Fees		$ 15,150
Certificate of Occupancy Fees		$ 14,375
General Fund One-time Revenues		***$ 257,175***
Enterprise Fund One-time Revenues		***$ 0***
Value of On-site Public Improvements		**$ 350,000**
Subtotal One-time Revenues		**$ 607,175**
Total Revenues		**$8,784,900**
General Fund Revenues		**$7,210,325**
Enterprise Fund Revenues		**$1,224,575**

Figures rounded to the nearest $25.

Table 2 Midtown Row, Option 1 Projected Costs		
Cost Type	Annual Revenues, Stabilization Year (FY 2024)	Ten-Year Total (FY 2018-2027)
General Government Service Operating Costs	$312,625	$2,297,475
General Government Service Capital Costs		$ 0
Education Operating Costs	$ 0	$ 0
Education Capital Costs		$ 0
Total General Fund Costs	***$312,625***	***$2,297,475***
Enterprise Fund Costs	***$ 7,600***	***$ 55,350***
Total Costs	**$320,225**	**$2,352,825**

Figures rounded to the nearest $25.

Table 3 Midtown Row, Option 1 Projected Cash Flow						
	FY 2018-2019	FY 2020	FY 2021	FY 2022	FY 2023	Stabilization Year FY 2024
General Fund Revenues	$ 22,125	$785,550	$840,025	$ 958,150	$ 979,225	$ 997,400
Enterprise Fund Revenues	$(21,450)	$ 70,425	$154,700	$ 170,150	$ 170,150	$ 170,150
Total Revenues	$ 675	$855,975	$994,725	$1,128,300	$1,149,375	$1,167,550
General Fund Costs	$ (9,675)	$123,100	$308,325	$ 312,625	$ 312,625	$ 312,625
Enterprise Fund Costs	$ (1,075)	$ 3,925	$ 6,875	$ 7,600	$ 7,600	$ 7,600
Total Costs	$(10,750)	$127,025	$315,200	$ 320,225	$ 320,225	$ 320,225
General Fund Cash Flow	$ 31,800	$662,450	$531,700	$ 645,525	$ 666,600	$ 684,775
Enterprise Fund Cash Flow	$(20,375)	$ 66,500	$147,825	$ 162,550	$ 162,550	$ 162,550
Total Cash Flow	$ 11,425	$728,950	$679,525	$ 808,075	$ 829,150	$ 847,325

Figures rounded to the nearest $25.

Table 4 Midtown Row, Option 1 Fiscal Impact Measures, General and Enterprise Funds		
	Stabilization Year	Ten-Year Total
Cumulative Cash Flow		
General Fund	N/A	$4,912,850
Enterprise Funds	N/A	$1,169,225
Value of Public Improvements		$ 350,000
Total	N/A	$6,432,075
Benefit-to-Cost Ratio		
General Fund*	3.19-to-1	3.14-to-1
Enterprise Funds	22.39-to-1	22.12-to-1
Combined	3.65-to-1	3.73-to-1

* Does not include value of on-site public improvements

It should be noted that during the proposed development's demolition and construction phase, which occurs during fiscal years 2018 and 2019, the City will suffer a loss of annual direct revenues due to the closing of a number of tenants currently occupying the Williamsburg Shopping Center. This loss is compensated in the City's general fund through the receipt of one-time revenues associated with Midtown Row's development. There is, of course, also a savings in cost due to fewer businesses being served by the City.

Long-term, there is a shift in the composition of the tenant mix away from larger retail establishments to include more restaurants and smaller, boutique-style retail stores. Thus, in the ten-year totals for the local option sales tax under Option 1, we see a negative impact because sales tax revenue projected to occur during the last eight years of the analysis period, when tenancy at Midtown Row is ramping up and then attaining full occupancy, is not enough to overcome the loss of sales tax revenue during the first two years of the analysis period. Meals tax revenue, on the other hand, is projected to increase significantly, with more restaurants and, particularly, more upscale restaurants at Midtown Row. Other revenue sources also increase so that annual direct revenue cash flow deficits in the first two years of the analysis period are completely wiped out in the first year of Midtown Row's coming online.

It should also be recognized that the scenario described above assumes that the tenants vacating the Williamsburg Shopping Center (and not relocating to the Monticello Shopping Center) will permanently close or leave the City. To the extent that tenants relocate to other retail space within the City, the losses of annual direct revenue predicted in this fiscal impact analysis would not occur (or would be minimal, confined to lost sales during the process of relocation). Also, to the extent that other stores located in the City receive spending that would otherwise occur at the closed stores, the loss of annual direct revenue by the City would be mitigated. Furthermore, if either of the two circumstances described above occur, the positive fiscal impact of those events would continue beyond the two years of the analysis period, reducing the amount of negative revenue factored into the fiscal impact analysis for Midtown Row and improving the already very positive fiscal impact of the proposed development.

Table 5 Midtown Row, Option 2 Projected Revenues		
Revenue Type	Annual Revenues, Stabilization Year (FY 2024)	Ten-Year Total (FY 2018-2027)
Real Estate Property Tax	$269,800	$2,052,300
Business Personal Property Tax	$ 35,425	$ 208,950
Local Sales Tax	$ 79,525	$ 370,075
Meals Tax	$388,100	$2,680,750
Business License Fee	$ 14,800	$ 63,075
Personal Property (Car) Tax, Car Rental Tax	$ 6,575	$ 48,775
Other fees	$ 10,425	$ 75,900
Utility Taxes	$ 10,075	$ 58,600
Subtotal Direct Taxes	*$814,725*	*$5,558,425*
Additional Revenues Derived from Households	$ 45,100	$ 334,050
General Fund Annual Revenues	***$859,825***	***$5,892,475***
Water Fees	$128,275	$ 882,850
Enterprise Fund Annual Revenues	***$128,275***	***$ 882,850***
Subtotal Annual Revenues	**$988,100**	**$6,775,325**
Building Permit and Review Fees		$ 158,425
Development Review and Other Fees		$ 11,200
Certificate of Occupancy Fees		$ 11,025
General Fund One-time Revenues		***$ 180,650***
Enterprise Fund One-time Revenues		***$ 0***
Value of On-site Public Improvements		**$ 350,000**
Subtotal One-time Revenues		**$ 530,650**
Total Revenues		**$7,305,975**
General Fund Revenues		**$6,073,125**
Enterprise Fund Revenues		**$ 882,850**

Figures rounded to the nearest $25.

Table 6 Midtown Row, Option 2 Projected Costs		
Cost Type	Annual Revenues, Stabilization Year (FY 2024)	Ten-Year Total (FY 2018-2027)
General Government Service Operating Costs	$264,425	$1,940,550
General Government Service Capital Costs		$ 0
Education Operating Costs	$ 0	$ 0
Education Capital Costs		$ 0
Total General Fund Costs	***$264,425***	***$1,940,550***
Enterprise Fund Costs	***$ 5,075***	***$ 35,275***
Total Costs	**$269,500**	**$1,975,825**

Figures rounded to the nearest $25

Table 7 Midtown Row, Option 2 Projected Cash Flow						
	FY 2018-2019	FY 2020	FY 2021	FY 2022	FY 2023	Stabilization Year FY 2024
General Fund Revenues	$(52,325)	$683,500	$685,200	$821,575	$856,850	$859,825
Enterprise Fund Revenues	$(21,450)	$ 40,725	$103,275	$119,850	$127,325	$128,275
Total Revenues	$(73,775)	$724,225	$788,475	$941,425	$984,175	$988,100
General Fund Costs	$ (9,675)	$104,150	$259,475	$264,425	$264,425	$264,425
Enterprise Fund Costs	$ (1,075)	$ 1,675	$ 4,300	$ 5,075	$ 5,075	$ 5,075
Total Costs	$(10,750)	$105,825	$263,775	$269,500	$269,500	$269,500
General Fund Cash Flow	$(42,650)	$579,350	$425,725	$557,150	$592,425	$595,400
Enterprise Fund Cash Flow	$(20,375)	$ 39,050	$ 98,975	$114,775	$122,250	$123,200
Total Cash Flow	$(63,025)	$618,400	$524,700	$671,925	$714,675	$718,600

Figures rounded to the nearest $25

Table 8 Midtown Row, Option 2 Fiscal Impact Measures, General and Enterprise Funds		
	Stabilization Year	Ten-Year Total
Cumulative Cash Flow		
General Fund	N/A	$4,132,575
Enterprise Funds	N/A	$ 847,575
Value of Public Improvements		$ 350,000
Total	N/A	$5,330,150
Benefit-to-Cost Ratio		
General Fund*	3.25-to-1	3.13-to-1
Enterprise Funds	25.28-to-1	25.03-to-1
Combined	3.67-to-1	3.7-to-1

Table 9 Midtown Row, Comparison: Options 1 & 2 Fiscal Impact Measures, General and Enterprise Funds		
	Option 1	Option 2
Stabilization Year		
Cash Flow		
General Fund	$ 684,775	$595,400
Enterprise Funds	$ 162,550	$123,200
Total	$ 847,325	$718,600
Benefit-to-Cost Ratio		
General Fund*	3.19-to-1	3.25-to-1
Enterprise Funds	22.39-to-1	25.28-to-1
Combined	3.65-to-1	3.67-to-1
Ten-Year Total		
Cumulative Cash Flow		
General Fund	$4,912,850	$4,132,575
Enterprise Funds	$1,169,225	$ 847,575
Value of Public Improvements	$ 350,000	$ 350,000
Total	$6,432,075	$5,330,150
Benefit-to-Cost Ratio		
General Fund*	3.14-to-1	3.13-to-1
Enterprise Funds	22.12-to-1	25.03-to-1
Combined	3.73-to-1	3.7-to-1