FRANKLIN COUNTY
SPECIAL USE PERMIT APPLICATION

Consultation with planning staff is strongly recommended prior to filing of a special use permit application. The purpose of the consultation is to review the request, identify specific information that may need to be submitted, and discuss procedures and time frames.

Filing Deadline: Completed application must be received by 4:30 PM on the deadline date listed on the current hearing schedule. The hearing schedule is available online at https://www.franklincountyva.gov/441/Planning-Commission, or in person at the Franklin County Development Services suite.

Incomplete applications will not be accepted nor advertised.

APPLICANT MUST SUBMIT A COMPLETE APPLICATION CONSISTING OF THE APPLICATION FORM, LETTER OF APPLICATION, CONCEPT PLAN, AND ANY OTHER PERTINENT INFORMATION TO BE CONSIDERED BY THE PLANNNG COMMISSION AND BOARD OF SUPERVISORS.

Application Requirements:

1. **Completed application form,** typed or printed in ink and signed by the applicant, including the property owner's consent and signature.

2. **Letter of application** stating in general terms:
   a) The proposed use of the property
   b) The reason for the request
   c) The effect of the changes on the surrounding area

3. **Concept Plan** for property showing existing site features and any proposed development additions and/or improvements. See attached information for recommended contents of concept plans.

Fee Schedule:

Planned Development	$300.00 + $5.00 per acre
Residential/Agricultural	$250.00 + $5.00 per acre
Commercial & Industrial	$250.00 + $5.00 per acre

ALL required application fees must be paid at the time of application submittal. Applicant may pay by cash, check, or credit/debit card. Please be advised there will be an 3.5% convenience fee added to the total amount if paid by credit or debit card.

Posting of the Subject Property prior to Public Hearings:

Franklin County Department of Planning and Community Development will prepare and post a "Notice of Public Hearing" sign along any road that is adjacent to the property for which a special use permit is requested. The notice will be posted by the county at least fourteen (14) days prior to the scheduled Planning Commission hearing and will remain up until the Board of Supervisors have decided on the application. If no public road abuts the property, then notice signs shall be erected on at least two (2) boundaries of the property abutting land not owned by the applicant.

The signs are property of Franklin County and must not be removed by the applicant or property owners.

Legal Advertisement Costs:

Each special use permit request must be legally advertised in a newspaper of general circulation in accordance with established state and local regulations. Franklin County advertises hearings in the Franklin News Post. The Department of Planning and Community Development shall prepare the legal ads and shall send the ads to the newspaper for publication.

The cost of publishing the legal ad is the responsibility of the applicant. The newspaper will send an invoice to Planning staff, and staff will then notify the applicant of the cost of the legal ad. Please note that the Planning Commission legal ad and the Board of Supervisors legal ad are submitted separately, and thus the applicant will receive two (2) notices that will require payment. If payment is not received prior to the public hearing, the application may be tabled and delayed one (1) month until the next public hearing.

If the applicant requests that the public hearing be delayed after the publication of the legal ad, the applicant shall be responsible for all costs of re-advisement. If the applicant requests to withdraw their application after the publication of the legal ad, the applicant will still be responsible for all costs of the advertisement.

Consideration for Granting Special Use Permits:

The planning Commission and the Board of Supervisors consider the following in reviewing requests for special use permits:

- The effect of the proposed use on the adjacent property
- The effect of the proposed use on the character of the existing zoning district
- The agreement of the proposed use with the purpose and intent of the zoning ordinance and other uses permitted by right in the district
- The effect of the proposed use on public health, safety and welfare

For Further Information Contact:

Department of Planning and Community Development
1255 Franklin Street, Suite 103
Rocky Mount, VA 24151

Phone: (540) 483-3027

Office Hours: Monday through Friday 8:00 AM to 4:30PM
*Except for approved County holidays & closures

FRANKLIN COUNTY SPECIAL USE PERMIT PROCESS

STEP 1- PRE-APPLICATION MEETING

- Applicant meets with planning staff to discuss request, obtain forms, review process and identify required materials for the request. An application for a special use permit must be filed by the property owner or with the property owner's written consent.

STEP 2- APPLICATION

- **Application:** Applicant submits complete application packet to the Department of Planning and Community Development. Application and plans are available for public review.
- **Posting of Property:** The County shall post public notice signs on the property at least fourteen (14) days prior to the scheduled Planning Commission public hearing. The sign will remain up until the Board of Supervisors has reached a decision on the application.
- **Notification of Property Owners:** Planning staff notifies adjoining property owners of the special use permit request and dates of public hearings. A letter of notification is mailed out approximately twenty (20) days prior to the Planning Commission public hearing.
- **Public Notice/Legal Advertisement:** Planning staff prepares required legal advertisement which is published in the local newspaper. Notification of requests and public hearings must appear in a local newspaper two (2) times within two (2) consecutive weeks prior to the public hearings. Applicant is responsible for the cost of ***both*** the Planning Commission and Board of Supervisors legal ad publications.

STEP 3- STAFF REVIEW

- Staff will visit the site listed on the special use permit application.
- The Development Review Team (DRT) reviews the application and discusses potential actions that would be required of the applicant if the special use application is approved.
- Planning staff prepares a written report for the Planning Commission and Board of Supervisors that considers the proposed district regulations, and Section 25-2 through 25-4 of the Franklin County Zoning Ordinance (Purpose and Intent; Relationship to Environment; and Relationship to the Comprehensive Plan adopted by the County.)

STEP 4- PLANNING COMMISSION REVIEW AND RECOMMENDATION

- Planning Commission visits each site prior to the scheduled public hearing.
- The applicant or a designated agent must attend the public hearing. During the public hearing, the applicant and/or their agent will address the Planning Commission. The applicant or agent may prepare a presentation.
- Any member of the public who wishes to comment on the application will be granted time to address the Planning Commission during the public hearing.
- Planning Commission must make a recommendation to the Board of Supervisors within 100 days of its first meeting date. The recommendation may include conditions on the use of the property to address specific

issues or concerns. Any conditions that are proposed by the developer must be submitted to the Planning Office no later than 4:30 PM six (6) days prior to the Board of Supervisors meeting.

- After action is taken by the Planning Commission, the request is scheduled for a public hearing with the Board of Supervisors. Even if the Planning Commission recommends denial, the application will still be heard by the Board of Supervisors. Planning staff immediately prepares legal advertisements and proceeds with newspaper publication. The applicant is responsible for the cost of legal ad publication.
- Please note that any request to withdraw or postpone an application must be requested in writing within two (2) days after the Planning Commission hearing in order to coordinate public notice requirements.

STEP 5- BOARD OF SUPERVISORS DECISION

- Planning Commission recommendation is forwarded in writing to the Board of Supervisors.
- The applicant or their agent must attend the public hearing.
- Board of Supervisors have the option to approve, deny or table the request. The Board of Supervisors may table the application to request more information from staff or the applicant. The Board of Supervisors may also refer the application back to the Planning Commission for additional review.
- The Board of Supervisors may impose conditions upon any special use permit, as provided for in Section 25-640 of the Zoning Ordinance and may require a bond or surety to ensure compliance with conditions.
- Special use permits are effective immediately after action by the Board of Supervisors.
- Special use permits expire in eighteen (18) months if there is no commencement of the use or related activity.

FRANKLIN COUNTY

SPECIAL USE PERMIT APPLICATION

I/We ABoone Development, Inc. as Owner(s), Contract Purchasers, or Owner's Authorized Agent of the property described below, hereby apply to the Franklin County Board of Supervisors for a special use permit on the property described below:

Petitioner's Name: ABoone Development, Inc.

Petitioner's Address: 3934 Electric Road, SW, Suite A Roanoke, Virginia 24018

Petitioner's Phone Number: [redacted]

Petitioner's Email Address: [redacted]

Property Owner's Name: Williard Investment Properties, LLC

Property Owner's Address: 75 Builders Pride Dr #200, Hardy, VA 24101

Property Owner's Phone Number: [redacted]

Property Owner's Email Address: [redacted]

Property Information:

A. Proposed Property Address: 12800 Booker T. Washington Highway
Hardy, VA 24101

B. Tax Map and Parcel Number: 030.00/001.05 and 030.00/052.28

C. Election District: Gills Creek

D. Size of Property: 82.7 acres

E. Existing Zoning: PCD

F. Existing Land Use: Vacant

G. Is the property located within any of the following overlay zoning districts:
☐ Corridor District ☑ Westlake Overlay District ☐ Smith Mountain Lake Surface District

H. Is any land submerged under water or part of Smith Mountain Lake? ☐ YES ☑ NO

I. If yes, please explain:

Proposed Special Use Permit Information:

J. Proposed Land Use: Applicant proposes to develop the property into 103 +/- single family detached homes with commercial pads fronting Route 122 to complement the existing Westlake Towne Center and the currently under development townhome and condominium community adjacent to the property. The community would be served by both public water and sewer as well as private roads, for which this SUP is required.

K. Size of Proposed Use: 82.7

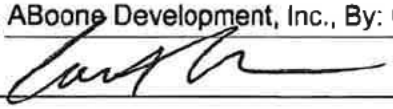
L. Other Details of Proposed Use: The proposed development would meet a critical housing shortage while complementing the existing commercial, office and residential uses of Westlake Towne Center and adding additional commercial uses along the corridor. The community would provide opportunity to more people for homeownership by offering high quality, detached housing in a desirable location with access to commercial shopping, restaurants and Smith Mountain Lake.

Checklist for Completed Items:

- Application Form
- Letter of Application
- Concept Plan
- Application Fee

I certify that this application for a special use permit and the information submitted is herein complete and accurate.

Petitioner's Name (Printed): ABoone Development, Inc., By: Court Rosen, Dir. of Dev.

Petitioner's Signature: 

Date: January 4, 2026

Mailing Address: 3934 Electric Road, SW, Suite A
Roanoke, Virginia 24018

Phone Number: [redacted]

Email Address: [redacted]

Owner's consent, if petitioner is not property owner:

Owner's Name: Ron Willard II

Owner's Signature: 

Date: 12-30-2025

Date Received by Planning Staff: _____

Concept Plans
Residential, Business, and Industrial Districts
Necessary Contents

Purpose of a Concept Plan:

A Concept plan is necessary for all special use permit applications. The purpose of the concept plan is to provide information on site conditions and general understanding of the proposed use of the property. Typically, a concept plan contains information on the property such as the property address, parcel boundaries, adjacent roads, natural features (including water courses) and neighboring properties. A concept plan also includes the locations of any proposed buildings, parkin, streets, community facilities, buffering or screening, boat docks, signs, and lighting, as well as the proposed densities of development.

Concept Plan versus Site Development Plan:

A concept plan is not the same as a site development plan, which is more detailed to ensure compliance with development regulations and obtain construction permits. A concept plan may be the first stem in creating a site development plan. It is important to note that the approval of a special use permit with a concept plan does not mean that a site development plan has been or will be approved.

Required Contents of the Concept Plan:

- Project title, name of applicant, project engineer/architect/surveyor/planner
- Plan Date
- North arrow and graphic scale
- Size of entire parcel and if applicable, size of portion of parcel requested for rezoning, accompanied by meets and bounds description
- Adjacent streets, railroads, natural features, historic sites, streams or bodies of water, floodplains, and other information that may help describe site conditions
- Locations, dimensions, and heights of all existing and proposed structures
- Locations and dimensions of proposed pedestrian and vehicular access points, driveways, parking areas/spaces and other facilities
- Natural areas or historic sites to be preserved
- Location and description of existing vegetation or any landscaping, screening or buffering proposed within the lot or along the perimeter of the development

- Location of proposed signs, including type of sign, size and height
- Lighting information, if applicable
- Building elevations or renderings of the proposed development, if available
- Accessory use information such as the location of storage yards, recreation spaces, refuse collection areas, septic drain fields, wells, or water tank locations, ETC
- Number, type, and size of dwellings proposed, and the residential density per acre
- Number and square footage of retail and office use proposed
- Location, size and type of recreational amenities, parking facilities, and utility information
- Other items that may be recommended by staff

CONCEPT PLANS MUST BE LEGIBLE

***NOTE* If you wish to display your concept plan or any other supporting materials during the Planning Commission or Board of Supervisors public hearings, there is an overhead projector available, as well as a computer projector. Applicants MUST bring a flash drive to display their presentation on the computer, or submit presentation materials to staff AT LEAST 24 HOURS in advance.**

TRAFFIC IMPACT ANALYSIS
For

Westlake Towne Center
On Route 122
Franklin County, VA

For
The Willard Companies
P.O. Box 540
Wirtz, VA 24184

November 21, 2014

Commission No. 3364

Mattern & Craig
ENGINEERS • SURVEYORS

701 FIRST STREET, S.W.
ROANOKE, VIRGINIA 24016

(540) 345-9342
FAX: (540) 345-7691

WESTLAKE TOWNE CENTER
TRAFFIC IMPACT ANALYSIS

EXCECUTIVE SUMMARY

This document presents the results of the traffic impact analysis performed for a proposed multi-use development south of Route 122 between the Booker T. Washington National Monument property and Route 616 in Franklin County, VA. The development is proposed by The Willard Companies.

Route 122 is a two lane minor arterial connecting the towns of Rocky Mount and Bedford and surrounding communities in the Smith Mountain Lake region. Route 122 is posted at 55 mph west of the proposed development and the speed limit reduces to 45 mph between Parkcrest Drive and Village Springs Drive.

The Willard Companies proposes to construct the multi-use development in two phases.

Phase 1 will consist of:

- 1 Fast-Food Restaurant with Drive-Through Window – Approximately 4,000 SF
- 1 Quality Restaurant – Approximately 10,000 SF
- 1 Retail facility – Approximately 20,000 SF

Phase 2 will consist of:

- All of Phase 1 development
- 54 Single-Family Detached Housing dwelling units
- 140 Apartment dwelling units
- 34 Low-Rise Residential Condominium dwelling units
- 3 Senior Adult Housing – Detached dwelling units
- 5,000 SF Day Care Center
- 88,000 SF General Office Buildings
- 62,720 SF Specialty Retail Center
- 14,700 SF Quality Restaurants

In the analysis, Phase 1 is anticipated to be fully occupied in 2018 and Phase 2 is anticipated to be fully occupied in 2023.

The study analyzes 2013 Existing, 2018 Background, 2018 Phase 1, 2023 Background, 2023 Phase 1, 2023 Phase 2, 2029 Background, 2029 Phase 1, and 2029 Phase 2 traffic volumes. The study area consists of two existing unsignalized intersections, one signalized intersection, and one proposed intersection. The study investigates warranted geometric improvements to the study network and traffic signal warrants for the appropriate study area intersection in each

scenario. Additionally, level of service operations were determined at each intersection for each scenario and study period.

The study analyzed traffic for two peak hours: PM Weekday and Saturday Midday. These peak hour periods represent the larger traffic volumes consistently experienced in the study network.

After analyzing the study network as described above, the following recommendations are offered:

1. Construct a full-width right turn lane at the eastbound approach of the Parkcrest Drive and Route 122 intersection. This right turn lane will extend through the proposed intersection west of Parkcrest Drive. The right turn lane will have at least 100' of storage and 100' of taper length at the eastbound approach of the proposed entrance intersection terminating at the Booker T. Washington National Monument property.

2. Due to access management restrictions, the northbound approach to the proposed intersection west of Parkcrest Drive will be right-in/right-out only configuration.

3. Developer should petition VDOT to relocate the 45 mph speed limit sign to the west of the proposed development.

4. The study findings indicate that with minimal traffic growth, left turn lanes should be implemented at the eastbound and westbound approaches to the intersection of Village Springs Drive and Route 122. These left turn lanes should contain at least 100' of storage and 100' taper.

5. To mitigate less than desirable level of service at the Village Springs Drive intersection during future design years, the developer should construct the connector road between the existing shopping center area and Parkcrest Drive as an initial phase to provide an alternative means of entering and exiting the shopping center area.

6. The study results indicate that 2018 Phase 1 traffic volumes warrant a signal at the intersection of Parkcrest Drive and Route 122. The signal should be coordinated with the existing signal at the intersection of Route 616 and Route 122.

7. Construct a left turn lane at the westbound approach to the intersection of Parkcrest Drive and Route 122 by 2018 with the Phase 1 development. Left turn lane should contain at least 300' of storage and 100' taper.

8. Construct a left turn lane at the eastbound approach to the intersection of Parkcrest Drive and Route 122 by 2018 with the Phase 1 development. Left turn lane should contain minimum storage (100') and minimum taper (100').

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Appendices

1.0 Introduction

Mattern & Craig, Inc. was commissioned by The Willard Companies to perform a Traffic Impact Analysis for the proposed Westlake Towne Center in Westlake Corner, Virginia. The development is scheduled to be constructed in two phases consisting of a combination of commercial and residential land uses. **Figure 1.1** depicts the location of the proposed development and the surrounding area (Figure 1.1 is oriented for ease of reference with the development layout in **Appendix A** and with the traffic volume figures throughout this report). This report includes a description of the proposed development, discussion of existing and projected traffic volumes in the study area, vehicular trips generated by the development, level of service analyses, signal warrant analysis, and identification of recommended geometric improvements to mitigate impacts to the roadway network in the study area.

The analysis will consider weekday PM peak hour and midday Saturday peak hour traffic to determine the warranted improvements to the study area roadway network with respect to the proposed development.

2.0 Proposed Development

The proposed development will be built in two phases. Phase 1 will include commercial facilities directly adjacent to Route 122. Phase 2 will include commercial and residential facilities located south and east of Phase 1. The proposed development layout by phase is provided in **Appendix A**.

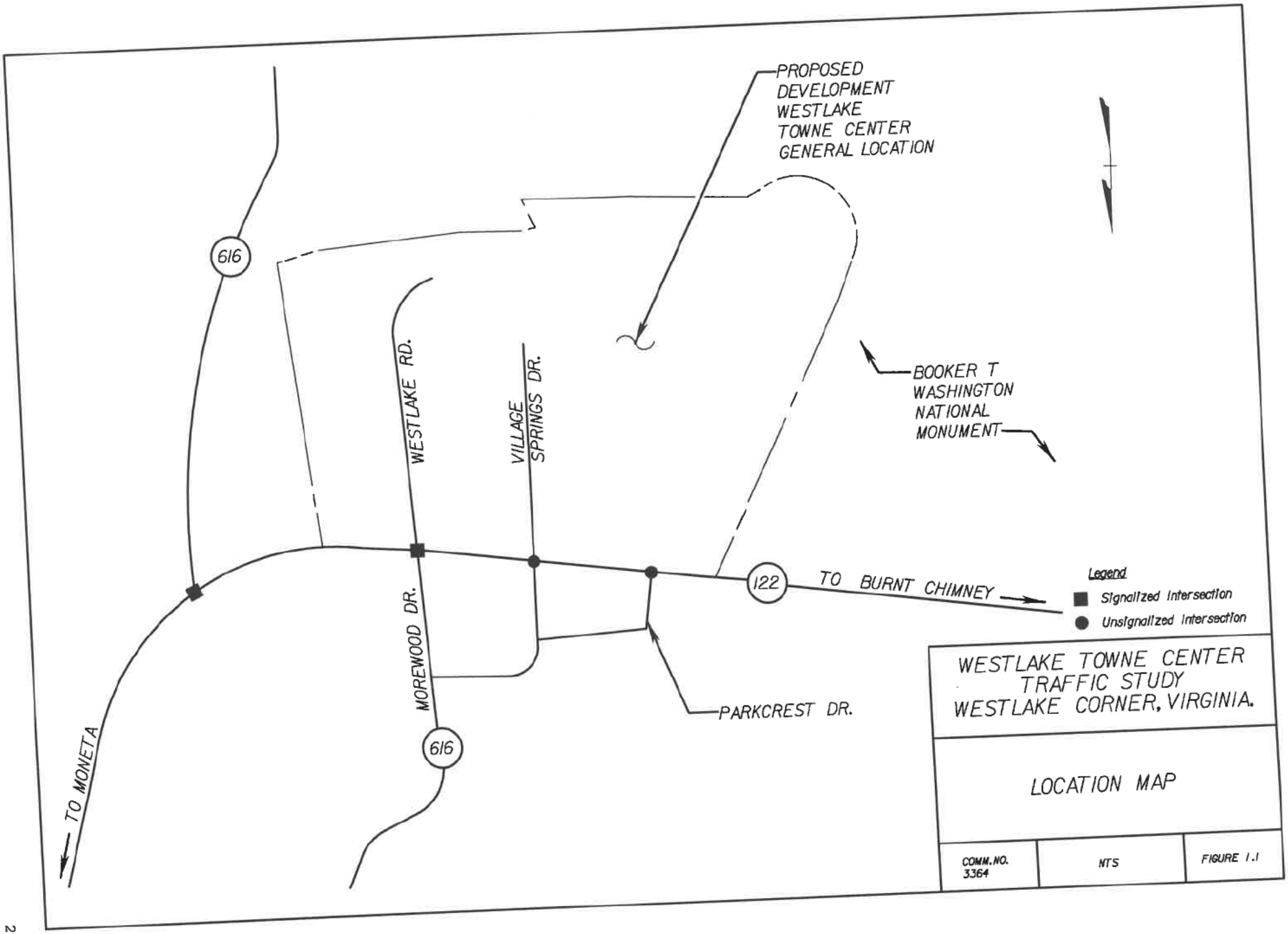
2.1 Phase 1

Phase 1 of the proposed development will be located on the south side of Route 122 between the existing intersections of Parkcrest Drive and Village Springs Drive. Access to Phase 1 will be via the two existing intersections and by a new access road (Entrance #1) constructed 330 feet west of the Parkcrest Drive intersection. Entrance #1 will provide right in/right out access only to Route 122. An internal road will be constructed parallel to Route 122 to provide direct access to the Phase 1 parcels.

Phase 1 will consist of:

- 1 Fast-Food Restaurant with Drive-Through Window – 4,000 SF
- 1 Quality Restaurant – 10,000 SF
- 1 Retail facility – 20,000 SF

Phase 1 is anticipated to be completed and fully occupied by 2018.


PROPOSED
DEVELOPMENT
WESTLAKE
TOWNE CENTER
GENERAL LOCATION
616
WESTLAKE RD.
VILLAGE
SPRINGS DR.
BOOKER T
WASHINGTON
NATIONAL
MONUMENT
122
TO BURNT CHIMNEY
MOREWOOD DR.
616
PARKCREST DR.
TO MONETA
Legend
Signalized Intersection
Unsignalized Intersection
WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.
LOCATION MAP
COMM. NO.
3364
NTS
FIGURE 1.1

2.2 Phase 2

Phase 2 of the proposed development will be located south of Route 122 and south and east of Phase 1. Access to the Phase 2 area will be via all intersections in the study area, including the new access road (Entrance #1).

As indicated on the development layout in **Appendix A**, construction has previously occurred on several parcels in the Phase 2 area. Certain of these structures were not fully occupied at the time traffic counts were made for this project. Growth factors applied to existing counts for study analysis in future years will account for the full occupancy of these facilities. Parcels with partially occupied structures currently within the proposed development area include: 2, 4, 6, 11, 13, and 15A-1.

The portion of the development to be completed in Phase 2 will consist of:

- 54 Single-Family Detached Housing dwelling units
- 140 Apartment dwelling units
- 34 Low-Rise Residential Condominium dwelling units
- 3 Senior Adult Housing – Detached dwelling units
- 5,000 SF Day Care Center
- 88,000 SF General Office Buildings
- 62,720 SF Specialty Retail Center
- 14,700 SF Quality Restaurants

Phase 2 is anticipated to be completed and fully occupied by 2023.

3.0 Existing Volumes

Twelve hour turning movement counts were collected on Wednesday, May 22, 2013 by The Traffic Group, a sub-consultant to Mattern & Craig. Turning movement counts were performed on Route 122 at the unsignalized intersections of Parkcrest Drive and Village Springs Drive and at the signalized intersection of Morewood Road/Westlake Road (Route 616). The 2013 existing traffic counts are included in **Appendix B**. As indicated by the turning movement counts, the PM peak hour is 4:15 – 5:15 PM.

During the scoping of this study VDOT noted that, based upon local knowledge of conditions in the area, the true peak hour occurred midday on Saturdays in the summer months.

VDOT provided raw directional traffic count data on Route 122 for the following four Saturdays: 5/18/2013, 6/1/2013, 6/8/2013, and 6/15/2013. Averaging the four Saturdays yields a 900 vehicle per hour peak with 60% eastbound and 40% westbound directional distribution. The Saturday peak hour occurs between 11:30 AM and 12:30 PM. The averaged 2013 Saturday directional traffic counts on Route 122 are included in **Appendix B**. Additionally, supporting

one-hour interval Saturday raw day is included in **Appendix B**. For the side streets (Parkcrest Drive, Village Spring Drive, and Rt. 616) the PM peak hour turning movement counts were used for the Saturday peak hour analyses.

The resulting balanced existing volumes are presented in **Figure 3.1**.

These volumes were used to quantify the existing volumes along Route 122 and to determine the directional distribution of existing peak hour traffic. The directional distributions for the PM Weekday and Saturday peak hours along Route 122 are delineated in Table 3.1.

Table 3.1 – Directional Distribution on Route 122

Peak Hour	Eastbound Percentage	Westbound Percentage
PM Weekday	50%	50%
Saturday	60%	40%

3.1 Projected Growth Rates

Projected annual growth rate on Route 122 in the vicinity of the study area is assumed to be 2.1%, as provided by VDOT.

4.0 Background Traffic Volumes

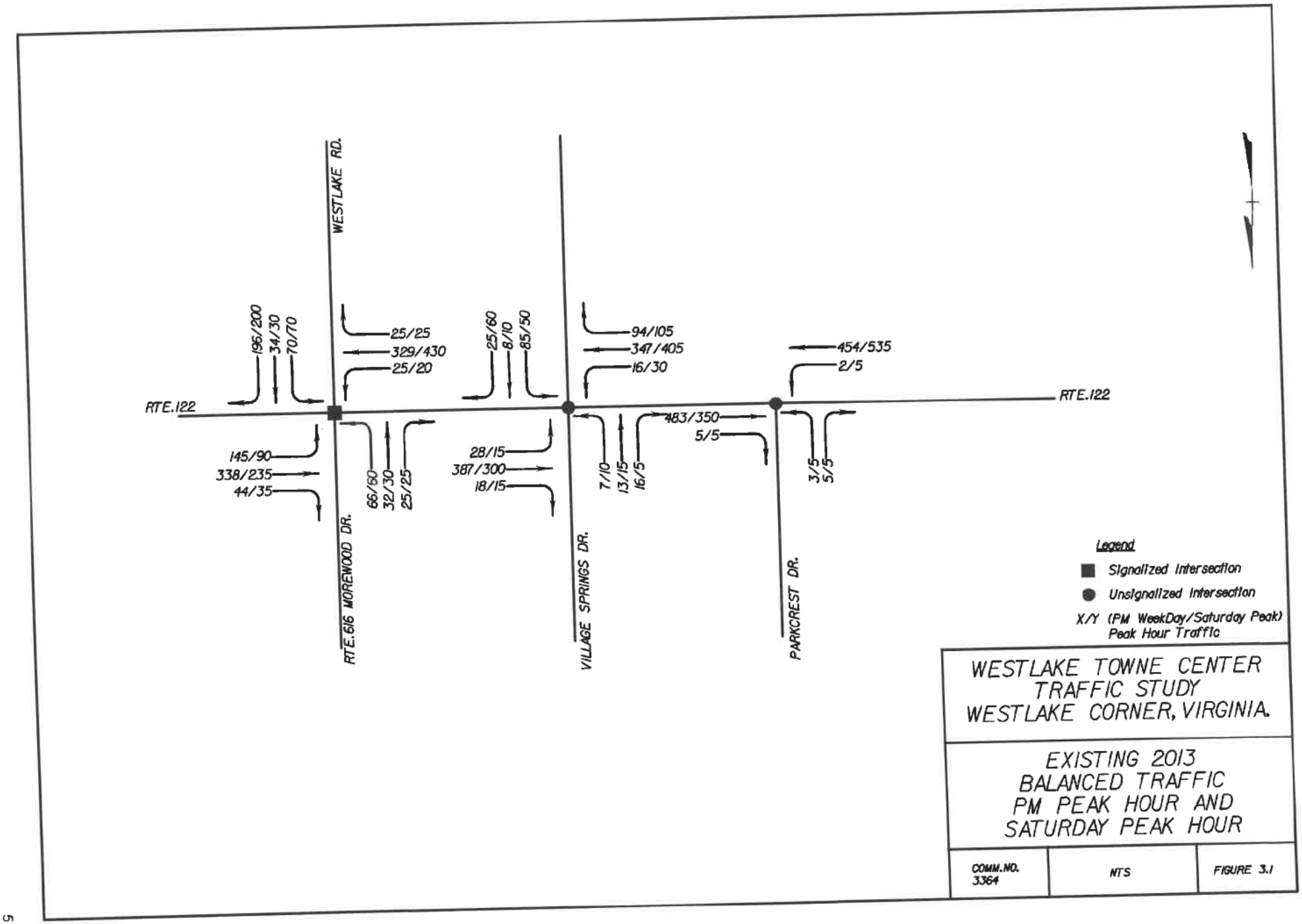
Construction of Phase 1 of the proposed development is anticipated to be completed in year 2018 and the construction of Phase 2 is projected to be completed in year 2023. Therefore, the design years 2018 and 2023 were used for analysis of the impacts to traffic and geometric improvements required on Route 122 as a result of the Phase 1 and Phase 2 buildout. Furthermore, per VDOT's Chapter 527 guidelines 2029 future conditions were determined and analyzed for background, Phase 1 buildout, and Phase 2 buildout conditions.

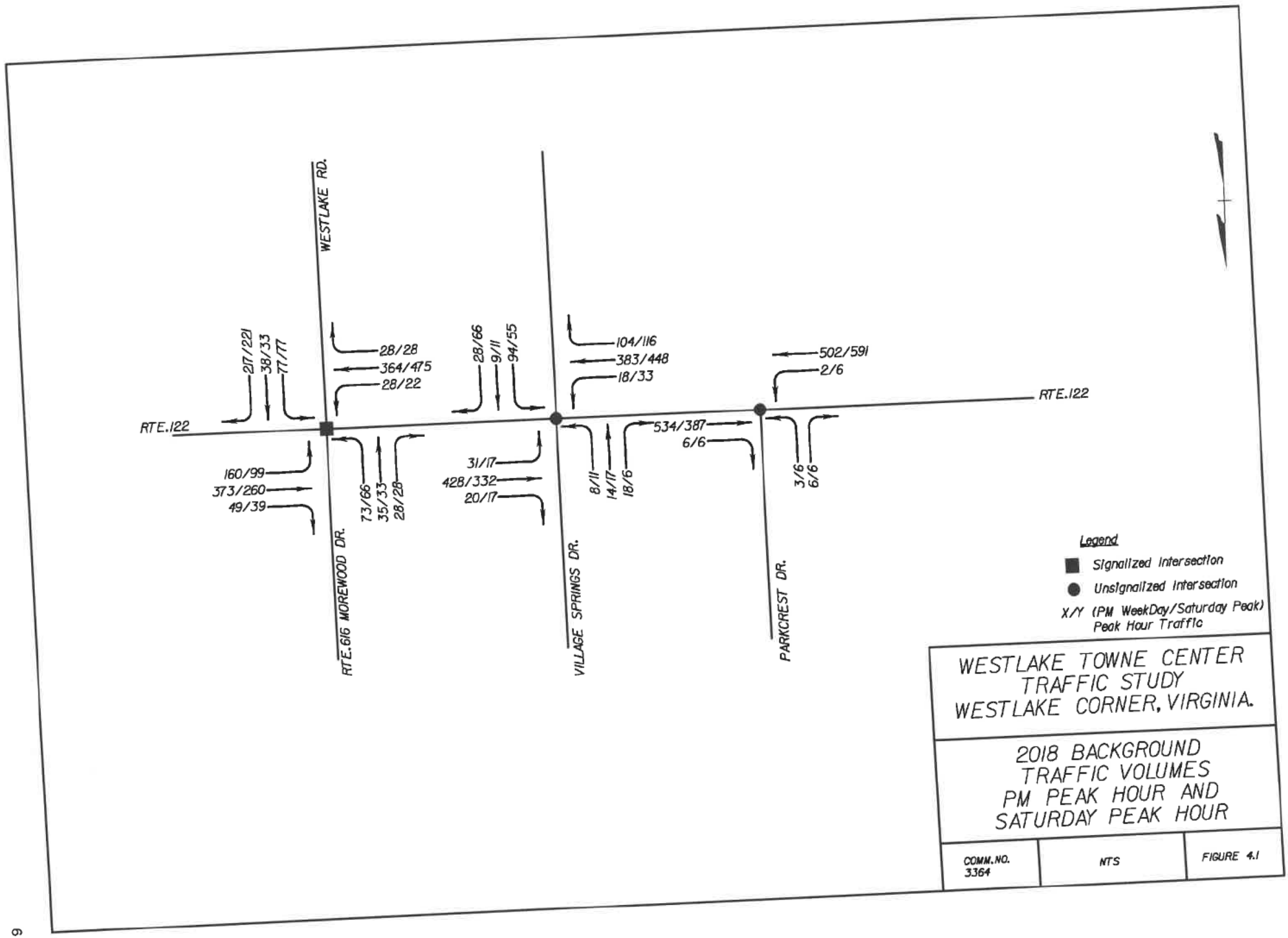
Background traffic is that which is anticipated to be utilizing the existing roadway network at the time the proposed development is expected to be completed, but not including the additional traffic generated by the new development. The existing, balanced 2013 traffic volumes were converted to 2018, 2023, and 2029 background traffic data by utilizing the annual growth rate of 2.1% from year 2013 (see Section 3.1).

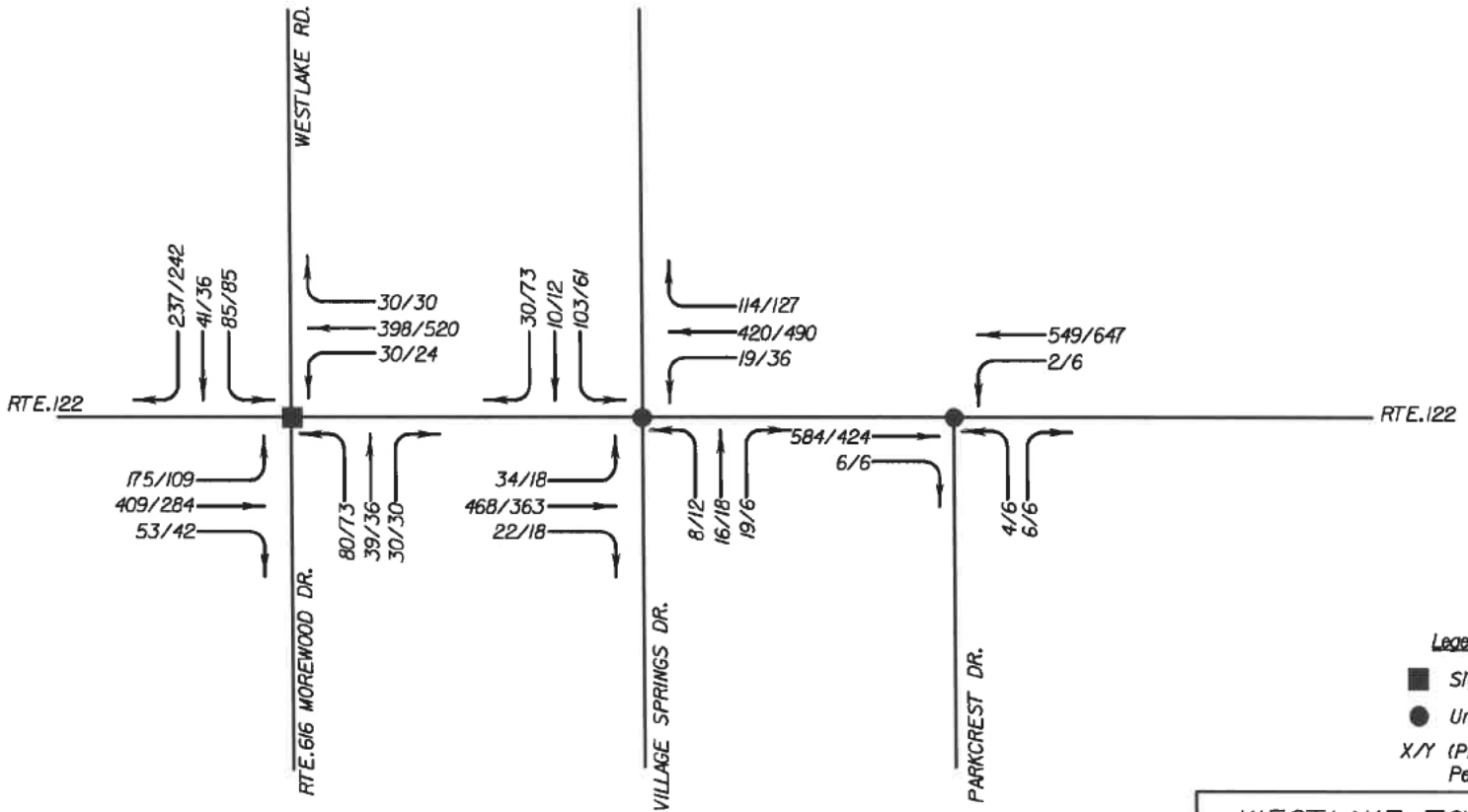
Design year 2018 background traffic volumes are presented in **Figure 4.1**.

Design year 2023 background traffic volumes are presented in **Figure 4.2**.

Design year 2029 background traffic volumes are presented in **Figure 4.3**.


WESTLAKE RD.
RTE.122
196/200
34/30
70/70
25/25
329/430
25/20
25/60
8/10
85/50
94/105
347/405
16/30
454/535
2/5
RTE.122
145/90
338/235
44/35
66/60
32/30
25/25
28/15
387/300
18/15
7/10
13/15
16/5
483/350
5/5
3/5
5/5
RTE.616 MOREWOOD DR.
VILLAGE SPRINGS DR.
PARKCREST DR.
Legend
Signalized Intersection
Unsignalized Intersection
X/Y (PM WeekDay/Saturday Peak) Peak Hour Traffic
WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.
EXISTING 2013
BALANCED TRAFFIC
PM PEAK HOUR AND
SATURDAY PEAK HOUR
COMM. NO. 3364
NTS
FIGURE 3.1


WESTLAKE RD.
RTE.122
RTE.122
RTE.616 MOREWOOD DR.
VILLAGE SPRINGS DR.
PARKCREST DR.
217/221
38/33
77/77
28/28
364/475
28/22
28/66
9/11
94/55
104/116
383/448
18/33
502/591
2/6
534/387
6/6
160/99
373/260
49/39
73/66
35/33
28/28
31/17
428/332
20/17
8/11
14/17
18/6
3/6
6/6
Legend
Signalized Intersection
Unsignalized Intersection
X/Y (PM WeekDay/Saturday Peak) Peak Hour Traffic
WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.
2018 BACKGROUND
TRAFFIC VOLUMES
PM PEAK HOUR AND
SATURDAY PEAK HOUR
COMM. NO. 3364
NTS
FIGURE 4.1



Legend

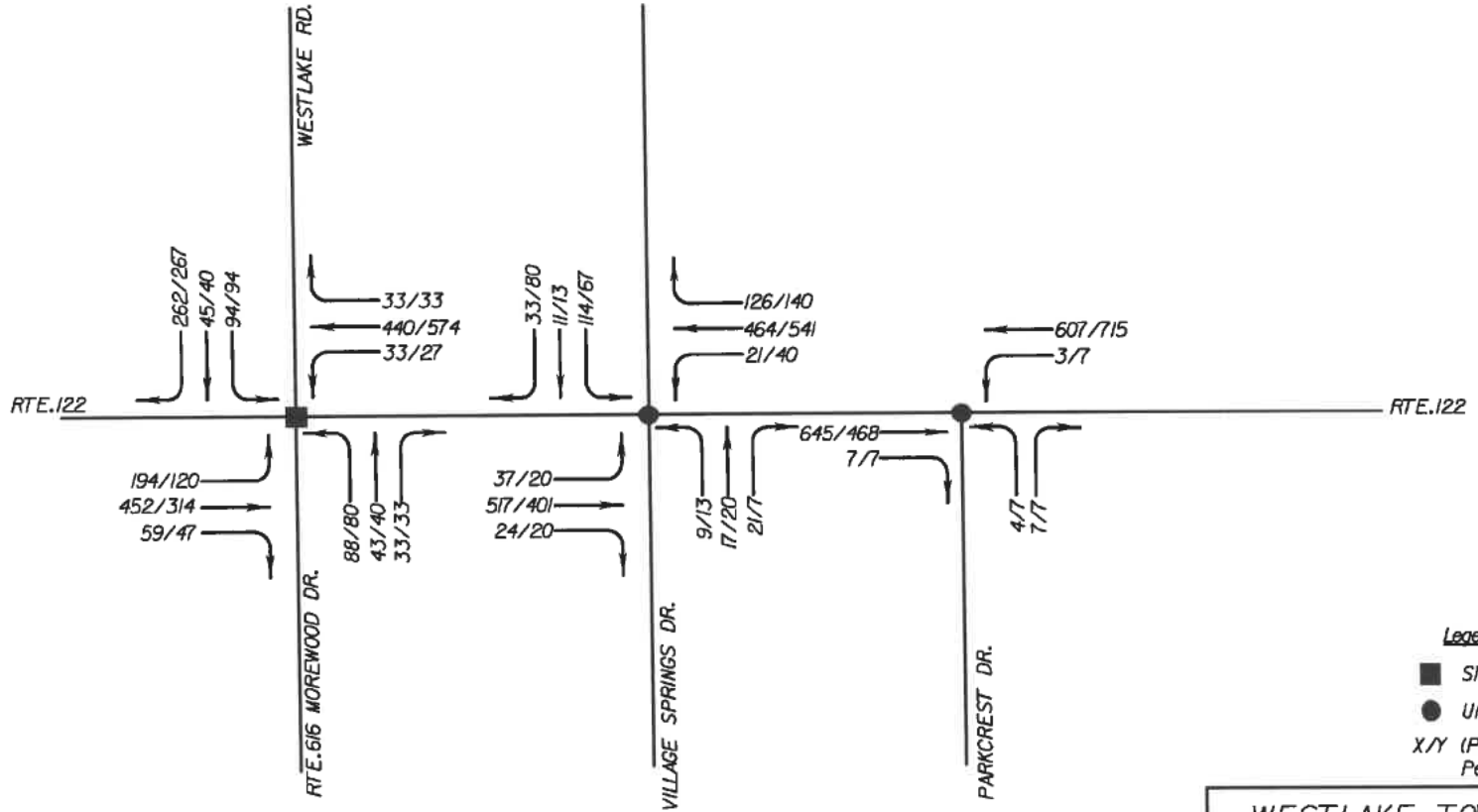
- Signalized Intersection
- Unsignalized Intersection

X/Y (PM WeekDay/Saturday Peak) Peak Hour Traffic

WESTLAKE TOWNE CENTER TRAFFIC STUDY WESTLAKE CORNER, VIRGINIA.

2023 BACKGROUND TRAFFIC VOLUMES PM PEAK HOUR AND SATURDAY PEAK HOUR

COMM. NO. 3364	NTS	FIGURE 4.2



Legend

- Signalized Intersection
- Unsignalized Intersection

X/Y (PM WeekDay/Saturday Peak) Peak Hour Traffic

WESTLAKE TOWNE CENTER TRAFFIC STUDY WESTLAKE CORNER, VIRGINIA.

2029 BACKGROUND TRAFFIC VOLUMES PM PEAK HOUR AND SATURDAY PEAK HOUR

COMM.NO. 3364	NTS	FIGURE 4.3

5.0 Projected Development Volumes

Trip generation was performed using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition. The land uses in Phase 1 and Phase 2 of the proposed development are described in Section 2.0. The Manual assigns land use codes to the land uses. Based on known size of the facility for each land use and the peak hour, the Manual provides an estimate of the new trips generated by each of the proposed land uses.

Due to the presence of existing commercial development adjacent to the proposed development area and because Route 122 is a primary collector route between communities within the vicinity, trip adjustment factors are allowed for internal capture trips and pass-by trips reductions.

Trip generation and appropriate reductions are discussed in sections 5.1 and 5.2.

5.1 Phase 1 Trip Generation

5.1.1 ITE Trip Generation

Table 5.1 provides the number of trips generated by the proposed land uses in Phase 1.

Table 5.1 – Phase 1 Trips Generated

Land Use	ITE Land Use Code	Size	PM Weekday Peak Hour		Saturday Peak Hour	
			Entering	Exiting	Entering	Exiting
Specialty Retail Center	826*	20,000 SF	24	30	56	44
Quality Restaurant	931	10,000 SF	50	25	64	44
Fast-Food Restaurant with Drive-Through Window	934	4,000 SF	69	63	120	116
		TOTAL	143	118	240	204

* Land Use 826 does not provide Saturday Peak Hour data; this study uses "Weekday, PM Peak Hour of Generator" trip generations for Saturday peak hour of land use 826.

5.1.2 Trip Adjustment Factors

After compiling the total trips generated during the PM Weekday and Saturday peak hours for the study area, site specific trip adjustment factors were utilized for internal capture and pass-by trips reduction allowance during each of the two peak hours. Per the Trip Generation Handbook, 2nd Edition, internal trips were subtracted out before pass-by trip reductions were applied.

5.1.2.1 Internal Capture Trips Adjustment

Internal capture rates consider site trips "captured" within a mixed use development, recognizing that trips from one land use can access another land use within a development without having to access the adjacent roadway system. Internal capture allows reduction of site trips from external intersections and roadways.

As established in the VDOT Pre-Scoping meeting (October 2, 2013), Phase 1 internal capture allowance is 5% for trips internally captured between the proposed land uses. The 5% internal capture allowance is applied to the PM Weekday and Saturday peak hour Phase 1 trips, per ITE Trip Generation Handbook methodology. See **Appendix C** for a Multi-Use Development Trip Generation and Internal Capture Summary Worksheet from the Trip Generation Handbook, 2nd Edition Chapter 7.

5.1.2.2 Pass-By Trip Adjustment

Trips projected to enter and exit the site area are a combination of new trips to the area and trips diverted from the adjacent roadway network. The trips that are diverted from the adjacent roadway network are pass-by trips. The ITE Trip Generation Handbook, 2nd Edition Chapter 5 provides pass-by trip estimations for specific land uses which may have pass-by trips.

Phase 1 pass-by trip reductions were applied to land uses 931 and 934; Quality Restaurant and Fast-Food Restaurant with Drive-Through Window, respectively. The ITE Trip Generation Handbook reports an average pass-by trip percentage of 44% for land use 931 in the PM Weekday peak hour and 50% in the PM peak hour for land use 934. As agreed upon in the VDOT Pre-Scoping meeting (October 2, 2013), a conservative average of 45% is used for both land uses.

Due to the nature of the Westlake Corner community and its vicinity to Smith Mountain Lake, it is assumed that Route 122 traffic will make stops at the proposed Westlake Towne Center in route to their destination to or from Smith Mountain Lake. Therefore, this analysis also utilizes the 45% pass-by trip reduction rate for the Saturday peak hour.

5.1.3 Phase 1 Net Trip Generation and Distribution

The net trips generated after reductions are presented in **Table 5.2**.

Table 5.2 – Phase 1 Net Trips Generated

Peak Hour	Vehicles Per Hour		
	Entering	Exiting	Total
Phase 1 PM Weekday Peak Hour	139	115	254
Phase 1 Saturday Peak Hour	235	199	434

Figure 5.1 illustrates the Phase 1 trips through the study area.

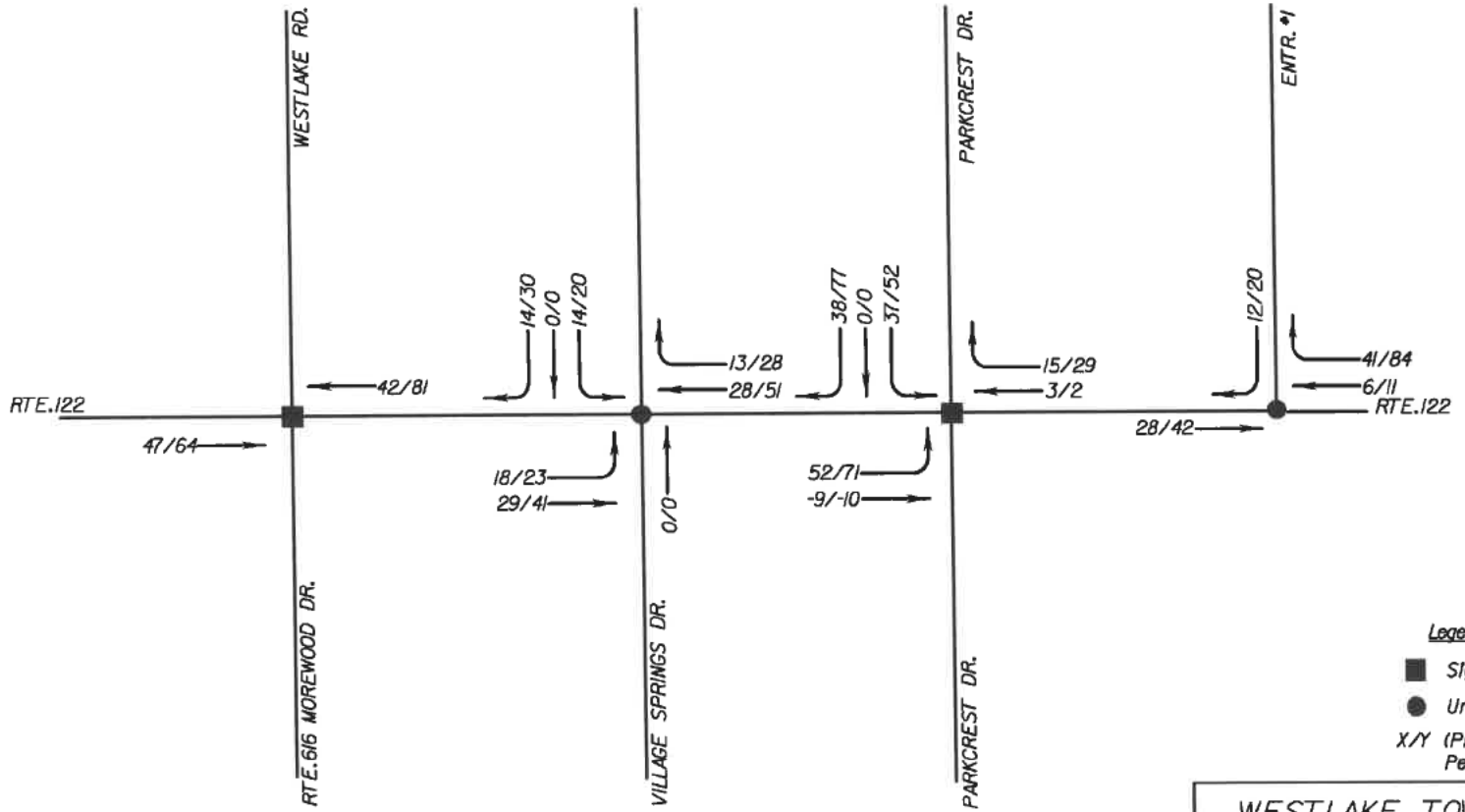
Generated trips are distributed within the study area based on the existing directional distribution along Route 122 as shown in **Table 3.1**. Furthermore, trips were distributed to each entrance using the assumption that the Parkcrest Drive intersection will be signalized and will therefore be the primary development entrance. The new entrance to the west (Entrance #1) and the existing entrance at the Village Springs Drive intersection will be considered secondary entrances.

A breakdown per intersection of the distribution percentages for the PM Weekday and Saturday peak hours is provided in **Figure 5.2**.

5.1.4 Phase 1 Trip Generation Applied to Background Traffic Volumes

Phase 1 trips in **Figure 5.1** are added to the 2018, 2023, and 2029 background traffic volumes as provided in **Figure 4.1**, **Figure 4.2**, and **Figure 4.3**, respectively, to illustrate the projected traffic volumes in 2018, 2023, and 2029 with the implementation of Phase 1. Phase 1 trips in **Figure 5.1** have been reduced as allowed by internal capture and pass-by trips reduction allowance. See **Figure 5.3** for 2018 Phase 1 Traffic Volumes, **Figure 5.4** for 2023 Phase 1 Traffic Volumes, and **Figure 5.5** for 2029 Phase 1 Traffic Volumes

Analysis of these traffic volumes is provided later in this report.



Legend

- Signalized Intersection
- Unsignalized Intersection

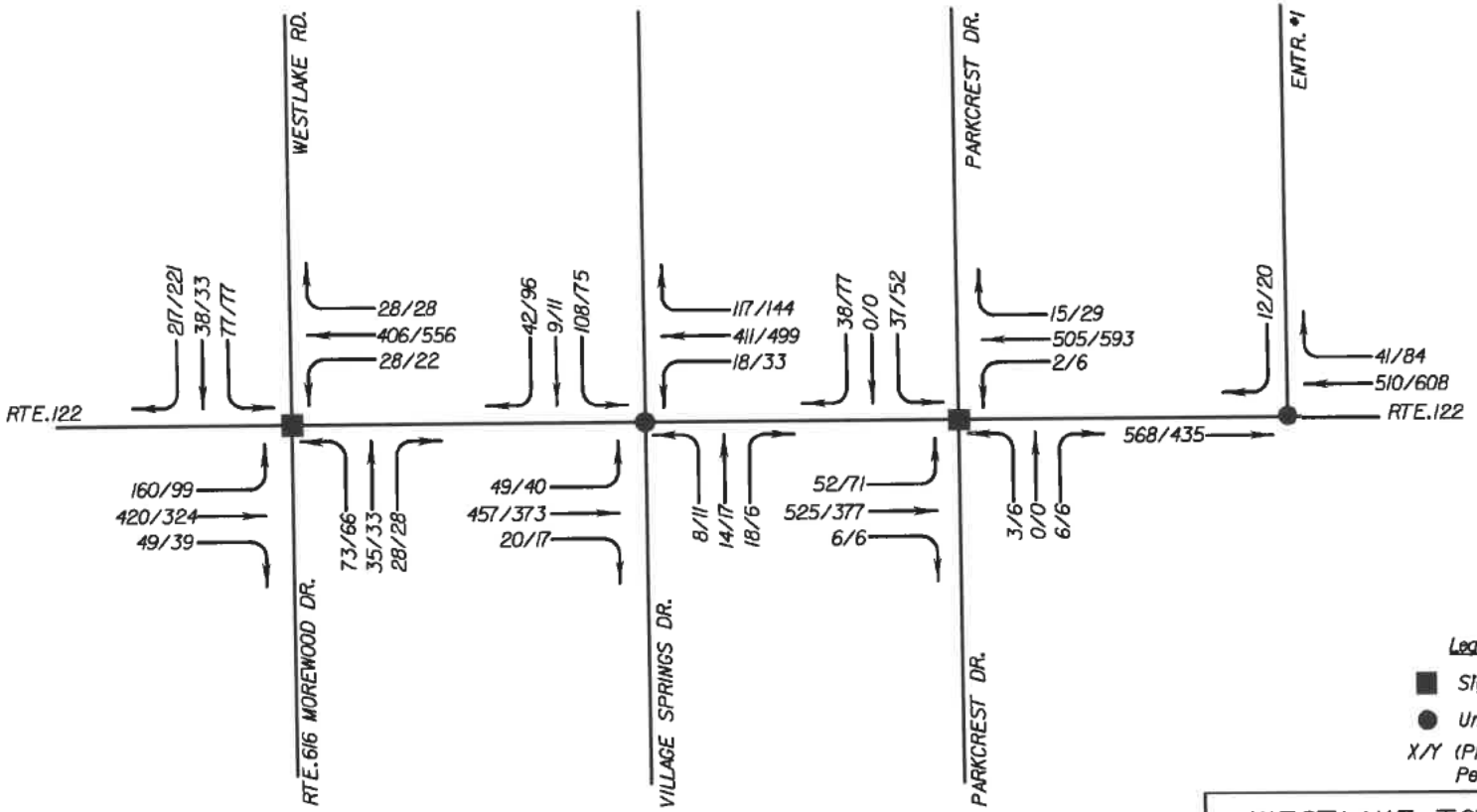
X/Y (PM WeekDay/Saturday Peak) Peak Hour Traffic

WESTLAKE TOWNE CENTER TRAFFIC STUDY WESTLAKE CORNER, VIRGINIA.

PHASE I TRIPS PM PEAK HOUR AND SATURDAY PEAK HOUR

COMM.NO. 3364	NTS	FIGURE 5J

PM
SATURDAY
Legend
Signalized Intersection
Unsignalized Intersection
WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA
PHASE I
TRIP DISTRIBUTIONS
PM PEAK HOUR AND
SATURDAY PEAK HOUR
COMM. NO. 3364
NTS
FIGURE 5.2
RTE. 122
RTE. 616 MOREWOOD DR.
WESTLAKE RD.
VILLAGE SPRINGS DR.
PARKCREST DR.
ENTR. #1
A 50% OF 50% ENTERING TRIPS
B 50% OF 50% ENTERING TRIPS
A' 20% OF 50% ENTERING TRIPS
B' 20% OF 50% ENTERING TRIPS
C 60% OF 50% ENTERING TRIPS
A 50% OF 40% ENTERING TRIPS
B 50% OF 40% ENTERING TRIPS
A' 20% OF 60% ENTERING TRIPS
B' 20% OF 60% ENTERING TRIPS
C 60% OF 60% ENTERING TRIPS
45% OF EXITING TRIPS
50%
0%
50%
60%
0%
40%
10% OF EXITING TRIPS
100%
20%
50%
60%



Legend

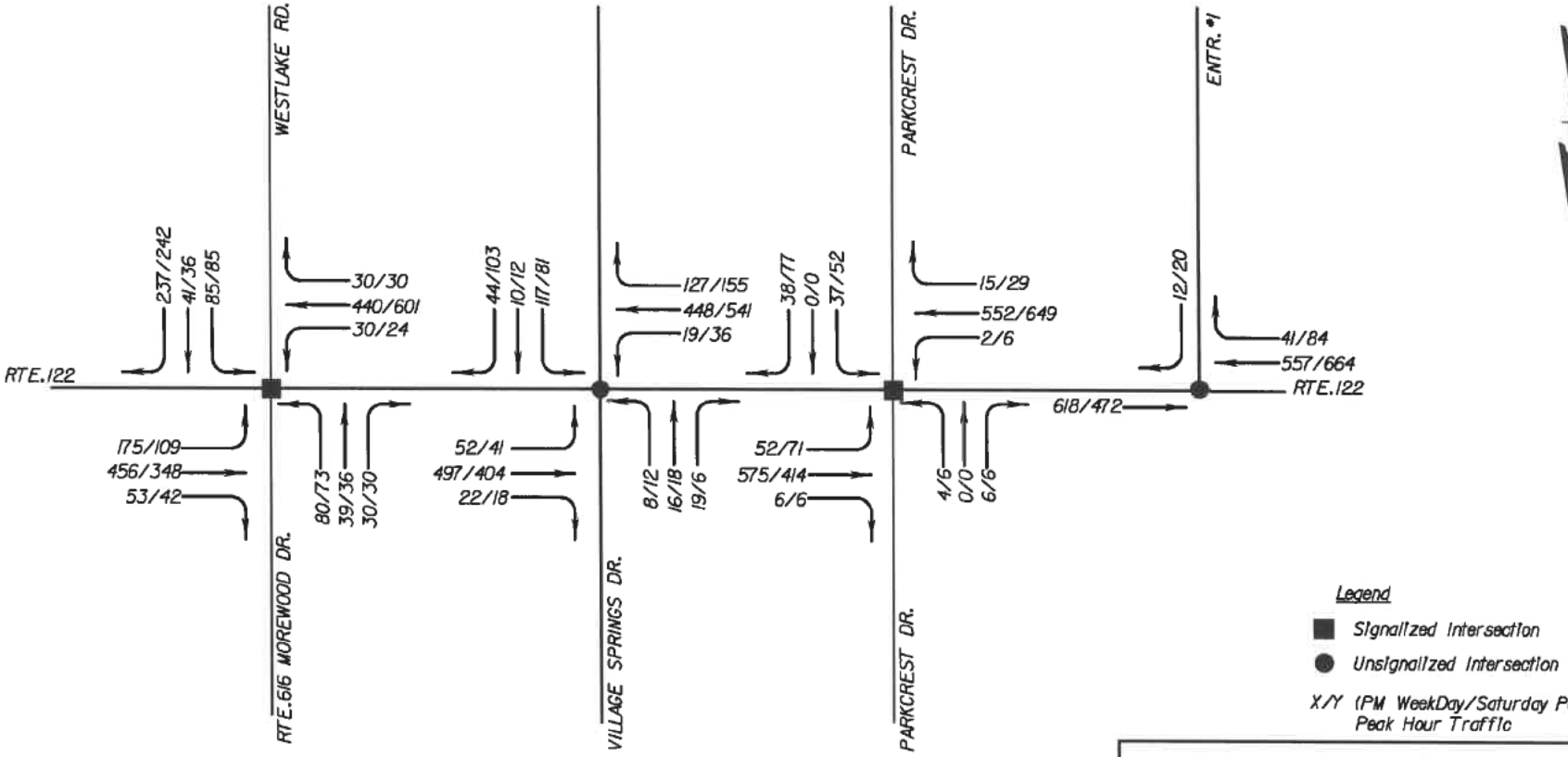
- Signalized Intersection
- Unsignalized Intersection

X/Y (PM WeekDay/Saturday Peak) Peak Hour Traffic

WESTLAKE TOWNE CENTER TRAFFIC STUDY WESTLAKE CORNER, VIRGINIA.

2018 PHASE I TRAFFIC VOLUMES PM PEAK HOUR AND SATURDAY PEAK HOUR

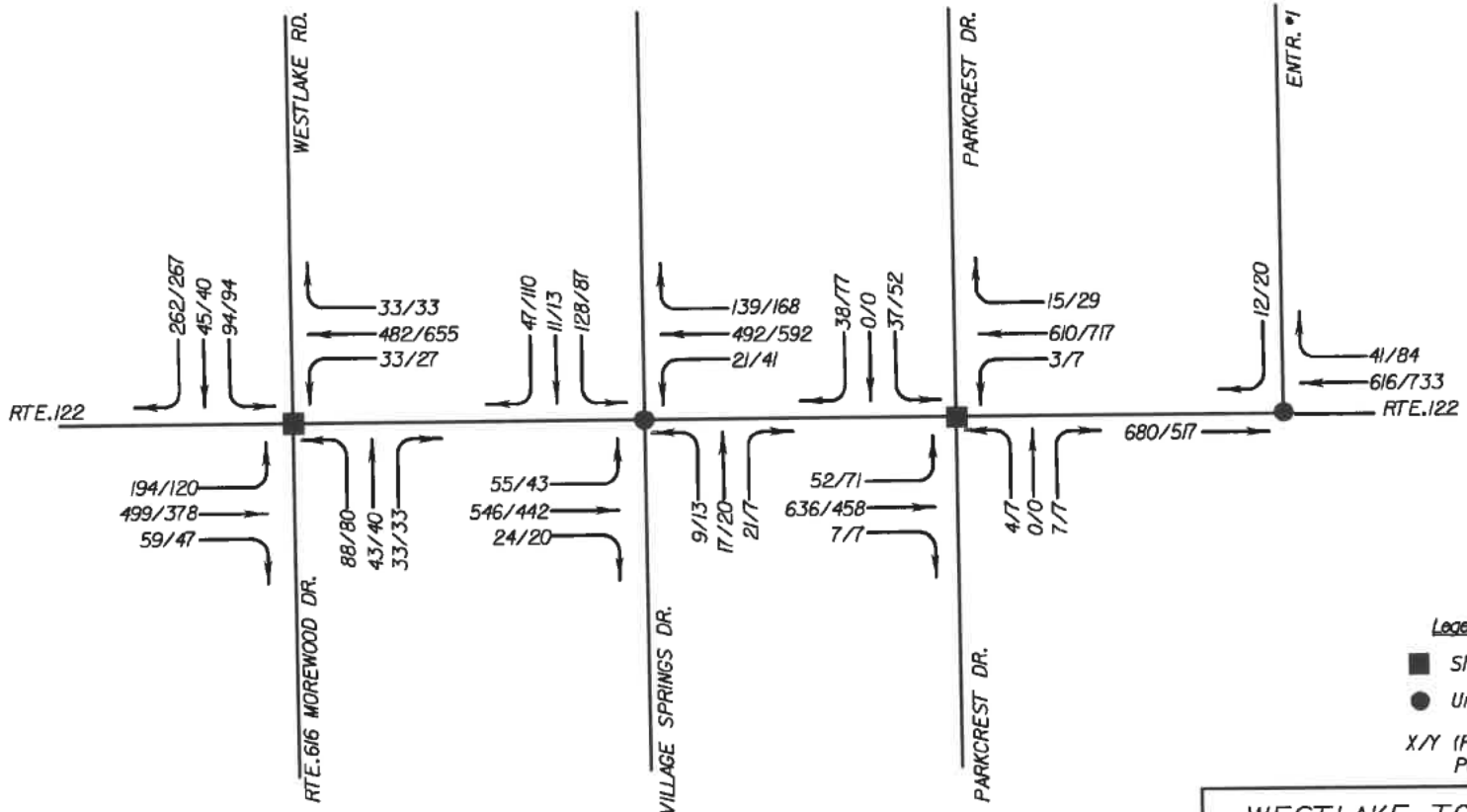
COMM.NO. 3364	NTS	FIGURE 5.3



WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.

2023 PHASE I
TRAFFIC VOLUMES
PM PEAK HOUR AND
SATURDAY PEAK HOUR

COMM.NO. 3364	NTS	FIGURE 5.4



WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.

2029 PHASE I
TRAFFIC VOLUMES
PM PEAK HOUR AND
SATURDAY PEAK HOUR

COMM. NO. 3364	NTS	FIGURE 5.5

5.2 Phase 2 Trip Generation

5.2.1 ITE Trip Generation

Table 5.3 provides information for the trips generated in Phase 2 per ITE Trip Generation Manual, 9th Edition.

Table 5.3 - Phase 2 Trips Generated

Land Use	ITE Land Use Code	Size	PM Weekday Peak Hour		Saturday Peak Hour	
			Entering	Exiting	Entering	Exiting
Phase 1*	--	--	143	118	240	204
Single-Family Detached Housing	210	54 Dwelling Units	38	22	31	26
Apartment	220**	140 Dwelling Units	62	33	60	39
Low-Rise Residential Condominium	231	34 Dwelling Units	16	11	13	10
Senior Adult Housing – Detached	251	3 Dwelling Units	1	0	0	1
Day Care Center	565	5,000 SF	29	33	6	3
General Office Buildings	710	88,000 SF	30	147	21	17
Specialty Retail Center	826***	62,720 SF	75	95	176	139
Quality Restaurant	931	14,700 SF	74	36	94	65
		TOTAL	468	495	641	504

* Phase 1 trips included here are total trips without reductions.

** Land Use 220 Saturday peak hour trips are derived from "Weekday, PM Peak Hour of Generator" to create a more conservative estimated trip generation projection.
*** Land Use 826 does not provide Saturday Peak Hour data; this study uses "Weekday, PM Peak Hour of Generator" trip generations for Saturday peak hour of land use 826.

5.2.2 Trip Adjustment Factors

After compiling the total trips generated during the PM Weekday and Saturday peak hours for the study area, site specific trip adjustment factors were utilized for internal capture and pass-by trips reduction allowance during each of the two peak hours. Per the Trip Generation Handbook, 2nd Edition, internal trips were subtracted out before pass-by trip reductions were applied.

5.2.2.1 Internal Capture Trip Adjustment

As established in the VDOT Pre-Scoping meeting (October 2, 2013), Phase 2 internal capture allowance is 15% for trips internally captured between the proposed land uses. The 15% internal capture allowance is applied to the Saturday peak hour Phase 2 trips. To provide a conservative forecast of the net Phase 2 trips generated during the PM weekday peak hour, internal capture allowance between Phase 2 land uses is determined by the values provided in Table 7.1 and Table 7.2 of the Trip Generation Handbook, 2nd Edition Chapter 7.

See **Appendix C** for a Multi-Use Development Trip Generation and Internal Capture Summary Worksheet from the Trip Generation Handbook, 2nd Edition Chapter 7 for the PM Weekday and Saturday peak hours.

5.2.2.2 Pass-By Trip Adjustment

As in Phase 1, Phase 2 pass-by trip reductions were applied to land uses 931 and 934; Quality Restaurant and Fast-Food Restaurant with Drive-Through Window, respectively. The ITE Trip Generation Handbook reports an average pass-by trip percentage of 44% for land use 931 in the PM Weekday peak hour and 50% in the PM peak hour for land use 934. As agreed upon in the VDOT Pre-Scoping meeting (October 2, 2013), a conservative average of 45% is used for both land uses. As in Phase 1, this analysis utilizes the 45% pass-by rate for the Saturday peak hour.

5.2.3 Phase 2 Net Trip Generation and Distribution

The net trips generated after reductions are presented in **Table 5.4**.

Table 5.4 – Phase 2 Net Trips Generated

Peak Hour	Vehicles Per Hour		
	Entering	Exiting	Total
Phase 2 PM Weekday Peak Hour	346	374	720
Phase 2 Saturday Peak Hour	494	379	873

Figure 5.6 illustrates the Phase 2 trips through the study area.

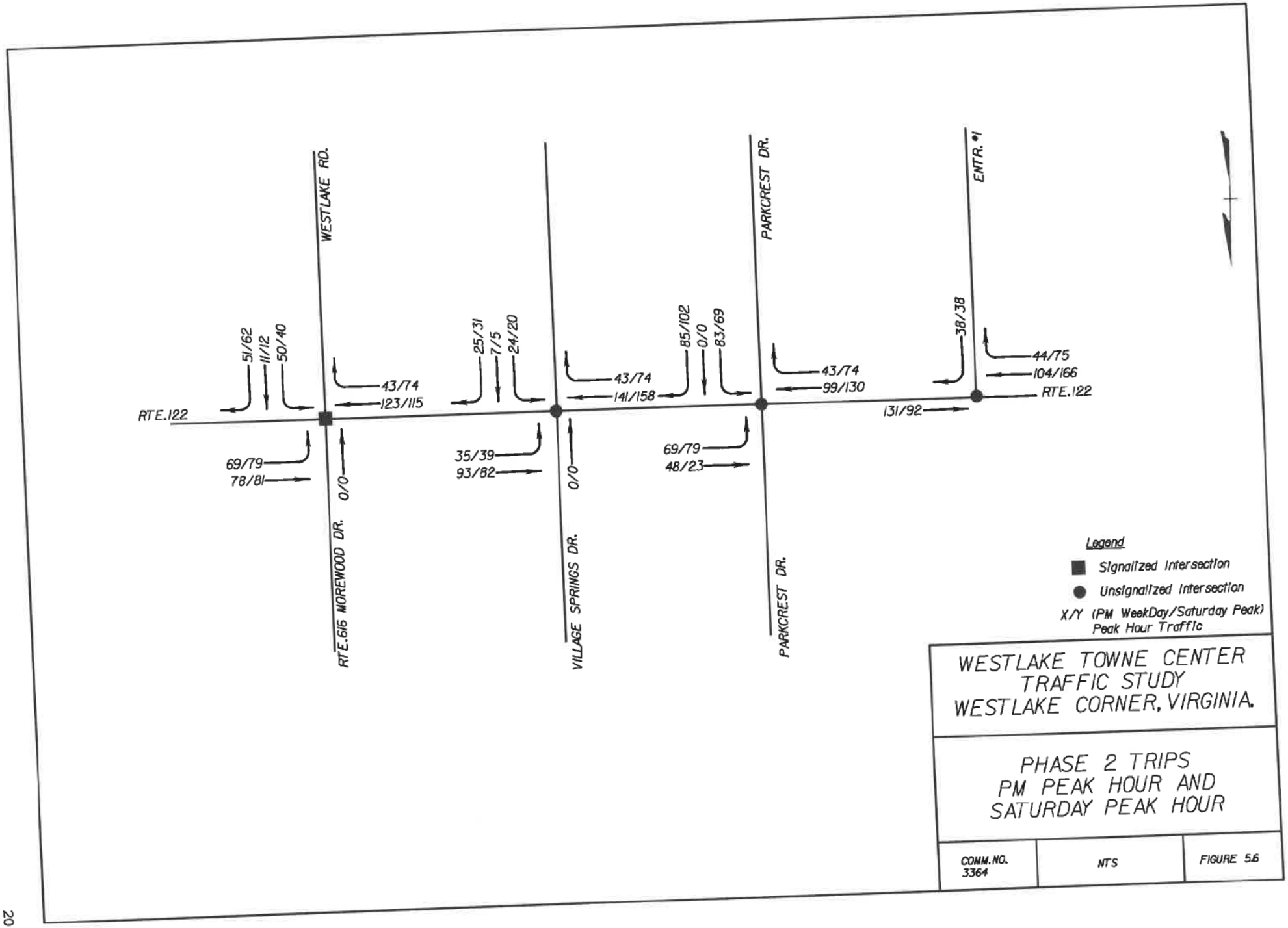
Generated trips are distributed within the study area based on the existing directional distribution along Route 122 as shown in **Table 3.1**. Furthermore, trips were distributed to each entrance using the assumption that the Parkcrest Drive intersection will be signalized and will therefore be the primary development entrance. The new entrance to the west (Entrance #1) and the existing entrances at the Village Springs Drive and Route 616 intersections will be considered secondary entrances.

A breakdown per intersection of the distribution percentages for the PM Weekday and Saturday peak hours is provided in **Figure 5.7**.

5.2.4 Phase 2 Trip Generation Applied to Background Traffic Volumes

Phase 2 trips in **Figure 5.6** are added to the 2023 and 2029 background traffic volumes, as provided in **Figure 4.2** and **Figure 4.3**, respectively, to illustrate the projected traffic volumes in 2023 and 2029 with the implementation of Phase 2. See **Figure 5.8** for 2023 Phase 2 Traffic Volumes and **Figure 5.9** for 2029 Phase 2 Traffic Volumes.

Analysis of these traffic volumes is provided later in this report.



WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.

PHASE 2 TRIPS
PM PEAK HOUR AND
SATURDAY PEAK HOUR

COMM. NO. 3364	NTS	FIGURE 5.6

PM
SATURDAY
Legend
Signalized Intersection
Unsignalized Intersection
WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.
PHASE 2
TRIP DISTRIBUTIONS
PM PEAK HOUR AND
SATURDAY PEAK HOUR
COMM. NO. 3364
NTS
FIGURE 5.7
RTE.122
WESTLAKE RD.
RTE.616 MOREWOOD DR.
VILLAGE SPRINGS DR.
PARKCREST DR.
ENTR. #1
(A) 40% OF 50% ENTERING TRIPS
(B) 20% OF 50% ENTERING TRIPS
(C) 40% OF 50% ENTERING TRIPS
(A') 25% OF 50% ENTERING TRIPS
(B') 25% OF 50% ENTERING TRIPS
(C') 25% OF 50% ENTERING TRIPS
(D') 25% OF 50% ENTERING TRIPS
(A) 40% OF 40% ENTERING TRIPS
(B) 20% OF 40% ENTERING TRIPS
(C) 40% OF 40% ENTERING TRIPS
(A') 25% OF 60% ENTERING TRIPS
(B') 25% OF 60% ENTERING TRIPS
(C') 25% OF 60% ENTERING TRIPS
(D') 25% OF 60% ENTERING TRIPS
30% OF EXITING TRIPS
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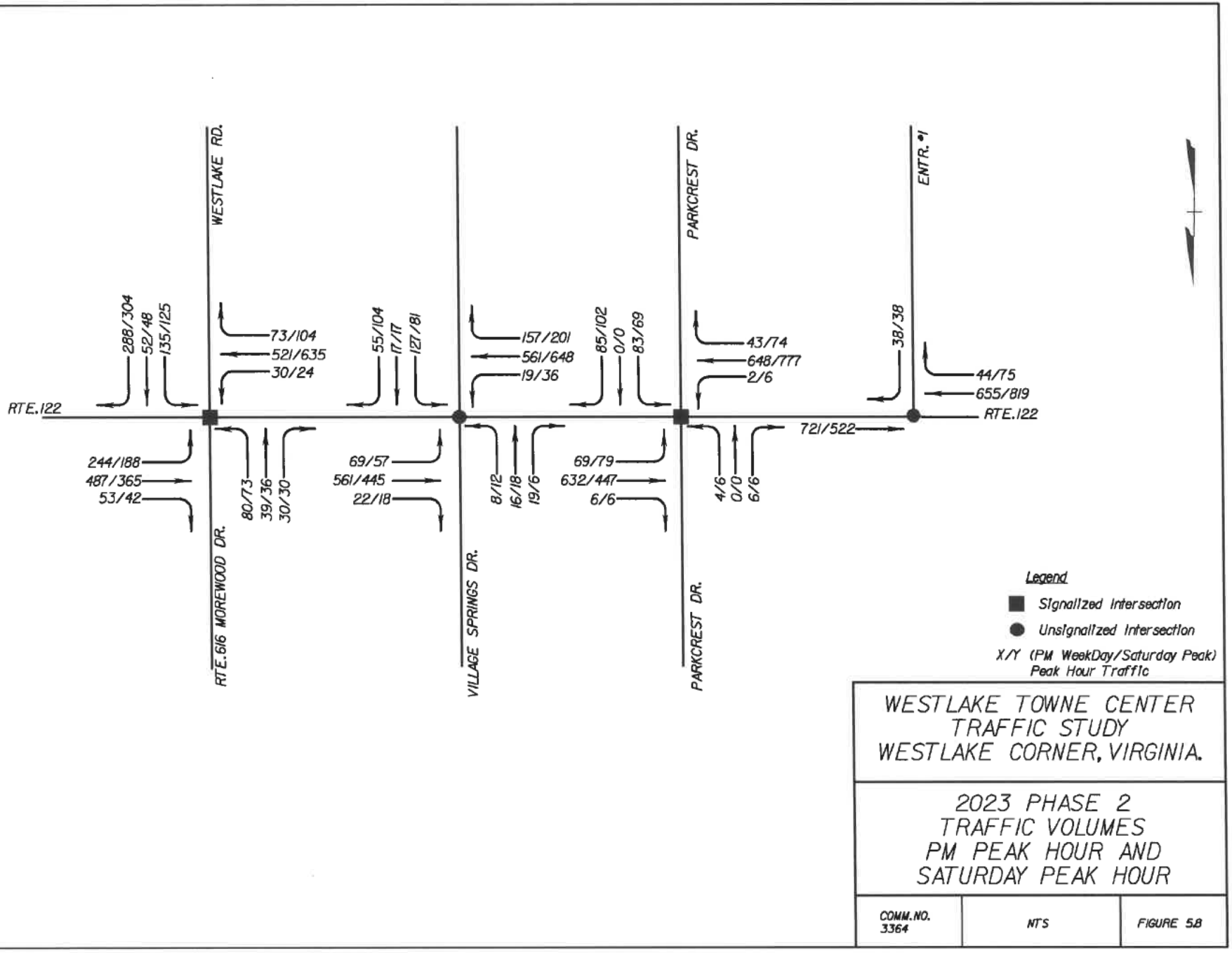
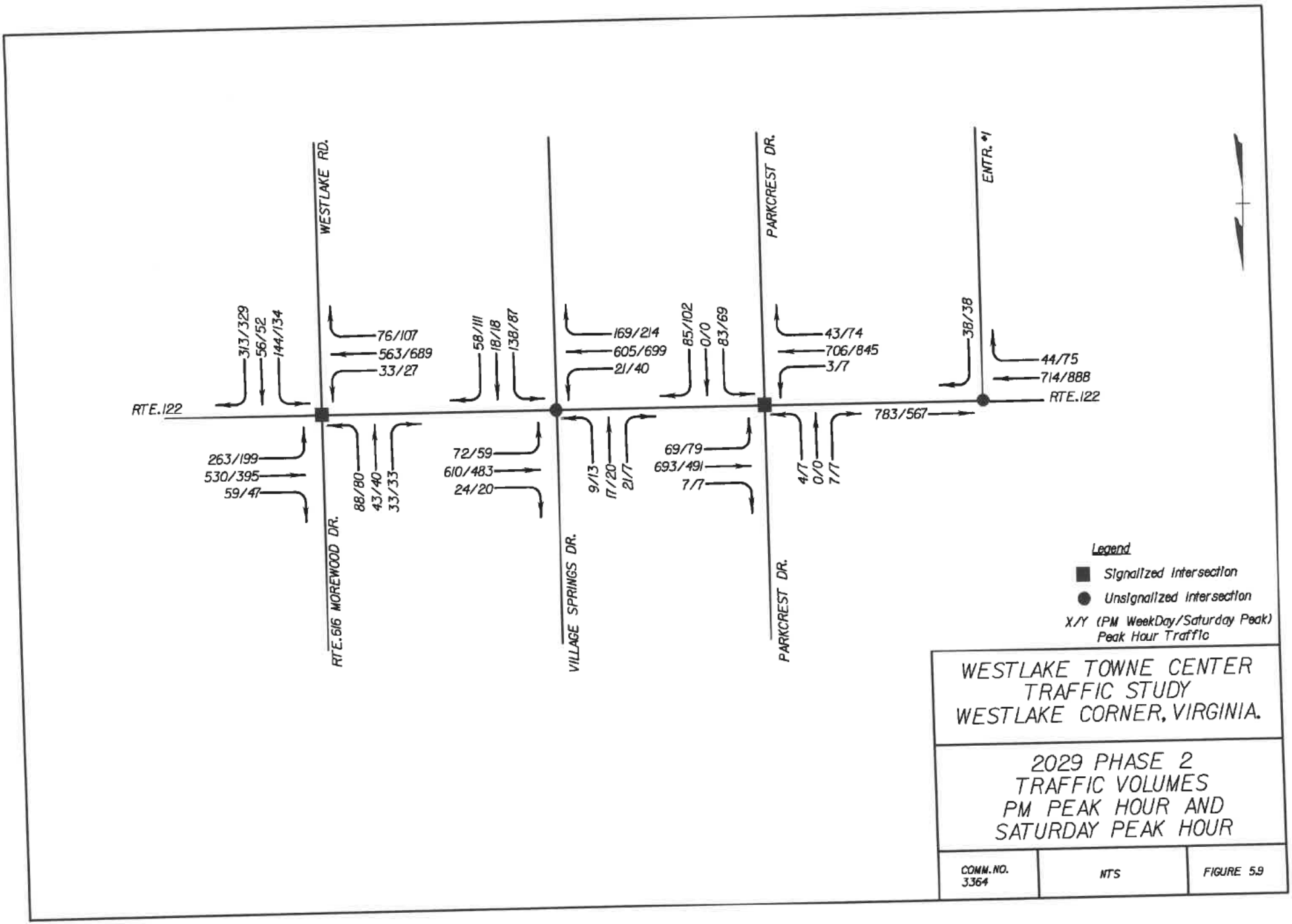


WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.

2023 PHASE 2
TRAFFIC VOLUMES
PM PEAK HOUR AND
SATURDAY PEAK HOUR

COMM.NO. 3364	NTS	FIGURE 5.8


WESTLAKE RD.
PARKCREST DR.
ENTR. #1
RTE.122
RTE.616 MOREWOOD DR.
VILLAGE SPRINGS DR.
PARKCREST DR.
313/329
56/52
144/134
76/107
563/689
33/27
58/111
18/18
138/87
169/214
605/699
21/40
85/102
0/0
83/69
43/74
706/845
3/7
38/38
44/75
714/888
RTE.122
783/567
263/199
530/395
59/47
88/80
43/40
33/33
72/59
610/483
24/20
9/13
17/20
21/7
69/79
693/491
7/7
4/7
0/0
7/7
Legend
Signalized Intersection
Unsignalized Intersection
X/Y (PM WeekDay/Saturday Peak)
Peak Hour Traffic
WESTLAKE TOWNE CENTER
TRAFFIC STUDY
WESTLAKE CORNER, VIRGINIA.
2029 PHASE 2
TRAFFIC VOLUMES
PM PEAK HOUR AND
SATURDAY PEAK HOUR
COMM. NO. 3364
NTS
FIGURE 5.9

6.0 Intersection Analysis

This section analyzes the geometric improvements warranted for the 2013 existing conditions, 2018, 2023, and 2029 design years and the addition of the Phase 1 and Phase 2 trips generated by the development. Section 6.1 analyzes the warrants for right and left turn lanes along Route 122. Section 6.2 analyzes the warrants for a signalized intersection at Parkcrest Drive.

The Access Management Design Standards in the VDOT Road Design Manual (pg. F-23) Minimum Spacing Standards for Commercial Entrances, Intersections, and Median Crossovers for a Minor Arterial (Route 122) indicates that the minimum centerline to centerline spacing between signalized intersections is 1,050'. The centerline to centerline spacing between the existing signalized Route 616 intersection and Village Springs Drive intersection is 750 feet. A signal will not be allowed at this intersection. The centerline to centerline spacing between the signalized Route 616 intersection and the Parkcrest Drive intersection is approximately 1,500 feet. If warranted, a signal would be allowed at the Parkcrest Drive intersection, based upon meeting the signal spacing criteria. The proposed location of Entrance #1 is approximately 330 feet from the intersection of Parkcrest Drive. A signal will not be allowed at Entrance #1. No signal warrant analyses were performed at the intersections of Village Springs Drive and Entrance #1.

The Access Management Design Standards in the VDOT Road Design Manual (pg. F-23) Minimum Spacing Standards for Commercial Entrances, Intersections, and Median Crossovers for a Minor Arterial (Route 122) indicates that the minimum centerline to centerline spacing from partial access one or two way entrances to any type of entrance, intersection or median crossover for legal speed limit greater than or equal to 50 mph is 425 feet. The proposed right-in/right-out entrance west of Parkcrest Drive is approximately 330 feet centerline to centerline from Parkcrest Drive. An access management exception will be pursued for the proposed right-in/right-out entrance location. An initial suggestion will be to petition VDOT to relocate the current change in speed limit from 55 mph to 45 mph to the west of the development site through the proper process. With a 45 mph speed limit Access Management minimum intersection spacing is met.

6.1 Geometric Improvements

On two-lane high volume roads, vehicles slowing or stopping to turn create a hazard for other vehicles. This hazard increases as the number of turning vehicles increases. The VDOT Road Design Manual provides guidelines for turn lanes on two-lane roads. These guidelines are based on the design speed, turning volume, approach volume, and opposing volume.

6.1.1 Right Turn Treatment

The existing conditions include a full width right turn lane and taper that extends from the Parkcrest Drive intersection to the Route 616 intersection in the westbound direction. The eastbound approaches to the Village Springs Drive and the Route 616 intersection also contain existing full width right turn lanes each approximately 200' long.

Figure 3-26 of Appendix F of the VDOT Road Design Manual (See **Appendix D**) was used to determine the required right turn treatments at the intersection approaches detailed in **Table 6.1**.

Table 6.1 – Required Right Turn Treatments by Condition and Peak Hour

Condition	Entrance	Direction	Improvement Required
2018 Phase 1 PM Weekday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Taper Only
	Parkcrest Drive & Rt. 122	EB	None
2018 Phase 1 Saturday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Taper Only
2023 Phase 1 PM Weekday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Taper Only
	Parkcrest Drive & Rt. 122	EB	None
2023 Phase 1 Saturday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Taper Only

2029 Phase 1 PM Weekday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	None
2029 Phase 1 Saturday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Taper Only
2023 Phase 2 PM Weekday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Full-width right turn lane and taper
2023 Phase 2 Saturday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Full-width right turn lane and taper
2029 Phase 2 PM Weekday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Full-width right turn lane and taper
2029 Phase 2 Saturday Peak Hour	Proposed Entrance #1 & Rt. 122	EB	Full-width right turn lane and taper
	Parkcrest Drive & Rt. 122	EB	Full-width right turn lane and taper

Table 6.1 shows that the proposed Entrance #1 eastbound approach warrants a full-width right turn lane during the 2018 Phase 1 Saturday peak hour. The Parkcrest Drive intersection eastbound approach warrants a right turn taper during the 2018 Phase 1 Saturday peak hour. The 2023 Phase 2 PM Weekday and Saturday peak hours warrant a full-width right turn lane at the eastbound approach to the Parkcrest Drive intersection.

In this analysis the Synchro traffic model assumes that a full-width right turn lane on eastbound Route 122 will be constructed for the 2018 Phase 1 buildout for both intersections. The proposed full-width right turn lane at Entrance #1 will have 100' of storage and 100' taper length. The full-width right turn lane at Parkcrest Drive will extend to the right-in/right-out Entrance #1 intersection.

Due to the left turn lane warrants at Parkcrest Drive and Village Springs Drive, discussed in Section 6.1.2, the Route 122 offset alignment will need to be adjusted per Figure 3-4, Passing/Left Turn Lane on Two-Lane Highway (pg. F-54) of the VDOT Road Design Manual. That being said, a queuing analysis was performed for the study network using SimTraffic. The analysis was performed to create recommendations for necessary storage lengths of proposed geometric improvements on Route 122 due to the proposed development. SimTraffic reports are provided in **Appendix F**.

The queuing analysis indicates that the existing 200' right turn lane at the eastbound approach to Village Spring Drive is excessive in length for all future study years, based on projected traffic volumes. With the offset alignment of Route 122 adjusted to accommodate warranted geometric improvements it is recommended that the right turn lane at the eastbound approach to Village Springs Drive have 100' storage length and 100' taper at its adjusted location, based on the maximum queue length reported by SimTraffic.

All proposed widening of Route 122 through the study network will be performed on the south side of Route 122. The existing eastbound through lane will become the proposed left turn lanes.

6.1.2 Left Turn Lanes

The existing conditions include a left turn lane for both eastbound and westbound approaches to the Route 616 intersection.

Table 3-1 (page F-53) of Appendix F of the VDOT Road Design Manual (See **Appendix D**) was used to determine if a left turn lane is warranted at the intersection approaches detailed in **Table 6.2**.

Table 6.2 – Required Left Turn Treatments by Condition and Peak Hour

Condition	Entrance	Direction	Improvement Required
2013 Existing PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2013 Existing Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	None
2018 Background PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2018 Background Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2023 Background PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane

2023 Background Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2029 Background PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2029 Background Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2018 Phase 1 PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2018 Phase 1 Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2023 Phase 1 PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane

2023 Phase 1 Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2029 Phase 1 PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2029 Phase 1 Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2023 Phase 2 PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2023 Phase 2 Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane
2029 Phase 2 PM Weekday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane

2029 Phase 2 Saturday Peak Hour	Parkcrest Drive & Rt. 122	EB	None
		WB	Left Turn Lane
	Village Springs Drive & Rt. 122	EB	Left Turn Lane
		WB	Left Turn Lane

Table 6.2 shows that left turn lanes are warranted for the eastbound and westbound approaches at the Village Springs Drive intersection with 2013 existing traffic conditions. A left turn lane is warranted for the westbound approach to the Parkcrest Drive intersection in the 2018 Phase 1 PM Weekday and Saturday peak hour conditions.

A queuing analysis was performed for the study network using SimTraffic. The SimTraffic reports (See **Appendix F**) indicate that left turn lanes at the eastbound and westbound approaches to Village Springs Drive have 100' storage length and 100' taper are adequate for the projected traffic volumes. The westbound approach to the signalized Parkcrest Drive intersection will require a 300' storage length and 100' taper to accommodate the maximum queue length as reported by SimTraffic. There is adequate space between the intersections of Parkcrest Drive and Village Springs Drive to accommodate the recommended length of the left turn lanes.

Although a left turn lane is not warranted at the eastbound approach to Parkcrest Drive it is advisable to include one of minimum length and taper as there will be room due to transition lengths associated with the Route 122 offset alignment required to accommodate for the left turn lanes.

All proposed widening of Route 122 through the study network will be performed on the south side of Route 122. The existing eastbound through lane will become the proposed left turn lanes.

6.2 Signal Warrant Analysis

The Manual of Uniform Traffic Control Devices (MUTCD) 2009 Edition traffic signal warrants serve as the basis for the signal warrants analysis. Signal warrant analyses were performed for all scenarios analyzed in this study.

The signal warrant analysis is for Warrant 3 – Peak Hour. This analysis used Figure 4C-4 of the MUTCD to determine signal warrants. Figure 4C-4 is for a community with less than 10,000 population or above 40 MPH on the major street.

The signal warrant analysis is for the existing unsignalized intersection of Parkcrest Drive and Route 122.

Table 6.3 provides the results of the Peak Hour Signal Warrant Analysis for the Parkcrest Drive intersection. Please see **Appendix G** for MUTCD peak hour signal warrant figures and plotted points for each scenario analyzed.

Table 6.3 – Peak Hour Signal Warrant Analysis

Condition	Signal Warranted?
2013 Existing PM Weekday Peak Hour	No
2013 Existing Saturday Peak Hour	No
2018 Background PM Weekday Peak Hour	No
2018 Background Saturday Peak Hour	No
2023 Background PM Weekday Peak Hour	No
2023 Background Saturday Peak Hour	No
2029 Background PM Weekday Peak Hour	No
2029 Background Saturday Peak Hour	No
2018 Phase 1 PM Weekday Peak Hour	No
2018 Phase 1 Saturday Peak Hour	Yes
2023 Phase 1 PM Weekday Peak Hour	No
2023 Phase 1 Saturday Peak Hour	Yes
2029 Phase 1 PM Weekday Peak Hour	No
2029 Phase 1 Saturday Peak Hour	Yes
2023 Phase 2 PM Weekday Peak Hour	Yes
2023 Phase 2 Saturday Peak Hour	Yes
2029 Phase 2 PM Weekday Peak Hour	Yes
2029 Phase 2 Saturday Peak Hour	Yes

Table 6.3 indicates that a traffic signal is warranted in 2018 with the Phase 1 development conditions by the Peak Hour Signal Warrant thresholds.

Additionally, an operational analysis was performed to compare an unsignalized verses signalized Parkcrest Drive intersection with the 2018 Phase 1 buildout volumes. Unsignalized Parkcrest Drive intersection Synchro PM and Saturday peak hour reports are provided in **Appendix H**. The delay reported at the northbound and southbound approaches is considerably higher for the unsignalized case. **Table 6.4** summarizes the delays in the unsignalized scenario as compared to the signalized scenario.

Table 6.4 – Signalized vs. Unsignalized Parkcrest Drive

Scenario	Peak Hour	NB Approach Delay (Sec.)	SB Approach Delay (Sec.)
2018 Phase 1 w/ Signal	PM	18.6	17.5
2018 Phase 1 w/o Signal	PM	34.2	21.1
2018 Phase 1 w/ Signal	Saturday	23.1	20.5
2018 Phase 1 w/o Signal	Saturday	43.5	28.2

The difference in delay is considerable between the two scenarios with Phase 1 development only. The difference will expand in magnitude as Phase 2 development is implemented, particularly for the northbound approach. The operational analysis provides further justification for installation of a traffic signal at the Parkcrest Drive intersection with the Phase 1 development.

7.0 Level of Service Analysis

Synchro traffic software was used to analyze the operational conditions for the study area for all study scenarios.

Delay within Synchro is reported with a Level of Service (LOS) designation. Level of service is a quantitative measure of driver perception of delay (waiting time) experienced at an intersection, and LOS is based on the delay thresholds specified in the 2010 Highway Capacity Manual (HCM). LOS conditions range from "A" (little delay) to "F" (very long delay). **Table 7.1** reflects the delay ranges in seconds drivers may experience for a corresponding level of service for both signalized and unsignalized intersections. The criteria used to measure LOS for signalized intersections are different from the criteria used for unsignalized intersections. LOS for signalized intersections is based on control delay per vehicle. Control delay, as defined by HCM, includes initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. According to this definition the minimum design acceptable delay is "D" for design purposes, particularly in a more developed area. For signalized intersections, LOS F indicates that more than one signal change cycle may be required for a driver to pass through the intersection. For unsignalized intersections, levels of service are based on critical gap, the minimum time interval in the major street traffic stream that allows entry for one minor street vehicle from an intersection, particularly the left turn vehicles. Level of service "E" is generally considered to be the minimum design standard. At an unsignalized intersection, LOS F occurs when there are not enough minimum gaps to allow the movements on the minor street to enter the major street in a "reasonable" amount of time.

Table 7.1 – Level of Service and Delay

Unsignalized Intersection		Signalized Intersection	
Level of Service	Average Control Delay per Vehicle (Seconds)	Level of Service	Average Control Delay per Vehicle (Seconds)
A	0-10	A	0-10
B	>10-15	B	>10-20
C	>15-25	C	>20-35
D	>25-35	D	>35-55
E	>35-50	E	>55-80
F	>50	F	>80

Synchro traffic software was used to analyze all signalized and unsignalized intersections in this report. The procedures used by Synchro are in accordance with the methodologies stated in the 2010 Highway Capacity Manual (HCM) for intersection analysis.

Analysis results for signalized intersections provide level of service calculations for all approaches as well as an overall intersection level of service. Please note that analysis results for

unsignalized intersections do not provide level of service results for all approaches or an overall intersection level of service, but rather a level of service for movements and/or approaches that have a conflicting movement. In this study, level of service is the basis for the evaluation of existing and background traffic conditions and the impacts of the traffic generated by the proposed site on the existing roadway network.

LOS, and delay are summarized for all study network scenarios (See **Table 7.2**)

See **Appendix E** for detailed Synchro 2010 HCM LOS Reports.

Table 7.2

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Parkcrest Drive / Route 122	WEEKDAY PM													
	2013 Existing	-	A (8.7)		-	-	-	-	-	-	-	C (16.1)		
			A (8.7)			-			-			C (16.1)		
	2018 Background	-	A (8.6)		-	-	-	-	-	-	-	C (16.2)		
			A (8.6)			-			-			C (16.2)		
	2018 Phase 1 *	D (35.2)	D (45.1)	D (35.8)	C (21.7)	D (47.4)	D (36.7)	C (23.4)	B (18.6)			B (17.5)		
			D (35.4)			D (37.5)			B (18.6)			B (17.5)		
	2023 Background	-	A (8.8)		-	-	-	-	-	-	-	C (18.7)		
			A (8.8)			-			-			C (18.7)		
	2023 Phase 1 *	C (33.5)	D (42.9)	C (33.8)	B (18.9)	D (45.0)	C (34.6)	C (20.7)	C (20.5)			B (19.2)		
			C (33.4)			C (35.3)			C (20.5)			B (19.2)		
	2023 Phase 2 *	D (35.2)	D (43.6)	D (37.6)	B (17.5)	D (49.0)	D (35.1)	B (19.5)	C (26.6)			C (22.3)		
			D (36.4)			D (36.3)			C (26.6)			C (22.3)		
	2029 Background	-	A (9.0)		-	-	-	-	-	-	-	C (20.7)		
			A (9.0)			-			-			C (20.7)		
	2029 Phase 1 *	D (35.9)	D (47.2)	C (34.5)	B (18.4)	D (49.0)	D (38.3)	C (21.4)	C (23.6)			C (22.2)		
			C (34.2)			D (38.9)			C (23.6)			C (22.2)		
	2029 Phase 2 *	D (37.2)	D (49.8)	D (42.2)	B (18.8)	E (59.2)	C (32.9)	B (17.5)	C (30.9)			C (26.1)		
			D (40.9)			D (35.1)			C (30.9)			C (26.1)		

Table 7.2 (con't)

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Parkcrest Drive / Route 122	SATURDAY PEAK HOUR													
	2013 Existing	-	A (8.1)		-	-	-	-	-	-	-	C (15.3)		
			A (8.1)			-			-			C (15.3)		
	2018 Background	-	A (8.2)		-	-	-	-	-	-	-	C (16.8)		
			A (8.2)			-			-			C (16.8)		
	2018 Phase 1 *	C (25.5)	C (20.6)	D (39.6)	C (20.5)	D (49.5)	A (0.8)	A (0.5)	C (23.1)			C (20.5)		
			D (38.5)			A (8.4)			C (23.1)			C (20.5)		
	2023 Background	-	A (8.3)		-	-	-	-	-	-	-	C (18.5)		
			A (8.3)			-			-			C (18.5)		
	2023 Phase 1 *	C (34.9)	C (34.3)	D (38.6)	B (18.3)	D (52.2)	C (30.8)	C (21.0)	C (25.7)			C (22.8)		
			D (37.7)			C (33.7)			C (25.7)			C (22.8)		
	2023 Phase 2 *	C (31.5)	C (26.1)	D (37.8)	B (14.4)	D (52.2)	B (19.0)	B (12.8)	C (34.4)			C (28.4)		
			D (35.7)			C (23.9)			C (34.4)			C (28.4)		
	2029 Background	-	A (8.4)		-	-	-	-	-	-	-	C (21.2)		
			A (8.4)			-			-			C (21.2)		
	2029 Phase 1 *	C (23.7)	B (14.7)	D (36.1)	B (14.9)	D (46.0)	A (0.3)	A (0.0)	C (28.8)			C (25.3)		
			D (35.0)			A (6.4)			C (28.8)			C (25.3)		
	2029 Phase 2 *	C (34.5)	C (27.1)	D (43.1)	B (15.9)	E (71.4)	B (14.6)	B (10.2)	D (41.8)			D (35.1)		
			D (40.8)			C (22.3)			D (41.8)			D (35.1)		

Table 7.2 (con't)

Intersection	Scenario	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
Unsignalized Village Spring Drive / Route 122	WEEKDAY PM													
	2013 Existing	-	A (8.3)		-	A (8.1)			D (32.5)			C (17.1)		
			A (8.3)			A (8.1)			D (32.5)			C (17.1)		
	2018 Background	-	A (8.3)		-	A (8.3)			E (43.5)			C (18.9)		
			A (8.3)			A (8.3)			E (43.5)			C (18.9)		
	2018 Phase 1	-	A (8.4)	-	-	A (8.4)	-	-	F (109.4)			C (23.7)		
			A (8.4)			A (8.4)			F (109.4)			C (23.7)		
	2023 Background	-	A (8.5)		-	A (8.4)		-	F (73.0)			C (21.5)		
			A (8.5)			A (8.4)			F (73.0)			C (21.5)		
	2023 Phase 1	-	A (8.6)	-	-	A (8.6)	-	-	F (146.6)			C (24.6)		
			A (8.6)			A (8.6)			F (146.6)			C (24.6)		
	2023 Phase 2	-	A (8.8)	-	-	A (9.1)	-	-	F (461.3)			E (36.5)		
			A (8.8)			A (9.1)			F (461.3)			E (36.5)		
	2029 Background	-	A (8.7)		-	A (8.6)		-	F (154.7)			D (25.6)		
			A (8.7)			A (8.6)			F (154.7)			D (25.6)		
	2029 Phase 1	-	A (8.7)	-	-	A (8.7)	-	-	F (289.4)			D (29.7)		
			A (8.7)			A (8.7)			F (289.4)			D (29.7)		
	2029 Phase 2	-	A (9.0)	-	-	A (9.3)	-	-	F (741.4)			E (48.5)		
			A (9.0)			A (9.3)			F (741.4)			E (48.5)		

Table 7.2 (con't)

Intersection	Scenario	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
Unsignalized Village Spring Drive / Route 122	SATURDAY PEAK HOUR													
	2013 Existing	-	A (8.0)		-	A (8.3)		-	C (20.9)			C (19.7)		
			A (8.0)			A (8.3)			C (20.9)			C (19.7)		
	2018 Background	-	A (8.1)		-	A (8.4)		-	D (26.2)			C (22.6)		
			A (8.1)			A (8.4)			D (26.2)			C (22.6)		
	2018 Phase 1	-	A (8.2)	-	-	A (8.7)		-	F (52.9)			D (29.4)		
			A (8.2)			A (8.7)			F (52.9)			D (29.4)		
	2023 Background	-	A (8.2)		-	A (8.6)		-	E (35.2)			D (26.8)		
			A (8.2)			A (8.6)			E (35.2)			D (26.8)		
	2023 Phase 1	-	A (8.3)	-	-	A (8.9)	-	-	F (91.2)			E (35.9)		
			A (8.3)			A (8.9)			F (91.2)			E (35.9)		
	2023 Phase 2	-	A (8.5)	-	-	A (9.4)	-	-	F (241.2)			F (56.2)		
			A (8.5)			A (9.4)			F (241.2)			F (56.2)		
	2029 Background	-	A (8.3)		-	A (8.8)		-	F (59.0)			D (33.3)		
			A (8.3)			A (8.8)			F (59.0)			D (33.3)		
	2029 Phase 1	-	A (8.5)	-	-	A (9.1)	-	-	F (190.8)			E (46.9)		
			A (8.5)			A (9.1)			F (190.8)			E (46.9)		
	2029 Phase 2	-	A (8.6)	-	-	A (9.6)	-	-	F (418.3)			F (82.1)		
			A (8.6)			A (9.6)			F (418.3)			F (82.1)		

Table 7.2 (con't)

Intersection	Scenario	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
Signalized Route 616 / Route 122	WEEKDAY PM													
	2013 Existing	C (29.1)	B (16.6)	C (24.3)	B (17.5)	B (16.1)	C (20.0)	B (14.8)	C (29.2)	D (53.8)		D (43.0)	D (42.2)	
			C (23.4)			B (18.5)			D (48.1)			D (42.6)		
	2018 Background	C (30.9)	B (16.5)	C (25.0)	B (17.5)	B (16.4)	C (20.0)	B (14.7)	C (30.9)		E (62.5)	D (46.2)	D (45.4)	
			C (23.9)			B (18.6)			E (55.1)			D (45.8)		
	2018 Phase 1	C (34.8)	B (15.0)	B (16.7)	B (11.5)	B (14.6)	B (18.7)	B (13.3)	D (37.0)	F (101.7)		D (52.7)	D (51.7)	
			B (16.3)			B (17.2)			F (86.7)			D (52.2)		
	2023 Background	D (36.3)	B (16.6)	C (25.8)	B (17.3)	B (17.3)	C (21.1)	B (14.9)	C (32.0)		F (89.6)	D (46.8)	D (46.0)	
			C (24.6)			B (19.5)			E (76.2)			D (46.4)		
	2023 Phase 1	D (38.3)	B (16.3)	C (20.3)	B (12.9)	B (16.3)	C (20.9)	B (14.2)	D (35.1)	F (113.4)		D (50.1)	D (49.2)	
			B (19.6)			B (19.2)			F (95.2)			D (49.7)		
	2023 Phase 2	E (59.6)	B (17.0)	C (25.4)	B (14.3)	C (21.9)	C (20.9)	B (13.7)	D (39.2)	F (226.4)		D (52.3)	D (51.3)	
			C (23.7)			C (20.7)			F (173.2)			D (51.9)		
	2029 Background	D (39.8)	B (19.6)	D (41.6)	C (20.3)	C (24.5)	C (27.2)	B (16.8)	C (27.3)	E (77.0)		D (41.4)	D (40.7)	
			D (38.8)			C (25.6)			E (65.4)			D (41.1)		
	2029 Phase 1	D (54.1)	B (16.1)	B (19.2)	B (12.0)	B (16.1)	C (20.6)	B (13.6)	D (40.8)		F (207.1)	E (55.3)	D (54.1)	
			B (18.6)			B (18.9)			F (168.2)			D (54.8)		
	2029 Phase 2	F (80.5)	B (17.2)	C (30.8)	B (18.4)	C (26.7)	C (20.7)	B (13.4)	D (49.6)	F (330.2)		E (63.1)	E (61.6)	
			C (28.7)			C (22.0)			F (251.2)			E (62.4)		

Table 7.2 (con't)

Intersection	Scenario	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
	SATURDAY PEAK HOUR													
	2013 Existing	C (30.3)	B (13.3)	C (21.3)	B (14.2)	B (14.4)	B (15.2)	B (12.9)	C (33.7)	E (63.8)		D (49.5)	D (50.0)	
			C (20.6)			B (14.8)			E (56.8)			D (49.7)		
	2018 Background	C (31.2)	B (14.8)	C (26.8)	B (15.7)	B (16.9)	B (17.4)	B (14.3)	C (29.7)	E (58.6)		D (44.7)	D (45.1)	
			C (25.7)			B (17.0)			D (51.8)			D (44.9)		
	2018 Phase 1	C (33.3)	B (12.5)	A (3.6)	A (0.1)	B (11.8)	B (15.6)	B (12.3)	D (40.1)	F (124.1)		E (56.1)	E (56.5)	
			A (3.8)			B (14.5)			F (104.5)			E (56.3)		
	2023 Background	D (37.5)	B (14.4)	C (27.3)	B (15.3)	B (17.8)	B (17.6)	B (14.3)	C (32.0)		F (89.6)	D (47.1)	D (47.3)	
			C (26.1)			B (17.4)			E (76.2)			D (47.2)		
	2023 Phase 1	D (48.4)	B (13.3)	C (26.1)	B (14.0)	B (17.5)	B (16.3)	B (12.6)	D (40.4)		F (159.5)	E (55.8)	E (56.1)	
			C (25.1)			B (16.1)			F (131.7)			E (56.0)		
	2023 Phase 2	E (74.9)	B (14.6)	C (32.3)	B (16.7)	C (25.7)	B (16.6)	B (12.6)	D (42.1)	F (286.7)		E (55.8)	E (56.1)	
			C (29.6)			B (19.2)			F (222.4)			E (56.0)		
	2029 Background	D (46.3)	B (15.1)	C (33.0)	B (16.0)	C (20.2)	B (18.5)	B (14.6)	C (32.7)	F (124.2)		D (47.1)	D (47.3)	
			C (31.4)			B (18.6)			F (102.7)			D (47.2)		
	2029 Phase 1	D (44.9)	B (13.7)	B (11.0)	A (1.8)	B (14.0)	B (18.2)	B (13.6)	D (37.6)		F (173.2)	D (52.2)	D (52.4)	
			B (10.7)			B (16.9)			F (141.4)			D (52.3)		
	2029 Phase 2	F (92.7)	B (15.1)	D (43.7)	C (23.8)	D (36.9)	B (17.3)	B (13.0)	D (53.9)	F (344.7)		E (72.2)	E (72.3)	
			D (40.2)			C (23.1)			F (269.0)			E (72.3)		

Table 7.2 (con't)

Intersection	Scenario	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
Entrance #1 / Route 122	WEEKDAY PM													
	2018 Phase 1	-	-	-		-	-		-	-	B (11.9)		-	
			-			-				B (11.9)			-	
	2023 Phase 1	-	-	-		-	-		-	-	B (12.4)		-	
			-			-				B (12.4)			-	
	2023 Phase 2	-	-	-		-	-		-	-	B (14.2)		-	
			-			-				B (14.2)			-	
	2029 Phase 1	-	-	-		-	-		-	-	B (13.1)		-	
			-			-				B (13.1)			-	
	2029 Phase 2	-	-	-		-	-		-	-	C (15.1)		-	
			-			-				C (15.1)			-	
	SATURDAY PEAK HOUR													
	2018 Phase 1	-	-	-		-	-		-	-	B (13.2)		-	
			-			-				B (13.2)			-	
	2023 Phase 1	-	-	-		-	-		-	-	B (13.9)		-	
			-			-				B (13.9)			-	
	2023 Phase 2	-	-	-		-	-		-	-	C (17.0)		-	
			-			-				C (17.0)			-	
	2029 Phase 1	-	-	-		-	-		-	-	B (14.9)		-	
			-			-				B (14.9)			-	
	2029 Phase 2	-	-	-		-	-		-	-	C (18.4)		-	
			-			-				C (18.4)			-	

7.1 Specific Intersection Analysis

The following subsections discuss the data presented in **Table 7.2**.

7.1.1 Intersection of Parkcrest Drive/Route 122

The intersection of Parkcrest Drive and Route 122 experiences acceptable overall LOS for all scenarios. During the 2018 Phase 1, 2023 Phase 1, 2023 Phase 2, 2029 Phase 1, and 2029 Phase 2 scenarios the intersection is analyzed with a signal and experiences acceptable LOS at all approaches.

7.1.2 Unsignalized Intersection of Village Springs Drive/Route 122

The unsignalized intersection of Village Springs Drive and Route 122 experiences poor LOS at the northbound approach beginning with the 2018 Background PM Weekday scenario. The northbound and southbound minor street approaches experience poor LOS during all of the future conditions.

7.1.3 Signalized Intersection of Route 616 / Route 122

The signalized intersection of Route 616 and Route 122 experiences acceptable overall LOS for all scenarios except the 2023 and 2029 Phase 2 scenarios. The northbound through and right lane experiences significant delays beginning with the Saturday 2013 Existing conditions.

7.1.4 Unsignalized Intersection of Proposed Entrance #1 / Route 122

The proposed right-in/right-out intersection of Entrance #1 and Route 122 experiences acceptable LOS for all approaches in all scenarios.

8.0 Conclusions and Recommendations

Mattern & Craig examined the projected increase in traffic volumes associated with the proposed Westlake Towne Center Phases 1 and 2 developments and the resulting warrants for turn lane and traffic control improvements along Route 122 in the vicinity of the proposed development. Additionally, operational analyses were completed for all analysis conditions.

The projected traffic volumes do not warrant a full-width right turn lane at the eastbound approach to the Parkcrest Drive intersection until the 2023 Phase 2 scenario. That being said, traffic volumes are expected to increase to a level that warrants a full-width right turn lane in a short period of time after 2018. This is confirmed by the need for a full-width turn lane in the 2023 design year. From a practical aspect, it is recommended that the full-width right turn lane be constructed with the initial improvements and signalization of the Parkcrest Drive intersection. This analysis includes a full-width right turn lane in the Synchro model for the eastbound approaches to the Parkcrest Drive and Entrance #1 intersections for the 2018 Phase 1 scenario and all other proposed future scenarios. It is recommended that a full-width right turn lane be implemented with the proposed development that will extend from the Parkcrest Drive intersection to Entrance #1. A full-width right turn lane at the eastbound approach of the proposed Entrance #1 is warranted during the 2018 Phase 1 Saturday peak hour scenario. The storage length of the full-width right turn lane at the eastbound approach to Entrance #1 will be at least 100' and the taper length will extend to the Booker T. Washington National Monument property.

The projected traffic volumes warrant left turn lanes at the Village Springs Drive intersection for both the eastbound and westbound approaches in the 2013 Existing PM Weekday peak hour conditions. Left turn lanes are warranted at the Village Springs Drive intersection for both the eastbound and westbound approaches in the 2018 Background Saturday peak hour conditions. It is recommended that regardless of the proposed development, left turn lanes should be constructed at the eastbound and westbound approaches of the Village Springs Drive intersection. It is recommended that the left turn lanes be 100' long with 100' taper for both approaches based on the maximum queue lengths as reported on the SimTraffic reports.

The projected traffic volumes warrant a left turn lane at the westbound approach of the Parkcrest Drive intersection in the 2018 Phase 1 conditions. It is recommended that a left turn lane at the westbound approach be implemented with the proposed development. The westbound left turn lane should be 300' long with 100' taper. Although a left turn lane is not warranted at the eastbound approach to Parkcrest Drive, it is advisable to include one of minimum length and taper as there will be space due to necessary transition lengths associated with the Route 122 offset alignment required to accommodate for warranted left turn lanes on Route 122. Widening of Route 122 will occur on the south side of Route 122; the eastbound through lanes will become the left turn lanes.

Due to access management restrictions, proposed Entrance #1 is recommended to be a right-in/right-out entrance. Entrance #1 is located approximately 330' centerline to centerline from Parkcrest Drive.

This traffic impact analysis performed a peak hour signal warrant analysis and operational analysis for the unsignalized intersection of Parkcrest Drive and Route 122. The results conclude that a signal is warranted at the Parkcrest Drive intersection with the 2018 Phase 1 development. This signal should be coordinated with the existing signal at the Route 616 intersection.

The existing signalized intersection at Route 616 (Morewood Road) and the proposed signalized intersection at Parkcrest Drive are projected to function in an acceptable manner during all scenarios considered. The unsignalized intersection of Village Springs Drive is projected to experience significant delays under the Phase 1 and Phase 2 development conditions. The delay at this intersection will promote the use of the signalized intersections of Route 616 and Parkcrest Drive as primary entrances for the proposed development.

It is recommended that the connector road between the existing shopping center area and Parkcrest Drive and onto the proposed right-in/right-out entrance be constructed initially such that vehicles may utilize the right-in/right-out entrance and/or Parkcrest Drive to enter and exit the existing shopping center area and mitigate the projected delays at Village Springs Drive. Alternatively, the connector road may be constructed to Parkcrest Drive along with the proposed right turn lane at the eastbound approach to the Parkcrest Drive intersection; the right turn lane and taper should extend to the Booker T. Washington National Monument property.

APPENDIX A

Proposed Development Layout

VICINITY MAP NTS

Phase 2

CARILION
7
FORMER LOTS
7, 8, 9A, 10A, & 11A
21.10 AC

12
1.13 AC

9
1.11 AC

ASSISTED LIVING
11
9.45 AC

11-A1-A
19.13 AC

10-A
2.30 AC

4A
1.54 AC

4
1.66 AC

3A
MULLINS AUTOMOTIVE
6
1.13 AC

WATER TOWER
0.45 AC

PROFESSIONAL PARK
13
5.18 AC

SWM

UPSCALE RESIDENTIAL
18.4 AC

CLUBHOUSE COMMON AREA
2.1 AC

SANITARY SEWER PUMP STATION

HIGHER DENSITY MULTI-FAMILY

1A
FERGUSON
BUILDER'S SUPPLY
1
4.01 AC

4 SQUARE
2
3.02 AC

KROGER
15
5.12 AC

CINEMA
15A-1
5.99 AC

20B
2.34 AC

20A

SWM

BANK
16
0.89 AC

FUELING
17
1.45 AC

WENDY'S
18A
1.03 AC

0.90 AC

1.06 AC

1.7 AC

1.7 AC

MAIN PROJECT IDENTIFICATION SIGN

ROUTE 122 BOOKER T. WASHINGTON HIGHWAY

ROUTE 616

WESTLAKE ROAD

BUILDERS RIDGE DRIVE

VILLAGE SPRING DR

PARKCREST DR

RETIREMENT DRIVE

CAREFREE COURT

SOUTHAMPTON DRIVE

PROFESSIONAL DRIVE

SIDEWALK SYSTEM THROUGHOUT

PEDESTRIAN CROSSWALK (TYP.)

Retail

Quality Restaurant

Fast Food Restaurant

Phase 1

Phase 2

GRAPHIC SCALE

Appendix A
Proposed Development Layout

CJMW ARCHITECTURE

papit

SCHEMATIC MASTER PLAN
FOR
WESTLAKE TOWNE CENTER
PREPARED FOR
WILLARD CONSTRUCTION
OF SMITH MOUNTAIN LAKE, LLC
GILLS CREEK MAGISTERIAL DISTRICT
FRANKLIN COUNTY, VIRGINIA

LUMSDEN ASSOCIATES, P.C.
ENGINEERS-SURVEYORS-PLANNERS
ROANOKE, VIRGINIA

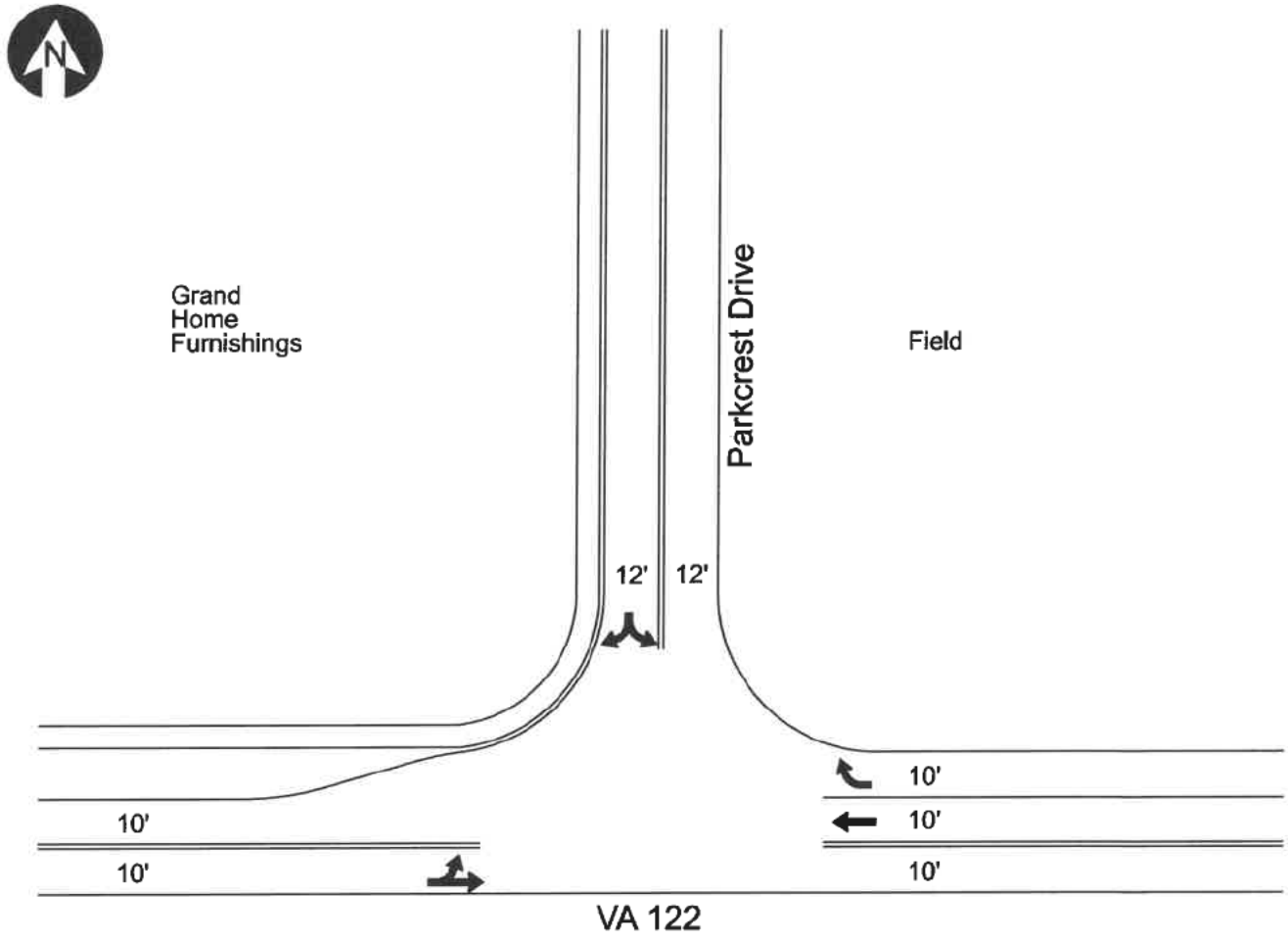
1604 HEMBRIDGE AVENUE, SW
P.O. BOX 20660
ROANOKE, VIRGINIA 24018

PHONE: (540) 774-4477
FAX: (540) 772-9456
E-MAIL: MAIL@LUMSDENPC.COM

DATE: July 2, 2013
COMM NO.: 2013.107
SCALE: 1" = 100'
SHEET 1 OF 1

APPENDIX B

Turning Movement Counts



The Traffic Group

VA 122 at Parkcrest Drive

FIELD WORK BY: *C. Hinkey*
DRAWN BY: *C. Pryseski*
DATE: *May 23, 2013*
SCALE: *N/A*
JOB NO.: *2012-0503*
DGN NAME: *VA 122 at Parkcrest*
LOCATION: *VA*
SHEET NO.: *1* OF *1*

PASSENGER VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Parkcrest Drive
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

TIME	TRAFFIC FROM NORTH on: Parkcrest Drive					TRAFFIC FROM SOUTH on:					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	0		0	0	0					0	0	91		0	91		58	0	0	58	149
7:15-7:30	1		0	0	1					0	0	94		0	94		66	0	0	66	161
7:30-7:45	0		0	0	0					0	1	82		0	83		65	0	0	65	148
7:45-8:00	0		0	0	0					0	0	101		0	101		88	1	0	89	190
8:00-8:15	0		0	0	0					0	0	71		0	71		85	0	0	85	156
8:15-8:30	0		1	0	1					0	1	67		0	68		101	0	1	102	171
8:30-8:45	0		0	0	0					0	1	49		0	50		76	2	0	78	128
8:45-9:00	0		0	0	0					0	0	67		0	67		105	3	0	108	175
9:00-9:15	0		0	0	0					0	0	57		0	57		88	0	0	88	145
9:15-9:30	0		0	0	0					0	1	67		0	68		70	1	0	71	139
9:30-9:45	1		1	0	2					0	2	73		0	75		81	0	0	81	158
9:45-10:00	0		1	0	1					0	0	68		0	68		67	1	0	68	137
3 Hr Totals	2	0	3	0	5	0	0	0	0	0	6	887	0	0	893	0	950	8	1	959	1857
1 Hr Totals																					
7:00-8:00	1	0	0	0	1	0	0	0	0	0	1	368	0	0	369	0	277	1	0	278	648
7:15-8:15	1	0	0	0	1	0	0	0	0	0	1	348	0	0	349	0	304	1	0	305	655
7:30-8:30	0	0	1	0	1	0	0	0	0	0	2	321	0	0	323	0	339	1	1	341	665
7:45-8:45	0	0	1	0	1	0	0	0	0	0	2	288	0	0	290	0	350	3	1	354	645
8:00-9:00	0	0	1	0	1	0	0	0	0	0	2	254	0	0	256	0	367	5	1	373	630
8:15-9:15	0	0	1	0	1	0	0	0	0	0	2	240	0	0	242	0	370	5	1	376	619
8:30-9:30	0	0	0	0	0	0	0	0	0	0	2	240	0	0	242	0	339	6	0	345	587
8:45-9:45	1	0	1	0	2	0	0	0	0	0	3	264	0	0	267	0	344	4	0	348	617
9:00-10:00	1	0	2	0	3	0	0	0	0	0	3	265	0	0	268	0	306	2	0	308	579
PEAK HOUR																					
7:30-8:30	0	0	1	0	1	0	0	0	0	0	2	321	0	0	323	0	339	1	1	341	665
PM																					
4:00-4:15	1		0	0	1					0	0	85		0	85		119	0	0	119	205
4:15-4:30	2		1	0	3					0	2	109		0	111		109	1	0	110	224
4:30-4:45	0		0	0	0					0	0	112		0	112		111	0	0	111	223
4:45-5:00	1		1	0	2					0	1	99		0	100		109	1	0	110	212
5:00-5:15	2		1	0	3					0	2	148		0	150		110	0	0	110	263
5:15-5:30	1		0	0	1					0	1	109		0	110		98	1	0	99	210
5:30-5:45	0		1	0	1					0	0	96		0	96		104	1	0	105	202
5:45-6:00	0		0	0	0					0	0	82		0	82		102	0	0	102	184
6:00-6:15	1		0	0	1					0	1	88		0	89		93	1	0	94	184
6:15-6:30	2		1	0	3					0	0	95		0	95		108	0	0	108	206
6:30-6:45	0		0	0	0					0	0	98		0	98		73	0	0	73	171
6:45-7:00	0		0	0	0					0	1	59		0	60		75	1	0	76	136
3 Hr Totals	10	0	5	0	15	0	0	0	0	0	8	1180	0	0	1188	0	1211	6	0	1217	2420
1 Hr Totals																					
4:00-5:00	4	0	2	0	6	0	0	0	0	0	3	405	0	0	408	0	448	2	0	450	864
4:15-5:15	5	0	3	0	8	0	0	0	0	0	5	468	0	0	473	0	439	2	0	441	922
4:30-5:30	4	0	2	0	6	0	0	0	0	0	4	468	0	0	472	0	428	2	0	430	908
4:45-5:45	4	0	3	0	7	0	0	0	0	0	4	452	0	0	456	0	421	3	0	424	887
5:00-6:00	3	0	2	0	5	0	0	0	0	0	3	435	0	0	438	0	414	2	0	416	859
5:15-6:15	2	0	1	0	3	0	0	0	0	0	2	375	0	0	377	0	397	3	0	400	780
5:30-6:30	3	0	2	0	5	0	0	0	0	0	1	361	0	0	362	0	407	2	0	409	776
5:45-6:45	3	0	1	0	4	0	0	0	0	0	1	363	0	0	364	0	376	1	0	377	745
6:00-7:00	3	0	1	0	4	0	0	0	0	0	2	340	0	0	342	0	349	2	0	351	697
PEAK HOUR																					
4:15-5:15	5	0	3	0	8	0	0	0	0	0	5	468	0	0	473	0	439	2	0	441	922

HEAVY TRUCK TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Parkcrest Drive
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

TIME	TRAFFIC FROM NORTH on: Parkcrest Drive					TRAFFIC FROM SOUTH on: 0					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	0		0	0	0					0	0	3		0	3		3	0	0	3	6
7:15-7:30	0		0	0	0					0	0	6		0	6		3	0	0	3	9
7:30-7:45	0		0	0	0					0	0	4		0	4		4	0	0	4	8
7:45-8:00	0		0	0	0					0	0	4		0	4		1	0	0	1	5
8:00-8:15	0		0	0	0					0	0	9		0	9		5	0	0	5	14
8:15-8:30	0		0	0	0					0	0	1		0	1		3	0	0	3	4
8:30-8:45	0		0	0	0					0	0	3		0	3		5	0	0	5	8
8:45-9:00	0		0	0	0					0	0	2		0	2		7	0	0	7	9
9:00-9:15	0		0	0	0					0	0	6		0	6		5	0	0	5	11
9:15-9:30	0		0	0	0					0	0	2		0	2		10	0	0	10	12
9:30-9:45	0		0	0	0					0	0	5		0	5		6	0	0	6	11
9:45-10:00	0		0	0	0					0	0	2		0	2		6	0	0	6	8
3 Hr Totals	0	0	0	0	0	0	0	0	0	0	0	47	0	0	47	0	58	0	0	58	105
1 Hr Totals																					
7:00-8:00	0	0	0	0	0	0	0	0	0	0	0	17	0	0	17	0	11	0	0	11	28
7:15-8:15	0	0	0	0	0	0	0	0	0	0	0	23	0	0	23	0	13	0	0	13	36
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	18	0	0	18	0	13	0	0	13	31
7:45-8:45	0	0	0	0	0	0	0	0	0	0	0	17	0	0	17	0	14	0	0	14	31
8:00-9:00	0	0	0	0	0	0	0	0	0	0	0	15	0	0	15	0	20	0	0	20	35
8:15-9:15	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	20	0	0	20	32
8:30-9:30	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	0	27	0	0	27	40
8:45-9:45	0	0	0	0	0	0	0	0	0	0	0	15	0	0	15	0	28	0	0	28	43
9:00-10:00	0	0	0	0	0	0	0	0	0	0	0	15	0	0	15	0	27	0	0	27	42
PEAK HOUR																					
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	18	0	0	18	0	13	0	0	13	31
PM																					
4:00-4:15					0					0	0	5		0	5		4	0	0	4	9
4:15-4:30					0					0	0	5		0	5		3	0	0	3	8
4:30-4:45					0					0	0	3		0	3		3	0	0	3	6
4:45-5:00					0					0	0	5		0	5		2	0	0	2	7
5:00-5:15					0					0	0	0		0	0		4	0	0	4	4
5:15-5:30					0					0	0	4		0	4		0	0	0	0	4
5:30-5:45					0					0	0	4		0	4		2	0	0	2	6
5:45-6:00					0					0	0	1		0	1		1	0	0	1	2
6:00-6:15					0					0	0	2		0	2		0	0	0	0	2
6:15-6:30					0					0	0	1		0	1		2	0	0	2	3
6:30-6:45					0					0	0	1		0	1		2	0	0	2	3
6:45-7:00					0					0	0	2		0	2		1	0	0	1	3
3 Hr Totals	0	0	0	0	0	0	0	0	0	0	0	33	0	0	33	0	24	0	0	24	57
1 Hr Totals																					
4:00-5:00	0	0	0	0	0	0	0	0	0	0	0	18	0	0	18	0	12	0	0	12	30
4:15-5:15	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	0	12	0	0	12	25
4:30-5:30	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	9	0	0	9	21
4:45-5:45	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	0	8	0	0	8	21
5:00-6:00	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	7	0	0	7	16
5:15-6:15	0	0	0	0	0	0	0	0	0	0	0	11	0	0	11	0	3	0	0	3	14
5:30-6:30	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8	0	5	0	0	5	13
5:45-6:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	5	0	0	5	10
6:00-7:00	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	5	0	0	5	11
PEAK HOUR																					
4:30-5:30	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	9	0	0	9	21

VEHICLE TURNING MOVEMENT COUNT - SUMMARY

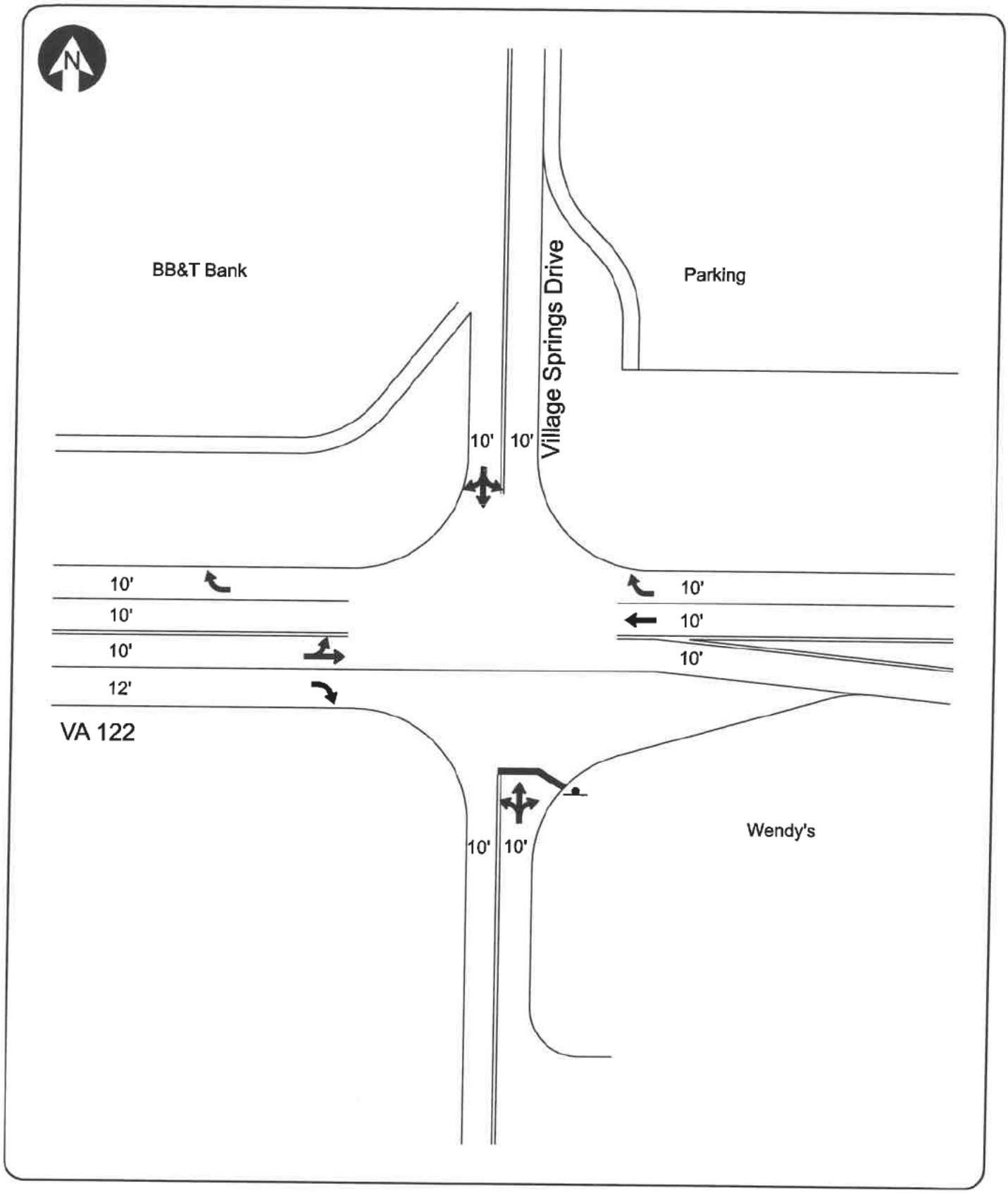
Intersection of: VA 122 (Booker T. Washington Hwy)
and: Parkcrest Drive
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

The Traffic Group

TIME	TRAFFIC FROM NORTH on: Parkcrest Drive					TRAFFIC FROM SOUTH on: 0					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	94	0	0	94	0	61	0	0	61	155
7:15-7:30	1	0	0	0	1	0	0	0	0	0	0	100	0	0	100	0	69	0	0	69	170
7:30-7:45	0	0	0	0	0	0	0	0	0	0	1	86	0	0	87	0	69	0	0	69	156
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	105	0	0	105	0	89	1	0	90	195
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	80	0	0	80	0	90	0	0	90	170
8:15-8:30	0	0	1	0	1	0	0	0	0	0	1	68	0	0	69	0	104	0	1	105	175
8:30-8:45	0	0	0	0	0	0	0	0	0	0	1	52	0	0	53	0	81	2	0	83	136
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	69	0	0	69	0	112	3	0	115	184
9:00-9:15	0	0	0	0	0	0	0	0	0	0	0	63	0	0	63	0	93	0	0	93	156
9:15-9:30	0	0	0	0	0	0	0	0	0	0	1	69	0	0	70	0	80	1	0	81	151
9:30-9:45	1	0	1	0	2	0	0	0	0	0	2	78	0	0	80	0	87	0	0	87	169
9:45-10:00	0	0	1	0	1	0	0	0	0	0	0	70	0	0	70	0	73	1	0	74	145
3 Hr Totals	2	0	3	0	5	0	0	0	0	0	6	934	0	0	940	0	1008	8	1	1017	1962
1 Hr Totals																					
7:00-8:00	1	0	0	0	1	0	0	0	0	0	1	385	0	0	386	0	288	1	0	289	676
7:15-8:15	1	0	0	0	1	0	0	0	0	0	1	371	0	0	372	0	317	1	0	318	691
7:30-8:30	0	0	1	0	1	0	0	0	0	0	2	339	0	0	341	0	352	1	1	354	696
7:45-8:45	0	0	1	0	1	0	0	0	0	0	2	305	0	0	307	0	364	3	1	368	676
8:00-9:00	0	0	1	0	1	0	0	0	0	0	2	269	0	0	271	0	387	5	1	393	665
8:15-9:15	0	0	1	0	1	0	0	0	0	0	2	252	0	0	254	0	390	5	1	396	651
8:30-9:30	0	0	0	0	0	0	0	0	0	0	2	253	0	0	255	0	386	6	0	372	627
8:45-9:45	1	0	1	0	2	0	0	0	0	0	3	279	0	0	282	0	372	4	0	376	660
9:00-10:00	1	0	2	0	3	0	0	0	0	0	3	280	0	0	283	0	333	2	0	335	621
PEAK HOUR																					
7:30-8:30	0	0	1	0	1	0	0	0	0	0	2	339	0	0	341	0	352	1	1	354	696
PM																					
4:00-4:15	1	0	0	0	1	0	0	0	0	0	0	90	0	0	90	0	123	0	0	123	214
4:15-4:30	2	0	1	0	3	0	0	0	0	0	2	114	0	0	116	0	112	1	0	113	232
4:30-4:45	0	0	0	0	0	0	0	0	0	0	0	115	0	0	115	0	114	0	0	114	229
4:45-5:00	1	0	1	0	2	0	0	0	0	0	1	104	0	0	105	0	111	1	0	112	219
5:00-5:15	2	0	1	0	3	0	0	0	0	0	2	148	0	0	150	0	114	0	0	114	267
5:15-5:30	1	0	0	0	1	0	0	0	0	0	1	113	0	0	114	0	98	1	0	99	214
5:30-5:45	0	0	1	0	1	0	0	0	0	0	0	100	0	0	100	0	106	1	0	107	208
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	83	0	0	83	0	103	0	0	103	186
6:00-6:15	1	0	0	0	1	0	0	0	0	0	1	90	0	0	91	0	93	1	0	94	186
6:15-6:30	2	0	1	0	3	0	0	0	0	0	0	96	0	0	96	0	110	0	0	110	209
6:30-6:45	0	0	0	0	0	0	0	0	0	0	0	99	0	0	99	0	75	0	0	75	174
6:45-7:00	0	0	0	0	0	0	0	0	0	0	1	61	0	0	62	0	76	1	0	77	139
3 Hr Totals	10	0	5	0	15	0	0	0	0	0	8	1213	0	0	1221	0	1235	6	0	1241	2477
1 Hr Totals																					
4:00-5:00	4	0	2	0	6	0	0	0	0	0	3	423	0	0	426	0	460	2	0	462	894
4:15-5:15	5	0	3	0	8	0	0	0	0	0	5	481	0	0	486	0	451	2	0	453	947
4:30-5:30	4	0	2	0	6	0	0	0	0	0	4	480	0	0	484	0	437	2	0	439	929
4:45-5:45	4	0	3	0	7	0	0	0	0	0	4	465	0	0	469	0	429	3	0	432	908
5:00-6:00	3	0	2	0	5	0	0	0	0	0	3	444	0	0	447	0	421	2	0	423	875
5:15-6:15	2	0	1	0	3	0	0	0	0	0	2	386	0	0	388	0	400	3	0	403	794
5:30-6:30	3	0	2	0	5	0	0	0	0	0	1	369	0	0	370	0	412	2	0	414	789
5:45-6:45	3	0	1	0	4	0	0	0	0	0	1	368	0	0	369	0	381	1	0	382	755
6:00-7:00	3	0	1	0	4	0	0	0	0	0	2	346	0	0	348	0	354	2	0	356	708
PEAK HOUR																					
4:15-5:15	5	0	3	0	8	0	0	0	0	0	5	481	0	0	486	0	451	2	0	453	947



The Traffic Group

VA 122 at Village Springs Drive

FIELD WORK BY: C. Hinkey
JOB NO.: 2012-0503
DRAWN BY: C. Pryseski
DGN NAME: VA 122 at Village Springs
DATE: May 23, 2013
LOCATION: VA
SCALE: N/A
SHEET NO.: 1 OF 1

PASSENGER VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Village Springs Drive
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

The Traffic Group

TIME	TRAFFIC FROM NORTH on: Village Springs Drive					TRAFFIC FROM SOUTH on: Village Springs Drive					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	2	1	0	0	3	0	1	9	0	10	0	77	1	0	78	6	47	4	0	57	148
7:15-7:30	3	0	0	0	3	0	0	10	0	10	1	83	1	0	85	3	60	0	0	63	161
7:30-7:45	3	0	1	0	4	0	1	8	0	9	3	72	0	0	75	8	57	2	0	67	155
7:45-8:00	6	0	0	0	6	1	0	8	0	9	1	90	1	0	92	8	76	2	0	86	193
8:00-8:15	3	1	2	0	6	5	0	6	0	11	5	64	3	0	72	13	68	4	0	85	174
8:15-8:30	1	1	3	0	5	1	0	7	0	8	3	61	1	0	65	18	83	3	0	104	182
8:30-8:45	1	0	2	0	3	1	0	6	0	7	2	48	5	0	55	16	61	2	0	79	144
8:45-9:00	3	2	2	0	7	3	0	6	0	9	5	55	6	0	66	10	90	4	0	104	186
9:00-9:15	2	0	3	0	5	7	2	5	0	14	5	48	4	0	57	7	76	4	0	87	163
9:15-9:30	4	3	4	0	11	3	2	9	0	14	5	52	6	0	63	11	58	2	0	71	159
9:30-9:45	2	3	2	0	7	2	2	11	0	15	3	57	1	0	61	11	65	4	0	80	163
9:45-10:00	1	2	0	0	3	2	0	4	0	6	2	51	8	0	61	11	55	1	0	67	137
3 Hr Totals	31	13	19	0	63	25	8	89	0	122	35	756	37	0	830	122	796	32	0	950	1965
1 Hr Totals																					
7:00-8:00	14	1	1	0	16	1	2	35	0	38	5	322	3	0	330	25	240	8	0	273	657
7:15-8:15	15	1	3	0	19	6	1	32	0	39	10	309	5	0	324	32	261	8	0	301	683
7:30-8:30	13	2	6	0	21	7	1	29	0	37	12	287	5	0	304	47	284	11	0	342	704
7:45-8:45	11	2	7	0	20	8	0	27	0	35	11	263	10	0	284	55	268	11	0	354	693
8:00-9:00	8	4	9	0	21	10	0	25	0	35	15	228	15	0	258	57	302	13	0	372	686
8:15-9:15	7	3	10	0	20	12	2	24	0	38	15	212	16	0	243	51	310	13	0	374	675
8:30-9:30	10	5	11	0	26	14	4	26	0	44	17	203	21	0	241	44	285	12	0	341	652
8:45-9:45	11	8	11	0	30	15	6	31	0	52	18	212	17	0	247	39	289	14	0	342	671
9:00-10:00	9	8	9	0	26	14	6	29	0	49	15	208	19	0	242	40	254	11	0	305	622
PEAK HOUR																					
7:30-8:30	13	2	6	0	21	7	1	29	0	37	12	287	5	0	304	47	284	11	0	342	704
PM																					
4:00-4:15	3	3	2	0	8	3	4	11	0	18	5	70	4	0	79	30	91	1	0	122	227
4:15-4:30	4	6	1	0	11	11	2	15	0	28	5	92	13	0	110	15	95	1	0	111	260
4:30-4:45	1	3	3	0	7	3	3	25	0	31	7	92	6	0	105	24	77	9	0	110	253
4:45-5:00	6	3	2	0	11	3	1	18	0	22	2	75	5	0	82	25	85	3	0	113	228
5:00-5:15	5	1	1	0	7	8	2	25	0	35	4	117	3	0	124	30	79	3	0	112	278
5:15-5:30	0	1	8	0	9	5	1	32	0	38	2	79	10	0	91	16	77	6	0	99	237
5:30-5:45	3	2	1	0	6	9	1	17	0	27	6	77	10	0	93	27	68	7	0	102	228
5:45-6:00	2	1	3	0	6	5	0	21	0	26	3	58	2	0	63	23	74	7	0	104	199
6:00-6:15	1	0	1	0	2	9	1	14	0	24	1	77	9	0	87	19	67	5	0	91	204
6:15-6:30	4	2	1	0	7	7	1	14	0	22	1	71	7	0	79	34	69	3	0	106	214
6:30-6:45	2	0	2	0	4	6	0	29	0	35	0	72	8	0	80	24	46	5	0	75	194
6:45-7:00	1	0	2	0	3	7	2	19	0	28	1	39	8	0	48	19	56	1	0	76	155
3 Hr Totals	32	22	27	0	81	76	18	240	0	334	37	919	85	0	1041	286	884	51	0	1221	2677
1 Hr Totals																					
4:00-5:00	14	15	8	0	37	20	10	69	0	99	19	329	28	0	376	94	348	14	0	456	968
4:15-5:15	16	13	7	0	36	25	8	83	0	116	18	376	27	0	421	94	336	16	0	446	1019
4:30-5:30	12	8	14	0	34	19	7	100	0	126	15	363	24	0	402	95	318	21	0	434	996
4:45-5:45	14	7	12	0	33	25	5	92	0	122	14	348	28	0	390	98	309	19	0	426	971
5:00-6:00	10	5	13	0	28	27	4	95	0	126	15	331	25	0	371	96	298	23	0	417	942
5:15-6:15	6	4	13	0	23	28	3	84	0	115	12	291	31	0	334	85	286	25	0	396	868
5:30-6:30	10	5	6	0	21	30	3	66	0	99	11	263	28	0	322	103	278	22	0	403	845
5:45-6:45	9	3	7	0	19	27	2	78	0	107	5	278	26	0	309	100	256	20	0	376	811
6:00-7:00	8	2	6	0	16	29	4	76	0	109	3	259	32	0	294	96	238	14	0	348	767
PEAK HOUR																					
4:15-5:15	16	13	7	0	36	25	8	83	0	116	18	376	27	0	421	94	336	16	0	446	1019

HEAVY TRUCK TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Village Springs Drive
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

The Traffic Group

TIME	TRAFFIC FROM NORTH on: Village Springs Drive					TRAFFIC FROM SOUTH on: Village Springs Drive					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	2	5	0	0	7	10
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	6	0	0	6	12
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	5	0	0	5	10
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	1	2	0	0	3	7
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	5	1	0	6	15
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	2	0	0	3	6
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	5	0	0	5	9
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	2	7	0	0	9	12
9:00-9:15	0	0	0	0	0	0	0	1	0	1	0	7	0	0	7	0	5	0	0	5	13
9:15-9:30	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	10	0	0	10	13
9:30-9:45	0	0	0	0	0	0	0	1	0	1	0	6	0	0	6	0	8	0	0	8	15
9:45-10:00	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	1	6	0	0	7	12
3 Hr Totals	1	0	0	0	1	0	0	2	0	2	0	56	1	0	57	7	66	1	0	74	134
1 Hr Totals																					
7:00-8:00	1	0	0	0	1	0	0	0	0	0	0	17	0	0	17	3	18	0	0	21	39
7:15-8:15	0	0	0	0	0	0	0	0	0	0	0	24	0	0	24	1	18	1	0	20	44
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	21	0	0	21	2	14	1	0	17	38
7:45-8:45	0	0	0	0	0	0	0	0	0	0	0	20	0	0	20	2	14	1	0	17	37
8:00-9:00	0	0	0	0	0	0	0	0	0	0	0	18	1	0	19	3	19	1	0	23	42
8:15-9:15	0	0	0	0	0	0	0	1	0	1	0	16	1	0	17	3	19	0	0	22	40
8:30-9:30	0	0	0	0	0	0	0	1	0	1	0	16	1	0	17	2	27	0	0	29	47
8:45-9:45	0	0	0	0	0	0	0	2	0	2	0	18	1	0	19	2	30	0	0	32	53
9:00-10:00	0	0	0	0	0	0	0	2	0	2	0	21	0	0	21	1	29	0	0	30	53
PEAK HOUR																					
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	21	0	0	21	2	14	1	0	17	38
PM																					
4:00-4:15	1	0	0	0	1	0	1	0	0	1	0	5	0	0	5	0	3	1	0	4	11
4:15-4:30	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	3	0	0	3	7
4:30-4:45	0	0	0	0	0	0	0	0	0	0	0	3	1	0	4	0	3	0	0	3	7
4:45-5:00	0	0	0	0	0	0	0	2	0	2	0	3	0	0	3	0	2	0	0	2	7
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	0	3	4
5:15-5:30	0	0	0	0	0	2	0	0	0	2	0	4	1	0	5	0	1	0	0	1	8
5:30-5:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	3	0	0	3	8
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
6:00-6:15	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
6:15-6:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	0	3	4
6:30-6:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	2	3
6:45-7:00	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	4
3 Hr Totals	1	0	0	0	1	2	1	2	0	5	0	33	2	0	35	1	24	1	0	26	67
1 Hr Totals																					
4:00-5:00	1	0	0	0	1	0	1	2	0	3	0	15	1	0	16	0	11	1	0	12	32
4:15-5:15	0	0	0	0	0	0	0	2	0	2	0	11	1	0	12	0	11	0	0	11	25
4:30-5:30	0	0	0	0	0	2	0	2	0	4	0	11	2	0	13	0	9	0	0	9	26
4:45-5:45	0	0	0	0	0	2	0	2	0	4	0	13	1	0	14	0	9	0	0	9	27
5:00-6:00	0	0	0	0	0	2	0	0	0	2	0	11	1	0	12	0	8	0	0	8	22
5:15-6:15	0	0	0	0	0	2	0	0	0	2	0	12	1	0	13	0	5	0	0	5	20
5:30-6:30	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	7	0	0	7	16
5:45-6:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	1	5	0	0	6	11
6:00-7:00	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	1	5	0	0	6	13
PEAK HOUR																					
4:15-5:15	0	0	0	0	0	0	0	2	0	2	0	11	1	0	12	0	11	0	0	11	25

VEHICLE TURNING MOVEMENT COUNT - SUMMARY

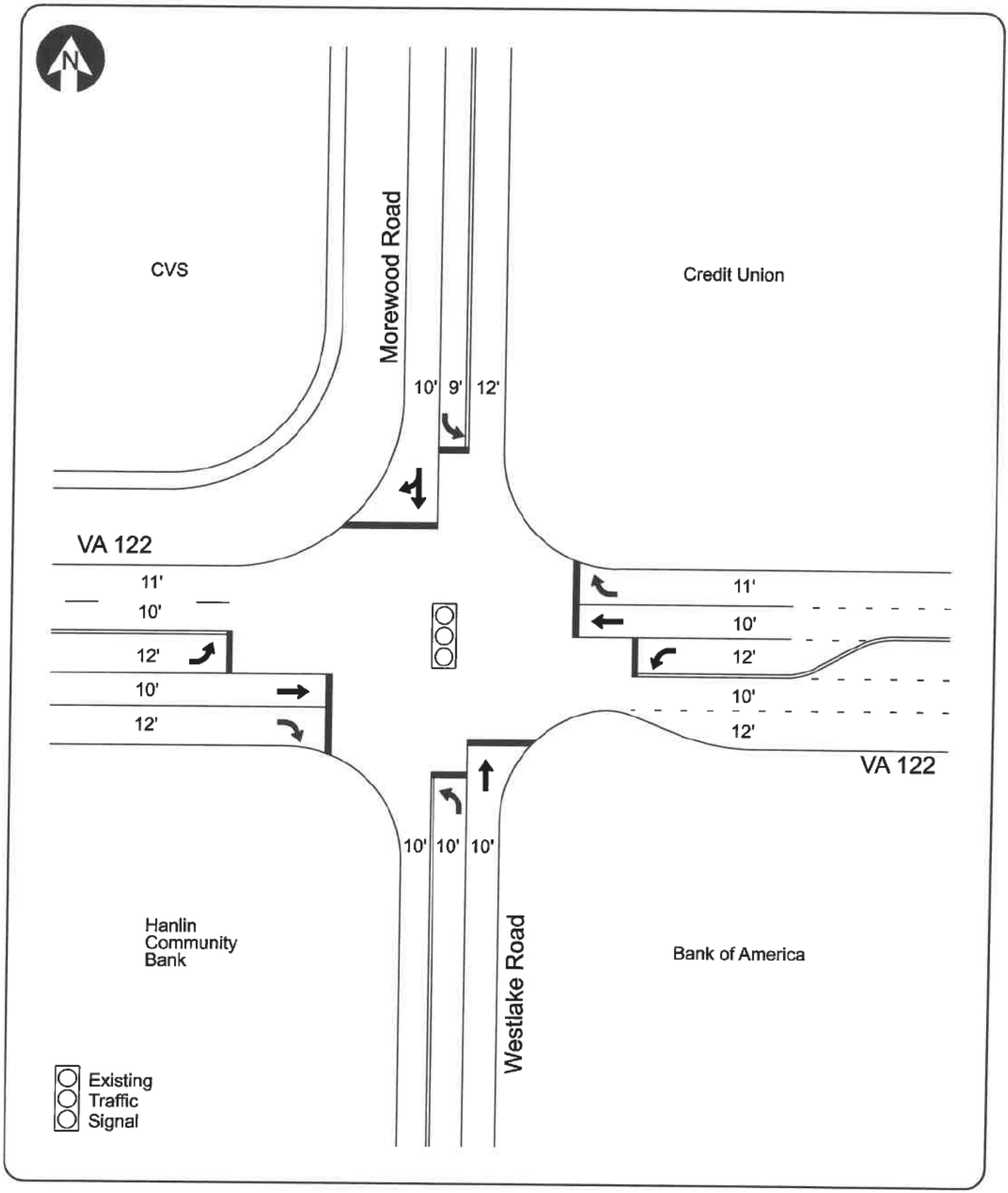
Intersection of: VA 122 (Booker T. Washington Hwy)
and: Village Springs Drive
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

The Traffic Group

TIME	TRAFFIC FROM NORTH on: Village Springs Drive					TRAFFIC FROM SOUTH on: Village Springs Drive					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	3	1	0	0	4	0	1	9	0	10	0	79	1	0	80	8	52	4	0	64	158
7:15-7:30	3	0	0	0	3	0	0	10	0	10	1	89	1	0	91	3	66	0	0	69	173
7:30-7:45	3	0	1	0	4	0	1	8	0	9	3	77	0	0	80	8	62	2	0	72	165
7:45-8:00	6	0	0	0	6	1	0	8	0	9	1	94	1	0	96	9	78	2	0	89	200
8:00-8:15	3	1	2	0	6	5	0	6	0	11	5	73	3	0	81	13	73	5	0	91	189
8:15-8:30	1	1	3	0	5	1	0	7	0	8	3	64	1	0	68	19	85	3	0	107	188
8:30-8:45	1	0	2	0	3	1	0	6	0	7	2	52	5	0	59	16	66	2	0	84	153
8:45-9:00	3	2	2	0	7	3	0	6	0	9	5	57	7	0	69	12	97	4	0	113	198
9:00-9:15	2	0	3	0	5	7	2	6	0	15	5	55	4	0	64	7	81	4	0	92	176
9:15-9:30	4	3	4	0	11	3	2	9	0	14	5	55	6	0	66	11	68	2	0	81	172
9:30-9:45	2	3	2	0	7	2	2	12	0	16	3	63	1	0	67	11	73	4	0	88	176
9:45-10:00	1	2	0	0	3	2	0	4	0	6	2	56	8	0	66	12	61	1	0	74	149
3 Hr Totals	32	13	19	0	64	25	8	91	0	124	35	814	38	0	887	129	862	33	0	1024	2099
1 Hr Totals																					
7:00-8:00	15	1	1	0	17	1	2	35	0	38	5	339	3	0	347	28	258	8	0	294	696
7:15-8:15	15	1	3	0	19	6	1	32	0	39	10	333	5	0	348	33	279	9	0	321	727
7:30-8:30	13	2	6	0	21	7	1	29	0	37	12	308	5	0	325	49	298	12	0	359	742
7:45-8:45	11	2	7	0	20	8	0	27	0	35	11	283	10	0	304	57	302	12	0	371	730
8:00-9:00	8	4	9	0	21	10	0	25	0	35	15	246	16	0	277	60	321	14	0	395	728
8:15-9:15	7	3	10	0	20	12	2	25	0	39	15	228	17	0	260	54	329	13	0	396	715
8:30-9:30	10	5	11	0	26	14	4	27	0	45	17	219	22	0	258	46	312	12	0	370	699
8:45-9:45	11	8	11	0	30	15	6	33	0	54	18	230	18	0	266	41	319	14	0	374	724
9:00-10:00	9	8	9	0	26	14	6	31	0	51	15	229	19	0	263	41	283	11	0	335	675
PEAK HOUR																					
7:30-8:30	13	2	6	0	21	7	1	29	0	37	12	308	5	0	325	49	298	12	0	359	742
PM																					
4:00-4:15	4	3	2	0	9	3	5	11	0	19	5	75	4	0	84	30	94	2	0	126	238
4:15-4:30	4	6	1	0	11	11	2	15	0	28	5	96	13	0	114	15	98	1	0	114	267
4:30-4:45	1	3	3	0	7	3	3	25	0	31	7	95	7	0	109	24	80	9	0	113	260
4:45-5:00	6	3	2	0	11	3	1	20	0	24	2	78	5	0	85	25	87	3	0	115	235
5:00-5:15	5	1	1	0	7	8	2	25	0	35	4	118	3	0	125	30	82	3	0	115	282
5:15-5:30	0	1	8	0	9	7	1	32	0	40	2	83	11	0	96	16	78	6	0	100	245
5:30-5:45	3	2	1	0	6	9	1	17	0	27	6	82	10	0	98	27	71	7	0	105	236
5:45-6:00	2	1	3	0	6	5	0	21	0	26	3	59	2	0	64	23	75	7	0	105	201
6:00-6:15	1	0	1	0	2	9	1	14	0	24	1	79	9	0	89	19	67	5	0	91	206
6:15-6:30	4	2	1	0	7	7	1	14	0	22	1	72	7	0	80	34	72	3	0	109	218
6:30-6:45	2	0	2	0	4	6	0	29	0	35	0	73	8	0	81	25	47	5	0	77	197
6:45-7:00	1	0	2	0	3	7	2	19	0	28	1	42	8	0	51	19	57	1	0	77	159
3 Hr Totals	33	22	27	0	82	78	19	242	0	339	37	952	87	0	1076	287	908	52	0	1247	2744
1 Hr Totals																					
4:00-5:00	15	15	8	0	38	20	11	71	0	102	19	344	29	0	392	94	359	15	0	468	1000
4:15-5:15	16	13	7	0	36	25	8	85	0	118	18	387	28	0	433	94	347	16	0	457	1044
4:30-5:30	12	8	14	0	34	21	7	102	0	130	15	374	26	0	415	95	327	21	0	443	1022
4:45-5:45	14	7	12	0	33	27	5	94	0	126	14	361	29	0	404	98	318	19	0	435	998
5:00-6:00	10	5	13	0	28	29	4	95	0	128	15	342	26	0	383	96	306	23	0	425	964
5:15-6:15	6	4	13	0	23	30	3	84	0	117	12	303	32	0	347	85	291	25	0	401	888
5:30-6:30	10	5	6	0	21	30	3	66	0	99	11	292	28	0	331	103	285	22	0	410	861
5:45-6:45	9	3	7	0	19	27	2	78	0	107	5	283	26	0	314	101	261	20	0	382	822
6:00-7:00	8	2	6	0	16	29	4	76	0	109	3	266	32	0	301	97	243	14	0	354	780
PEAK HOUR																					
4:15-5:15	16	13	7	0	36	25	8	85	0	118	18	387	28	0	433	94	347	16	0	457	1044



The Traffic Group

VA 122 at Westlake and Morewood Roads

FIELD WORK BY:	C. Hinkey	JOB NO.:	2012-0503
DRAWN BY:	C. Pryseski	DGN NAME:	VA 122 at Morewood
DATE:	May 23, 2013	LOCATION:	VA
SCALE:	N/A	SHEET NO.:	1 OF 1

PASSENGER VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Morewood Road/Westlake Road
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

TIME	TRAFFIC FROM NORTH on: Morewood Road					TRAFFIC FROM SOUTH on: Westlake Road					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	5	1	9	0	15	5	0	3	0	8	2	73	14	0	89	3	42	2	0	47	159
7:15-7:30	6	3	6	0	15	7	0	2	0	9	4	77	12	0	93	2	56	3	0	61	178
7:30-7:45	8	2	4	0	14	7	1	1	0	9	7	71	12	0	90	7	48	4	0	59	172
7:45-8:00	10	2	4	0	16	6	1	3	0	10	5	79	23	0	107	7	67	6	0	80	213
8:00-8:15	7	2	3	0	12	8	3	4	0	15	9	63	33	0	105	8	61	3	0	72	204
8:15-8:30	4	6	10	0	20	12	4	3	0	19	16	56	18	0	90	8	75	3	0	86	215
8:30-8:45	5	2	6	0	13	29	1	6	0	36	13	44	27	0	84	10	57	3	0	70	203
8:45-9:00	3	4	12	0	19	25	3	3	0	31	8	60	25	0	93	7	84	4	0	95	238
9:00-9:15	3	2	19	0	24	24	2	4	0	30	8	48	27	0	83	7	77	2	0	86	223
9:15-9:30	4	4	8	0	16	21	1	3	0	25	5	57	25	0	87	6	56	4	0	66	194
9:30-9:45	2	4	13	0	19	23	3	7	0	33	9	57	22	0	88	3	63	4	0	70	210
9:45-10:00	1	4	10	0	15	20	2	1	0	23	12	57	32	0	101	4	52	4	0	60	199
3 Hr Totals	58	36	104	0	198	187	21	40	0	248	98	742	270	0	1110	72	738	42	0	852	2408
1 Hr Totals																					
7:00-8:00	29	8	23	0	60	25	2	9	0	36	18	300	61	0	379	19	213	15	0	247	722
7:15-8:15	31	9	17	0	57	28	5	10	0	43	25	290	80	0	395	24	232	16	0	272	767
7:30-8:30	29	12	21	0	62	33	9	11	0	53	37	269	86	0	392	30	251	16	0	297	804
7:45-8:45	26	12	23	0	61	55	9	16	0	80	43	242	101	0	386	33	260	15	0	308	835
8:00-9:00	19	14	31	0	64	74	11	16	0	101	46	223	103	0	372	33	277	13	0	323	860
8:15-9:15	15	14	47	0	76	90	10	16	0	116	45	208	97	0	350	32	293	12	0	337	879
8:30-9:30	15	12	45	0	72	99	7	16	0	122	34	209	104	0	347	30	274	13	0	317	858
8:45-9:45	12	14	52	0	78	93	9	17	0	119	30	222	99	0	351	23	280	14	0	317	865
9:00-10:00	10	14	50	0	74	88	8	15	0	111	34	219	106	0	359	20	248	14	0	282	826
PEAK HOUR																					
8:45-9:45	12	14	52	0	78	93	9	17	0	119	30	222	99	0	351	23	280	14	0	317	865
PM																					
4:00-4:15	4	3	14	0	21	50	10	13	0	73	9	73	32	0	114	13	78	8	0	99	307
4:15-4:30	6	9	15	0	30	41	1	10	0	52	12	85	42	0	139	6	86	5	0	97	318
4:30-4:45	9	9	18	0	36	45	13	17	0	75	9	76	35	0	120	5	77	7	0	89	320
4:45-5:00	2	4	18	0	24	64	8	13	0	85	11	63	30	0	104	8	82	2	0	92	305
5:00-5:15	3	8	15	0	26	46	12	27	0	85	12	97	38	0	147	4	73	4	0	81	339
5:15-5:30	3	4	23	0	30	46	5	3	0	54	20	83	36	0	139	8	84	6	0	98	321
5:30-5:45	6	3	17	0	26	35	5	6	0	46	10	74	35	0	119	4	66	6	0	76	267
5:45-6:00	1	1	19	0	21	51	6	7	0	64	11	53	26	0	90	4	72	7	0	83	258
6:00-6:15	3	2	8	0	13	31	1	6	0	38	12	71	42	0	125	4	73	5	0	82	258
6:15-6:30	3	3	10	0	16	38	7	4	0	49	6	72	25	0	103	1	65	4	0	70	238
6:30-6:45	3	1	8	0	12	34	3	3	0	40	2	71	33	0	106	1	58	2	0	61	219
6:45-7:00	3	3	10	0	16	34	4	0	0	38	6	43	38	0	87	1	55	7	0	63	204
3 Hr Totals	46	50	175	0	271	515	75	109	0	699	120	861	412	0	1393	59	869	63	0	991	3354
1 Hr Totals																					
4:00-5:00	21	25	65	0	111	200	32	53	0	285	41	297	139	0	477	32	323	22	0	377	1250
4:15-5:15	20	30	66	0	116	196	34	67	0	297	44	321	145	0	510	23	318	18	0	359	1282
4:30-5:30	17	25	74	0	116	201	38	60	0	299	52	319	139	0	510	25	316	19	0	360	1285
4:45-5:45	14	19	73	0	106	191	30	49	0	270	53	317	139	0	509	24	305	18	0	347	1232
5:00-6:00	13	16	74	0	103	178	28	43	0	249	53	307	135	0	495	20	295	23	0	338	1185
5:15-6:15	13	10	67	0	90	163	17	22	0	202	53	281	139	0	473	20	295	24	0	339	1104
5:30-6:30	13	9	54	0	76	155	19	23	0	197	39	270	128	0	437	13	276	22	0	311	1021
5:45-6:45	10	7	45	0	62	154	17	20	0	191	31	267	126	0	424	10	268	18	0	296	973
6:00-7:00	12	9	36	0	57	137	15	13	0	165	26	257	138	0	421	7	251	18	0	276	919
PEAK HOUR																					
4:30-5:30	17	25	74	0	116	201	38	60	0	299	52	319	139	0	510	25	316	19	0	360	1285

HEAVY TRUCK TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Morewood Road/Westlake Road
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

The Traffic Group

TIME	TRAFFIC FROM NORTH on: Morewood Road					TRAFFIC FROM SOUTH on: Westlake Road					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	0	0	0	0	0	0	0	0	0	0	3	2	0	0	5	0	3	0	0	3	8
7:15-7:30	1	0	0	0	1	1	0	0	0	1	0	5	0	0	5	0	6	0	0	6	13
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	3	1	0	4	9
7:45-8:00	0	0	1	0	1	0	0	1	0	1	1	5	0	0	6	0	0	0	0	0	8
8:00-8:15	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	0	3	1	0	4	11
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	3
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	3	0	0	4	7
8:45-9:00	0	0	1	0	1	1	0	0	0	1	2	3	1	0	6	0	4	0	0	4	12
9:00-9:15	0	0	2	0	2	0	0	0	0	0	1	7	0	0	8	0	5	1	0	6	16
9:15-9:30	0	0	1	0	1	1	0	1	0	2	0	2	0	0	2	0	10	0	0	10	15
9:30-9:45	0	0	0	0	0	0	0	0	0	0	0	5	1	0	6	0	5	1	0	6	12
9:45-10:00	0	0	1	0	1	0	0	0	0	0	0	4	0	0	4	1	5	0	0	6	11
3 Hr Totals	1	1	6	0	8	3	0	2	0	5	7	48	2	0	57	2	49	4	0	55	125
1 Hr Totals																					
7:00-8:00	1	0	1	0	2	1	0	1	0	2	4	17	0	0	21	0	12	1	0	13	38
7:15-8:15	1	1	1	0	3	1	0	1	0	2	1	21	0	0	22	0	12	2	0	14	41
7:30-8:30	0	1	1	0	2	0	0	1	0	1	1	17	0	0	18	0	8	2	0	10	31
7:45-8:45	0	1	1	0	2	0	0	1	0	1	1	15	0	0	16	1	8	1	0	10	29
8:00-9:00	0	1	1	0	2	1	0	0	0	1	2	13	1	0	16	1	12	1	0	14	33
8:15-9:15	0	0	3	0	3	1	0	0	0	1	3	14	1	0	18	1	14	1	0	16	38
8:30-9:30	0	0	4	0	4	2	0	1	0	3	3	15	1	0	19	1	22	1	0	24	50
8:45-9:45	0	0	4	0	4	2	0	1	0	3	3	17	2	0	22	0	24	2	0	26	55
9:00-10:00	0	0	4	0	4	1	0	1	0	2	1	18	1	0	20	1	25	2	0	28	54
PEAK HOUR																					
8:45-9:45	0	0	4	0	4	2	0	1	0	3	3	17	2	0	22	0	24	2	0	26	55
PM																					
4:00-4:15	1	0	2	0	3	0	0	0	0	0	0	5	0	0	5	1	2	0	0	3	11
4:15-4:30	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	2	0	2	6
4:30-4:45	2	2	0	0	4	0	0	0	0	0	0	2	0	0	2	0	3	0	0	3	9
4:45-5:00	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	4
5:00-5:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	0	3	4
5:15-5:30	0	0	0	0	0	0	1	1	0	2	0	5	0	0	5	0	1	0	0	1	8
5:30-5:45	1	0	0	0	1	0	0	0	0	0	2	5	0	0	7	0	1	1	0	2	10
5:45-6:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
6:00-6:15	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	3
6:15-6:30	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
6:30-6:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	3
6:45-7:00	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	3
3 Hr Totals	4	2	2	0	8	0	1	1	0	2	2	33	0	0	35	1	15	3	0	19	64
1 Hr Totals																					
4:00-5:00	3	2	2	0	7	0	0	0	0	0	0	15	0	0	15	1	5	2	0	8	30
4:15-5:15	2	2	0	0	4	0	0	0	0	0	0	11	0	0	11	0	6	2	0	8	23
4:30-5:30	2	2	0	0	4	0	1	1	0	2	0	12	0	0	12	0	7	0	0	7	25
4:45-5:45	1	0	0	0	1	0	1	1	0	2	2	15	0	0	17	0	5	1	0	6	26
5:00-6:00	1	0	0	0	1	0	1	1	0	2	2	12	0	0	14	0	5	1	0	6	23
5:15-6:15	1	0	0	0	1	0	1	1	0	2	2	13	0	0	15	0	3	1	0	4	22
5:30-6:30	1	0	0	0	1	0	0	0	0	0	2	9	0	0	11	0	3	1	0	4	16
5:45-6:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	4	0	0	4	9
6:00-7:00	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	5	0	0	5	11
PEAK HOUR																					
4:30-5:30	2	2	0	0	4	0	1	1	0	2	0	12	0	0	12	0	7	0	0	7	25

VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: VA 122 (Booker T. Washington Hwy)
and: Morewood Road/Westlake Road
Location: Hardy County, VA

Counted by: VCU
Date: May 22, 2013
Weather: Periods of Rain, Warm
Entered by: AG

Day: Wednesday

The Traffic Group

TIME	TRAFFIC FROM NORTH on: Morewood Road					TRAFFIC FROM SOUTH on: Westlake Road					TRAFFIC FROM EAST on: VA 122					TRAFFIC FROM WEST on: VA 122					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00-7:15	5	1	9	0	15	5	0	3	0	8	5	75	14	0	94	3	45	2	0	50	167
7:15-7:30	7	3	6	0	16	8	0	2	0	10	4	82	12	0	98	2	62	3	0	67	191
7:30-7:45	8	2	4	0	14	7	1	1	0	9	7	76	12	0	95	7	51	5	0	63	181
7:45-8:00	10	2	5	0	17	6	1	4	0	11	6	84	23	0	113	7	67	6	0	80	221
8:00-8:15	7	3	3	0	13	8	3	4	0	15	9	69	33	0	111	8	64	4	0	76	215
8:15-8:30	4	6	10	0	20	12	4	3	0	19	16	57	18	0	91	8	77	3	0	88	218
8:30-8:45	5	2	6	0	13	29	1	6	0	36	13	47	27	0	87	11	60	3	0	74	210
8:45-9:00	3	4	13	0	20	26	3	3	0	32	10	63	26	0	99	7	88	4	0	99	250
9:00-9:15	3	2	21	0	26	24	2	4	0	30	9	55	27	0	91	7	82	3	0	92	239
9:15-9:30	4	4	9	0	17	22	1	4	0	27	5	59	25	0	89	6	66	4	0	76	209
9:30-9:45	2	4	13	0	19	23	3	7	0	33	9	62	23	0	94	3	68	5	0	76	222
9:45-10:00	1	4	11	0	16	20	2	1	0	23	12	61	32	0	105	5	57	4	0	66	210
3 Hr Totals	59	37	110	0	206	190	21	42	0	253	105	790	272	0	1167	74	787	46	0	907	2533
1 Hr Totals																					
7:00-8:00	30	8	24	0	62	26	2	10	0	38	22	317	61	0	400	19	225	16	0	260	760
7:15-8:15	32	10	18	0	60	29	5	11	0	45	26	311	80	0	417	24	244	18	0	286	808
7:30-8:30	29	13	22	0	64	33	9	12	0	54	38	286	86	0	410	30	259	18	0	307	835
7:45-8:45	26	13	24	0	63	55	9	17	0	81	44	257	101	0	402	34	268	16	0	318	864
8:00-9:00	19	15	32	0	66	75	11	16	0	102	48	236	104	0	388	34	289	14	0	337	893
8:15-9:15	15	14	50	0	79	91	10	16	0	117	48	222	98	0	368	33	307	13	0	353	917
8:30-9:30	15	12	49	0	76	101	7	17	0	125	37	224	105	0	366	31	296	14	0	341	908
8:45-9:45	12	14	56	0	82	95	9	18	0	122	33	239	101	0	373	23	304	16	0	343	920
9:00-10:00	10	14	54	0	78	89	8	16	0	113	35	237	107	0	379	21	273	16	0	310	880
PEAK HOUR																					
8:45-9:45	12	14	56	0	82	95	9	18	0	122	33	239	101	0	373	23	304	16	0	343	920
PM																					
4:00-4:15	5	3	16	0	24	50	10	13	0	73	9	78	32	0	119	14	80	8	0	102	318
4:15-4:30	6	9	15	0	30	41	1	10	0	52	12	89	42	0	143	6	86	7	0	99	324
4:30-4:45	11	11	18	0	40	45	13	17	0	75	9	78	35	0	122	5	80	7	0	92	329
4:45-5:00	2	4	18	0	24	64	8	13	0	85	11	67	30	0	108	8	82	2	0	92	309
5:00-5:15	3	8	15	0	26	46	12	27	0	85	12	98	38	0	148	4	76	4	0	84	343
5:15-5:30	3	4	23	0	30	46	6	4	0	56	20	88	36	0	144	8	85	6	0	99	329
5:30-5:45	7	3	17	0	27	35	5	6	0	46	12	79	35	0	126	4	67	7	0	78	277
5:45-6:00	1	1	19	0	21	51	6	7	0	64	11	54	26	0	91	4	72	7	0	83	259
6:00-6:15	3	2	8	0	13	31	1	6	0	38	12	73	42	0	127	4	74	5	0	83	261
6:15-6:30	3	3	10	0	16	38	7	4	0	49	6	73	25	0	104	1	66	4	0	71	240
6:30-6:45	3	1	8	0	12	34	3	3	0	40	2	72	33	0	107	1	60	2	0	63	222
6:45-7:00	3	3	10	0	16	34	4	0	0	38	6	45	38	0	89	1	56	7	0	64	207
3 Hr Totals	50	52	177	0	279	515	76	110	0	701	122	894	412	0	1428	60	884	66	0	1010	3418
1 Hr Totals																					
4:00-5:00	24	27	67	0	118	200	32	53	0	285	41	312	139	0	492	33	328	24	0	385	1280
4:15-5:15	22	32	66	0	120	196	34	67	0	297	44	332	145	0	521	23	324	20	0	367	1305
4:30-5:30	19	27	74	0	120	201	39	61	0	301	52	331	139	0	522	25	323	19	0	367	1310
4:45-5:45	15	19	73	0	107	191	31	50	0	272	55	332	139	0	526	24	310	19	0	353	1258
5:00-6:00	14	16	74	0	104	178	29	44	0	251	55	319	135	0	509	20	300	24	0	344	1208
5:15-6:15	14	10	67	0	91	163	18	23	0	204	55	294	139	0	488	20	298	25	0	343	1126
5:30-6:30	14	9	54	0	77	155	19	23	0	197	41	279	128	0	448	13	279	23	0	315	1037
5:45-6:45	10	7	45	0	62	154	17	20	0	191	31	272	126	0	429	10	272	18	0	300	982
6:00-7:00	12	9	36	0	57	137	15	13	0	165	26	263	138	0	427	7	256	18	0	281	930
PEAK HOUR																					
4:30-5:30	19	27	74	0	120	201	39	61	0	301	52	331	139	0	522	25	323	19	0	367	1310

Route 122 South- SR 116 Burnt Chimney to 33-636 Lost Mt Rd

Average*

Time	Avg. Total	Time	
12:00:00 AM	43	0	
1:00:00 AM	26	100	
2:00:00 AM	14	200	
3:00:00 AM	20	300	
4:00:00 AM	23	400	
5:00:00 AM	41	500	
6:00:00 AM	96	600	
7:00:00 AM	158	700	
8:00:00 AM	235	800	
9:00:00 AM	301	900	
10:00:00 AM	350	1000	
11:00:00 AM	352	1100	
12:00:00 PM	382	1200	43% << SB Direction
1:00:00 PM	352	1300	
2:00:00 PM	373	1400	
3:00:00 PM	385	1500	
4:00:00 PM	414	1600	
5:00:00 PM	390	1700	
6:00:00 PM	378	1800	
7:00:00 PM	304	1900	
8:00:00 PM	271	2000	
9:00:00 PM	241	2100	
10:00:00 PM	171	2200	
11:00:00 PM	132	2300	
	5445		

Peak Hour: 11:30 - 12:30

* Average of May 18, 2013; June 1, 2013; June 8, 2013; and June 15, 2013
Count station located west of site on Route 122 between Route 116 and Route 636

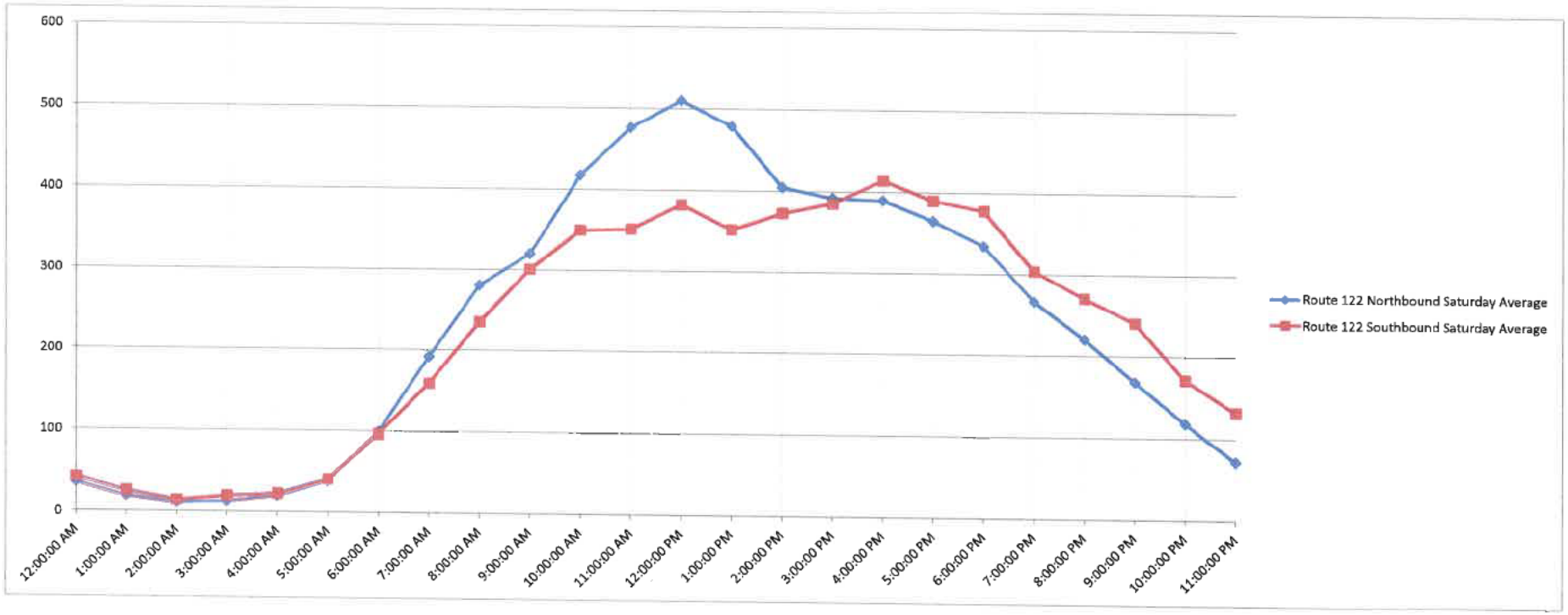
Route 122 North- SR 116 Burnt Chimney to 33-636 Lost Mt Rd

Average*

Time	Avg. Total	Time	
12:00:00 AM	36	0	
1:00:00 AM	19	100	
2:00:00 AM	11	200	
3:00:00 AM	13	300	
4:00:00 AM	20	400	
5:00:00 AM	39	500	
6:00:00 AM	99	600	
7:00:00 AM	192	700	
8:00:00 AM	281	800	
9:00:00 AM	320	900	
10:00:00 AM	418	1000	
11:00:00 AM	477	1100	
12:00:00 PM	510	1200	**57%** << NB Direction
1:00:00 PM	479	1300	
2:00:00 PM	405	1400	
3:00:00 PM	392	1500	
4:00:00 PM	390	1600	
5:00:00 PM	365	1700	
6:00:00 PM	335	1800	
7:00:00 PM	267	1900	
8:00:00 PM	221	2000	
9:00:00 PM	168	2100	
10:00:00 PM	118	2200	
11:00:00 PM	72	2300	
	5647		

Peak Hour: 11:30 - 12:30

* Average of May 18, 2013; June 1, 2013; June 8, 2013; and June 15, 2013
Count station located west of site on Route 122 between Route 116 and Route 636.


600
500
400
300
200
100
0
12:00:00 AM
1:00:00 AM
2:00:00 AM
3:00:00 AM
4:00:00 AM
5:00:00 AM
6:00:00 AM
7:00:00 AM
8:00:00 AM
9:00:00 AM
10:00:00 AM
11:00:00 AM
12:00:00 PM
1:00:00 PM
2:00:00 PM
3:00:00 PM
4:00:00 PM
5:00:00 PM
6:00:00 PM
7:00:00 PM
8:00:00 PM
9:00:00 PM
10:00:00 PM
11:00:00 PM
Route 122 Northbound Saturday Average
Route 122 Southbound Saturday Average

Route 122 South- SR 116 Burnt Chimney to 33-636 Lost Mt Rd

May 18 Sat

Start Date	DIRECTION	Interval Total
2013/05/18 0000	South	32
2013/05/18 0100	South	26
2013/05/18 0200	South	15
2013/05/18 0300	South	23
2013/05/18 0400	South	22
2013/05/18 0500	South	58
2013/05/18 0600	South	89
2013/05/18 0700	South	121
2013/05/18 0800	South	215
2013/05/18 0900	South	273
2013/05/18 1000	South	313
2013/05/18 1100	South	317
2013/05/18 1200	South	370
2013/05/18 1300	South	316
2013/05/18 1400	South	397
2013/05/18 1500	South	364
2013/05/18 1600	South	340
2013/05/18 1700	South	343
2013/05/18 1800	South	335
2013/05/18 1900	South	249
2013/05/18 2000	South	215
2013/05/18 2100	South	183
2013/05/18 2200	South	100
2013/05/18 2300	South	87

Jun 8 Sat

Start Date	DIRECTION	Interval Total
2013/06/08 0000	South	34
2013/06/08 0100	South	20
2013/06/08 0200	South	12
2013/06/08 0300	South	12
2013/06/08 0400	South	26
2013/06/08 0500	South	33
2013/06/08 0600	South	68
2013/06/08 0700	South	119
2013/06/08 0800	South	171
2013/06/08 0900	South	228
2013/06/08 1000	South	320
2013/06/08 1100	South	336
2013/06/08 1200	South	373
2013/06/08 1300	South	304
2013/06/08 1400	South	346
2013/06/08 1500	South	371
2013/06/08 1600	South	377
2013/06/08 1700	South	357
2013/06/08 1800	South	356
2013/06/08 1900	South	317
2013/06/08 2000	South	268
2013/06/08 2100	South	240
2013/06/08 2200	South	171
2013/06/08 2300	South	134

Jun 1 Sat

Start Date	DIRECTION	Interval Total
2013/06/01 0000	South	50
2013/06/01 0100	South	34
2013/06/01 0200	South	17
2013/06/01 0300	South	23
2013/06/01 0400	South	22
2013/06/01 0500	South	33
2013/06/01 0600	South	101
2013/06/01 0700	South	152
2013/06/01 0800	South	257
2013/06/01 0900	South	363
2013/06/01 1000	South	410
2013/06/01 1100	South	408
2013/06/01 1200	South	411
2013/06/01 1300	South	391
2013/06/01 1400	South	333
2013/06/01 1500	South	351
2013/06/01 1600	South	409
2013/06/01 1700	South	396
2013/06/01 1800	South	405
2013/06/01 1900	South	278
2013/06/01 2000	South	284
2013/06/01 2100	South	248
2013/06/01 2200	South	190
2013/06/01 2300	South	117

Jun 15 Sat

Start Date	DIRECTION	Interval Total
2013/06/15 0000	South	54
2013/06/15 0100	South	22
2013/06/15 0200	South	12
2013/06/15 0300	South	20
2013/06/15 0400	South	20
2013/06/15 0500	South	39
2013/06/15 0600	South	125
2013/06/15 0700	South	241
2013/06/15 0800	South	296
2013/06/15 0900	South	338
2013/06/15 1000	South	356
2013/06/15 1100	South	346
2013/06/15 1200	South	374
2013/06/15 1300	South	397
2013/06/15 1400	South	414
2013/06/15 1500	South	454
2013/06/15 1600	South	528
2013/06/15 1700	South	462
2013/06/15 1800	South	414
2013/06/15 1900	South	371
2013/06/15 2000	South	315
2013/06/15 2100	South	292
2013/06/15 2200	South	222
2013/06/15 2300	South	188

May 22 Wed

Start Date	DIRECTION	Interval Total
2013/05/22 0000	South	21
2013/05/22 0100	South	7
2013/05/22 0200	South	3
2013/05/22 0300	South	20
2013/05/22 0400	South	27
2013/05/22 0500	South	67
2013/05/22 0600	South	210
2013/05/22 0700	South	374
2013/05/22 0800	South	269
2013/05/22 0900	South	257
2013/05/22 1000	South	293
2013/05/22 1100	South	278
2013/05/22 1200	South	311
2013/05/22 1300	South	343
2013/05/22 1400	South	337
2013/05/22 1500	South	368
2013/05/22 1600	South	409
2013/05/22 1700	South	427
2013/05/22 1800	South	287
2013/05/22 1900	South	225
2013/05/22 2000	South	182
2013/05/22 2100	South	112
2013/05/22 2200	South	74
2013/05/22 2300	South	18

Route 122 North- SR 116 Burnt Chimney to 33-636 Lost Mt Rd

May 18 Sat

Start Date	DIRECTION	Interval Total	Time
2013/05/18 0000	North	27	0000
2013/05/18 0100	North	27	0100
2013/05/18 0200	North	12	0200
2013/05/18 0300	North	9	0300
2013/05/18 0400	North	26	0400
2013/05/18 0500	North	43	0500
2013/05/18 0600	North	71	0600
2013/05/18 0700	North	156	0700
2013/05/18 0800	North	256	0800
2013/05/18 0900	North	313	0900
2013/05/18 1000	North	369	1000
2013/05/18 1100	North	393	1100
2013/05/18 1200	North	399	1200
2013/05/18 1300	North	379	1300
2013/05/18 1400	North	354	1400
2013/05/18 1500	North	313	1500
2013/05/18 1600	North	334	1600
2013/05/18 1700	North	365	1700
2013/05/18 1800	North	297	1800
2013/05/18 1900	North	202	1900
2013/05/18 2000	North	162	2000
2013/05/18 2100	North	113	2100
2013/05/18 2200	North	101	2200
2013/05/18 2300	North	57	2300

Jun 8 Sat

Start Date	DIRECTION	Interval Total
2013/06/08 0000	North	31
2013/06/08 0100	North	15
2013/06/08 0200	North	12
2013/06/08 0300	North	13
2013/06/08 0400	North	18
2013/06/08 0500	North	32
2013/06/08 0600	North	72
2013/06/08 0700	North	163
2013/06/08 0800	North	217
2013/06/08 0900	North	247
2013/06/08 1000	North	364
2013/06/08 1100	North	461
2013/06/08 1200	North	508
2013/06/08 1300	North	474
2013/06/08 1400	North	419
2013/06/08 1500	North	398
2013/06/08 1600	North	378
2013/06/08 1700	North	317
2013/06/08 1800	North	341
2013/06/08 1900	North	278
2013/06/08 2000	North	228
2013/06/08 2100	North	175
2013/06/08 2200	North	129
2013/06/08 2300	North	69

Jun 1 Sat

Start Date	DIRECTION	Interval Total
2013/06/01 0000	North	47
2013/06/01 0100	North	15
2013/06/01 0200	North	11
2013/06/01 0300	North	19
2013/06/01 0400	North	18
2013/06/01 0500	North	39
2013/06/01 0600	North	154
2013/06/01 0700	North	244
2013/06/01 0800	North	328
2013/06/01 0900	North	362
2013/06/01 1000	North	433
2013/06/01 1100	North	483
2013/06/01 1200	North	477
2013/06/01 1300	North	427
2013/06/01 1400	North	395
2013/06/01 1500	North	404
2013/06/01 1600	North	431
2013/06/01 1700	North	380
2013/06/01 1800	North	329
2013/06/01 1900	North	264
2013/06/01 2000	North	218
2013/06/01 2100	North	190
2013/06/01 2200	North	108
2013/06/01 2300	North	69

Jun 15 Sat

Start Date	DIRECTION	Interval Total
2013/06/15 0000	North	39
2013/06/15 0100	North	20
2013/06/15 0200	North	9
2013/06/15 0300	North	10
2013/06/15 0400	North	19
2013/06/15 0500	North	43
2013/06/15 0600	North	99
2013/06/15 0700	North	203
2013/06/15 0800	North	322
2013/06/15 0900	North	359
2013/06/15 1000	North	505
2013/06/15 1100	North	570
2013/06/15 1200	North	656
2013/06/15 1300	North	637
2013/06/15 1400	North	452
2013/06/15 1500	North	454
2013/06/15 1600	North	417
2013/06/15 1700	North	399
2013/06/15 1800	North	372
2013/06/15 1900	North	323
2013/06/15 2000	North	274
2013/06/15 2100	North	195
2013/06/15 2200	North	134
2013/06/15 2300	North	94

May 22 Wed

Start Date	DIRECTION	Interval Total
2013/05/22 0000	North	27
2013/05/22 0100	North	11
2013/05/22 0200	North	10
2013/05/22 0300	North	6
2013/05/22 0400	North	23
2013/05/22 0500	North	42
2013/05/22 0600	North	155
2013/05/22 0700	North	283
2013/05/22 0800	North	373
2013/05/22 0900	North	320
2013/05/22 1000	North	311
2013/05/22 1100	North	285
2013/05/22 1200	North	309
2013/05/22 1300	North	271
2013/05/22 1400	North	330
2013/05/22 1500	North	375
2013/05/22 1600	North	436
2013/05/22 1700	North	406
2013/05/22 1800	North	377
2013/05/22 1900	North	201
2013/05/22 2000	North	166
2013/05/22 2100	North	105
2013/05/22 2200	North	56
2013/05/22 2300	North	26

APPENDIX C

Internal Capture Worksheets

Analyst THL
Date 9/23/2014

MULTI-USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt WESTLAKE TOWNE CENTER
Time Period WEEKDAY PM PEAK HOUR OF ADJACENT STREET

PHASE 1

LAND USE A RETAIL

ITE LU Code 826
Size 20,000 SF

	Total	Internal	External
Enter	24	1	23
Exit	30	2	28
Total	54	3	51
%	100%	6%	94%

Exit to External: 28
Enter from External: 23

* AS ESTABLISHED IN VDOT PRE-SCOPING MEETING *

5% | 2 Demand — 2 Balanced — * 5% | 6 Demand
5% | 1 Demand — 1 Balanced — 5% | 4 Demand
% | Demand — Balanced — % | Demand
% | Demand — Balanced — % | Demand

LAND USE B RESTAURANT

ITE LU Code 931/934
Size 14,000

	Total	Internal	External
Enter	119	2	117
Exit	88	1	87
Total	207	3	204
%	100%	1%	99%

Exit to External: 87
Enter from External: 116

% | Demand — Balanced — % | Demand
% | Demand — Balanced — % | Demand

LAND USE C

ITE LU Code
Size

	Total	Internal	External
Enter			
Exit			
Total			
%			

Enter from External
Exit to External

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	TOTAL
Enter	23	117	—	140
Exit	28	87	—	115
Total	51	204	—	255
Single-Use Trip Gen. Est.	54	207	—	261

INTERNAL CAPTURE 2%

Source: Kaku Associates, Inc.

Analyst THL
Date 4-29-2014

MULTI-USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt WESTLAKE TOWNE CENTER
Time Period SATURDAY PEAK HOUR

PHASE 1

*AS ESTABLISHED IN VDOT PRE-SCOPING MEETING

LAND USE A RETAIL

ITE LU Code 826
Size 20,000 SF

	Total	Internal	External
Enter	56	3	53
Exit	44	2	42
Total	100	5	95
%	100%	5%	95%

Exit to External: 42
Enter from External: 53

5% 2 Demand — 2 Balanced
5% 3 Demand — 3 Balanced
* 5% 9 Demand
5% 8 Demand

% Demand — Balanced
% Demand — Balanced
% Demand
% Demand

LAND USE B RESTAURANT

ITE LU Code 931/934
Size 14,000 SF

	Total	Internal	External
Enter	184	2	182
Exit	160	3	157
Total	344	5	339
%	100%	1%	99%

Exit to External: 157
Enter from External: 182

% Demand — Balanced
% Demand — Balanced
% Demand
% Demand

LAND USE C

ITE LU Code
Size

	Total	Internal	External
Enter			
Exit			
Total			
%			

Enter from External
Exit to External

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	TOTAL
Enter	53	182	—	235
Exit	42	157	—	199
Total	95	339	—	434
Single-Use Trip Gen. Est.	100	344	—	444

INTERNAL CAPTURE: 2%

Source: Kaku Associates, I

PHASE 1 + 2

Analyst THL
Date 9/23/2014

MULTI- USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt WESTLAKE TOWN CENTER
Time Period WEEKDAY PM PEAK HR. OF ADJACENT S

LAND USE A RESIDENTIAL

ITE LU Code 210, 220, 231, 251
Size 231 DWELLING UNITS

	Total	Internal	External
Enter	117	35	82
Exit	66	19	47
Total	183	54	129
%	100%	30%	70%

Exit to External: 47
Enter from External: 82

LAND USE B OFFICE

ITE LU Code 710
Size 88,000 SF

	Total	Internal	External
Enter	30	9	21
Exit	147	26	121
Total	177	35	142
%	100%	20%	80%

Enter from External: 21
Exit to External: 121

LAND USE C RETAIL

ITE LU Code 826
Size 82,720 SF

	Total	Internal	External
Enter	99	26	73
Exit	125	38	87
Total	224	64	160
%	100%	29%	71%

Exit to External: 87
Enter from External: 73

LAND USE D * RESTAURANT

ITE LU Code 931, 934
Size 28,700 SF

	Total	Internal	External
Enter	193	51	142
Exit	124	38	86
Total	317	89	228
%	100%	28%	72%

Enter from External: 141
Exit to External: 86

Demand 2% 2 | Balanced 2 | Demand 2% 3
Demand 0% 0 | Balanced 0 | Demand 0% 0
Demand 23% 34 | Balanced 2 | Demand 2% 2
Demand 15% 10 | Balanced 10
Demand 53% 35 | Balanced 9 | Demand 9% 9
Demand 31% 36 | Balanced 15 | Demand 12% 15
Demand 15% 29 | Balanced 18 | Demand 15% 19
Demand 31% 9 | Balanced 4 | Demand 3% 4
Demand 15% 22 | Balanced 22 | Demand 15% 29
Demand 15% 5 | Balanced 5 | Demand 15% 19
Demand 15% 15 | Balanced 15 | Demand 15% 19
Demand 15% 19 | Balanced 19 | Demand 15% 29

* AS ESTABLISHED IN VDOT PRE-SCOPING MEETING

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	LAND USE D	TOTAL
Enter	82	21	73	142	318
Exit	47	121	87	86	341
Total	129	142	160	228	659
Single-Use Trip Gen. Est.	183	177	224	317	901

Source: Kaku Associates, In

INTERNAL CAPTURE: 27%

PHASE 1 + 2

Analyst THL
Date 9/23/2014

MULTI- USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Name of Dvlpt WESTLAKE TOWN CENTER
Time Period WEEKDAY PM PEAK HR. OF ADJACENT S

LAND USE A RESIDENTIAL

ITE LU Code 210, 220, 231, 251
Size 231 DWELLING UNITS

	Total	Internal	External
Enter	117	35	82
Exit	66	19	47
Total	183	54	129
%	100%	30%	70%

Exit to External: 47
Enter from External: 82

LAND USE B OFFICE

ITE LU Code 710
Size 88,000 SF

	Total	Internal	External
Enter	30	9	21
Exit	147	26	121
Total	177	35	142
%	100%	20%	80%

Enter from External: 21
Exit to External: 121

LAND USE C RETAIL

ITE LU Code 826
Size 82,700 SF

	Total	Internal	External
Enter	99	26	73
Exit	125	38	87
Total	224	64	160
%	100%	29%	71%

Exit to External: 87
Enter from External: 73

LAND USE D * RESTAURANT

ITE LU Code 931, 934
Size 28,700 SF

	Total	Internal	External
Enter	193	51	142
Exit	124	38	86
Total	317	89	228
%	100%	28%	72%

Enter from External: 141
Exit to External: 86

Demand 2% 2 | Balanced 2 | Demand 2% 3
0% 0 Demand | 0 Balanced | 0% 0 Demand
53% 35 Demand | 9 Balanced | 9% 9 Demand
31% 36 Demand | 15 Balanced | 12% 15 Demand
15% 10 Demand | 10 Balanced | 15% 29 Demand
23% 34 Demand | 2 Balanced | 2% 2 Demand
15% 18 Demand | 18 Balanced | 15% 19 Demand
31% 9 Demand | 4 Balanced | 3% 4 Demand
15% 22 Demand | 22 Balanced | 15% 29 Demand
15% 5 Demand | 5 Balanced | 15% 19 Demand
Demand 15% 15 | Balanced 15 | Demand 15% 19
15% 19 Demand | 19 Balanced | 15% 29 Demand

*AS ESTABLISHED IN VDOT PRE-SCOPING MEETING

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	LAND USE D	TOTAL
Enter	82	21	73	142	318
Exit	47	121	87	86	341
Total	129	142	160	228	659
Single-Use Trip Gen. Est.	183	177	224	317	901

Source: Kaku Associates, In

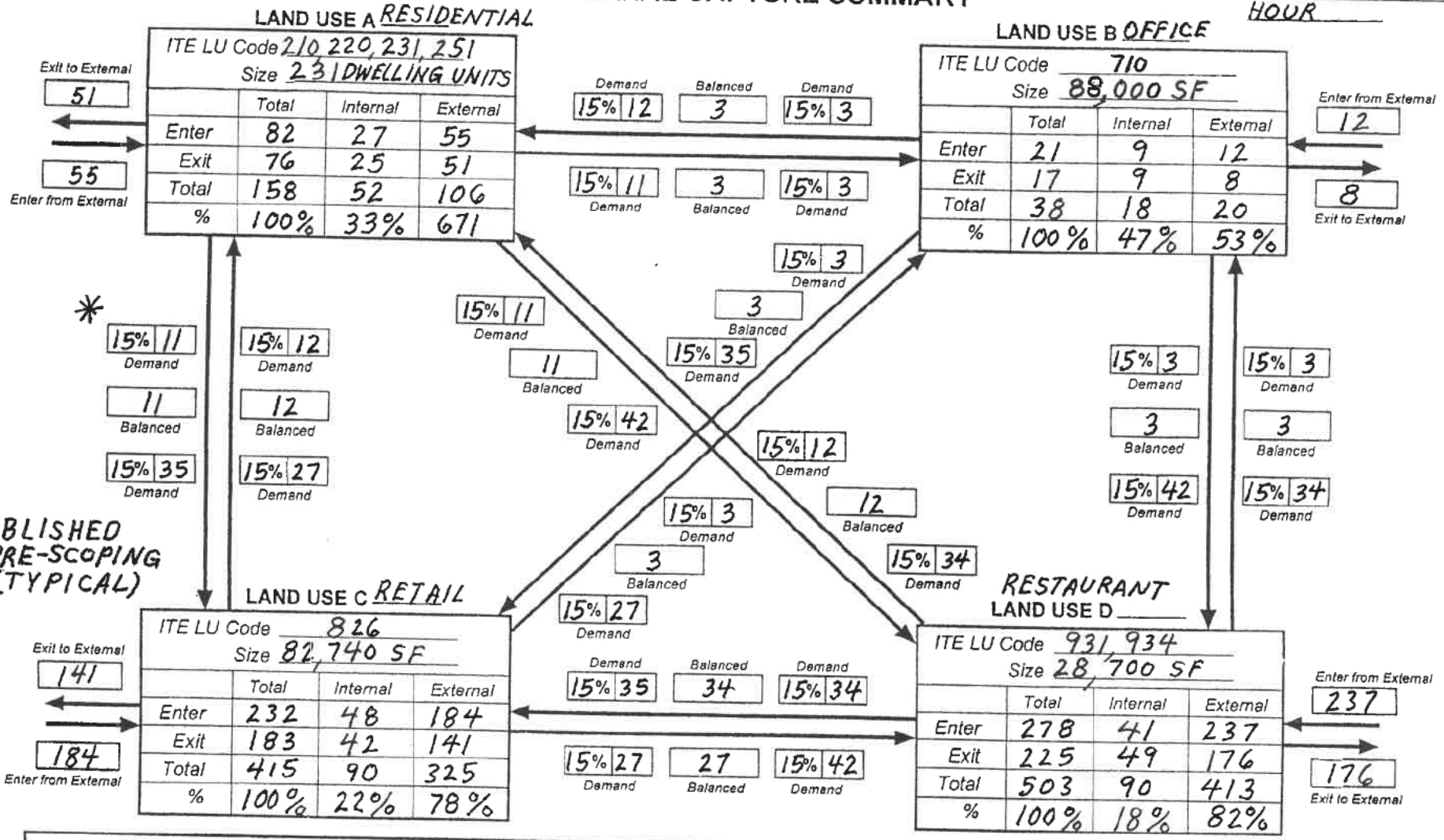
INTERNAL CAPTURE 27%

PHASE 1 & 2

MULTI- USE DEVELOPMENT TRIP GENERATION AND INTERNAL CAPTURE SUMMARY

Analyst
Date 4/29/2014

Name of Dvlpt WESTLAKE TOWNE CENTER
Time Period SATURDAY PEAK HOUR



*AS ESTABLISHED IN VDOT PRE-SCOPING MEETING (TYPICAL)

Net External Trips for Multi-Use Development

	LAND USE A	LAND USE B	LAND USE C	LAND USE D	TOTAL
Enter	55	12	184	237	488
Exit	51	8	141	176	376
Total	106	20	325	413	864
Single-Use Trip Gen. Est.	158	38	415	503	1,114

Source: Kaku Associates, Inc.

INTERNAL CAPTURE 22%

APPENDIX D

Left and Right Turn Lane Warrants (VDOT Road Design Manual)

Warrants for Left Turn Storage Lanes on Two-Lane Highways

Advancing volume and opposing volumes (VPH), speed and percent left turns are used to determine whether a left turn storage lane is warranted on two-lane highways.

The warrants in table below are taken from the 2011 AASHTO Green Book, Chapter 9, Section 9.7.3, Page 9-132, Table 9-23. They were derived from Highway Research Report No. 211, Figures 2 through 19, for required storage length determinations.

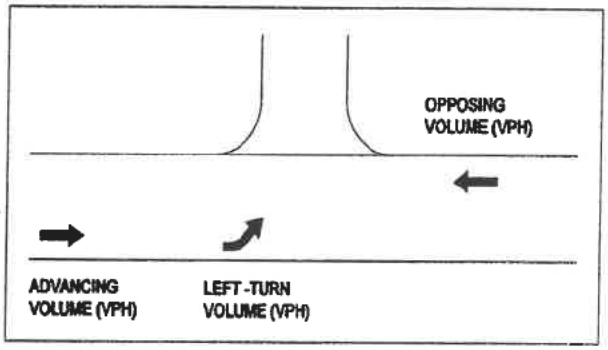
WARRANTS FOR LEFT TURN LANES ON TWO-LANE HIGHWAYS

VPH OPPOSING VOLUME	ADVANCING VOLUME			
	5% LEFT TURNS	10% LEFT TURNS	20% LEFT TURNS	30% LEFT TURNS
	40-MPH DESIGN SPEED*			
800	330	240	180	160
600	410	305	225	200
400	510	380	275	245
200	640	470	350	305
100	720	515	390	340
	50-MPH DESIGN SPEED*			
800	280	210	165	135
600	350	280	195	170
400	430	320	240	210
200	550	400	300	270
100	615	445	335	295
	60-MPH DESIGN SPEED*			
800	230	170	125	115
600	290	210	160	140
400	365	270	200	175
200	450	330	250	215
100	505	370	275	240

TABLE 3-1

Source: Adapted from 2011 AASHTO Green Book, Chapter 9, Section 9.7.3, Page 9-132, Table 9-23

* USE DESIGN SPEED IF AVAILABLE, IF NOT USE LEGAL SPEED LIMIT.



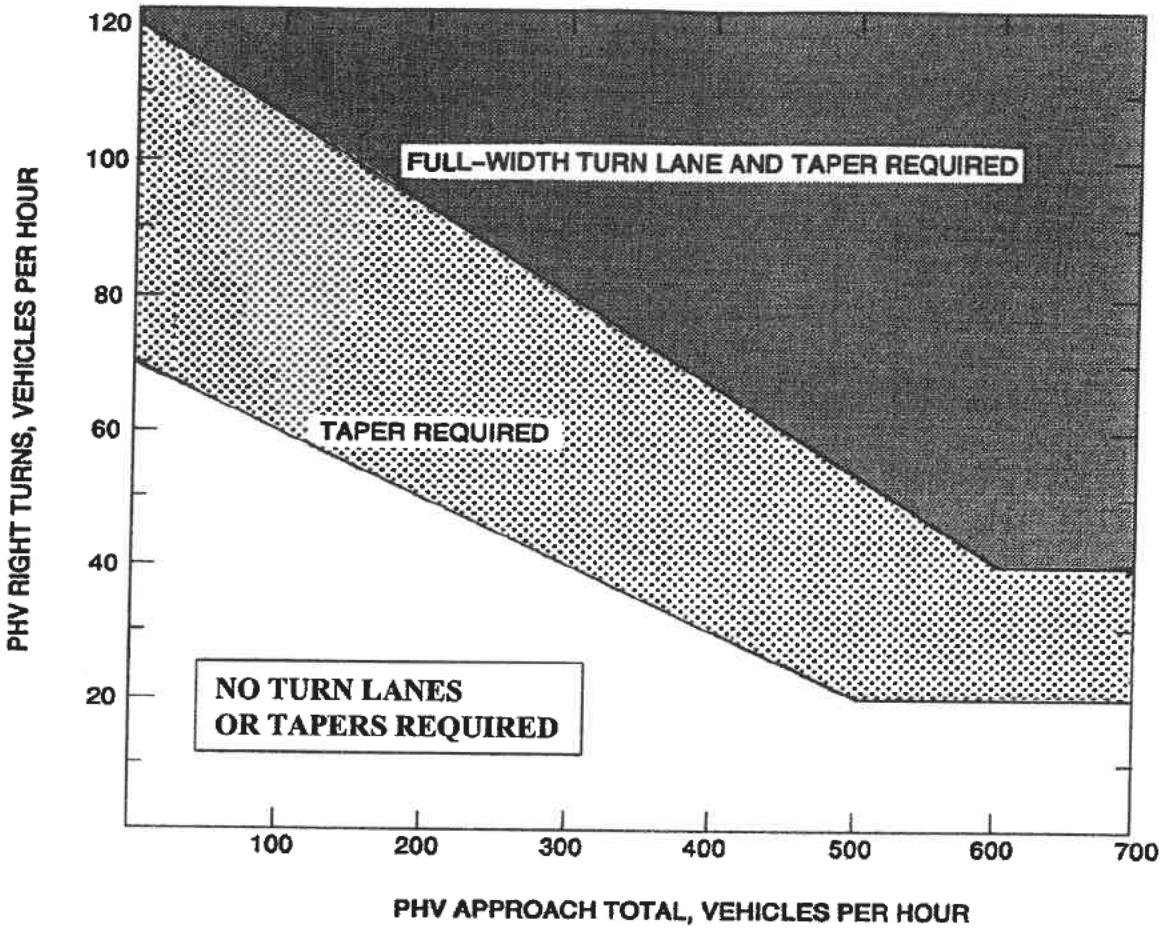
Example:

Two-lane highway with 40-MPH operating speed

Opposing Volume (VPH) - 600
Advancing Volume (VPH) - 440
Left-Turn Volume (VPH) - 44 or 10% of Advancing Volume

With opposing volume (VPH) of 600 and 10% of advancing volume (VPH) making left turns, and advancing volume (VPH) of 305 or more will warrant a left-turn lane.

When the Average Running Speed on an existing facility is available, the corresponding Design Speed may be obtained from IIM LD- 117.



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.
Adjusted right turns = PHV Right Turns - 20
If PHV is not known use formula: PHV = ADT x K x D

K = the percent of AADT occurring in the peak hour
D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

FIGURE 3-26 GUIDELINES FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)

APPENDIX E

Synchro Reports

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	454	483	5	3	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	99	99	81	81	67	67
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	2	459	596	6	4	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	596	0	-	0	1059	596
Stage 1	-	-	-	-	596	-
Stage 2	-	-	-	-	463	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	980	-	-	-	221	487
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	602	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	980	-	-	-	220	487
Mov Cap-2 Maneuver	-	-	-	-	220	-
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	600	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	980	-	-	-	335
HCM Lane V/C Ratio	0.002	-	-	-	0.036
HCM Control Delay (s)	8.7	0	-	-	16.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	16	347	94	28	387	18	85	8	25	7	13	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	87	87	87	84	84	84	82	82	82
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	16	351	95	32	445	21	101	10	30	9	16	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	445	0	0	351	0	0	910	892	351	911	892	445
Stage 1	-	-	-	-	-	-	383	383	-	509	509	-
Stage 2	-	-	-	-	-	-	527	509	-	402	383	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1115	-	-	1197	-	-	255	281	692	255	281	613
Stage 1	-	-	-	-	-	-	640	612	-	547	538	-
Stage 2	-	-	-	-	-	-	535	538	-	625	612	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1115	-	-	1197	-	-	226	266	692	228	266	613
Mov Cap-2 Maneuver	-	-	-	-	-	-	226	266	-	228	266	-
Stage 1	-	-	-	-	-	-	628	600	-	537	519	-
Stage 2	-	-	-	-	-	-	484	519	-	577	600	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	32.5	17.1
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	267	1115	-	-	1197	-	-	341
HCM Lane V/C Ratio	0.526	0.014	-	-	0.027	-	-	0.129
HCM Control Delay (s)	32.5	8.3	0	-	8.1	0	-	17.1
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.8	0	-	-	0.1	-	-	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	329	25	145	338	44	70	34	196	66	32	25
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1718	1843
Adj Flow Rate, veh/h	27	354	27	165	384	50	80	39	225	88	43	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.88	0.88	0.88	0.87	0.87	0.87	0.75	0.75	0.75
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	353	657	559	439	779	669	331	45	258	132	69	53
Arrive On Green	0.02	0.36	0.36	0.08	0.42	0.42	0.18	0.18	0.18	0.08	0.08	0.08
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	242	1394	1721	903	693
Grp Volume(v), veh/h	27	354	27	165	384	50	80	0	264	88	0	76
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1635	1721	0	1595
Q Serve(g_s), s	0.9	12.7	0.9	4.7	12.5	1.6	3.2	0.0	13.0	4.1	0.0	3.8
Cycle Q Clear(g_c), s	0.9	12.7	0.9	4.7	12.5	1.6	3.2	0.0	13.0	4.1	0.0	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.43
Lane Grp Cap(c), veh/h	353	657	559	439	779	669	331	0	302	132	0	122
V/C Ratio(X)	0.08	0.54	0.05	0.38	0.49	0.07	0.24	0.00	0.87	0.67	0.00	0.62
Avail Cap(c_a), veh/h	395	657	559	498	779	669	359	0	327	332	0	308
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.6	21.2	17.4	15.6	17.8	14.6	28.8	0.0	32.9	37.3	0.0	37.1
Incr Delay (d2), s/veh	0.1	3.2	0.2	0.5	2.2	0.2	0.4	0.0	20.9	5.7	0.0	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	7.0	0.4	2.4	6.9	0.7	1.6	0.0	7.6	2.2	0.0	1.9
LnGrp Delay(d),s/veh	16.6	24.3	17.5	16.1	20.0	14.8	29.2	0.0	53.8	43.0	0.0	42.2
LnGrp LOS	B	C	B	B	C	B	C		D	D		D
Approach Vol, veh/h		408			599			344			164	
Approach Delay, s/veh		23.4			18.5			48.1			42.6	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.8	35.9		20.7	9.1	40.7		12.5
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	9.4	29.1		* 17	4.0	34.5		16.0
Max Q Clear Time (g_c+I1), s	6.7	14.7		15.0	2.9	14.5		6.1
Green Ext Time (p_c), s	0.1	3.8		0.3	0.0	4.3		0.4

Intersection Summary			
HCM 2010 Ctrl Delay		29.1	
HCM 2010 LOS		C	

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	5	535	350	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	5	582	380	5	5	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	380	0	-	0	972	380
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	592	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1178	-	-	-	251	653
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	518	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1178	-	-	-	249	653
Mov Cap-2 Maneuver	-	-	-	-	249	-
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	515	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1178	-	-	-	361
HCM Lane V/C Ratio	0.005	-	-	-	0.03
HCM Control Delay (s)	8.1	0	-	-	15.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	30	405	105	15	300	15	50	10	60	10	15	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	33	440	114	16	326	16	54	11	65	11	16	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	326	0	0	440	0	0	875	864	440	902	864	326
Stage 1	-	-	-	-	-	-	505	505	-	359	359	-
Stage 2	-	-	-	-	-	-	370	359	-	543	505	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1234	-	-	1109	-	-	270	292	617	259	292	715
Stage 1	-	-	-	-	-	-	549	540	-	659	627	-
Stage 2	-	-	-	-	-	-	650	627	-	524	540	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1234	-	-	1109	-	-	245	276	617	215	276	715
Mov Cap-2 Maneuver	-	-	-	-	-	-	245	276	-	215	276	-
Stage 1	-	-	-	-	-	-	528	519	-	633	616	-
Stage 2	-	-	-	-	-	-	617	616	-	441	519	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4	20.9	19.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	355	1234	-	-	1109	-	-	278
HCM Lane V/C Ratio	0.367	0.026	-	-	0.015	-	-	0.117
HCM Control Delay (s)	20.9	8	0	-	8.3	0	-	19.7
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.6	0.1	-	-	0	-	-	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	430	25	90	235	35	70	30	200	60	30	25
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	22	467	27	98	255	38	76	33	217	65	33	27
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	504	835	710	406	904	776	309	37	244	101	52	42
Arrive On Green	0.02	0.45	0.45	0.05	0.48	0.48	0.17	0.17	0.17	0.06	0.06	0.06
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	215	1416	1721	875	716
Grp Volume(v), veh/h	22	467	27	98	255	38	76	0	250	65	0	60
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1631	1721	0	1591
Q Serve(g_s), s	0.7	17.3	0.9	2.7	7.6	1.2	3.4	0.0	14.0	3.4	0.0	3.4
Cycle Q Clear(g_c), s	0.7	17.3	0.9	2.7	7.6	1.2	3.4	0.0	14.0	3.4	0.0	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.45
Lane Grp Cap(c), veh/h	504	835	710	406	904	776	309	0	281	101	0	94
V/C Ratio(X)	0.04	0.56	0.04	0.24	0.28	0.05	0.25	0.00	0.89	0.64	0.00	0.64
Avail Cap(c_a), veh/h	543	835	710	441	904	776	319	0	291	295	0	273
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.2	18.6	14.1	14.1	14.4	12.8	33.3	0.0	37.7	42.9	0.0	42.9
Incr Delay (d2), s/veh	0.0	2.7	0.1	0.3	0.8	0.1	0.4	0.0	26.1	6.6	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.3	9.3	0.4	1.3	4.1	0.5	1.7	0.0	8.3	1.8	0.0	1.7
LnGrp Delay(d),s/veh	13.3	21.3	14.2	14.4	15.2	12.9	33.7	0.0	63.8	49.5	0.0	50.0
LnGrp LOS	B	C	B	B	B	B	C		E	D		D
Approach Vol, veh/h		516			391			326			125	
Approach Delay, s/veh		20.6			14.8			56.8			49.7	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.5	48.6		21.5	8.9	51.2		11.6
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	6.1	42.4		* 17	4.0	44.5		16.0
Max Q Clear Time (g_c+I1), s	4.7	19.3		16.0	2.7	9.6		5.4
Green Ext Time (p_c), s	0.0	4.3		0.1	0.0	4.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	30.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	502	534	6	3	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	2	546	580	7	3	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	580	0	-	0	1130	580
Stage 1	-	-	-	-	580	-
Stage 2	-	-	-	-	550	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	994	-	-	-	199	498
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	544	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	994	-	-	-	198	498
Mov Cap-2 Maneuver	-	-	-	-	198	-
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	542	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	994	-	-	-	331
HCM Lane V/C Ratio	0.002	-	-	-	0.03
HCM Control Delay (s)	8.6	0	-	-	16.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	383	104	31	428	20	94	9	28	8	14	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	20	416	113	34	465	22	102	10	30	9	15	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	465	0	0	416	0	0	1005	988	416	1009	988	465
Stage 1	-	-	-	-	-	-	455	455	-	533	533	-
Stage 2	-	-	-	-	-	-	550	533	-	476	455	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1096	-	-	1132	-	-	220	247	637	219	247	597
Stage 1	-	-	-	-	-	-	585	569	-	531	525	-
Stage 2	-	-	-	-	-	-	519	525	-	570	569	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1096	-	-	1132	-	-	192	231	637	192	231	597
Mov Cap-2 Maneuver	-	-	-	-	-	-	192	231	-	192	231	-
Stage 1	-	-	-	-	-	-	570	554	-	517	503	-
Stage 2	-	-	-	-	-	-	467	503	-	519	554	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	43.5	18.9
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	229	1096	-	-	1132	-	-	302
HCM Lane V/C Ratio	0.622	0.018	-	-	0.03	-	-	0.144
HCM Control Delay (s)	43.5	8.3	0	-	8.3	0	-	18.9
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	3.7	0.1	-	-	0.1	-	-	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	364	28	160	373	49	77	38	217	73	35	28
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	30	396	30	174	405	53	84	41	236	79	38	30
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	359	697	592	430	817	702	337	46	262	119	62	49
Arrive On Green	0.02	0.38	0.38	0.08	0.44	0.44	0.19	0.19	0.19	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	242	1393	1721	890	703
Grp Volume(v), veh/h	30	396	30	174	405	53	84	0	277	79	0	68
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1635	1721	0	1593
Q Serve(g_s), s	1.0	15.1	1.1	5.1	13.7	1.7	3.5	0.0	14.6	3.9	0.0	3.7
Cycle Q Clear(g_c), s	1.0	15.1	1.1	5.1	13.7	1.7	3.5	0.0	14.6	3.9	0.0	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.44
Lane Grp Cap(c), veh/h	359	697	592	430	817	702	337	0	308	119	0	110
V/C Ratio(X)	0.08	0.57	0.05	0.40	0.50	0.08	0.25	0.00	0.90	0.66	0.00	0.62
Avail Cap(c_a), veh/h	394	697	592	485	817	702	337	0	308	312	0	289
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	21.6	17.3	15.8	17.9	14.5	30.5	0.0	35.0	40.0	0.0	39.9
Incr Delay (d2), s/veh	0.1	3.3	0.2	0.6	2.1	0.2	0.4	0.0	27.5	6.2	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	8.2	0.5	2.6	7.6	0.8	1.8	0.0	8.9	2.1	0.0	1.8
LnGrp Delay(d),s/veh	16.5	25.0	17.5	16.4	20.0	14.7	30.9	0.0	62.5	46.2	0.0	45.4
LnGrp LOS	B	C	B	B	C	B	C		E	D		D
Approach Vol, veh/h		456			632			361			147	
Approach Delay, s/veh		23.9			18.6			55.1			45.8	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.3	39.7		22.0	9.3	44.7		12.2
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	9.8	32.7		* 17	4.0	38.5		16.0
Max Q Clear Time (g_c+I1), s	7.1	17.1		16.6	3.0	15.7		5.9
Green Ext Time (p_c), s	0.1	4.3		0.0	0.0	4.9		0.3

Intersection Summary			
HCM 2010 Ctrl Delay		30.9	
HCM 2010 LOS		C	

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	6	591	387	6	6	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	7	642	421	7	7	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	421	0	-	0	1076	421
Stage 1	-	-	-	-	421	-
Stage 2	-	-	-	-	655	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1138	-	-	-	215	618
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	481	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1138	-	-	-	213	618
Mov Cap-2 Maneuver	-	-	-	-	213	-
Stage 1	-	-	-	-	632	-
Stage 2	-	-	-	-	476	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1138	-	-	-	317
HCM Lane V/C Ratio	0.006	-	-	-	0.041
HCM Control Delay (s)	8.2	0	-	-	16.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	33	448	116	17	332	17	55	11	66	11	17	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	36	487	126	18	361	18	60	12	72	12	18	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	361	0	0	487	0	0	969	957	487	999	957	361
Stage 1	-	-	-	-	-	-	559	559	-	398	398	-
Stage 2	-	-	-	-	-	-	410	398	-	601	559	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1198	-	-	1066	-	-	233	258	581	222	258	684
Stage 1	-	-	-	-	-	-	513	511	-	628	603	-
Stage 2	-	-	-	-	-	-	619	603	-	487	511	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1198	-	-	1066	-	-	206	241	581	178	241	684
Mov Cap-2 Maneuver	-	-	-	-	-	-	206	241	-	178	241	-
Stage 1	-	-	-	-	-	-	489	487	-	598	590	-
Stage 2	-	-	-	-	-	-	581	590	-	397	487	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4	26.2	22.6
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	310	1198	-	-	1066	-	-	241
HCM Lane V/C Ratio	0.463	0.03	-	-	0.017	-	-	0.153
HCM Control Delay (s)	26.2	8.1	0	-	8.4	0	-	22.6
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.3	0.1	-	-	0.1	-	-	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	475	28	99	260	39	77	33	221	66	33	28
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	24	516	30	108	283	42	84	36	240	72	36	30
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	435	735	625	322	809	694	340	40	269	113	57	47
Arrive On Green	0.02	0.40	0.40	0.05	0.43	0.43	0.19	0.19	0.19	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	213	1418	1721	867	722
Grp Volume(v), veh/h	24	516	30	108	283	42	84	0	276	72	0	66
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1631	1721	0	1589
Q Serve(g_s), s	0.7	20.0	1.0	3.0	8.6	1.3	3.4	0.0	14.0	3.5	0.0	3.4
Cycle Q Clear(g_c), s	0.7	20.0	1.0	3.0	8.6	1.3	3.4	0.0	14.0	3.5	0.0	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.45
Lane Grp Cap(c), veh/h	435	735	625	322	809	694	340	0	310	113	0	104
V/C Ratio(X)	0.06	0.70	0.05	0.34	0.35	0.06	0.25	0.00	0.89	0.64	0.00	0.64
Avail Cap(c_a), veh/h	478	735	625	322	809	694	349	0	318	323	0	299
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.7	21.3	15.6	16.3	16.2	14.1	29.3	0.0	33.6	38.8	0.0	38.8
Incr Delay (d2), s/veh	0.1	5.5	0.1	0.6	1.2	0.2	0.4	0.0	25.0	5.9	0.0	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.3	11.2	0.5	1.5	4.7	0.6	1.7	0.0	8.4	1.8	0.0	1.7
LnGrp Delay(d),s/veh	14.8	26.8	15.7	16.9	17.4	14.3	29.7	0.0	58.6	44.7	0.0	45.1
LnGrp LOS	B	C	B	B	B	B	C		E	D		D
Approach Vol, veh/h		570			433			360			138	
Approach Delay, s/veh		25.7			17.0			51.8			44.9	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.6	40.3		21.6	8.9	43.0		11.7
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	4.4	34.1		* 17	4.0	34.5		16.0
Max Q Clear Time (g_c+I1), s	5.0	22.0		16.0	2.7	10.6		5.5
Green Ext Time (p_c), s	0.0	3.8		0.1	0.0	5.0		0.3

Intersection Summary			
HCM 2010 Ctrl Delay		31.2	
HCM 2010 LOS		C	

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	505	15	52	525	6	37	0	38	3	0	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	2	549	16	57	571	7	40	0	41	3	0	7
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	115	637	547	169	838	719	338	17	309	210	23	435
Arrive On Green	0.35	0.35	0.35	0.01	0.15	0.15	0.41	0.00	0.41	0.41	0.00	0.41
Sat Flow, veh/h	832	1845	1583	1774	1845	1583	692	42	752	397	56	1058
Grp Volume(v), veh/h	2	549	16	57	571	7	81	0	0	10	0	0
Grp Sat Flow(s),veh/h/ln	832	1845	1583	1774	1845	1583	1485	0	0	1511	0	0
Q Serve(g_s), s	0.2	27.7	0.7	0.0	29.3	0.4	1.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	29.5	27.7	0.7	0.0	29.3	0.4	3.1	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.49		0.51	0.30		0.70
Lane Grp Cap(c), veh/h	115	637	547	169	838	719	664	0	0	668	0	0
V/C Ratio(X)	0.02	0.86	0.03	0.34	0.68	0.01	0.12	0.00	0.00	0.01	0.00	0.00
Avail Cap(c_a), veh/h	263	965	828	212	1205	1034	664	0	0	668	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	45.0	30.5	21.7	46.2	35.7	23.4	18.2	0.0	0.0	17.5	0.0	0.0
Incr Delay (d2), s/veh	0.1	5.3	0.0	1.2	1.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	15.0	0.3	1.6	15.2	0.2	1.5	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	45.1	35.8	21.7	47.4	36.7	23.4	18.6	0.0	0.0	17.5	0.0	0.0
LnGrp LOS	D	D	C	D	D	C	B			B		
Approach Vol, veh/h		567			635			81			10	
Approach Delay, s/veh		35.4			37.5			18.6			17.5	
Approach LOS		D			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		46.9	10.9	42.2		46.9		53.1
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 21	5.6	* 52		* 21		65.3
Max Q Clear Time (g_c+I1), s		5.1	2.0	31.5		2.4		31.3
Green Ext Time (p_c), s		0.4	1.2	3.0		0.4		3.5

Intersection Summary	
HCM 2010 Ctrl Delay	35.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	14.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	411	117	49	457	20	108	9	42	8	14	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	20	447	127	53	497	22	117	10	46	9	15	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	497	0	0	447	0	0	1107	1089	447	1117	1089	497
Stage 1	-	-	-	-	-	-	486	486	-	603	603	-
Stage 2	-	-	-	-	-	-	621	603	-	514	486	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.52	6.92	6.42	7.52	6.92	6.42
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1067	-	-	1103	-	-	166	191	597	163	191	557
Stage 1	-	-	-	-	-	-	533	522	-	454	457	-
Stage 2	-	-	-	-	-	-	443	457	-	513	522	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1067	-	-	1103	-	-	142	178	597	137	178	557
Mov Cap-2 Maneuver	-	-	-	-	-	-	142	178	-	137	178	-
Stage 1	-	-	-	-	-	-	523	512	-	445	435	-
Stage 2	-	-	-	-	-	-	393	435	-	456	512	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.8	109.4	23.7
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	180	1067	-	-	1103	-	-	236
HCM Lane V/C Ratio	0.96	0.018	-	-	0.048	-	-	0.184
HCM Control Delay (s)	109.4	8.4	-	-	8.4	-	-	23.7
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	7.6	0.1	-	-	0.2	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	406	28	160	420	49	77	38	217	73	35	28
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	30	441	30	174	457	53	84	41	236	79	38	30
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	378	819	696	483	928	796	297	40	231	115	60	47
Arrive On Green	0.03	0.59	0.59	0.07	0.50	0.50	0.17	0.17	0.17	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	242	1393	1721	890	703
Grp Volume(v), veh/h	30	441	30	174	457	53	84	0	277	79	0	68
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1635	1721	0	1593
Q Serve(g_s), s	1.0	14.4	0.8	5.2	16.3	1.7	4.1	0.0	16.6	4.5	0.0	4.2
Cycle Q Clear(g_c), s	1.0	14.4	0.8	5.2	16.3	1.7	4.1	0.0	16.6	4.5	0.0	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.44
Lane Grp Cap(c), veh/h	378	819	696	483	928	796	297	0	271	115	0	107
V/C Ratio(X)	0.08	0.54	0.04	0.36	0.49	0.07	0.28	0.00	1.02	0.69	0.00	0.64
Avail Cap(c_a), veh/h	406	819	696	513	928	796	297	0	271	275	0	255
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.9	14.2	11.4	14.1	16.8	13.2	36.5	0.0	41.7	45.6	0.0	45.5
Incr Delay (d2), s/veh	0.1	2.5	0.1	0.5	1.9	0.2	0.5	0.0	59.9	7.0	0.0	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	7.8	0.4	2.6	8.9	0.8	2.1	0.0	12.0	2.4	0.0	2.0
LnGrp Delay(d),s/veh	15.0	16.7	11.5	14.6	18.7	13.3	37.0	0.0	101.7	52.7	0.0	51.7
LnGrp LOS	B	B	B	B	B	B	D		F	D		D
Approach Vol, veh/h		501			684			361			147	
Approach Delay, s/veh		16.3			17.2			86.7			52.2	
Approach LOS		B			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.4	50.8		22.0	9.5	55.7		12.8
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	8.8	33.7		* 17	4.0	38.5		16.0
Max Q Clear Time (g_c+I1), s	7.2	16.4		18.6	3.0	18.3		6.5
Green Ext Time (p_c), s	0.1	5.1		0.0	0.0	5.4		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	34.8
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	510	41	0	568	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	554	45	0	617	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	554	0	1171	554
Stage 1	-	-	-	-	554	-
Stage 2	-	-	-	-	617	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1016	-	213	532
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	538	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1016	-	213	532
Mov Cap-2 Maneuver	-	-	-	-	213	-
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	538	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	532	-	-	1016	-
HCM Lane V/C Ratio	0.025	-	-	-	-
HCM Control Delay (s)	11.9	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	593	29	71	377	6	52	0	77	6	0	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	7	645	32	77	410	7	57	0	84	7	0	7
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	433	711	610	155	907	778	260	19	341	314	16	279
Arrive On Green	0.39	0.39	0.39	0.07	0.98	0.98	0.38	0.00	0.38	0.38	0.00	0.38
Sat Flow, veh/h	965	1845	1583	1774	1845	1583	558	49	895	690	42	732
Grp Volume(v), veh/h	7	645	32	77	410	7	141	0	0	14	0	0
Grp Sat Flow(s),veh/h/ln	965	1845	1583	1774	1845	1583	1503	0	0	1463	0	0
Q Serve(g_s), s	0.5	35.0	1.3	0.0	0.7	0.0	3.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.2	35.0	1.3	0.0	0.7	0.0	6.5	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.40		0.60	0.50		0.50
Lane Grp Cap(c), veh/h	433	711	610	155	907	778	620	0	0	608	0	0
V/C Ratio(X)	0.02	0.91	0.05	0.50	0.45	0.01	0.23	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	592	1015	871	206	1258	1080	620	0	0	608	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.6	30.8	20.4	47.1	0.5	0.5	22.2	0.0	0.0	20.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	8.8	0.0	2.4	0.4	0.0	0.9	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	19.5	0.6	2.2	0.3	0.0	3.0	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	20.6	39.6	20.5	49.5	0.8	0.5	23.1	0.0	0.0	20.5	0.0	0.0
LnGrp LOS	C	D	C	D	A	A	C			C		
Approach Vol, veh/h		684			494			141			14	
Approach Delay, s/veh		38.5			8.4			23.1			20.5	
Approach LOS		D			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		46.2	11.3	48.5		46.2		59.8
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 20	6.6	* 58		* 20		72.3
Max Q Clear Time (g_c+I1), s		8.5	2.0	37.0		2.5		2.7
Green Ext Time (p_c), s		0.6	1.0	3.8		0.8		2.5

Intersection Summary	
HCM 2010 Ctrl Delay	25.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	33	499	144	40	373	17	75	11	96	11	17	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	36	542	157	43	405	18	82	12	104	12	18	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	405	0	0	542	0	0	1119	1106	542	1164	1106	405
Stage 1	-	-	-	-	-	-	614	614	-	492	492	-
Stage 2	-	-	-	-	-	-	505	492	-	672	614	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1154	-	-	1017	-	-	184	210	540	171	210	646
Stage 1	-	-	-	-	-	-	479	483	-	558	548	-
Stage 2	-	-	-	-	-	-	549	548	-	445	483	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1154	-	-	1017	-	-	160	195	540	124	195	646
Mov Cap-2 Maneuver	-	-	-	-	-	-	160	195	-	124	195	-
Stage 1	-	-	-	-	-	-	464	468	-	541	525	-
Stage 2	-	-	-	-	-	-	502	525	-	339	468	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.8	52.9	29.4
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	259	1154	-	-	1017	-	-	184
HCM Lane V/C Ratio	0.764	0.031	-	-	0.043	-	-	0.201
HCM Control Delay (s)	52.9	8.2	-	-	8.7	-	-	29.4
HCM Lane LOS	F	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	5.6	0.1	-	-	0.1	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	556	28	99	324	39	77	33	221	66	33	28
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1863	1845	1863	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	24	604	30	108	352	42	84	36	240	72	36	30
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	474	920	782	545	974	836	281	33	222	106	53	44
Arrive On Green	0.04	1.00	1.00	0.05	0.53	0.53	0.16	0.16	0.16	0.06	0.06	0.06
Sat Flow, veh/h	1620	1835	1560	1774	1845	1583	1792	213	1418	1721	867	722
Grp Volume(v), veh/h	24	604	30	108	352	42	84	0	276	72	0	66
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1774	1845	1583	1792	0	1631	1721	0	1589
Q Serve(g_s), s	0.8	0.0	0.0	3.1	11.8	1.4	4.4	0.0	16.6	4.3	0.0	4.3
Cycle Q Clear(g_c), s	0.8	0.0	0.0	3.1	11.8	1.4	4.4	0.0	16.6	4.3	0.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.45
Lane Grp Cap(c), veh/h	474	920	782	545	974	836	281	0	255	106	0	98
V/C Ratio(X)	0.05	0.66	0.04	0.20	0.36	0.05	0.30	0.00	1.08	0.68	0.00	0.67
Avail Cap(c_a), veh/h	504	920	782	545	974	836	281	0	255	260	0	240
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	0.0	11.6	14.6	12.1	39.6	0.0	44.7	48.7	0.0	48.7
Incr Delay (d2), s/veh	0.0	3.6	0.1	0.2	1.0	0.1	0.6	0.0	79.4	7.4	0.0	7.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.3	0.9	0.0	1.5	6.2	0.6	2.2	0.0	13.1	2.3	0.0	2.1
LnGrp Delay(d),s/veh	12.5	3.6	0.1	11.8	15.6	12.3	40.1	0.0	124.1	56.1	0.0	56.5
LnGrp LOS	B	A	A	B	B	B	D		F	E		E
Approach Vol, veh/h		658			502			360			138	
Approach Delay, s/veh		3.8			14.5			104.5			56.3	
Approach LOS		A			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	59.4		22.0	9.2	62.1		12.6
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	4.8	43.7		* 17	4.0	44.5		16.0
Max Q Clear Time (g_c+I1), s	5.1	2.0		18.6	2.8	13.8		6.3
Green Ext Time (p_c), s	0.0	6.9		0.0	0.0	6.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	33.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	608	84	0	435	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	661	91	0	473	0	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	661	0	1134	661
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	473	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	927	-	224	462
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	927	-	224	462
Mov Cap-2 Maneuver	-	-	-	-	224	-
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	627	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	462	-	-	927	-
HCM Lane V/C Ratio	0.047	-	-	-	-
HCM Control Delay (s)	13.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	549	584	6	4	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	2	597	635	7	4	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	635	0	-	0	1236	635
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	601	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	948	-	-	-	170	462
Stage 1	-	-	-	-	492	-
Stage 2	-	-	-	-	512	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	948	-	-	-	169	462
Mov Cap-2 Maneuver	-	-	-	-	169	-
Stage 1	-	-	-	-	492	-
Stage 2	-	-	-	-	510	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	948	-	-	-	273
HCM Lane V/C Ratio	0.002	-	-	-	0.04
HCM Control Delay (s)	8.8	0	-	-	18.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	19	420	114	34	468	22	103	10	30	8	16	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	21	457	124	37	509	24	112	11	33	9	17	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	509	0	0	457	0	0	1100	1081	457	1103	1081	509
Stage 1	-	-	-	-	-	-	498	498	-	583	583	-
Stage 2	-	-	-	-	-	-	602	583	-	520	498	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1056	-	-	1093	-	-	190	218	604	189	218	564
Stage 1	-	-	-	-	-	-	554	544	-	498	499	-
Stage 2	-	-	-	-	-	-	486	499	-	539	544	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1056	-	-	1093	-	-	161	201	604	161	201	564
Mov Cap-2 Maneuver	-	-	-	-	-	-	161	201	-	161	201	-
Stage 1	-	-	-	-	-	-	537	528	-	483	475	-
Stage 2	-	-	-	-	-	-	429	475	-	484	528	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	73	21.5
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	193	1056	-	-	1093	-	-	264
HCM Lane V/C Ratio	0.805	0.02	-	-	0.034	-	-	0.177
HCM Control Delay (s)	73	8.5	0	-	8.4	0	-	21.5
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	5.6	0.1	-	-	0.1	-	-	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	398	30	175	409	53	85	41	237	80	39	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	33	433	33	190	445	58	92	45	258	87	42	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	336	714	607	404	823	707	330	45	257	128	66	52
Arrive On Green	0.02	0.39	0.39	0.08	0.44	0.44	0.18	0.18	0.18	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	243	1393	1721	892	701
Grp Volume(v), veh/h	33	433	33	190	445	58	92	0	303	87	0	75
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1636	1721	0	1594
Q Serve(g_s), s	1.1	17.0	1.2	5.7	15.7	1.9	4.0	0.0	16.6	4.4	0.0	4.1
Cycle Q Clear(g_c), s	1.1	17.0	1.2	5.7	15.7	1.9	4.0	0.0	16.6	4.4	0.0	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.44
Lane Grp Cap(c), veh/h	336	714	607	404	823	707	330	0	302	128	0	118
V/C Ratio(X)	0.10	0.61	0.05	0.47	0.54	0.08	0.28	0.00	1.00	0.68	0.00	0.63
Avail Cap(c_a), veh/h	368	714	607	404	823	707	330	0	302	306	0	283
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	22.0	17.2	16.4	18.5	14.7	31.6	0.0	36.7	40.6	0.0	40.5
Incr Delay (d2), s/veh	0.1	3.8	0.2	0.9	2.5	0.2	0.5	0.0	52.9	6.2	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	9.3	0.5	2.8	8.6	0.9	2.0	0.0	11.9	2.3	0.0	2.0
LnGrp Delay(d),s/veh	16.6	25.8	17.3	17.3	21.1	14.9	32.0	0.0	89.6	46.8	0.0	46.0
LnGrp LOS	B	C	B	B	C	B	C		F	D		D
Approach Vol, veh/h		499			693			395			162	
Approach Delay, s/veh		24.6			19.5			76.2			46.4	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	41.2		22.0	9.4	45.8		12.8
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	6.8	25.7		* 17	4.0	28.5		16.0
Max Q Clear Time (g_c+I1), s	7.7	19.0		18.6	3.1	17.7		6.4
Green Ext Time (p_c), s	0.0	2.9		0.0	0.0	4.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	36.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	6	647	424	6	6	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	7	703	461	7	7	7

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	461	0	-	0	1177	461
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	716	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1100	-	-	-	185	585
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	447	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1100	-	-	-	183	585
Mov Cap-2 Maneuver	-	-	-	-	183	-
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	443	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	18.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1100	-	-	-	279
HCM Lane V/C Ratio	0.006	-	-	-	0.047
HCM Control Delay (s)	8.3	0	-	-	18.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	36	490	127	18	363	18	61	12	73	12	18	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	39	533	138	20	395	20	66	13	79	13	20	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	395	0	0	533	0	0	1058	1045	533	1091	1045	395
Stage 1	-	-	-	-	-	-	611	611	-	434	434	-
Stage 2	-	-	-	-	-	-	447	434	-	657	611	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1164	-	-	1025	-	-	203	229	547	192	229	654
Stage 1	-	-	-	-	-	-	481	484	-	600	581	-
Stage 2	-	-	-	-	-	-	591	581	-	454	484	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1164	-	-	1025	-	-	176	211	547	147	211	654
Mov Cap-2 Maneuver	-	-	-	-	-	-	176	211	-	147	211	-
Stage 1	-	-	-	-	-	-	455	457	-	567	566	-
Stage 2	-	-	-	-	-	-	551	566	-	356	457	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.4	35.2	26.8
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	272	1164	-	-	1025	-	-	204
HCM Lane V/C Ratio	0.583	0.034	-	-	0.019	-	-	0.192
HCM Control Delay (s)	35.2	8.2	0	-	8.6	0	-	26.8
HCM Lane LOS	E	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	3.4	0.1	-	-	0.1	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	520	30	109	284	42	85	36	242	73	36	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1716	1843
Adj Flow Rate, veh/h	26	565	33	118	309	46	92	39	263	79	39	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	431	780	663	301	840	721	330	39	262	119	60	50
Arrive On Green	0.02	0.43	0.43	0.04	0.45	0.45	0.18	0.18	0.18	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	211	1420	1721	860	728
Grp Volume(v), veh/h	26	565	33	118	309	46	92	0	302	79	0	72
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1631	1721	0	1588
Q Serve(g_s), s	0.8	23.0	1.1	3.3	9.8	1.5	4.0	0.0	16.6	4.0	0.0	4.0
Cycle Q Clear(g_c), s	0.8	23.0	1.1	3.3	9.8	1.5	4.0	0.0	16.6	4.0	0.0	4.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.46
Lane Grp Cap(c), veh/h	431	780	663	301	840	721	330	0	301	119	0	110
V/C Ratio(X)	0.06	0.72	0.05	0.39	0.37	0.06	0.28	0.00	1.00	0.66	0.00	0.66
Avail Cap(c_a), veh/h	469	780	663	301	840	721	330	0	301	306	0	282
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	21.5	15.2	17.0	16.4	14.1	31.6	0.0	36.7	40.9	0.0	40.8
Incr Delay (d2), s/veh	0.1	5.8	0.1	0.8	1.2	0.2	0.5	0.0	52.9	6.2	0.0	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	12.9	0.5	1.7	5.4	0.7	2.0	0.0	11.9	2.1	0.0	1.9
LnGrp Delay(d),s/veh	14.4	27.3	15.3	17.8	17.6	14.3	32.0	0.0	89.6	47.1	0.0	47.3
LnGrp LOS	B	C	B	B	B	B	C		F	D		D
Approach Vol, veh/h		624			473			394			151	
Approach Delay, s/veh		26.1			17.4			76.2			47.2	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.2	44.5		22.0	9.1	46.6		12.3
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	4.0	28.5		* 17	4.0	28.5		16.0
Max Q Clear Time (g_c+I1), s	5.3	25.0		18.6	2.8	11.8		6.0
Green Ext Time (p_c), s	0.0	1.7		0.0	0.0	4.9		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	37.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	552	15	52	575	6	37	0	38	4	0	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	2	600	16	57	625	7	40	0	41	4	0	7
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	119	694	596	177	902	774	310	18	279	231	22	353
Arrive On Green	0.38	0.38	0.38	0.01	0.16	0.16	0.37	0.00	0.37	0.37	0.00	0.37
Sat Flow, veh/h	792	1845	1583	1774	1845	1583	686	48	752	485	59	953
Grp Volume(v), veh/h	2	600	16	57	625	7	81	0	0	11	0	0
Grp Sat Flow(s),veh/h/ln	792	1845	1583	1774	1845	1583	1486	0	0	1497	0	0
Q Serve(g_s), s	0.2	28.9	0.6	0.0	30.7	0.4	1.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	30.9	28.9	0.6	0.0	30.7	0.4	3.2	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.49		0.51	0.36		0.64
Lane Grp Cap(c), veh/h	119	694	596	177	902	774	607	0	0	606	0	0
V/C Ratio(X)	0.02	0.86	0.03	0.32	0.69	0.01	0.13	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	237	967	830	204	1197	1028	607	0	0	606	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	42.9	27.7	18.9	43.9	33.5	20.7	20.0	0.0	0.0	19.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	6.1	0.0	1.0	1.1	0.0	0.5	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	15.8	0.3	1.5	16.0	0.2	1.5	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	42.9	33.8	18.9	45.0	34.6	20.7	20.5	0.0	0.0	19.2	0.0	0.0
LnGrp LOS	D	C	B	D	C	C	C			B		
Approach Vol, veh/h		618			689			81			11	
Approach Delay, s/veh		33.4			35.3			20.5			19.2	
Approach LOS		C			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		41.4	10.8	43.8		41.4		54.6
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 20	4.6	* 50		* 20		62.3
Max Q Clear Time (g_c+I1), s		5.2	2.0	32.9		2.4		32.7
Green Ext Time (p_c), s		0.4	1.0	3.2		0.4		3.9

Intersection Summary	
HCM 2010 Ctrl Delay	33.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	19.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	19	448	127	52	497	22	117	10	44	8	16	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	21	487	138	57	540	24	127	11	48	9	17	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	540	0	0	487	0	0	1200	1181	487	1211	1181	540
Stage 1	-	-	-	-	-	-	528	528	-	653	653	-
Stage 2	-	-	-	-	-	-	672	653	-	558	528	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1028	-	-	1066	-	-	162	190	581	159	190	542
Stage 1	-	-	-	-	-	-	534	528	-	456	464	-
Stage 2	-	-	-	-	-	-	445	464	-	514	528	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1028	-	-	1066	-	-	136	176	581	131	176	542
Mov Cap-2 Maneuver	-	-	-	-	-	-	136	176	-	131	176	-
Stage 1	-	-	-	-	-	-	523	517	-	447	439	-
Stage 2	-	-	-	-	-	-	389	439	-	452	517	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.8	146.6	24.6
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	172	1028	-	-	1066	-	-	230
HCM Lane V/C Ratio	1.081	0.02	-	-	0.053	-	-	0.203
HCM Control Delay (s)	146.6	8.6	-	-	8.6	-	-	24.6
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	9.3	0.1	-	-	0.2	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	440	30	175	456	53	85	41	237	80	39	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	33	478	33	190	496	58	92	45	258	87	42	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	332	761	647	431	881	756	310	42	241	125	65	51
Arrive On Green	0.03	0.55	0.55	0.08	0.47	0.47	0.17	0.17	0.17	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	243	1393	1721	892	701
Grp Volume(v), veh/h	33	478	33	190	496	58	92	0	303	87	0	75
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1636	1721	0	1594
Q Serve(g_s), s	1.1	17.1	0.9	5.7	18.3	1.9	4.3	0.0	16.6	4.7	0.0	4.4
Cycle Q Clear(g_c), s	1.1	17.1	0.9	5.7	18.3	1.9	4.3	0.0	16.6	4.7	0.0	4.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.44
Lane Grp Cap(c), veh/h	332	761	647	431	881	756	310	0	283	125	0	116
V/C Ratio(X)	0.10	0.63	0.05	0.44	0.56	0.08	0.30	0.00	1.07	0.69	0.00	0.65
Avail Cap(c_a), veh/h	360	761	647	434	881	756	310	0	283	287	0	266
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.2	16.4	12.8	15.6	18.3	14.0	34.6	0.0	39.7	43.5	0.0	43.3
Incr Delay (d2), s/veh	0.1	3.9	0.1	0.7	2.6	0.2	0.5	0.0	73.7	6.7	0.0	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	9.3	0.4	2.8	10.0	0.9	2.2	0.0	13.3	2.5	0.0	2.1
LnGrp Delay(d),s/veh	16.3	20.3	12.9	16.3	20.9	14.2	35.1	0.0	113.4	50.1	0.0	49.2
LnGrp LOS	B	C	B	B	C	B	D		F	D		D
Approach Vol, veh/h		544			744			395			162	
Approach Delay, s/veh		19.6			19.2			95.2			49.7	
Approach LOS		B			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.9	46.0		22.0	9.5	51.4		13.1
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	7.8	30.7		* 17	4.0	34.5		16.0
Max Q Clear Time (g_c+I1), s	7.7	19.1		18.6	3.1	20.3		6.7
Green Ext Time (p_c), s	0.0	4.6		0.0	0.0	5.1		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	38.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	557	41	0	618	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	605	45	0	672	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	605	0	1277	605
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	672	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	973	-	184	498
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	508	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	973	-	184	498
Mov Cap-2 Maneuver	-	-	-	-	184	-
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	498	-	-	973	-
HCM Lane V/C Ratio	0.026	-	-	-	-
HCM Control Delay (s)	12.4	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	649	29	71	414	6	52	0	77	6	0	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	7	705	32	77	450	7	57	0	84	7	0	7
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	253	772	662	156	968	831	240	19	312	289	16	254
Arrive On Green	0.42	0.42	0.42	0.01	0.17	0.17	0.35	0.00	0.35	0.35	0.00	0.35
Sat Flow, veh/h	931	1845	1583	1774	1845	1583	554	54	896	686	46	732
Grp Volume(v), veh/h	7	705	32	77	450	7	141	0	0	14	0	0
Grp Sat Flow(s),veh/h/ln	931	1845	1583	1774	1845	1583	1504	0	0	1463	0	0
Q Serve(g_s), s	0.6	38.1	1.3	0.0	23.3	0.4	3.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	23.9	38.1	1.3	0.0	23.3	0.4	6.8	0.0	0.0	0.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.40		0.60	0.50		0.50
Lane Grp Cap(c), veh/h	253	772	662	156	968	831	571	0	0	560	0	0
V/C Ratio(X)	0.03	0.91	0.05	0.49	0.46	0.01	0.25	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	393	1049	901	190	1276	1095	571	0	0	560	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	34.3	29.0	18.3	49.9	30.4	21.0	24.7	0.0	0.0	22.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	9.6	0.0	2.4	0.3	0.0	1.0	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.2	21.4	0.6	2.3	12.0	0.2	3.1	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	34.3	38.6	18.3	52.2	30.8	21.0	25.7	0.0	0.0	22.8	0.0	0.0
LnGrp LOS	C	D	B	D	C	C	C			C		
Approach Vol, veh/h		744			534			141			14	
Approach Delay, s/veh		37.7			33.7			25.7			22.8	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		42.7	11.3	52.0		42.7		63.3
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 19	5.6	* 60		* 19		73.3
Max Q Clear Time (g_c+I1), s		8.8	2.0	40.1		2.6		25.3
Green Ext Time (p_c), s		0.6	0.9	4.2		0.8		2.7

Intersection Summary	
HCM 2010 Ctrl Delay	34.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	13.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	36	541	155	41	404	18	81	12	103	12	18	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	39	588	168	45	439	20	88	13	112	13	20	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	439	0	0	588	0	0	1207	1194	588	1257	1194	439
Stage 1	-	-	-	-	-	-	666	666	-	528	528	-
Stage 2	-	-	-	-	-	-	541	528	-	729	666	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1121	-	-	977	-	-	160	187	509	148	187	618
Stage 1	-	-	-	-	-	-	449	457	-	534	528	-
Stage 2	-	-	-	-	-	-	525	528	-	414	457	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1121	-	-	977	-	-	136	172	509	102	172	618
Mov Cap-2 Maneuver	-	-	-	-	-	-	136	172	-	102	172	-
Stage 1	-	-	-	-	-	-	433	441	-	515	504	-
Stage 2	-	-	-	-	-	-	476	504	-	302	441	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.8	91.2	35.9
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	226	1121	-	-	977	-	-	155
HCM Lane V/C Ratio	0.943	0.035	-	-	0.046	-	-	0.252
HCM Control Delay (s)	91.2	8.3	-	-	8.9	-	-	35.9
HCM Lane LOS	F	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	8.2	0.1	-	-	0.1	-	-	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	601	30	109	348	42	85	36	242	73	36	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1716	1843
Adj Flow Rate, veh/h	26	653	33	118	378	46	92	39	263	79	39	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	452	904	769	320	978	839	281	33	222	114	57	48
Arrive On Green	0.02	0.49	0.49	0.05	0.52	0.52	0.16	0.16	0.16	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	211	1420	1721	860	728
Grp Volume(v), veh/h	26	653	33	118	378	46	92	0	302	79	0	72
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1631	1721	0	1588
Q Serve(g_s), s	0.8	29.7	1.2	3.4	12.8	1.5	4.8	0.0	16.6	4.8	0.0	4.7
Cycle Q Clear(g_c), s	0.8	29.7	1.2	3.4	12.8	1.5	4.8	0.0	16.6	4.8	0.0	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.46
Lane Grp Cap(c), veh/h	452	904	769	320	978	839	281	0	255	114	0	105
V/C Ratio(X)	0.06	0.72	0.04	0.37	0.39	0.05	0.33	0.00	1.18	0.69	0.00	0.69
Avail Cap(c_a), veh/h	481	904	769	329	978	839	281	0	255	260	0	240
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.2	21.2	13.9	16.8	15.2	12.5	39.7	0.0	44.7	48.4	0.0	48.4
Incr Delay (d2), s/veh	0.1	5.0	0.1	0.7	1.2	0.1	0.7	0.0	114.8	7.4	0.0	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	16.1	0.5	1.7	6.9	0.7	2.5	0.0	15.6	2.5	0.0	2.3
LnGrp Delay(d),s/veh	13.3	26.1	14.0	17.5	16.3	12.6	40.4	0.0	159.5	55.8	0.0	56.1
LnGrp LOS	B	C	B	B	B	B	D		F	E		E
Approach Vol, veh/h		712			542			394			151	
Approach Delay, s/veh		25.1			16.3			131.7			56.0	
Approach LOS		C			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.4	58.5		22.0	9.3	61.6		13.1
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	5.8	42.7		* 17	4.0	44.5		16.0
Max Q Clear Time (g_c+I1), s	5.4	31.7		18.6	2.8	14.8		6.8
Green Ext Time (p_c), s	0.0	4.8		0.0	0.0	7.3		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	48.4
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	664	84	0	472	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	722	91	0	513	0	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	722	0	1235	722
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	513	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	880	-	195	427
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	601	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	880	-	195	427
Mov Cap-2 Maneuver	-	-	-	-	195	-
Stage 1	-	-	-	-	481	-
Stage 2	-	-	-	-	601	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	427	-	-	880	-
HCM Lane V/C Ratio	0.051	-	-	-	-
HCM Control Delay (s)	13.9	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	648	43	69	632	6	83	0	85	4	0	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	2	704	47	75	687	7	90	0	92	4	0	7
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	123	772	662	162	978	840	283	17	252	211	21	321
Arrive On Green	0.42	0.42	0.42	0.01	0.18	0.18	0.33	0.00	0.33	0.33	0.00	0.33
Sat Flow, veh/h	747	1845	1583	1774	1845	1583	684	51	752	485	63	959
Grp Volume(v), veh/h	2	704	47	75	687	7	182	0	0	11	0	0
Grp Sat Flow(s),veh/h/ln	747	1845	1583	1774	1845	1583	1487	0	0	1507	0	0
Q Serve(g_s), s	0.3	35.9	1.8	0.0	35.0	0.4	7.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	35.3	35.9	1.8	0.0	35.0	0.4	9.0	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.49		0.51	0.36		0.64
Lane Grp Cap(c), veh/h	123	772	662	162	978	840	552	0	0	554	0	0
V/C Ratio(X)	0.02	0.91	0.07	0.46	0.70	0.01	0.33	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	216	1002	860	196	1238	1062	552	0	0	554	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	43.5	27.4	17.4	47.0	33.8	19.5	25.0	0.0	0.0	22.3	0.0	0.0
Incr Delay (d2), s/veh	0.1	10.3	0.0	2.1	1.3	0.0	1.6	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	20.4	0.8	2.1	18.2	0.2	4.0	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	43.6	37.6	17.5	49.0	35.1	19.5	26.6	0.0	0.0	22.3	0.0	0.0
LnGrp LOS	D	D	B	D	D	B	C			C		
Approach Vol, veh/h		753			769			182			11	
Approach Delay, s/veh		36.4			36.3			26.6			22.3	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		39.3	11.2	49.5		39.3		60.7
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 19	5.4	* 54		* 19		67.1
Max Q Clear Time (g_c+I1), s		11.0	2.0	37.9		2.4		37.0
Green Ext Time (p_c), s		0.7	1.4	3.9		1.0		4.5

Intersection Summary	
HCM 2010 Ctrl Delay	35.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	57.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	19	561	157	69	561	22	127	17	55	8	16	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	21	610	171	75	610	24	138	18	60	9	17	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	610	0	0	610	0	0	1430	1411	610	1450	1411	610
Stage 1	-	-	-	-	-	-	651	651	-	760	760	-
Stage 2	-	-	-	-	-	-	779	760	-	690	651	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	969	-	-	959	-	-	~ 112	138	494	109	138	494
Stage 1	-	-	-	-	-	-	457	465	-	398	414	-
Stage 2	-	-	-	-	-	-	389	414	-	435	465	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	969	-	-	959	-	-	~ 89	124	494	79	124	494
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 89	124	-	79	124	-
Stage 1	-	-	-	-	-	-	447	455	-	389	382	-
Stage 2	-	-	-	-	-	-	328	382	-	359	455	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1	$ 461.3	36.5
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	119	969	-	-	959	-	-	160
HCM Lane V/C Ratio	1.818	0.021	-	-	0.078	-	-	0.292
HCM Control Delay (s)	$ 461.3	8.8	-	-	9.1	-	-	36.5
HCM Lane LOS	F	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	16.9	0.1	-	-	0.3	-	-	1.1

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	521	73	244	487	53	135	52	288	80	39	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	33	566	79	265	529	58	147	57	313	87	42	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	328	755	642	393	915	786	297	42	230	124	64	51
Arrive On Green	0.03	0.55	0.55	0.10	0.49	0.49	0.17	0.17	0.17	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	252	1385	1721	892	701
Grp Volume(v), veh/h	33	566	79	265	529	58	147	0	370	87	0	75
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1637	1721	0	1594
Q Serve(g_s), s	1.2	23.7	2.5	8.1	20.1	1.9	7.5	0.0	16.6	4.9	0.0	4.6
Cycle Q Clear(g_c), s	1.2	23.7	2.5	8.1	20.1	1.9	7.5	0.0	16.6	4.9	0.0	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.44
Lane Grp Cap(c), veh/h	328	755	642	393	915	786	297	0	272	124	0	115
V/C Ratio(X)	0.10	0.75	0.12	0.67	0.58	0.07	0.49	0.00	1.36	0.70	0.00	0.65
Avail Cap(c_a), veh/h	354	755	642	405	915	786	297	0	272	275	0	255
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.9	18.7	13.9	17.7	18.2	13.6	37.9	0.0	41.7	45.3	0.0	45.2
Incr Delay (d2), s/veh	0.1	6.7	0.4	4.2	2.7	0.2	1.3	0.0	184.7	7.0	0.0	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	13.2	1.1	4.4	11.0	0.9	3.8	0.0	21.4	2.6	0.0	2.2
LnGrp Delay(d),s/veh	17.0	25.4	14.3	21.9	20.9	13.7	39.2	0.0	226.4	52.3	0.0	51.3
LnGrp LOS	B	C	B	C	C	B	D		F	D		D
Approach Vol, veh/h		678			852			517			162	
Approach Delay, s/veh		23.7			20.7			173.2			51.9	
Approach LOS		C			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.3	47.4		22.0	9.6	55.1		13.3
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	10.8	31.7		* 17	4.0	38.5		16.0
Max Q Clear Time (g_c+I1), s	10.1	25.7		18.6	3.2	22.1		6.9
Green Ext Time (p_c), s	0.1	3.4		0.0	0.0	6.4		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	59.6
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	655	44	0	721	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	712	48	0	784	0	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	712	0	1496	712
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	784	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	888	-	135	432
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	450	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	888	-	135	432
Mov Cap-2 Maneuver	-	-	-	-	135	-
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	450	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	432	-	-	888	-
HCM Lane V/C Ratio	0.096	-	-	-	-
HCM Control Delay (s)	14.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	777	74	79	447	6	69	0	102	6	0	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	7	845	80	86	486	7	75	0	111	7	0	7
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	339	909	780	157	1107	950	195	19	245	226	16	191
Arrive On Green	0.49	0.49	0.49	0.02	0.40	0.40	0.27	0.00	0.27	0.27	0.00	0.27
Sat Flow, veh/h	900	1845	1583	1774	1845	1583	539	69	900	642	59	701
Grp Volume(v), veh/h	7	845	80	86	486	7	186	0	0	14	0	0
Grp Sat Flow(s),veh/h/ln	900	1845	1583	1774	1845	1583	1508	0	0	1402	0	0
Q Serve(g_s), s	0.6	45.5	2.9	0.0	20.3	0.3	7.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	20.9	45.5	2.9	0.0	20.3	0.3	10.6	0.0	0.0	0.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.40		0.60	0.50		0.50
Lane Grp Cap(c), veh/h	339	909	780	157	1107	950	459	0	0	433	0	0
V/C Ratio(X)	0.02	0.93	0.10	0.55	0.44	0.01	0.41	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	416	1067	916	172	1276	1095	459	0	0	433	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.1	25.2	14.4	49.2	18.7	12.8	31.8	0.0	0.0	28.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	12.6	0.1	3.0	0.3	0.0	2.6	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	26.2	1.3	2.6	10.4	0.1	4.8	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	26.1	37.8	14.4	52.2	19.0	12.8	34.4	0.0	0.0	28.4	0.0	0.0
LnGrp LOS	C	D	B	D	B	B	C			C		
Approach Vol, veh/h		932			579			186			14	
Approach Delay, s/veh		35.7			23.9			34.4			28.4	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		34.7	11.4	59.9		34.7		71.3
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 19	4.6	* 61		* 19		73.3
Max Q Clear Time (g_c+I1), s		12.6	2.0	47.5		2.6		22.3
Green Ext Time (p_c), s		0.6	0.8	4.8		1.1		3.0

Intersection Summary	
HCM 2010 Ctrl Delay	31.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	31.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	36	648	201	57	445	18	81	17	104	12	18	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	39	704	218	62	484	20	88	18	113	13	20	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	484	0	0	704	0	0	1404	1391	704	1456	1391	484
Stage 1	-	-	-	-	-	-	783	783	-	608	608	-
Stage 2	-	-	-	-	-	-	621	608	-	848	783	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1079	-	-	885	-	-	117	142	437	108	142	583
Stage 1	-	-	-	-	-	-	387	404	-	483	486	-
Stage 2	-	-	-	-	-	-	475	486	-	356	404	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1079	-	-	885	-	-	94	127	437	66	127	583
Mov Cap-2 Maneuver	-	-	-	-	-	-	94	127	-	66	127	-
Stage 1	-	-	-	-	-	-	373	389	-	466	452	-
Stage 2	-	-	-	-	-	-	418	452	-	242	389	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1	241.2	56.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	164	1079	-	-	885	-	-	108
HCM Lane V/C Ratio	1.339	0.036	-	-	0.07	-	-	0.362
HCM Control Delay (s)	241.2	8.5	-	-	9.4	-	-	56.2
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	13.2	0.1	-	-	0.2	-	-	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	24	635	104	188	365	42	125	48	304	73	36	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1716	1843
Adj Flow Rate, veh/h	26	690	113	204	397	46	136	52	330	79	39	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	440	855	727	304	978	839	281	35	221	114	57	48
Arrive On Green	0.02	0.47	0.47	0.08	0.52	0.52	0.16	0.16	0.16	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	222	1410	1721	860	728
Grp Volume(v), veh/h	26	690	113	204	397	46	136	0	382	79	0	72
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1633	1721	0	1588
Q Serve(g_s), s	0.9	34.1	4.4	6.1	13.6	1.5	7.3	0.0	16.6	4.8	0.0	4.7
Cycle Q Clear(g_c), s	0.9	34.1	4.4	6.1	13.6	1.5	7.3	0.0	16.6	4.8	0.0	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		0.46
Lane Grp Cap(c), veh/h	440	855	727	304	978	839	281	0	256	114	0	105
V/C Ratio(X)	0.06	0.81	0.16	0.67	0.41	0.05	0.48	0.00	1.49	0.69	0.00	0.69
Avail Cap(c_a), veh/h	468	855	727	309	978	839	281	0	256	260	0	240
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.5	24.2	16.3	20.3	15.4	12.5	40.8	0.0	44.7	48.4	0.0	48.4
Incr Delay (d2), s/veh	0.1	8.1	0.5	5.4	1.3	0.1	1.3	0.0	242.0	7.4	0.0	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	19.2	2.0	3.4	7.4	0.7	3.7	0.0	24.6	2.5	0.0	2.3
LnGrp Delay(d),s/veh	14.6	32.3	16.7	25.7	16.6	12.6	42.1	0.0	286.7	55.8	0.0	56.1
LnGrp LOS	B	C	B	C	B	B	D		F	E		E
Approach Vol, veh/h		829			647			518			151	
Approach Delay, s/veh		29.6			19.2			222.4			56.0	
Approach LOS		C			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.3	55.6		22.0	9.3	61.6		13.1
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	8.4	40.1		* 17	4.0	44.5		16.0
Max Q Clear Time (g_c+I1), s	8.1	36.1		18.6	2.9	15.6		6.8
Green Ext Time (p_c), s	0.0	2.4		0.0	0.0	8.1		0.3

Intersection Summary		
HCM 2010 Ctrl Delay		74.9
HCM 2010 LOS		E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	819	75	0	522	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	890	82	0	567	0	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	890	0	1457	890
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	567	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	761	-	143	342
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	568	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	761	-	143	342
Mov Cap-2 Maneuver	-	-	-	-	143	-
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	568	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	342	-	-	761	-
HCM Lane V/C Ratio	0.121	-	-	-	-
HCM Control Delay (s)	17	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	3	607	645	7	4	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	3	660	701	8	4	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	701	0	-	0	1367	701
Stage 1	-	-	-	-	701	-
Stage 2	-	-	-	-	666	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	896	-	-	-	139	422
Stage 1	-	-	-	-	455	-
Stage 2	-	-	-	-	474	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	896	-	-	-	138	422
Mov Cap-2 Maneuver	-	-	-	-	138	-
Stage 1	-	-	-	-	455	-
Stage 2	-	-	-	-	472	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	896	-	-	-	241
HCM Lane V/C Ratio	0.004	-	-	-	0.05
HCM Control Delay (s)	9	0	-	-	20.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	18.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	21	464	126	37	517	24	114	11	33	9	17	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	23	504	137	40	562	26	124	12	36	10	18	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	562	0	0	504	0	0	1213	1192	504	1216	1192	562
Stage 1	-	-	-	-	-	-	550	550	-	642	642	-
Stage 2	-	-	-	-	-	-	663	642	-	574	550	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1009	-	-	1050	-	-	159	187	568	158	187	526
Stage 1	-	-	-	-	-	-	519	516	-	463	469	-
Stage 2	-	-	-	-	-	-	450	469	-	504	516	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1009	-	-	1050	-	-	130	170	568	130	170	526
Mov Cap-2 Maneuver	-	-	-	-	-	-	130	170	-	130	170	-
Stage 1	-	-	-	-	-	-	500	497	-	446	442	-
Stage 2	-	-	-	-	-	-	389	442	-	444	497	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	154.7	25.6
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	158	1009	-	-	1050	-	-	225
HCM Lane V/C Ratio	1.087	0.023	-	-	0.038	-	-	0.227
HCM Control Delay (s)	154.7	8.7	0	-	8.6	0	-	25.6
HCM Lane LOS	F	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	8.9	0.1	-	-	0.1	-	-	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	440	33	194	452	59	94	45	262	88	43	33
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1718	1843
Adj Flow Rate, veh/h	36	478	36	211	491	64	102	49	285	96	47	36
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	252	560	476	317	701	601	371	50	289	142	75	57
Arrive On Green	0.03	0.30	0.30	0.10	0.37	0.37	0.21	0.21	0.21	0.08	0.08	0.08
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	240	1395	1721	903	692
Grp Volume(v), veh/h	36	478	36	211	491	64	102	0	334	96	0	83
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1635	1721	0	1595
Q Serve(g_s), s	1.2	19.8	1.3	6.4	17.9	2.1	3.9	0.0	16.4	4.4	0.0	4.1
Cycle Q Clear(g_c), s	1.2	19.8	1.3	6.4	17.9	2.1	3.9	0.0	16.4	4.4	0.0	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.43
Lane Grp Cap(c), veh/h	252	560	476	317	701	601	371	0	339	142	0	132
V/C Ratio(X)	0.14	0.85	0.08	0.67	0.70	0.11	0.27	0.00	0.99	0.68	0.00	0.63
Avail Cap(c_a), veh/h	287	560	476	317	701	601	371	0	339	341	0	316
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.4	26.3	19.9	19.3	21.4	16.5	26.9	0.0	31.9	35.9	0.0	35.8
Incr Delay (d2), s/veh	0.3	15.3	0.3	5.2	5.8	0.4	0.4	0.0	45.2	5.5	0.0	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.6	12.3	0.6	3.6	10.4	1.0	1.9	0.0	11.6	2.3	0.0	2.0
LnGrp Delay(d),s/veh	19.6	41.6	20.3	24.5	27.2	16.8	27.3	0.0	77.0	41.4	0.0	40.7
LnGrp LOS	B	D	C	C	C	B	C		E	D		D
Approach Vol, veh/h		550			766			436			179	
Approach Delay, s/veh		38.8			25.6			65.4			41.1	
Approach LOS		D			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	30.8		22.1	9.4	36.4		12.8
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	7.8	24.6		* 17	4.0	28.4		16.0
Max Q Clear Time (g_c+I1), s	8.4	21.8		18.4	3.2	19.9		6.4
Green Ext Time (p_c), s	0.0	1.6		0.0	0.0	3.8		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	39.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	7	715	468	7	7	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	2	2	2
Mvmt Flow	8	777	509	8	8	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	509	0	-	0	1301	509
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	792	-
Critical Hdwy	4.12	-	-	-	6.82	6.42
Critical Hdwy Stg 1	-	-	-	-	5.82	-
Critical Hdwy Stg 2	-	-	-	-	5.82	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1056	-	-	-	154	548
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	409	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1056	-	-	-	152	548
Mov Cap-2 Maneuver	-	-	-	-	152	-
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	404	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	21.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1056	-	-	-	238
HCM Lane V/C Ratio	0.007	-	-	-	0.064
HCM Control Delay (s)	8.4	0	-	-	21.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	40	541	140	20	401	20	67	13	80	13	20	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	200	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	43	588	152	22	436	22	73	14	87	14	22	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	436	0	0	588	0	0	1169	1154	588	1205	1154	436
Stage 1	-	-	-	-	-	-	675	675	-	479	479	-
Stage 2	-	-	-	-	-	-	494	479	-	726	675	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1124	-	-	977	-	-	170	197	509	161	197	620
Stage 1	-	-	-	-	-	-	444	453	-	568	555	-
Stage 2	-	-	-	-	-	-	557	555	-	416	453	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1124	-	-	977	-	-	141	178	509	116	178	620
Mov Cap-2 Maneuver	-	-	-	-	-	-	141	178	-	116	178	-
Stage 1	-	-	-	-	-	-	414	423	-	530	538	-
Stage 2	-	-	-	-	-	-	512	538	-	311	423	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.4	59	33.3
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	227	1124	-	-	977	-	-	170
HCM Lane V/C Ratio	0.766	0.039	-	-	0.022	-	-	0.256
HCM Control Delay (s)	59	8.3	0	-	8.8	0	-	33.3
HCM Lane LOS	F	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	5.4	0.1	-	-	0.1	-	-	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	574	33	120	314	47	94	40	267	80	40	33
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	29	624	36	130	341	51	102	43	290	87	43	36
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	407	762	648	264	834	716	328	39	260	128	64	54
Arrive On Green	0.02	0.42	0.42	0.05	0.45	0.45	0.18	0.18	0.18	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	211	1420	1721	865	724
Grp Volume(v), veh/h	29	624	36	130	341	51	102	0	333	87	0	79
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1631	1721	0	1589
Q Serve(g_s), s	0.9	27.3	1.3	3.8	11.2	1.6	4.5	0.0	16.6	4.5	0.0	4.4
Cycle Q Clear(g_c), s	0.9	27.3	1.3	3.8	11.2	1.6	4.5	0.0	16.6	4.5	0.0	4.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.46
Lane Grp Cap(c), veh/h	407	762	648	264	834	716	328	0	298	128	0	118
V/C Ratio(X)	0.07	0.82	0.06	0.49	0.41	0.07	0.31	0.00	1.12	0.68	0.00	0.67
Avail Cap(c_a), veh/h	441	762	648	264	834	716	328	0	298	303	0	280
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.0	23.5	15.9	18.8	17.1	14.4	32.1	0.0	37.1	40.9	0.0	40.9
Incr Delay (d2), s/veh	0.1	9.5	0.2	1.4	1.5	0.2	0.5	0.0	87.1	6.2	0.0	6.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	15.7	0.6	1.9	6.1	0.8	2.3	0.0	14.6	2.3	0.0	2.1
LnGrp Delay(d),s/veh	15.1	33.0	16.0	20.2	18.5	14.6	32.7	0.0	124.2	47.1	0.0	47.3
LnGrp LOS	B	C	B	C	B	B	C		F	D		D
Approach Vol, veh/h		689			522			435			166	
Approach Delay, s/veh		31.4			18.6			102.7			47.2	
Approach LOS		C			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	43.9		22.0	9.3	46.6		12.8
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	4.8	37.7		* 17	4.0	38.5		16.0
Max Q Clear Time (g_c+I1), s	5.8	29.3		18.6	2.9	13.2		6.5
Green Ext Time (p_c), s	0.0	3.8		0.0	0.0	6.5		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	46.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	610	15	52	636	7	37	0	38	4	0	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	3	663	16	57	691	8	40	0	41	4	0	8
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	112	762	654	172	953	818	296	16	268	203	21	357
Arrive On Green	0.41	0.41	0.41	0.01	0.17	0.17	0.36	0.00	0.36	0.36	0.00	0.36
Sat Flow, veh/h	744	1845	1583	1774	1845	1583	688	45	752	443	58	1002
Grp Volume(v), veh/h	3	663	16	57	691	8	81	0	0	12	0	0
Grp Sat Flow(s),veh/h/ln	744	1845	1583	1774	1845	1583	1485	0	0	1504	0	0
Q Serve(g_s), s	0.4	34.9	0.6	0.0	37.6	0.4	1.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	38.0	34.9	0.6	0.0	37.6	0.4	3.6	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.49		0.51	0.33		0.67
Lane Grp Cap(c), veh/h	112	762	654	172	953	818	580	0	0	581	0	0
V/C Ratio(X)	0.03	0.87	0.02	0.33	0.73	0.01	0.14	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	227	1049	901	194	1258	1080	580	0	0	581	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	47.2	28.5	18.4	47.9	36.8	21.4	23.1	0.0	0.0	22.1	0.0	0.0
Incr Delay (d2), s/veh	0.1	6.0	0.0	1.1	1.4	0.0	0.5	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	19.0	0.3	1.7	19.6	0.2	1.7	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	47.2	34.5	18.4	49.0	38.3	21.4	23.6	0.0	0.0	22.2	0.0	0.0
LnGrp LOS	D	C	B	D	D	C	C			C		
Approach Vol, veh/h		682			756			81			12	
Approach Delay, s/veh		34.2			38.9			23.6			22.2	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		43.5	11.0	51.5		43.5		62.5
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 20	4.6	* 60		* 20		72.3
Max Q Clear Time (g_c+I1), s		5.6	2.0	40.0		2.5		39.6
Green Ext Time (p_c), s		0.4	1.1	3.8		0.4		4.6

Intersection Summary	
HCM 2010 Ctrl Delay	35.9
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	37

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	21	492	139	55	546	24	128	11	47	9	17	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	23	535	151	60	593	26	139	12	51	10	18	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	593	0	0	535	0	0	1314	1293	535	1325	1293	593
Stage 1	-	-	-	-	-	-	580	580	-	713	713	-
Stage 2	-	-	-	-	-	-	734	713	-	612	580	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	983	-	-	1023	-	-	~ 135	163	545	133	163	506
Stage 1	-	-	-	-	-	-	500	500	-	423	435	-
Stage 2	-	-	-	-	-	-	412	435	-	480	500	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	983	-	-	1023	-	-	~ 110	150	545	106	150	506
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 110	150	-	106	150	-
Stage 1	-	-	-	-	-	-	488	488	-	413	409	-
Stage 2	-	-	-	-	-	-	354	409	-	414	488	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.8	289.4	29.7
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	141	983	-	-	1023	-	-	196
HCM Lane V/C Ratio	1.434	0.023	-	-	0.058	-	-	0.261
HCM Control Delay (s)	289.4	8.7	-	-	8.7	-	-	29.7
HCM Lane LOS	F	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	13.3	0.1	-	-	0.2	-	-	1

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	482	33	194	499	59	94	45	262	88	43	33
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1718	1843
Adj Flow Rate, veh/h	36	524	36	211	542	64	102	49	285	96	47	36
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	335	828	704	443	950	815	281	38	219	132	69	53
Arrive On Green	0.03	0.60	0.60	0.08	0.51	0.51	0.16	0.16	0.16	0.08	0.08	0.08
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	240	1395	1721	903	692
Grp Volume(v), veh/h	36	524	36	211	542	64	102	0	334	96	0	83
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1635	1721	0	1595
Q Serve(g_s), s	1.3	19.5	1.0	6.5	21.3	2.2	5.4	0.0	16.6	5.8	0.0	5.4
Cycle Q Clear(g_c), s	1.3	19.5	1.0	6.5	21.3	2.2	5.4	0.0	16.6	5.8	0.0	5.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.43
Lane Grp Cap(c), veh/h	335	828	704	443	950	815	281	0	256	132	0	122
V/C Ratio(X)	0.11	0.63	0.05	0.48	0.57	0.08	0.36	0.00	1.30	0.73	0.00	0.68
Avail Cap(c_a), veh/h	356	828	704	464	950	815	281	0	256	260	0	241
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.9	15.5	11.8	15.3	18.1	13.4	40.0	0.0	44.7	47.9	0.0	47.7
Incr Delay (d2), s/veh	0.1	3.7	0.1	0.8	2.5	0.2	0.8	0.0	162.4	7.5	0.0	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.6	10.7	0.5	3.3	11.6	1.0	2.7	0.0	19.0	3.0	0.0	2.6
LnGrp Delay(d),s/veh	16.1	19.2	12.0	16.1	20.6	13.6	40.8	0.0	207.1	55.3	0.0	54.1
LnGrp LOS	B	B	B	B	C	B	D		F	E		D
Approach Vol, veh/h		596			817			436			179	
Approach Delay, s/veh		18.6			18.9			168.2			54.8	
Approach LOS		B			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.7	54.0		22.0	9.8	60.0		14.2
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	9.8	38.7		* 17	4.0	44.5		16.0
Max Q Clear Time (g_c+I1), s	8.5	21.5		18.6	3.3	23.3		7.8
Green Ext Time (p_c), s	0.1	6.3		0.0	0.0	6.8		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	54.1
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	616	41	0	680	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	670	45	0	739	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	670	0	1409	670
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	739	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	920	-	153	457
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	472	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	920	-	153	457
Mov Cap-2 Maneuver	-	-	-	-	153	-
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	472	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	457	-	-	920	-
HCM Lane V/C Ratio	0.029	-	-	-	-
HCM Control Delay (s)	13.1	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	717	29	71	458	6	52	0	77	7	0	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	8	779	32	77	498	7	57	0	84	8	0	8
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	481	848	728	164	1055	905	209	20	263	253	17	216
Arrive On Green	0.46	0.46	0.46	0.07	1.00	1.00	0.29	0.00	0.29	0.29	0.00	0.29
Sat Flow, veh/h	890	1845	1583	1774	1845	1583	542	68	898	679	58	736
Grp Volume(v), veh/h	8	779	32	77	498	7	141	0	0	16	0	0
Grp Sat Flow(s),veh/h/ln	890	1845	1583	1774	1845	1583	1507	0	0	1473	0	0
Q Serve(g_s), s	0.5	39.5	1.1	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	39.5	1.1	0.0	0.0	0.0	7.0	0.0	0.0	0.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.40		0.60	0.50		0.50
Lane Grp Cap(c), veh/h	481	848	728	164	1055	905	492	0	0	486	0	0
V/C Ratio(X)	0.02	0.92	0.04	0.47	0.47	0.01	0.29	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	585	1063	912	178	1278	1097	492	0	0	486	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.7	25.3	14.9	44.0	0.0	0.0	27.4	0.0	0.0	25.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	10.8	0.0	2.1	0.3	0.0	1.5	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	22.5	0.5	2.1	0.1	0.0	3.2	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	14.7	36.1	14.9	46.0	0.3	0.0	28.8	0.0	0.0	25.3	0.0	0.0
LnGrp LOS	B	D	B	D	A	A	C			C		
Approach Vol, veh/h		819			582			141			16	
Approach Delay, s/veh		35.0			6.4			28.8			25.3	
Approach LOS		D			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		35.1	11.2	53.7		35.1		64.9
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 17	4.3	* 58		* 17		69.3
Max Q Clear Time (g_c+I1), s		9.0	2.0	41.5		2.7		2.0
Green Ext Time (p_c), s		0.5	0.7	4.5		0.7		3.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	27.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	41	592	168	43	442	20	87	13	110	13	20	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	45	643	183	47	480	22	95	14	120	14	22	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	480	0	0	643	0	0	1322	1307	643	1373	1307	480
Stage 1	-	-	-	-	-	-	733	733	-	574	574	-
Stage 2	-	-	-	-	-	-	589	574	-	799	733	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1082	-	-	932	-	-	133	160	473	123	160	586
Stage 1	-	-	-	-	-	-	412	426	-	504	503	-
Stage 2	-	-	-	-	-	-	494	503	-	379	426	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1082	-	-	932	-	-	108	146	473	79	146	586
Mov Cap-2 Maneuver	-	-	-	-	-	-	108	146	-	79	146	-
Stage 1	-	-	-	-	-	-	395	408	-	483	478	-
Stage 2	-	-	-	-	-	-	442	478	-	262	408	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.8	190.8	46.9
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	186	1082	-	-	932	-	-	128
HCM Lane V/C Ratio	1.227	0.041	-	-	0.05	-	-	0.34
HCM Control Delay (s)	190.8	8.5	-	-	9.1	-	-	46.9
HCM Lane LOS	F	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	12.3	0.1	-	-	0.2	-	-	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	655	33	120	378	47	94	40	267	80	40	33
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	29	712	36	130	411	51	102	43	290	87	43	36
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	402	860	731	411	918	788	297	35	236	124	63	52
Arrive On Green	0.04	0.94	0.94	0.04	0.49	0.49	0.17	0.17	0.17	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	211	1420	1721	865	724
Grp Volume(v), veh/h	29	712	36	130	411	51	102	0	333	87	0	79
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1631	1721	0	1589
Q Serve(g_s), s	0.9	10.9	0.2	3.8	14.3	1.7	5.0	0.0	16.6	4.9	0.0	4.9
Cycle Q Clear(g_c), s	0.9	10.9	0.2	3.8	14.3	1.7	5.0	0.0	16.6	4.9	0.0	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.46
Lane Grp Cap(c), veh/h	402	860	731	411	918	788	297	0	271	124	0	115
V/C Ratio(X)	0.07	0.83	0.05	0.32	0.45	0.06	0.34	0.00	1.23	0.70	0.00	0.69
Avail Cap(c_a), veh/h	431	860	731	411	918	788	297	0	271	275	0	254
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	2.0	1.7	13.5	16.6	13.4	36.9	0.0	41.7	45.3	0.0	45.3
Incr Delay (d2), s/veh	0.1	9.0	0.1	0.4	1.6	0.2	0.7	0.0	131.5	6.9	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	6.1	0.1	1.9	7.8	0.8	2.5	0.0	17.3	2.6	0.0	2.4
LnGrp Delay(d),s/veh	13.7	11.0	1.8	14.0	18.2	13.6	37.6	0.0	173.2	52.2	0.0	52.4
LnGrp LOS	B	B	A	B	B	B	D		F	D		D
Approach Vol, veh/h		777			592			435			166	
Approach Delay, s/veh		10.7			16.9			141.4			52.3	
Approach LOS		B			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.6	53.1		22.0	9.4	55.3		13.3
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	4.4	38.1		* 17	4.0	38.5		16.0
Max Q Clear Time (g_c+I1), s	5.8	12.9		18.6	2.9	16.3		6.9
Green Ext Time (p_c), s	0.0	7.9		0.0	0.0	7.5		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	44.9
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	733	84	0	517	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	797	91	0	562	0	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	797	0	1359	797
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	562	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	825	-	164	387
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	571	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	825	-	164	387
Mov Cap-2 Maneuver	-	-	-	-	164	-
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	571	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	387	-	-	825	-
HCM Lane V/C Ratio	0.056	-	-	-	-
HCM Control Delay (s)	14.9	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	706	43	69	693	7	83	0	85	4	0	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	3	767	47	75	753	8	90	0	92	4	0	8
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	125	829	711	141	1003	861	283	14	258	194	18	344
Arrive On Green	0.45	0.45	0.45	0.02	0.36	0.36	0.34	0.00	0.34	0.34	0.00	0.34
Sat Flow, veh/h	702	1845	1583	1774	1845	1583	692	42	750	447	53	1001
Grp Volume(v), veh/h	3	767	47	75	753	8	182	0	0	12	0	0
Grp Sat Flow(s),veh/h/ln	702	1845	1583	1774	1845	1583	1484	0	0	1502	0	0
Q Serve(g_s), s	0.5	47.0	2.0	0.0	42.9	0.4	8.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	43.3	47.0	2.0	0.0	42.9	0.4	10.8	0.0	0.0	0.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.49		0.51	0.33		0.67
Lane Grp Cap(c), veh/h	125	829	711	141	1003	861	555	0	0	556	0	0
V/C Ratio(X)	0.02	0.93	0.07	0.53	0.75	0.01	0.33	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	221	1081	928	170	1281	1099	555	0	0	556	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	49.7	31.2	18.8	56.1	31.0	17.5	29.3	0.0	0.0	26.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	11.1	0.0	3.1	1.9	0.0	1.6	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	26.4	0.9	2.6	22.4	0.2	4.7	0.0	0.0	0.3	0.0	0.0
LnGrp Delay(d),s/veh	49.8	42.2	18.8	59.2	32.9	17.5	30.9	0.0	0.0	26.1	0.0	0.0
LnGrp LOS	D	D	B	E	C	B	C			C		
Approach Vol, veh/h		817			836			182			12	
Approach Delay, s/veh		40.9			35.1			30.9			26.1	
Approach LOS		D			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		47.0	11.4	61.6		47.0		73.0
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 23	5.6	* 70		* 23		83.3
Max Q Clear Time (g_c+I1), s		12.8	2.0	49.0		2.6		44.9
Green Ext Time (p_c), s		0.8	1.6	4.9		1.1		5.3

Intersection Summary	
HCM 2010 Ctrl Delay	37.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	91.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	21	605	169	72	610	24	138	18	58	9	17	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	23	658	184	78	663	26	150	20	63	10	18	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	663	0	0	658	0	0	1543	1523	658	1565	1523	663
Stage 1	-	-	-	-	-	-	703	703	-	820	820	-
Stage 2	-	-	-	-	-	-	840	820	-	745	703	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	926	-	-	920	-	-	~ 94	118	464	90	118	461
Stage 1	-	-	-	-	-	-	428	440	-	369	389	-
Stage 2	-	-	-	-	-	-	360	389	-	406	440	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	926	-	-	920	-	-	~ 71	105	464	61	105	461
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 71	105	-	61	105	-
Stage 1	-	-	-	-	-	-	417	429	-	360	356	-
Stage 2	-	-	-	-	-	-	297	356	-	327	429	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.9	$ 741.4	48.5
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	96	926	-	-	920	-	-	132
HCM Lane V/C Ratio	2.423	0.025	-	-	0.085	-	-	0.387
HCM Control Delay (s)	$ 741.4	9	-	-	9.3	-	-	48.5
HCM Lane LOS	F	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	21.2	0.1	-	-	0.3	-	-	1.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	33	563	76	263	530	59	144	56	313	88	43	33
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1718	1843
Adj Flow Rate, veh/h	36	612	83	286	576	64	157	61	340	96	47	36
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	339	855	726	386	1011	868	278	39	215	128	67	51
Arrive On Green	0.02	0.47	0.47	0.10	0.54	0.54	0.16	0.16	0.16	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	249	1388	1721	903	692
Grp Volume(v), veh/h	36	612	83	286	576	64	157	0	401	96	0	83
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1637	1721	0	1595
Q Serve(g_s), s	1.4	32.1	3.6	9.5	24.5	2.3	9.7	0.0	18.6	6.6	0.0	6.1
Cycle Q Clear(g_c), s	1.4	32.1	3.6	9.5	24.5	2.3	9.7	0.0	18.6	6.6	0.0	6.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.43
Lane Grp Cap(c), veh/h	339	855	726	386	1011	868	278	0	254	128	0	118
V/C Ratio(X)	0.11	0.72	0.11	0.74	0.57	0.07	0.57	0.00	1.58	0.75	0.00	0.70
Avail Cap(c_a), veh/h	356	855	726	417	1011	868	278	0	254	229	0	213
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.1	25.7	18.1	20.4	18.3	13.2	47.0	0.0	50.7	54.5	0.0	54.3
Incr Delay (d2), s/veh	0.1	5.1	0.3	6.4	2.3	0.2	2.6	0.0	279.5	8.6	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.6	17.4	1.6	5.4	13.3	1.1	5.0	0.0	28.1	3.4	0.0	2.9
LnGrp Delay(d),s/veh	17.2	30.8	18.4	26.7	20.7	13.4	49.6	0.0	330.2	63.1	0.0	61.6
LnGrp LOS	B	C	B	C	C	B	D		F	E		E
Approach Vol, veh/h		731			926			558			179	
Approach Delay, s/veh		28.7			22.0			251.2			62.4	
Approach LOS		C			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.9	62.1		24.0	10.0	71.0		15.0
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	13.8	46.7		* 19	4.1	56.4		16.0
Max Q Clear Time (g_c+I1), s	11.5	34.1		20.6	3.4	26.5		8.6
Green Ext Time (p_c), s	0.2	6.1		0.0	0.0	9.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	80.5
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	714	44	0	783	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	776	48	0	851	0	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	776	0	1627	776
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	851	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	840	-	112	397
Stage 1	-	-	-	-	454	-
Stage 2	-	-	-	-	419	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	840	-	112	397
Mov Cap-2 Maneuver	-	-	-	-	112	-
Stage 1	-	-	-	-	454	-
Stage 2	-	-	-	-	419	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	397	-	-	840	-
HCM Lane V/C Ratio	0.104	-	-	-	-
HCM Control Delay (s)	15.1	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	845	74	79	491	7	69	0	102	7	0	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1845	1863	1863	1845	1863	1881	1844	1881	1881	1844	1881
Adj Flow Rate, veh/h	8	918	80	86	534	8	75	0	111	8	0	8
Adj No. of Lanes	1	1	1	1	1	1	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	3	2	2	3	2	2	2	2	2	2	2
Cap, veh/h	373	976	837	130	1132	972	196	15	257	223	12	196
Arrive On Green	0.53	0.53	0.53	0.03	0.61	0.61	0.29	0.00	0.29	0.29	0.00	0.29
Sat Flow, veh/h	860	1845	1583	1774	1845	1583	555	51	897	639	43	683
Grp Volume(v), veh/h	8	918	80	86	534	8	186	0	0	16	0	0
Grp Sat Flow(s),veh/h/ln	860	1845	1583	1774	1845	1583	1503	0	0	1365	0	0
Q Serve(g_s), s	0.8	63.5	3.4	0.3	21.4	0.3	10.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	22.2	63.5	3.4	0.3	21.4	0.3	13.4	0.0	0.0	0.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.40		0.60	0.50		0.50
Lane Grp Cap(c), veh/h	373	976	837	130	1132	972	469	0	0	431	0	0
V/C Ratio(X)	0.02	0.94	0.10	0.66	0.47	0.01	0.40	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	464	1171	1005	153	1347	1156	469	0	0	431	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	27.1	30.0	15.9	63.2	14.3	10.2	39.2	0.0	0.0	34.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	13.1	0.0	8.2	0.3	0.0	2.5	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.2	35.7	1.5	3.4	10.9	0.1	6.0	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	27.1	43.1	15.9	71.4	14.6	10.2	41.8	0.0	0.0	35.1	0.0	0.0
LnGrp LOS	C	D	B	E	B	B	D			D		
Approach Vol, veh/h		1006			628			186			16	
Approach Delay, s/veh		40.8			22.3			41.8			35.1	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6		8
Phs Duration (G+Y+Rc), s		44.8	11.5	79.6		44.8		91.2
Change Period (Y+Rc), s		* 5.8	7.7	* 7.7		* 5.8		7.7
Max Green Setting (Gmax), s		* 23	5.6	* 86		* 23		99.3
Max Q Clear Time (g_c+I1), s		15.4	2.3	65.5		2.9		23.4
Green Ext Time (p_c), s		0.7	1.0	6.4		1.2		3.4

Intersection Summary	
HCM 2010 Ctrl Delay	34.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	53.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	40	699	214	59	483	20	87	18	111	13	20	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	43	760	233	64	525	22	95	20	121	14	22	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	525	0	0	760	0	0	1515	1500	760	1570	1500	525
Stage 1	-	-	-	-	-	-	847	847	-	653	653	-
Stage 2	-	-	-	-	-	-	668	653	-	917	847	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1042	-	-	843	-	-	98	122	406	90	122	552
Stage 1	-	-	-	-	-	-	357	378	-	456	464	-
Stage 2	-	-	-	-	-	-	448	464	-	326	378	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1042	-	-	843	-	-	~ 75	108	406	50	108	552
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 75	108	-	50	108	-
Stage 1	-	-	-	-	-	-	342	362	-	437	429	-
Stage 2	-	-	-	-	-	-	388	429	-	208	362	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1	$ 418.3	82.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	135	1042	-	-	843	-	-	87
HCM Lane V/C Ratio	1.739	0.042	-	-	0.076	-	-	0.5
HCM Control Delay (s)	$ 418.3	8.6	-	-	9.6	-	-	82.1
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	17.5	0.1	-	-	0.2	-	-	2.1

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	689	107	199	395	47	134	52	329	80	40	33
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	29	749	116	216	429	51	146	57	358	87	43	36
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	455	957	814	280	1071	919	285	36	224	115	58	48
Arrive On Green	0.01	0.35	0.35	0.07	0.57	0.57	0.16	0.16	0.16	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	224	1409	1721	865	724
Grp Volume(v), veh/h	29	749	116	216	429	51	146	0	415	87	0	79
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1633	1721	0	1589
Q Serve(g_s), s	1.1	49.7	6.9	7.4	17.3	1.9	10.1	0.0	21.6	6.8	0.0	6.6
Cycle Q Clear(g_c), s	1.1	49.7	6.9	7.4	17.3	1.9	10.1	0.0	21.6	6.8	0.0	6.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		0.46
Lane Grp Cap(c), veh/h	455	957	814	280	1071	919	285	0	259	115	0	106
V/C Ratio(X)	0.06	0.78	0.14	0.77	0.40	0.06	0.51	0.00	1.60	0.76	0.00	0.75
Avail Cap(c_a), veh/h	472	957	814	310	1071	919	285	0	259	202	0	187
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.1	37.3	23.4	26.5	16.2	12.9	52.4	0.0	57.2	62.4	0.0	62.3
Incr Delay (d2), s/veh	0.1	6.3	0.4	10.4	1.1	0.1	1.6	0.0	287.5	9.8	0.0	10.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	26.9	3.1	5.1	9.3	0.9	5.2	0.0	30.4	3.5	0.0	3.2
LnGrp Delay(d),s/veh	15.1	43.7	23.8	36.9	17.3	13.0	53.9	0.0	344.7	72.2	0.0	72.3
LnGrp LOS	B	D	C	D	B	B	D		F	E		E
Approach Vol, veh/h		894			696			561			166	
Approach Delay, s/veh		40.2			23.1			269.0			72.3	
Approach LOS		D			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.7	77.2		27.0	9.9	84.0		15.2
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	11.8	61.7		* 22	4.1	69.4		16.0
Max Q Clear Time (g_c+I1), s	9.4	51.7		23.6	3.1	19.3		8.8
Green Ext Time (p_c), s	0.1	5.4		0.0	0.0	10.2		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	92.7
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	888	75	0	567	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	965	82	0	616	0	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	965	0	1581	965
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	616	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	714	-	120	309
Stage 1	-	-	-	-	370	-
Stage 2	-	-	-	-	539	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	714	-	120	309
Mov Cap-2 Maneuver	-	-	-	-	120	-
Stage 1	-	-	-	-	370	-
Stage 2	-	-	-	-	539	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	309	-	-	714	-
HCM Lane V/C Ratio	0.134	-	-	-	-
HCM Control Delay (s)	18.4	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

APPENDIX F

SimTraffic Reports

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	38	26
Average Queue (ft)	2	5
95th Queue (ft)	17	20
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	LT	R	LTR	LTR
Maximum Queue (ft)	40	9	71	2	92	50
Average Queue (ft)	5	0	12	0	39	24
95th Queue (ft)	24	5	46	2	73	48
Link Distance (ft)	718		662	662	253	334
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		200				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	54	222	41	114	206	48	96	169	98	90
Average Queue (ft)	14	115	11	54	90	14	38	73	40	35
95th Queue (ft)	44	193	33	97	167	40	78	133	80	74
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	155			260	150					
Storage Blk Time (%)		3			0	1				
Queuing Penalty (veh)		1			0	2				

Network Summary

Network wide Queuing Penalty: 3

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	35	24
Average Queue (ft)	2	6
95th Queue (ft)	17	22
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	LT	R	LTR	LTR
Maximum Queue (ft)	50	6	59	4	94	57
Average Queue (ft)	8	0	8	0	39	20
95th Queue (ft)	33	3	36	4	70	49
Link Distance (ft)	718		662	662	253	334
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		200				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	92	281	44	85	156	45	106	216	103	91
Average Queue (ft)	12	133	9	40	63	12	43	85	43	36
95th Queue (ft)	54	235	31	74	125	36	86	168	88	75
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)								0		
Queuing Penalty (veh)								0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		5			0					
Queuing Penalty (veh)		2			0					

Network Summary

Network wide Queuing Penalty: 3

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	34	22
Average Queue (ft)	2	6
95th Queue (ft)	19	21
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LT	LTR	LTR
Maximum Queue (ft)	57	14	102	110	61
Average Queue (ft)	7	1	16	45	26
95th Queue (ft)	35	7	59	87	53
Link Distance (ft)	718		662	253	334
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		200			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	83	264	43	156	225	70	113	220	116	113
Average Queue (ft)	17	134	11	62	104	17	44	101	52	41
95th Queue (ft)	56	230	33	116	188	54	90	189	100	86
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)					0	0		0		
Queuing Penalty (veh)					0	0		0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		5		0	2					
Queuing Penalty (veh)		3		0	3					

Network Summary

Network wide Queuing Penalty: 7

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	46	31
Average Queue (ft)	4	8
95th Queue (ft)	27	27
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	LT	R	LTR	LTR
Maximum Queue (ft)	62	11	74	4	100	55
Average Queue (ft)	9	0	8	0	41	23
95th Queue (ft)	37	6	41	2	76	50
Link Distance (ft)	718		662	662	253	334
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		200				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	135	306	39	102	168	42	134	206	94	103
Average Queue (ft)	15	150	10	44	72	12	45	89	42	38
95th Queue (ft)	70	257	32	83	139	36	94	170	82	79
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)								0		
Queuing Penalty (veh)								0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		8			1					
Queuing Penalty (veh)		4			1					

Network Summary

Network wide Queuing Penalty: 4

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	41	340	29	199	461	23	87	22
Average Queue (ft)	3	215	6	43	218	3	29	3
95th Queue (ft)	32	325	24	119	376	15	69	14
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		3						
Queuing Penalty (veh)		9						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		33			4			
Queuing Penalty (veh)		1			2			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	NB	SB
Directions Served	L	R	L	LTR	LTR
Maximum Queue (ft)	37	20	68	152	58
Average Queue (ft)	7	1	19	59	25
95th Queue (ft)	29	10	50	117	53
Link Distance (ft)				247	328
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100	100	100		
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	97	272	42	197	264	47	114	237	123	113
Average Queue (ft)	17	98	8	64	112	11	51	111	55	41
95th Queue (ft)	62	211	29	129	208	35	97	216	103	89
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)								1		
Queuing Penalty (veh)								0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		6		0	3					
Queuing Penalty (veh)		3		1	5					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	NB
Directions Served	T	R
Maximum Queue (ft)	49	38
Average Queue (ft)	3	11
95th Queue (ft)	26	37
Link Distance (ft)	519	341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Network Summary

Network wide Queuing Penalty: 20

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	117	363	47	160	333	20	131	28
Average Queue (ft)	9	276	14	57	148	1	49	4
95th Queue (ft)	65	386	40	119	288	11	99	19
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		11						
Queuing Penalty (veh)		36						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		38			1			
Queuing Penalty (veh)		2			1			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	R	L	R	LTR	LTR
Maximum Queue (ft)	50	35	56	2	140	67
Average Queue (ft)	12	1	15	0	61	23
95th Queue (ft)	38	13	46	2	113	54
Link Distance (ft)				661	247	328
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100	100	100			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	72	292	46	119	196	41	140	250	108	122
Average Queue (ft)	12	121	8	46	81	10	55	117	48	44
95th Queue (ft)	47	246	30	88	162	31	112	219	94	93
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)								1		
Queuing Penalty (veh)								0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		7		0	1					
Queuing Penalty (veh)		4		0	1					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	NB
Directions Served	T	R
Maximum Queue (ft)	160	48
Average Queue (ft)	22	17
95th Queue (ft)	96	44
Link Distance (ft)	519	341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	1	
Queuing Penalty (veh)	1	

Network Summary

Network wide Queuing Penalty: 44

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	32	22
Average Queue (ft)	1	6
95th Queue (ft)	18	22
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LT	LTR	LTR
Maximum Queue (ft)	78	9	123	122	67
Average Queue (ft)	10	0	20	53	26
95th Queue (ft)	45	5	70	102	54
Link Distance (ft)	718		662	253	334
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		200			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	132	285	49	192	284	76	133	253	132	126
Average Queue (ft)	22	155	11	74	128	17	51	117	55	48
95th Queue (ft)	76	256	36	142	232	56	102	219	108	98
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)					1	0	0	2		
Queuing Penalty (veh)					0	0	0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)	0	9		0	5					
Queuing Penalty (veh)	0	5		1	9					

Network Summary

Network wide Queuing Penalty: 15

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	42	30
Average Queue (ft)	3	7
95th Queue (ft)	20	26
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	R	LT	R	LTR	LTR
Maximum Queue (ft)	82	8	83	2	122	55
Average Queue (ft)	15	0	12	0	51	24
95th Queue (ft)	55	3	54	2	98	52
Link Distance (ft)	718		662	662	253	334
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		200				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	195	386	43	107	188	49	131	247	122	112
Average Queue (ft)	24	196	12	50	83	14	53	117	50	43
95th Queue (ft)	109	331	35	92	156	40	102	211	100	91
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)							0	1		
Queuing Penalty (veh)							0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		15			1					
Queuing Penalty (veh)		8			1					

Network Summary

Network wide Queuing Penalty: 9

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	61	342	46	216	446	22	86	22
Average Queue (ft)	3	223	6	42	226	1	28	3
95th Queue (ft)	32	339	25	117	388	11	66	15
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		4						
Queuing Penalty (veh)		13						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		32			4			
Queuing Penalty (veh)		1			2			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	LTR	LTR
Maximum Queue (ft)	44	2	29	72	15	165	64
Average Queue (ft)	8	0	1	19	1	63	29
95th Queue (ft)	30	2	12	52	16	120	56
Link Distance (ft)		723			661	247	328
Upstream Blk Time (%)						0	
Queuing Penalty (veh)						0	
Storage Bay Dist (ft)	100		100	100			
Storage Blk Time (%)				0	0		
Queuing Penalty (veh)				0	0		

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	128	279	35	181	301	41	133	256	123	115
Average Queue (ft)	20	127	10	70	127	14	53	115	59	46
95th Queue (ft)	71	242	32	136	241	38	107	220	107	94
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)								3		
Queuing Penalty (veh)								0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		9		0	4					
Queuing Penalty (veh)		6		1	8					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	NB
Directions Served	T	R
Maximum Queue (ft)	108	38
Average Queue (ft)	6	12
95th Queue (ft)	49	37
Link Distance (ft)	519	341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Network Summary

Network wide Queuing Penalty: 31

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	100	354	41	213	357	25	134	29
Average Queue (ft)	10	277	11	61	149	3	51	5
95th Queue (ft)	66	390	35	138	291	15	107	22
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		11						
Queuing Penalty (veh)		39						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		37			1			
Queuing Penalty (veh)		2			1			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	R	L	T	LTR	LTR
Maximum Queue (ft)	53	20	65	19	183	69
Average Queue (ft)	12	1	17	1	75	25
95th Queue (ft)	39	9	48	14	145	56
Link Distance (ft)				661	247	328
Upstream Blk Time (%)					0	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	100	100	100			
Storage Blk Time (%)			0	0		
Queuing Penalty (veh)			0	0		

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	151	352	82	105	209	39	149	255	121	114
Average Queue (ft)	17	146	9	48	92	10	59	133	51	46
95th Queue (ft)	76	294	59	89	174	33	118	243	100	93
Link Distance (ft)		661			520	520	241	241	322	322
Upstream Blk Time (%)							0	2		
Queuing Penalty (veh)							0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		10		0	2					
Queuing Penalty (veh)		6		0	2					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	EB	NB
Directions Served	T	R	R
Maximum Queue (ft)	184	20	53
Average Queue (ft)	25	1	17
95th Queue (ft)	108	20	46
Link Distance (ft)	519		341
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)	2		
Queuing Penalty (veh)	1		

Network Summary

Network wide Queuing Penalty: 51

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	61	354	51	286	512	22	195	33
Average Queue (ft)	2	251	15	61	225	2	78	4
95th Queue (ft)	24	371	42	167	423	14	149	20
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		8						
Queuing Penalty (veh)		27						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		33			5			
Queuing Penalty (veh)		1			3			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	34	2	43	77	16	2	244	66
Average Queue (ft)	9	0	4	28	1	0	98	29
95th Queue (ft)	31	2	20	63	16	2	195	59
Link Distance (ft)		723			661	661	705	328
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100	100				
Storage Blk Time (%)				0	0			
Queuing Penalty (veh)				1	0			

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	185	425	174	239	323	47	233	269	149	129
Average Queue (ft)	31	204	26	108	159	15	103	178	61	47
95th Queue (ft)	116	376	105	192	271	40	193	293	118	95
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)							0	15		
Queuing Penalty (veh)							0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		26		3	8					
Queuing Penalty (veh)		27		14	21					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	EB	NB
Directions Served	T	R	R
Maximum Queue (ft)	137	20	68
Average Queue (ft)	14	1	27
95th Queue (ft)	76	20	58
Link Distance (ft)	519		341
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)	1		
Queuing Penalty (veh)	0		

Network Summary

Network wide Queuing Penalty: 93

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	98	294	62	174	371	21	197	39
Average Queue (ft)	7	259	22	66	115	2	84	7
95th Queue (ft)	53	327	51	132	256	13	159	25
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		10						
Queuing Penalty (veh)		45						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		36			1			
Queuing Penalty (veh)		2			1			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	50	17	51	74	9	2	216	68
Average Queue (ft)	12	1	4	25	0	0	92	28
95th Queue (ft)	40	23	28	58	9	2	186	58
Link Distance (ft)		723			661	661	247	328
Upstream Blk Time (%)							2	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)	100		100	100				
Storage Blk Time (%)		0		0	0			
Queuing Penalty (veh)		0		0	0			

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	190	474	137	188	232	40	234	282	135	133
Average Queue (ft)	21	228	31	89	113	12	103	205	55	46
95th Queue (ft)	93	416	130	154	208	35	213	313	110	97
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)		0					2	34		
Queuing Penalty (veh)		1					0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		26		1	3					
Queuing Penalty (veh)		33		4	6					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	EB	NB
Directions Served	T	R	R
Maximum Queue (ft)	423	137	93
Average Queue (ft)	101	7	34
95th Queue (ft)	306	67	74
Link Distance (ft)	519		341
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)		100	
Storage Blk Time (%)	7		
Queuing Penalty (veh)	5		

Network Summary

Network wide Queuing Penalty: 97

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	80	26
Average Queue (ft)	5	8
95th Queue (ft)	48	25
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LT	LTR	LTR
Maximum Queue (ft)	113	12	144	167	66
Average Queue (ft)	14	1	29	66	30
95th Queue (ft)	61	6	94	134	58
Link Distance (ft)	718		662	253	334
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		200			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	181	398	91	233	298	57	116	230	121	129
Average Queue (ft)	35	206	16	93	157	21	51	113	54	50
95th Queue (ft)	122	355	67	178	265	48	92	208	103	102
Link Distance (ft)		662			292	292	239	239	322	322
Upstream Blk Time (%)					1			1		
Queuing Penalty (veh)					0			0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		20		1	8					
Queuing Penalty (veh)		13		4	16					

Network Summary

Network wide Queuing Penalty: 33

Intersection: 3: Rt. 122 & Parkcrest Dr

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	64	29
Average Queue (ft)	5	8
95th Queue (ft)	34	26
Link Distance (ft)	905	412
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LT	LTR	LTR
Maximum Queue (ft)	115	13	118	173	57
Average Queue (ft)	17	1	18	64	25
95th Queue (ft)	65	7	70	129	53
Link Distance (ft)	718		662	253	334
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		200			
Storage Blk Time (%)	0				
Queuing Penalty (veh)	0				

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	195	483	132	109	214	49	162	256	122	110
Average Queue (ft)	31	222	15	55	99	16	61	136	57	43
95th Queue (ft)	129	372	65	94	184	41	122	241	110	88
Link Distance (ft)		662			291	291	239	239	321	321
Upstream Blk Time (%)							0	3		
Queuing Penalty (veh)							0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		20		0	2					
Queuing Penalty (veh)		12		0	3					

Network Summary

Network wide Queuing Penalty: 15

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	32	349	31	254	549	94	89	32
Average Queue (ft)	3	249	5	52	267	6	29	5
95th Queue (ft)	17	366	23	160	479	77	69	21
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		7						
Queuing Penalty (veh)		23						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		34			8			
Queuing Penalty (veh)		1			4			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	R	L	R	LTR	LTR
Maximum Queue (ft)	46	30	70	2	196	69
Average Queue (ft)	11	2	22	0	81	29
95th Queue (ft)	36	16	54	2	159	58
Link Distance (ft)				661	247	328
Upstream Blk Time (%)					0	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	100	100	100			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	119	282	33	225	332	44	159	262	150	139
Average Queue (ft)	21	132	8	86	158	14	65	152	64	53
95th Queue (ft)	67	262	27	170	282	37	127	270	120	111
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)							0	8		
Queuing Penalty (veh)							0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		10		1	7					
Queuing Penalty (veh)		7		7	14					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	NB
Directions Served	T	R
Maximum Queue (ft)	133	40
Average Queue (ft)	12	11
95th Queue (ft)	70	36
Link Distance (ft)	519	341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	1	
Queuing Penalty (veh)	0	

Network Summary

Network wide Queuing Penalty: 56

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	132	361	55	146	380	17	146	29
Average Queue (ft)	8	272	13	54	149	1	58	6
95th Queue (ft)	57	381	40	113	306	11	121	22
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		10						
Queuing Penalty (veh)		38						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		35			1			
Queuing Penalty (veh)		2			1			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	EB	WB	NB	SB
Directions Served	L	T	R	L	LTR	LTR
Maximum Queue (ft)	54	19	27	66	200	73
Average Queue (ft)	17	0	3	21	83	27
95th Queue (ft)	46	10	16	55	164	59
Link Distance (ft)		723			247	328
Upstream Blk Time (%)					1	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	100		100	100		
Storage Blk Time (%)		0		0		
Queuing Penalty (veh)		0		0		

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	195	533	131	148	253	40	167	263	137	135
Average Queue (ft)	27	236	15	62	111	13	64	165	61	51
95th Queue (ft)	118	436	82	119	206	35	127	275	114	106
Link Distance (ft)		661			520	520	241	241	322	322
Upstream Blk Time (%)		0					0	8		
Queuing Penalty (veh)		0					0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		27		0	3					
Queuing Penalty (veh)		16		0	3					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	EB	NB
Directions Served	T	R	R
Maximum Queue (ft)	313	60	57
Average Queue (ft)	34	3	18
95th Queue (ft)	167	42	49
Link Distance (ft)	519		341
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)		100	
Storage Blk Time (%)	2		
Queuing Penalty (veh)	2		

Network Summary

Network wide Queuing Penalty: 64

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	44	363	50	345	619	25	196	30
Average Queue (ft)	3	275	16	67	265	2	83	5
95th Queue (ft)	26	391	41	205	521	15	155	20
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		13			0			
Queuing Penalty (veh)		48			0			
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		35			9			
Queuing Penalty (veh)		1			6			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	41	9	33	78	50	9	305	69
Average Queue (ft)	12	0	3	30	2	0	127	30
95th Queue (ft)	37	7	18	66	27	5	243	60
Link Distance (ft)		723			661	661	705	328
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100	100				
Storage Blk Time (%)				0	0			
Queuing Penalty (veh)				1	0			

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	119	425	134	250	446	96	235	287	151	149
Average Queue (ft)	23	182	23	138	211	18	115	233	73	56
95th Queue (ft)	83	354	88	246	384	74	208	313	132	112
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)		0			0	0	1	51		
Queuing Penalty (veh)		0			0	0	0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		17		7	13					
Queuing Penalty (veh)		19		38	34					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	EB	NB
Directions Served	T	R	R
Maximum Queue (ft)	272	79	83
Average Queue (ft)	33	2	31
95th Queue (ft)	157	35	68
Link Distance (ft)	519		341
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)	2		
Queuing Penalty (veh)	1		

Network Summary

Network wide Queuing Penalty: 148

Intersection: 3: Parkcrest Dr & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	R	L	T	R	LTR	LTR
Maximum Queue (ft)	149	363	60	216	398	27	226	42
Average Queue (ft)	10	319	21	73	154	2	96	8
95th Queue (ft)	67	393	50	149	319	14	180	29
Link Distance (ft)		274	274		723	723	359	406
Upstream Blk Time (%)		21						
Queuing Penalty (veh)		98						
Storage Bay Dist (ft)	100			300				
Storage Blk Time (%)		37			3			
Queuing Penalty (veh)		3			2			

Intersection: 5: Village Springs Dr/Village Springs Dr & Rt. 122

Movement	EB	EB	EB	WB	NB	SB
Directions Served	L	T	R	L	LTR	LTR
Maximum Queue (ft)	47	56	67	82	265	88
Average Queue (ft)	14	3	6	27	146	33
95th Queue (ft)	42	38	38	62	274	73
Link Distance (ft)		723			247	328
Upstream Blk Time (%)					13	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)	100		100	100		
Storage Blk Time (%)		0		0		
Queuing Penalty (veh)		0		0		

Intersection: 8: Westlake Rd/Morewood Rd & Rt. 122

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	TR	L	TR
Maximum Queue (ft)	234	567	378	239	302	43	210	288	158	157
Average Queue (ft)	26	264	46	112	143	12	101	247	68	61
95th Queue (ft)	121	491	215	199	253	35	183	305	132	121
Link Distance (ft)		661			520	520	239	239	321	321
Upstream Blk Time (%)		0					1	67		
Queuing Penalty (veh)		1					0	0		
Storage Bay Dist (ft)	155		260	150						
Storage Blk Time (%)		19		5	7					
Queuing Penalty (veh)		26		18	13					

Intersection: 11: Entr. #1 & Rt. 122

Movement	EB	EB	NB
Directions Served	T	R	R
Maximum Queue (ft)	499	200	124
Average Queue (ft)	129	21	43
95th Queue (ft)	388	123	99
Link Distance (ft)	519		341
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)		100	
Storage Blk Time (%)	9		
Queuing Penalty (veh)	7		

Network Summary

Network wide Queuing Penalty: 169

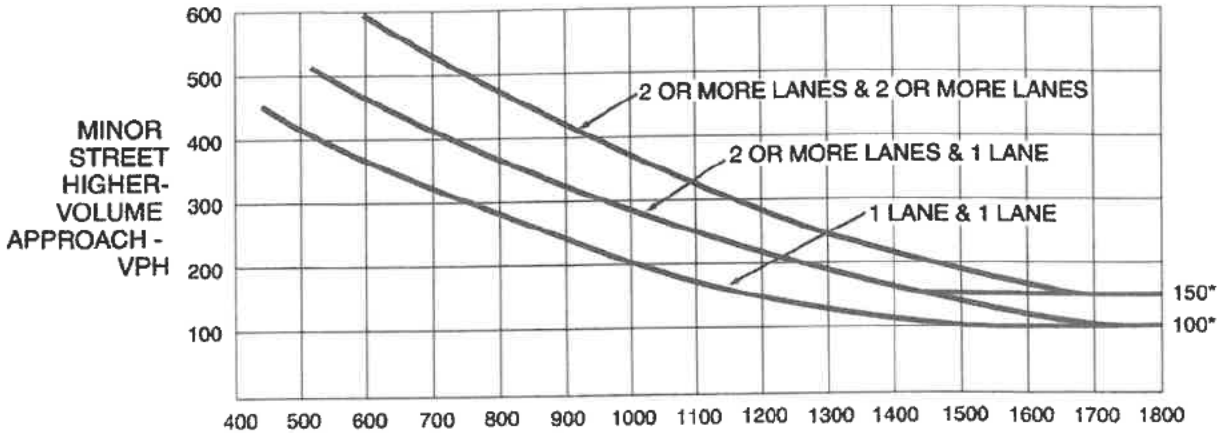
Appendix G

MUTCD Peak Hour Signal Warrants

Appendix G

MUTCD Peak Hour Signal Warrants

Figure 4C-3. Warrant 3, Peak Hour

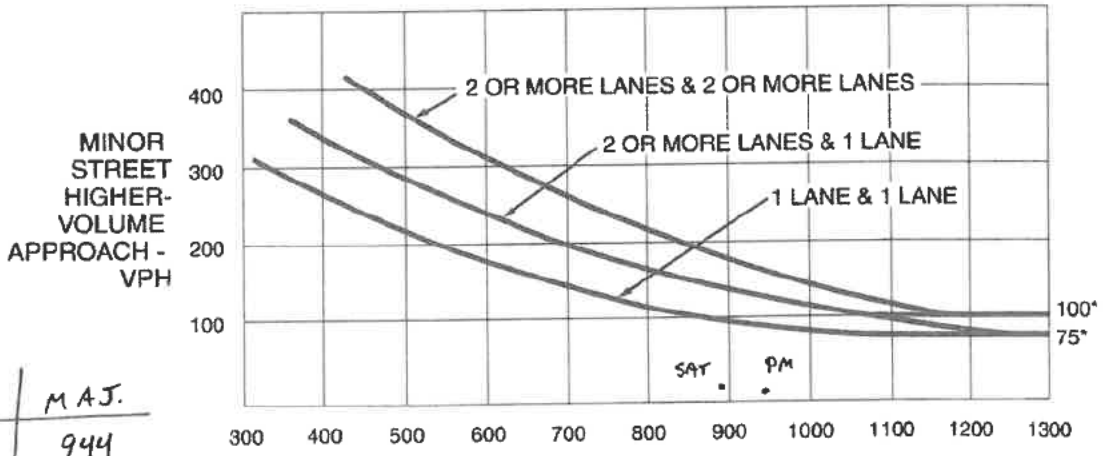


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2013 EXIST PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

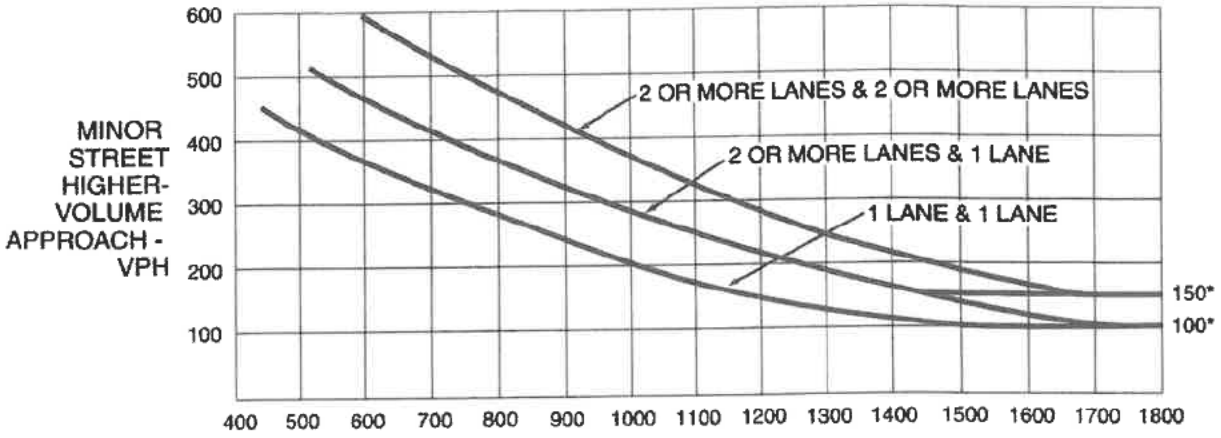
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



	MIN.	MAJ.
PM	8	944
SAT	10	895

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour

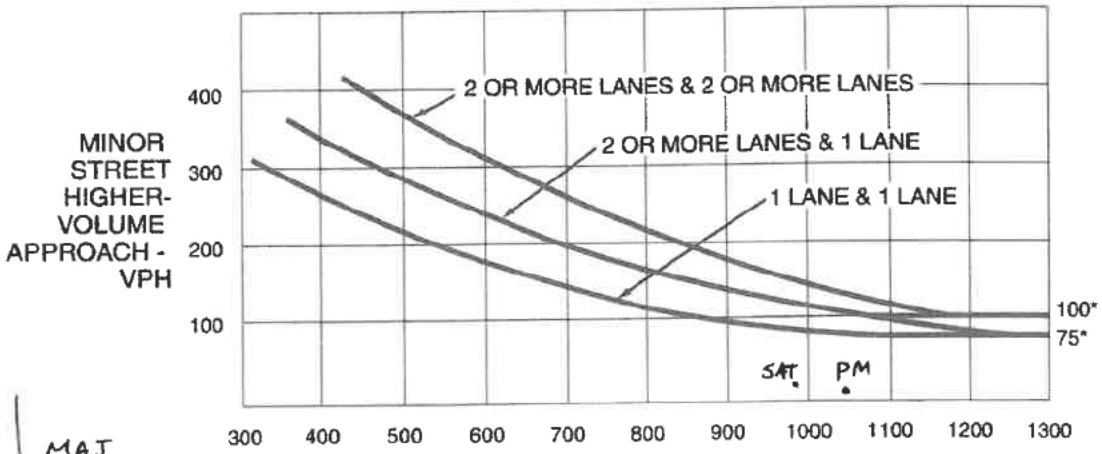


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2018 BACKGROUND
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

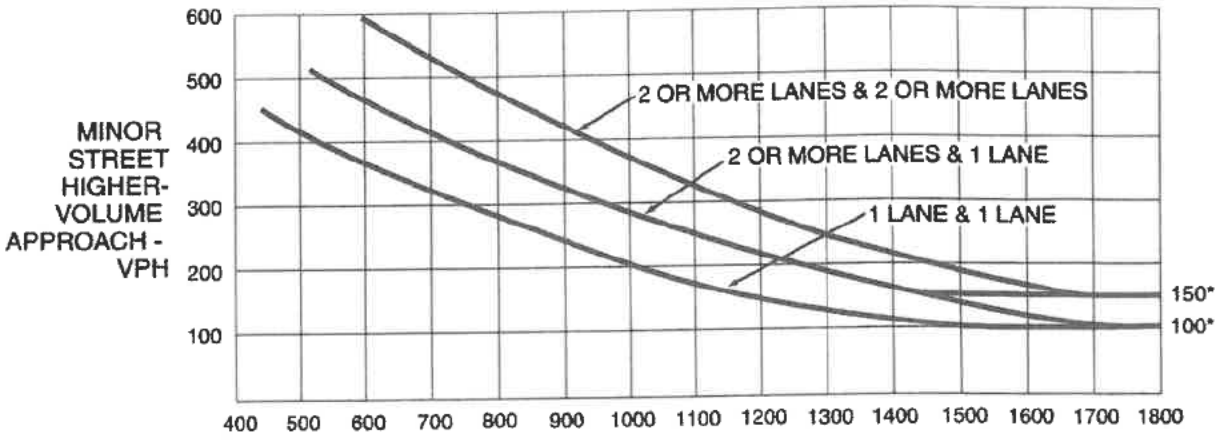
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

	MIN.	MAJ
PM	9	1044
SAT	12	990

Figure 4C-3. Warrant 3, Peak Hour

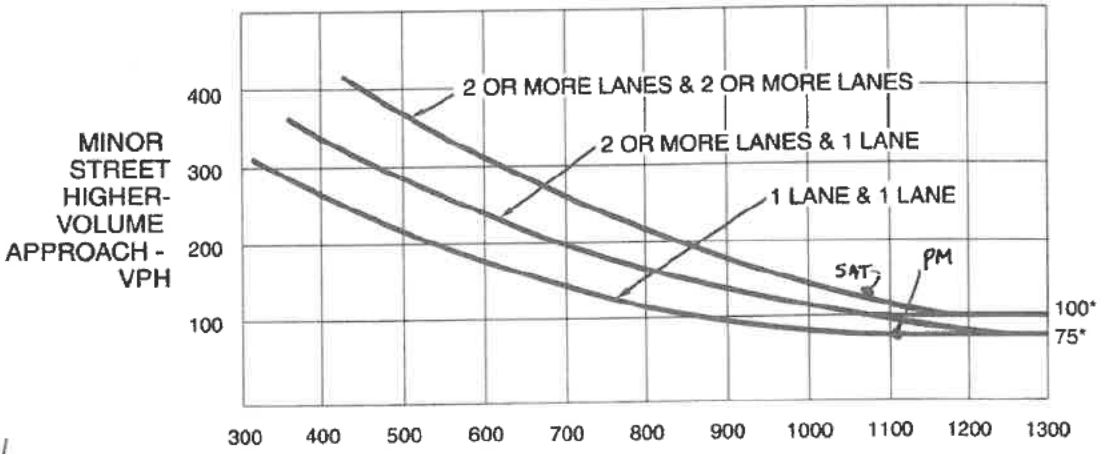


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2018 Phase 1
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

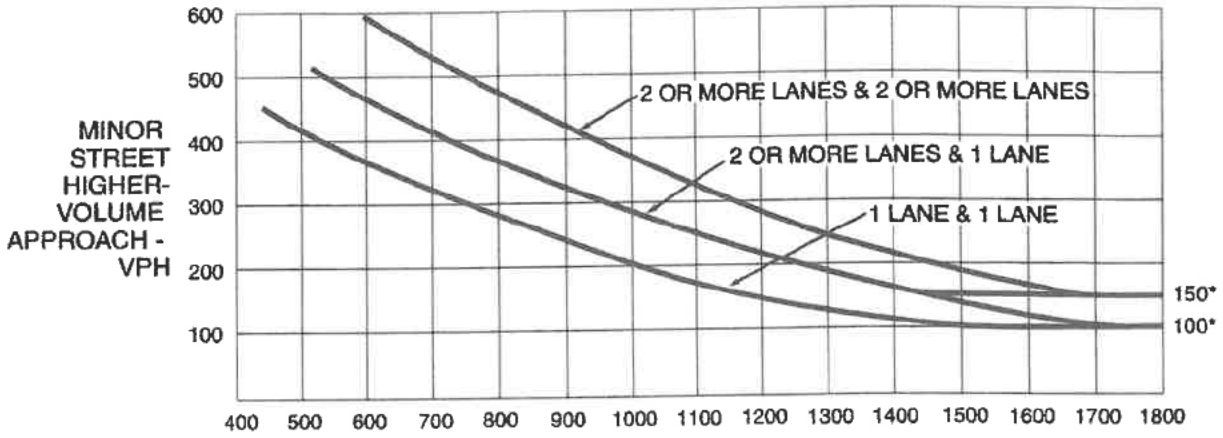
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

	MIN	MAJ	
PM	75	1105	NO
SAT	129	1082	YES

Figure 4C-3. Warrant 3, Peak Hour

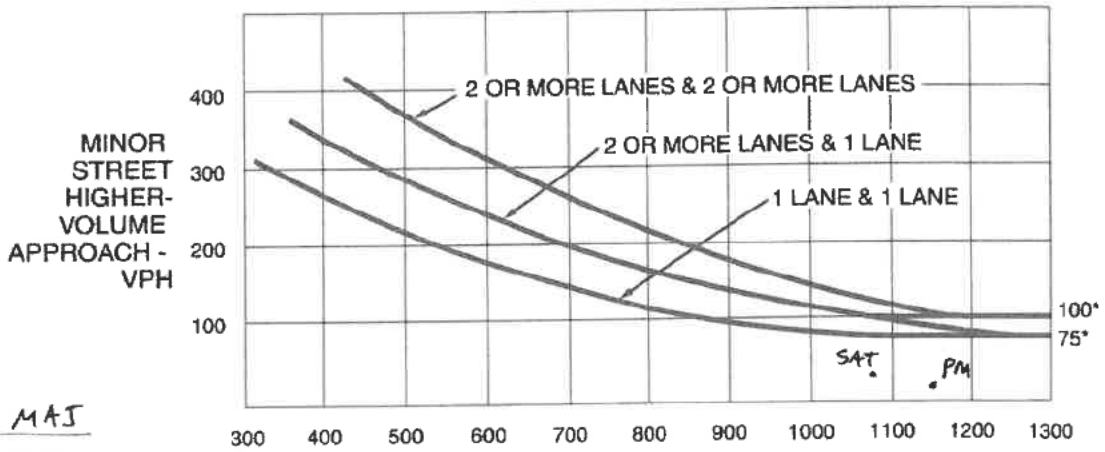


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2023 BACKGROUND
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

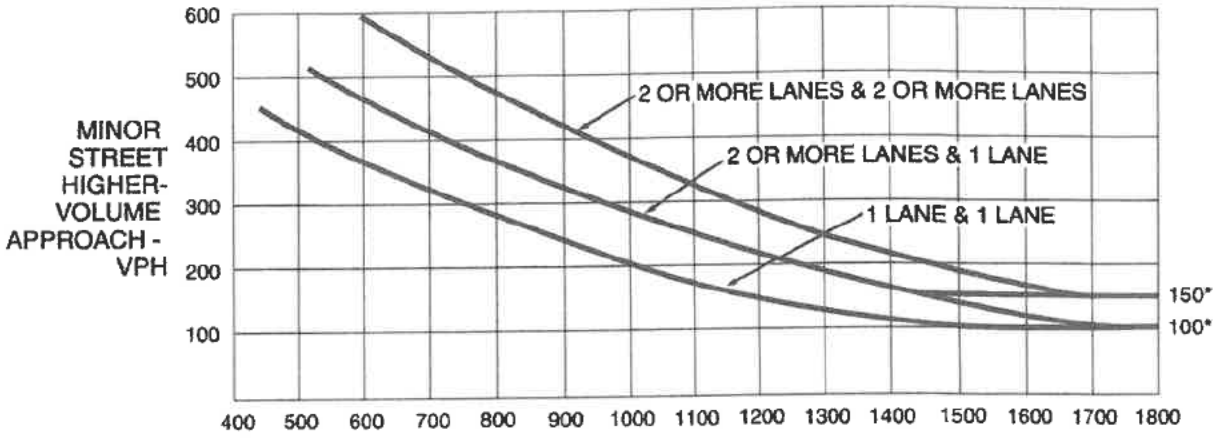
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



	MIN	MAJ
PM	10	1141
SAT	12	1083

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour

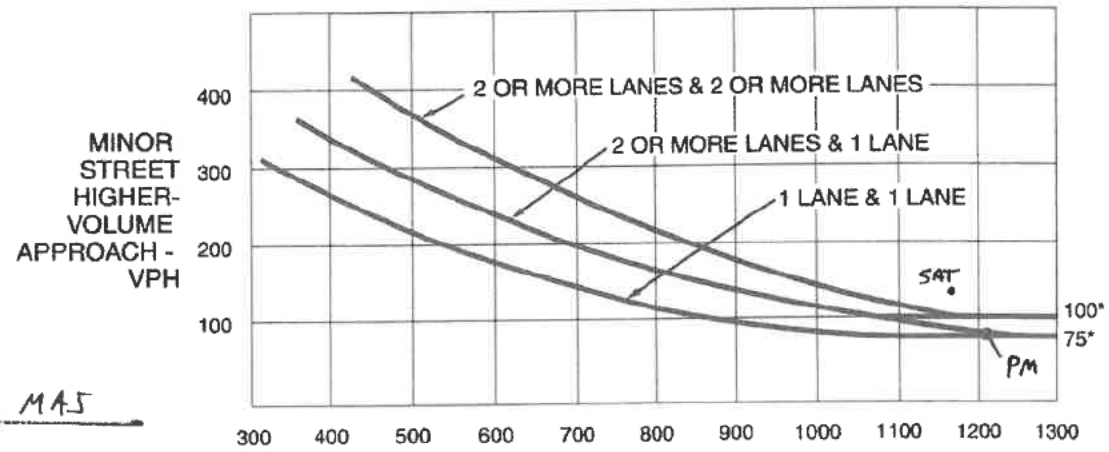


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2023 PHASE 1
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

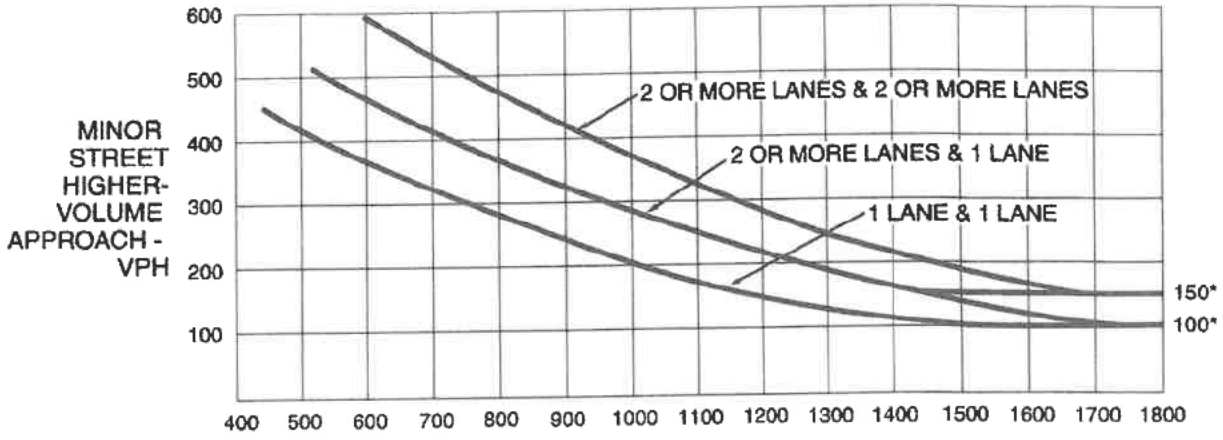
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



	MIN	MAX
PM	75	1202
SAT	129	1175

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour

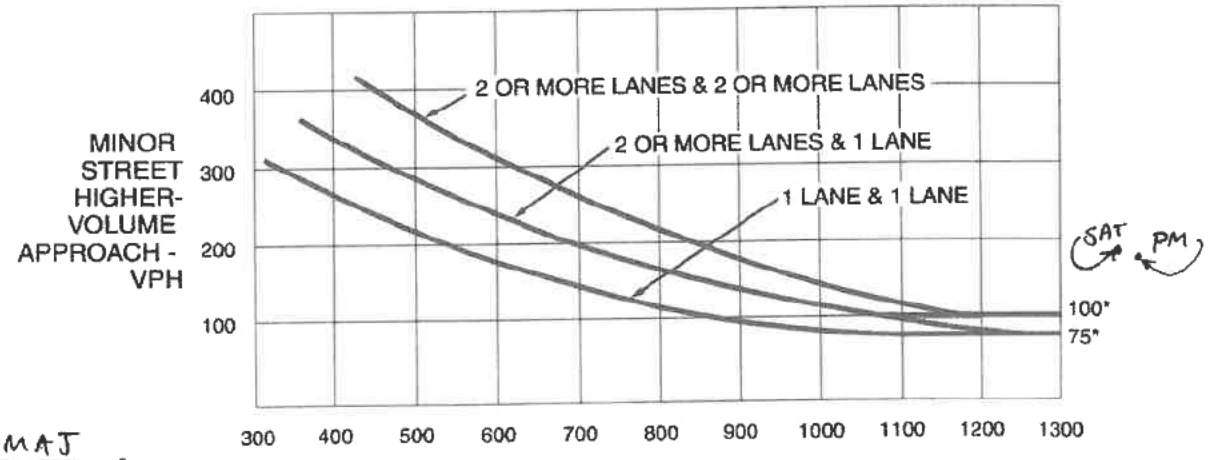


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2023 PHASE 2
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

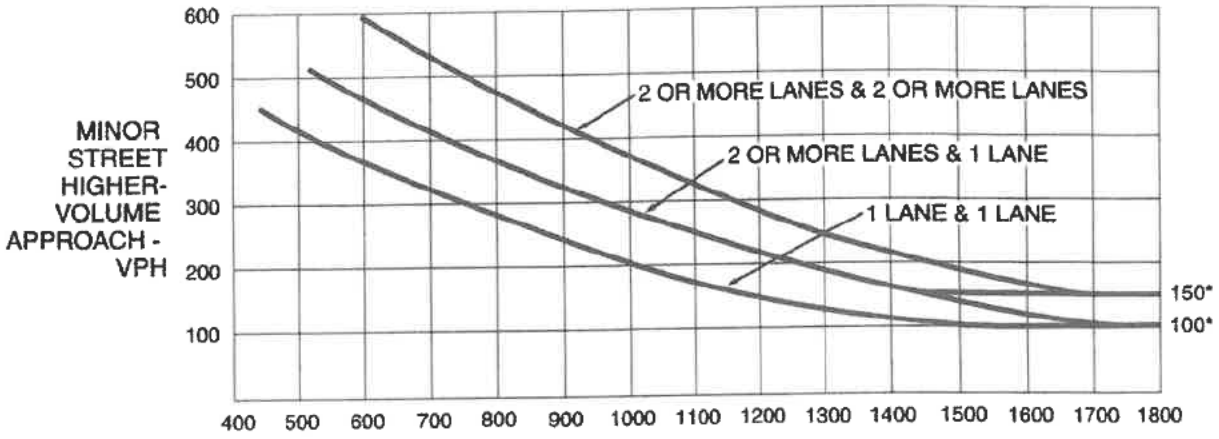
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

	MIN	MAJ
PM	168	1400
SAT	171	1389

Figure 4C-3. Warrant 3, Peak Hour

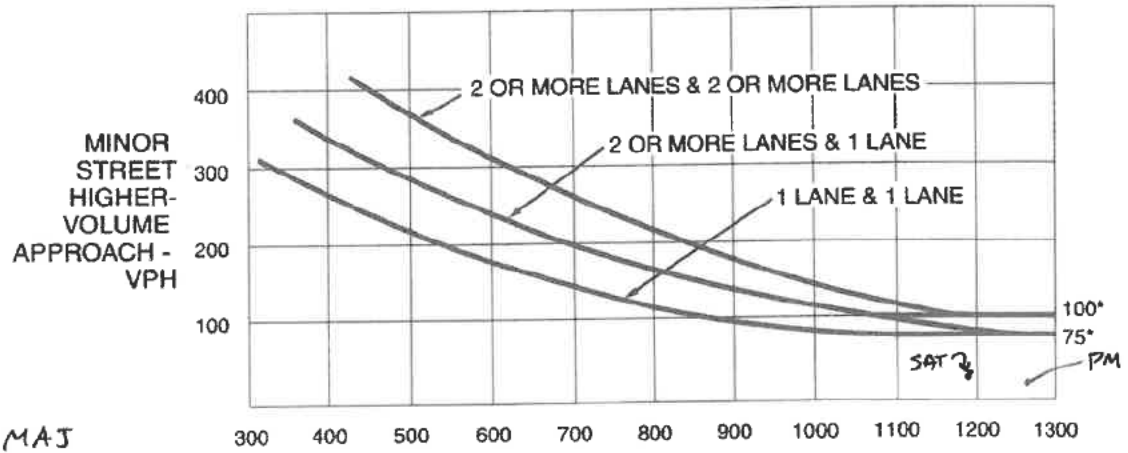


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2029 BACKGROUND PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

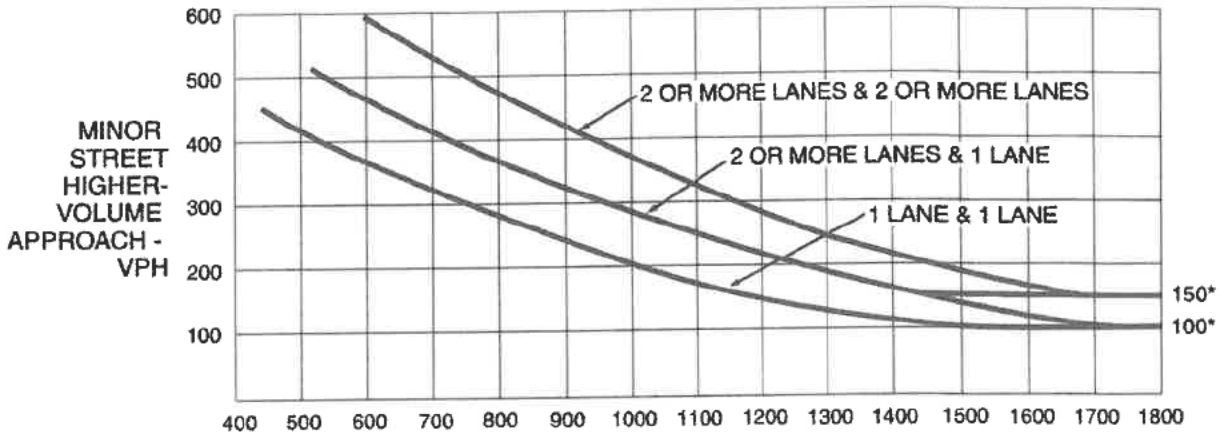
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

	MIN	MAJ
PM	11	1262
SAT	14	1197

Figure 4C-3. Warrant 3, Peak Hour

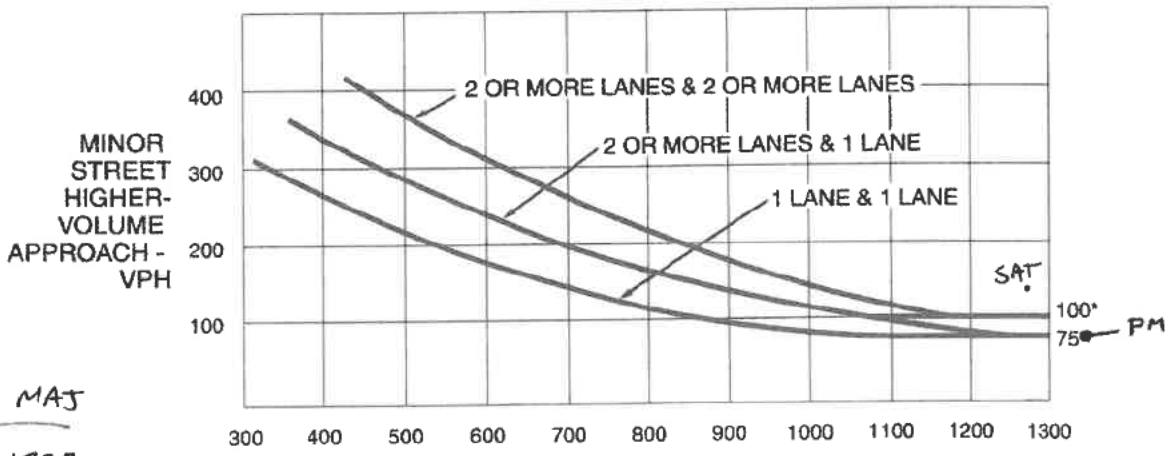


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2029 PHASE 1
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

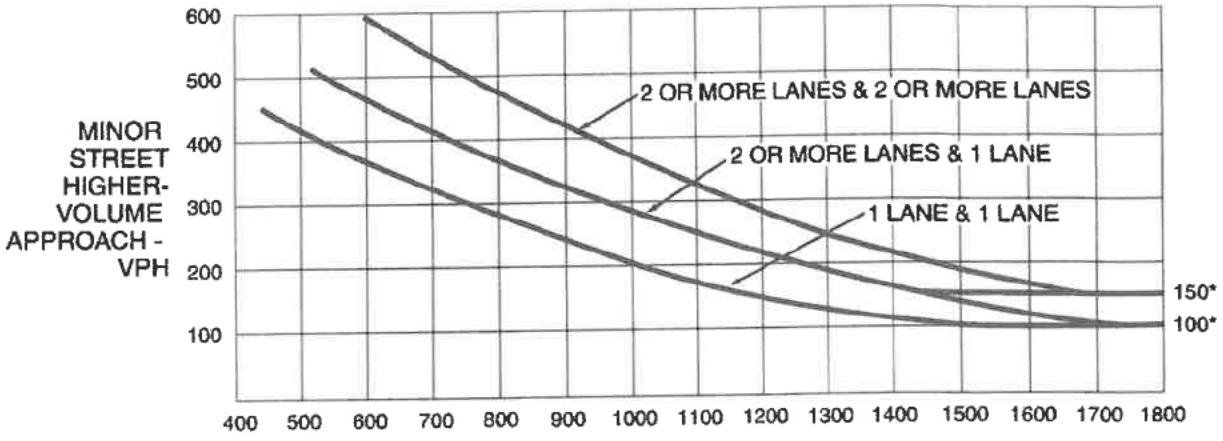
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

	MIN	MAJ
PM	75	1323
SAT	129	1288

Figure 4C-3. Warrant 3, Peak Hour

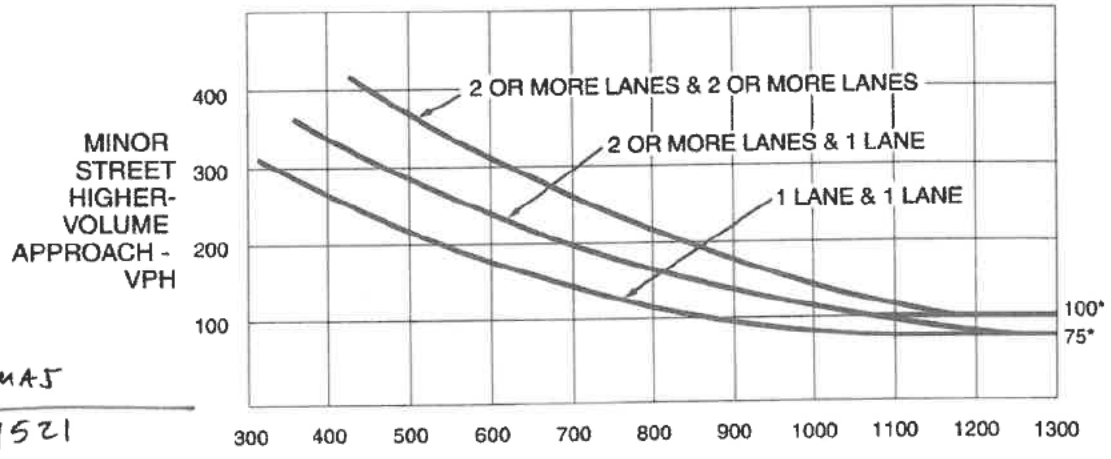


*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

2029 PHASE 2
PARKCREST

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



SAT PM

	MIN	MAJ
PM	168	1521
SAT	171	1503

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Appendix H

Synchro Reports

(No Signal at Parkcrest Drive)

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	505	15	52	525	6	37	0	38	3	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	0	300	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	2	3	2	2	2	2	2	2	2
Mvmt Flow	2	549	16	57	571	7	40	0	41	3	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	571	0	0	549	0	0	1240	1237	549	1258	1237	571
Stage 1	-	-	-	-	-	-	553	553	-	684	684	-
Stage 2	-	-	-	-	-	-	687	684	-	574	553	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.92	6.42	7.52	6.92	6.42
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1002	-	-	1021	-	-	132	153	519	128	153	504
Stage 1	-	-	-	-	-	-	487	484	-	407	416	-
Stage 2	-	-	-	-	-	-	405	416	-	473	484	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1002	-	-	1021	-	-	125	144	519	113	144	504
Mov Cap-2 Maneuver	-	-	-	-	-	-	125	144	-	113	144	-
Stage 1	-	-	-	-	-	-	486	483	-	406	393	-
Stage 2	-	-	-	-	-	-	377	393	-	434	483	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.8	34.2	21.1
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	203	1002	-	-	1021	-	-	234
HCM Lane V/C Ratio	0.402	0.002	-	-	0.055	-	-	0.042
HCM Control Delay (s)	34.2	8.6	-	-	8.7	-	-	21.1
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.8	0	-	-	0.2	-	-	0.1

Intersection	
Int Delay, s/veh	14.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	18	411	117	49	457	20	108	9	42	8	14	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	20	447	127	53	497	22	117	10	46	9	15	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	497	0	0	447	0	0	1107	1089	447	1117	1089	497
Stage 1	-	-	-	-	-	-	486	486	-	603	603	-
Stage 2	-	-	-	-	-	-	621	603	-	514	486	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.52	6.92	6.42	7.52	6.92	6.42
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1067	-	-	1103	-	-	166	191	597	163	191	557
Stage 1	-	-	-	-	-	-	533	522	-	454	457	-
Stage 2	-	-	-	-	-	-	443	457	-	513	522	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1067	-	-	1103	-	-	142	178	597	137	178	557
Mov Cap-2 Maneuver	-	-	-	-	-	-	142	178	-	137	178	-
Stage 1	-	-	-	-	-	-	523	512	-	445	435	-
Stage 2	-	-	-	-	-	-	393	435	-	456	512	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.8	109.4	23.7
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	180	1067	-	-	1103	-	-	236
HCM Lane V/C Ratio	0.96	0.018	-	-	0.048	-	-	0.184
HCM Control Delay (s)	109.4	8.4	-	-	8.4	-	-	23.7
HCM Lane LOS	F	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	7.6	0.1	-	-	0.2	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	406	28	160	420	49	77	38	217	73	35	28
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1891	1872	1891	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	30	441	30	174	457	53	84	41	236	79	38	30
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	335	744	633	399	836	718	330	45	257	119	61	48
Arrive On Green	0.02	0.41	0.41	0.06	0.45	0.45	0.18	0.18	0.18	0.07	0.07	0.07
Sat Flow, veh/h	1620	1835	1560	1801	1872	1607	1792	242	1393	1721	890	703
Grp Volume(v), veh/h	30	441	30	174	457	53	84	0	277	79	0	68
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1801	1872	1607	1792	0	1635	1721	0	1593
Q Serve(g_s), s	1.0	16.9	1.0	5.1	16.1	1.7	3.6	0.0	15.0	4.0	0.0	3.7
Cycle Q Clear(g_c), s	1.0	16.9	1.0	5.1	16.1	1.7	3.6	0.0	15.0	4.0	0.0	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.85	1.00		0.44
Lane Grp Cap(c), veh/h	335	744	633	399	836	718	330	0	302	119	0	110
V/C Ratio(X)	0.09	0.59	0.05	0.44	0.55	0.07	0.25	0.00	0.92	0.67	0.00	0.62
Avail Cap(c_a), veh/h	369	744	633	399	836	718	330	0	302	306	0	283
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.8	20.9	16.2	15.9	18.2	14.3	31.4	0.0	36.0	40.9	0.0	40.8
Incr Delay (d2), s/veh	0.1	3.5	0.1	0.8	2.6	0.2	0.4	0.0	31.5	6.3	0.0	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	9.3	0.5	2.6	8.8	0.8	1.8	0.0	9.4	2.1	0.0	1.8
LnGrp Delay(d),s/veh	15.9	24.4	16.4	16.7	20.8	14.5	31.8	0.0	67.5	47.2	0.0	46.3
LnGrp LOS	B	C	B	B	C	B	C		E	D		D
Approach Vol, veh/h		501			684			361			147	
Approach Delay, s/veh		23.4			19.3			59.2			46.8	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	42.7		22.0	9.3	46.4		12.3
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	5.8	26.7		* 17	4.0	28.5		16.0
Max Q Clear Time (g_c+I1), s	7.1	18.9		17.0	3.0	18.1		6.0
Green Ext Time (p_c), s	0.0	3.3		0.0	0.0	4.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	31.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Two Way Analysis cannot be performed on Signalized Intersection.

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	510	41	0	568	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	554	45	0	617	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	554	0	1171	554
Stage 1	-	-	-	-	554	-
Stage 2	-	-	-	-	617	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1016	-	213	532
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	538	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1016	-	213	532
Mov Cap-2 Maneuver	-	-	-	-	213	-
Stage 1	-	-	-	-	575	-
Stage 2	-	-	-	-	538	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	532	-	-	1016	-
HCM Lane V/C Ratio	0.025	-	-	-	-
HCM Control Delay (s)	11.9	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	593	29	71	377	6	52	0	77	6	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	0	300	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	2	-	-	2	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	2	3	2	2	2	2	2	2	2
Mvmt Flow	7	645	32	77	410	7	57	0	84	7	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	410	0	0	645	0	0	1225	1222	645	1263	1222	410
Stage 1	-	-	-	-	-	-	658	658	-	564	564	-
Stage 2	-	-	-	-	-	-	567	564	-	699	658	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.92	6.42	7.52	6.92	6.42
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.92	-	6.52	5.92	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1149	-	-	940	-	-	136	157	456	127	157	627
Stage 1	-	-	-	-	-	-	421	429	-	479	478	-
Stage 2	-	-	-	-	-	-	477	478	-	398	429	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1149	-	-	940	-	-	126	143	456	97	143	627
Mov Cap-2 Maneuver	-	-	-	-	-	-	126	143	-	97	143	-
Stage 1	-	-	-	-	-	-	418	426	-	476	439	-
Stage 2	-	-	-	-	-	-	433	439	-	323	426	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.4	45.5	28.2
HCM LOS			E	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	222	1149	-	-	940	-	-	168
HCM Lane V/C Ratio	0.632	0.006	-	-	0.082	-	-	0.078
HCM Control Delay (s)	45.5	8.2	-	-	9.2	-	-	28.2
HCM Lane LOS	E	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	3.8	0	-	-	0.3	-	-	0.2

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	33	499	144	40	373	17	75	11	96	11	17	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	100	100	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	4	3	2	2	2	2	2	2	2
Mvmt Flow	36	542	157	43	405	18	82	12	104	12	18	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	405	0	0	542	0	0	1119	1106	542	1164	1106	405
Stage 1	-	-	-	-	-	-	614	614	-	492	492	-
Stage 2	-	-	-	-	-	-	505	492	-	672	614	-
Critical Hdwy	4.12	-	-	4.14	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.236	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1154	-	-	1017	-	-	184	210	540	171	210	646
Stage 1	-	-	-	-	-	-	479	483	-	558	548	-
Stage 2	-	-	-	-	-	-	549	548	-	445	483	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1154	-	-	1017	-	-	160	195	540	124	195	646
Mov Cap-2 Maneuver	-	-	-	-	-	-	160	195	-	124	195	-
Stage 1	-	-	-	-	-	-	464	468	-	541	525	-
Stage 2	-	-	-	-	-	-	502	525	-	339	468	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.8	52.9	29.4
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	259	1154	-	-	1017	-	-	184
HCM Lane V/C Ratio	0.764	0.031	-	-	0.043	-	-	0.201
HCM Control Delay (s)	52.9	8.2	-	-	8.7	-	-	29.4
HCM Lane LOS	F	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	5.6	0.1	-	-	0.1	-	-	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	556	28	99	324	39	77	33	221	66	33	28
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1701	1835	1835	1863	1845	1863	1881	1881	1919	1807	1717	1843
Adj Flow Rate, veh/h	24	604	30	108	352	42	84	36	240	72	36	30
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	3	2	2	2	2	2	6	6
Cap, veh/h	406	789	671	278	838	720	330	39	262	111	56	47
Arrive On Green	0.02	0.43	0.43	0.04	0.45	0.45	0.18	0.18	0.18	0.06	0.06	0.06
Sat Flow, veh/h	1620	1835	1560	1774	1845	1583	1792	213	1418	1721	867	722
Grp Volume(v), veh/h	24	604	30	108	352	42	84	0	276	72	0	66
Grp Sat Flow(s),veh/h/ln	1620	1835	1560	1774	1845	1583	1792	0	1631	1721	0	1589
Q Serve(g_s), s	0.7	25.2	1.0	3.1	11.6	1.3	3.6	0.0	14.9	3.7	0.0	3.6
Cycle Q Clear(g_c), s	0.7	25.2	1.0	3.1	11.6	1.3	3.6	0.0	14.9	3.7	0.0	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		0.45
Lane Grp Cap(c), veh/h	406	789	671	278	838	720	330	0	301	111	0	102
V/C Ratio(X)	0.06	0.77	0.04	0.39	0.42	0.06	0.25	0.00	0.92	0.65	0.00	0.64
Avail Cap(c_a), veh/h	445	789	671	278	838	720	330	0	301	306	0	283
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.3	21.8	14.9	17.3	16.6	13.8	31.4	0.0	36.0	41.1	0.0	41.1
Incr Delay (d2), s/veh	0.1	7.0	0.1	0.9	1.5	0.2	0.4	0.0	31.4	6.3	0.0	6.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.3	14.1	0.5	1.5	6.2	0.6	1.8	0.0	9.4	1.9	0.0	1.8
LnGrp Delay(d),s/veh	14.4	28.8	15.0	18.2	18.1	13.9	31.8	0.0	67.4	47.4	0.0	47.7
LnGrp LOS	B	C	B	B	B	B	C		E	D		D
Approach Vol, veh/h		658			502			360			138	
Approach Delay, s/veh		27.6			17.8			59.1			47.5	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.2	44.9		22.0	9.0	47.1		11.9
Change Period (Y+Rc), s	7.2	6.2		* 5.4	7.2	6.2		6.1
Max Green Setting (Gmax), s	4.0	28.5		* 17	4.0	28.5		16.0
Max Q Clear Time (g_c+I1), s	5.1	27.2		16.9	2.7	13.6		5.7
Green Ext Time (p_c), s	0.0	0.8		0.0	0.0	5.2		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	33.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	608	84	0	435	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	661	91	0	473	0	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	661	0	1134	661
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	473	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	927	-	224	462
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %	-	-				
Mov Cap-1 Maneuver	-	-	927	-	224	462
Mov Cap-2 Maneuver	-	-	-	-	224	-
Stage 1	-	-	-	-	514	-
Stage 2	-	-	-	-	627	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	462	-	-	927	-
HCM Lane V/C Ratio	0.047	-	-	-	-
HCM Control Delay (s)	13.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

GOROVE SLADE
Transportation Planners and Engineers

WESTLAKE TOWN CENTER

TRIP GENERATION ANALYSIS

To:	Lisa Cooper	Franklin County
Cc:	Court Rosen	ABoone Real Estate, Inc.
	Alexander Boone	ABoone Real Estate, Inc.
From:	Carl Hultgren, P.E., PTOE	Gorove Slade
Date:	December 31, 2025	
Subject:	**Westlake Town Center – Trip Generation Analysis**	

ABoone Real Estate, Inc. is proposing a mixed-use development on the south side of Route 122 (Booker T. Washington Highway) across from Parkcrest Drive. The proposed access plan includes one full-movement driveway on Route 122 aligned with Parkcrest Drive, one right-in / right-out driveway on Route 122, and connection to Apron Road to the east.

The subject parcels are part of the overall Westlake Town Center mixed-use project, which is partially built-out. The approved TIA for Westlake Town Center was submitted on November 21, 2014, which assumed the following land uses on the subject parcels:

- 54 single-family lots
- 140 multi-family units
- Approximately 30,000 square feet (s.f.) of specialty retail space (on the two 1.7 acre outparcels shown in Appendix A)
- One 10,000 s.f. quality restaurant
- One 4,000 s.f. fast-food restaurant with drive-through window

ABoone Real Estate's preliminary development plan includes the following assumed land uses:

- 103 single-family lots
- 12,500 s.f. of retail space
- One 14,000 s.f. pharmacy with drive-through window
- One 4,000 s.f. fast-food restaurant with drive-through window

The proposed development plan requires a zoning map amendment and Special Use Permit (SUP), and the end users on the commercial outparcels are unknown at this time. The end users listed above are for planning purposes only.

Table 1 shows the trip estimate from the November 2014 TIA based on the 9th edition of the Trip Generation Manual, which was current at the time, and the trip potential of the preliminary development plan based on the 11th edition of the Trip Generation Manual.

Table 1: ITE Trip Generation – Typical Weekday

Land Use (ITE Land Use Code)	Size	Average Daily Traffic (vpd)		AM Peak Hour (vph)		PM Peak Hour (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit
November 2014 TIA (9th Edition of ITE Trip Generation Manual)							
Single-Family Detached Housing (210)	54 lots	298	298	12	36	38	22
Apartment (220)	140 apartments	486	486	15	58	62	33
Specialty Retail Center (826)	30,000 s.f.	665	665	5	5	41	52
Quality Restaurant (931)	10,000 s.f.	450	450	4	4	50	25
Fast-Food Restaurant with Drive-Through Window (934)	4,000 s.f.	992	992	93	89	69	63
Subtotal		2,891	2,891	129	192	260	195
Preliminary Development Plan (11th Edition of ITE Trip Generation Manual)							
Single-Family Detached Housing (210)	103 lots	519	519	19	58	64	38
Strip Retail Plaza (< 40 ksf) (822)	12,500 s.f.	379	379	20	13	46	45
Pharmacy / Drugstore with Drive-Through Window (881)	14,000 s.f.	759	759	27	25	72	72
Fast-Food Restaurant with Drive-Through Window (934)	4,000 s.f.	935	935	91	87	69	63
Subtotal		2,592	2,592	157	183	251	218
% Difference Compared to November 2014 TIA		-10%		+6%		+3%	

ITE did not publish AM peak hour trip rates for specialty retail centers in the 9th edition of the Trip Generation Manual, so those trips are estimated based on engineering judgement.

The November 2014 TIA assumed that Phase 1 of the Westlake Town Center project would include 20,000 s.f. of specialty retail space, the 10,000 s.f. quality restaurant, and the 4,000 s.f. fast-food restaurant with drive-through window. The following roadway improvements were recommended in the November 2014 TIA for the intersection of Route 122 at Parkcrest Drive with Phase 1 of the project:

- Construct an eastbound right-turn lane on Route 122 with at least 100 feet of storage and a 100-foot taper
- Construct a westbound left-turn lane on Route 122 with at least 300 feet of storage and a 100-foot taper
- Construct an eastbound left-turn lane on Route 122 with 100 feet of storage and a 100-foot taper
- Install a traffic signal, which will be coordinated with the existing traffic signal on Route 122 at Scruggs Road

Conclusions

The preliminary development plan generates approximately 10% fewer daily trips, 6% more AM peak hour trips, and 3% more PM peak hour trips as the development plan that was assumed in the November 2014 TIA.

The traffic capacity analysis in the November 2014 TIA was based on the AM and PM peak hour traffic volumes, therefore, the conclusions and recommendations in the November 2014 TIA listed above are still valid with the proposed development plan.

The following is a Metes and Bounds Description of Tract 5C (26.1496 Acres), located in Gills Creek Magisterial District, as created in the plat recorded in the Clerks Office of Franklin County, Virginia in Instrument # 250000972.

Beginning at a point being the Southwesterly property corner of Franklin County, Virginia Tax Parcel # 0300005211, Tract 11-A1-A1-A1 of Westlake Towne Center, the property of RUNK & PRATT OF SML, LLC as acquired in Deed Book 907, Page 1757 and being the common corner to the southeasterly property corner with the herein described Tract 5C and lying on the northerly property line of Tax Parcel # 0300005301, Parcel No. 2 of Deed Book 1208. Page 761, the property of OUT TO PASTURE, LLC as acquired in Deed Book 1168, Page 1129 of the aforesaid Clerks Office for the POINT OF BEGINNING.

Thence leaving the property of RUNK & PRATT OF SML, LLC and with the northerly property line of OUT TO PASTURE, LLC, S 89° 12' 34" W, a distance of 669.84 feet to a point;

Thence continuing with the northerly property line of Tax Parcel # 0300005301 the property of OUT TO PASTURE, LLC, S 89° 32' 43" W, a distance of 34.00 feet to a point being the northwesterly property corner of Tax Parcel # 0300005301 and the northeasterly common property corner with Tax Parcel # 0300005300 the property of MICHAEL RAY NEAMO, MOSE KREATON NEAMO and ROBIN JANICE NEAMO as acquired in Deed Book 361, Page 1873 and Deed Book 544, Page 1211;

Thence leaving Tax Parcel # 0300005301 and with the northerly property line of Tax Parcel # 0300005300 for the following four (4) courses:

S 88° 05' 42" W, a distance of 18.81 feet to a point;

Thence S 80° 34' 09" W, a distance of 345.07 feet to a point:

Thence S 59° 48' 26" W, a distance of 445.87 feet to a point;

Thence N 25° 30' 02" W, a distance of 83.48 feet to a point at the southeasterly property corner of Tax Parcel # 0300000105 the property of WILLARD INVESTMENT PROPERTIES, LLC as acquired in Deed Book 1166, Page 1629 of the said Clerks Office.

Thence leaving Tax Parcel # 0300005300 and with the easterly property line of Tax Parcel # 0300000105, N 33° 58' 02" E, a distance of 2014.99 feet to a point being the common property corner of the herein described Tract 5C and Tract 5B both shown and created in Instrument # 250000972.

Thence leaving Tax Parcel # 0300000105 and with the common property lines of Tracts 5C and 5B for the following four (4) courses:

S 51° 47’ 44” E, a distance of 237.85 feet to a point;

Thence N 58° 42’ 44” E, a distance of 239.52 feet to a point;

Thence S 52° 37’ 53” E, a distance of 78.70 feet to a point;

Thence S 01° 46’ 14” E, a distance of 264.51 feet to a point lying on the northerly property line of the said Tax Parcel # 0300005211 the property of RUNK & PRATT OF SML, LLC;

Thence leaving Tract 5B and with the property of RUNK & PRATT OF SML, LLC for the following seven (7) courses:

S 88° 13’ 46” W, a distance of 247.65 feet to a point;

Thence S 29° 06’ 54” W, a distance of 210.83 feet to a point;

Thence S 32° 37’ 03” E, a distance of 48.80 feet to a point;

Thence S 02° 47’ 08” W, a distance of 267.13 feet to a point;

Thence S 16° 47’ 46” E, a distance of 300.11 feet to a point;

Thence S 42° 03’ 52” E, a distance of 182.28 feet to a point;

Thence S 06° 56’ 13” E, a distance of 199.80 feet to the POINT OF BEGINNING and containing 26.1496 Acres, 1,139,078 Square Feet more or less.

The following is a Metes and Bounds Description of Tract 6A-1 (56.31033 Acres), located in Gills Creek Magisterial District, as created in the plat recorded in the Clerks Office of Franklin County, Virginia in Deed Book 1204, Pages 568-569.

Beginning at a point lying on the southerly right-of-way line of U. S. Route # 122, Booker T. Washington Highway (variable width right-of-way) and being the northeasterly property corner of Franklin County, Virginia Tax Parcel # 0300000105, Tract 6A-1, the herein described tract of land and being the property of WILLARD INVESTMENT PROPERTIES, LLC as acquired in Deed Book 1166, Page 1629 of the said Clerks Office and being the common corner to the northwesterly property corner with Tax Parcel # 0300005207B, Tract 19A-1B1 also created in Deed Book 1204, Pages 568-569 being the property of KROGER LIMITED PARTNERSHIP I, as acquired in Deed Book 1209, Page 1949 of the said Clerks Office for the POINT OF BEGINNING.

Thence leaving the southerly right-of-way line of U. S. Route # 122 and with the common property line between Parcels 6A-1 and 19A-1B1 for the following two (2) courses:

S 10° 19’ 20” W, a distance of 236.90 feet to a point;

Thence S 79° 33’ 29” E, a distance of 112.97 feet to a point being the northwesterly corner to Tax Parcel # 0300005226 and the 40’ wide private road designated Apron Road;

Thence leaving Tax Parcel # 0300005207B, Tract 19A-1B1 and partially with the westerly property line of Tax Parcel # 0300005200 the property of WILLARD CONSTRUCTION OF SMITH MOUNTAIN LAKE, LLC as acquired in Deed Book 667, Page 367 and Deed Book 689, Page 160, S 35° 44’ 16” W, passing along the westerly property line of Tax Parcel # 0300005225 the property of LAKESIDE IMPORTS & DISTRIBUTING, LLC as acquired in Deed Book 1018, Page 1759, and passing along the westerly property line of Tax Parcel # 0300005227 the property of ABOONE DEVELOPMENT, INC. as acquired in Deed Book 1225, Page 546 and with the westerly property line of Tax Parcel # 0300005228 the property of WILLARD CONSTRUCTION OF SMITH MOUNTAIN LAKE, LLC as acquired in Deed Book 667, Page 367, all of the said Clerks Office for a total distance of 3,081.16 feet to a point at the southwesterly property corner of Tax Parcel # 0300005228 and lying on the northerly property line of Tax Parcel # 0300005300 the property of MICHAEL RAY NEAMO, MOSE KREATON NEAMO and ROBIN JANICE NEAMO as acquired in Deed Book 361, Page 1873 and Deed Book 544, Page 1211;

Thence leaving Tax Parcel # 0300005228 and with Tax Parcel # 0300005300 for the following two (2) courses:

N 23° 43’ 56” W, a distance of 210.39 feet to a point;

Thence S 78° 23’ 33” W, a distance of 53.49 feet to a point on the northerly property line of Tax Parcel # 0300005300, said point being the common property corner with Tax Parcel # 0290002400 the property of the BOOKER T. WASHINGTON NATIONAL MONUMENT FOUNDATION as acquired in Deed Book 148, Page 427;

Thence leaving Tax Parcel # 0300005300 and with Tax Parcel # 0290002400 for the following thirteen (13) courses:

N 00° 58’ 09” W, a distance of 44.49 feet to a point;

Thence N 20° 04’ 57” W, a distance of 43.46 feet to a point;

Thence N 27° 44’ 17” W, a distance of 69.92 feet to a point;

Thence N 20° 02’ 39” W, a distance of 95.64 feet to a point;

Thence N 08° 11’ 27” W, a distance of 84.63 feet to a point;

Thence N 49° 20’ 52” W, a distance of 38.81 feet to a point;

Thence N 21° 32’ 38” W, a distance of 182.86 feet to a point;

Thence N 11° 45’ 17” W, a distance of 55.52 feet to a point;

Thence N 36° 22’ 59” W, a distance of 38.19 feet to a point;

Thence N 18° 01’ 13” W, a distance of 184.72 feet to a point;

Thence N 20° 54’ 11” W, a distance of 204.38 feet to a point;

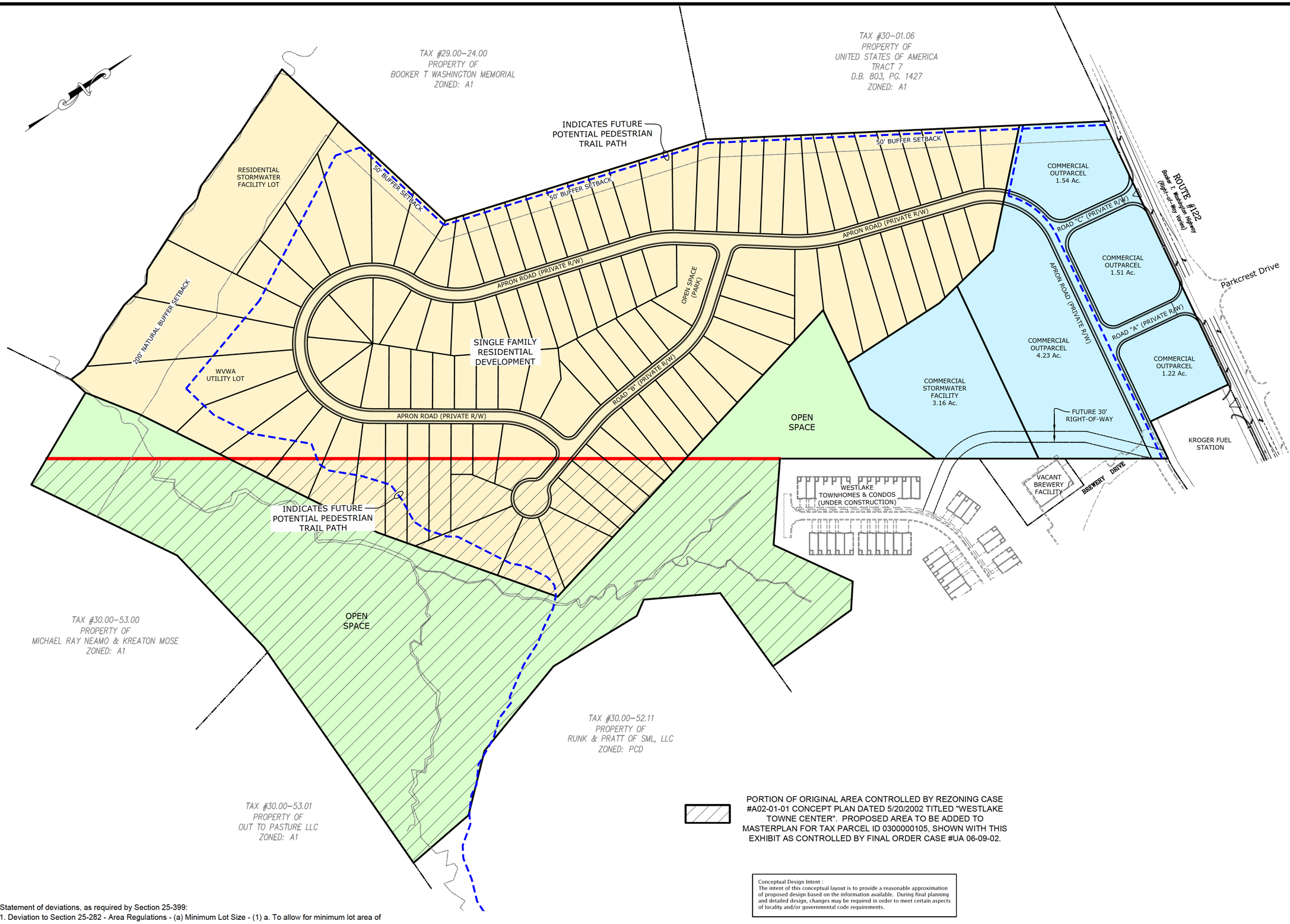
Thence N 78° 40’ 10” E, a distance of 612.36 feet to a point;

Thence N 18° 24’ 28” E, a distance of 752.04 feet to a point at the southeasterly property corner of Tax Parcel # 0300000106 the property of The UNITED STATES OF AMERICA as acquired in Deed Book 803, Page 1427;

Thence leaving Tax Parcel # 0290002400 and with Tax Parcel # 0300000106, N 33° 07’ 44” E, a distance of 1093.07 feet to a point lying on the southerly right-of-way line of U. S. Route 122, Booker T. Washington Highway;

Thence leaving Tax Parcel # 0300000106 and with the southerly right-of-way line of U. S. Route 122, S 79° 35’ 34” E, a distance of 799.59 feet to the POINT OF BEGINNING and containing 56.31033 Acres, 2,452,878 Square Feet more or less.

X:\word\2024\24193\Description of Tract 6A-1.docx



PORTION OF ORIGINAL AREA CONTROLLED BY REZONING CASE #A02-01-01 CONCEPT PLAN DATED 5/20/2002 TITLED "WESTLAKE TOWNE CENTER". PROPOSED AREA TO BE ADDED TO MASTERPLAN FOR TAX PARCEL ID 0300000105, SHOWN WITH THIS EXHIBIT AS CONTROLLED BY FINAL ORDER CASE #UA 06-09-02.

Conceptual Design Intent :
The intent of this conceptual layout is to provide a reasonable approximation of proposed design based on the information available. During final planning and detailed design, changes may be required in order to meet certain aspects of locality and/or governmental code requirements.

Statement of deviations, as required by Section 25-399:

1. Deviation to Section 25-282 - Area Regulations - (a) Minimum Lot Size - (1) a. To allow for minimum lot area of 8,000 sf within the residential portion of the development community.
   Reason - To allow for consistency and proposed density within the proposed residential portion of the development community.
2. Deviation to Section 25-282 - Area Regulations - (a) Minimum Lot Size - (2) a. To allow for a minimum of 60 foot lot width for residential lots being served by both public water and sewer.
   Reason - To allow for consistency and proposed density within the proposed residential portion of the development community.
3. Deviation to Section 25-395 - Minimum Dimensions - (a) Front Setback. To allow for a minimum of 25 foot front setback from the proposed right-of-way of each private street within the residential portion of the development community.
   Reason - To allow for consistency and proposed density within the proposed residential portion of the development community.

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

SITE TABULATION & SUMMARY:

TOTAL ACREAGE: (INCLUDES TAX No. 0300000105 & 0300005228)	±82.7 ACRE
COMMERCIAL ACREAGE:	±13.0 ACRE
RESIDENTIAL ACREAGE:	±45.2 ACRE
60' WIDTH SFR LOTS:	103 TOTAL LOTS
PROPOSED DENSITY:	2.28 HOUSES PER ACRE
OPEN SPACE ACREAGE:	±24.5 ACRE

MASTER PLAN EXHIBIT

SHOWING

WESTLAKE VILLAGE BUSINESS PARK SOUTH

LOCATED WITHIN

GILLS CREEK MAGISTERIAL DISTRICT
FRANKLIN COUNTY, VIRGINIA

Lumsden Associates, P.C.
ENGINEERS | SURVEYORS | PLANNERS
4664 BRAMBLETON AVENUE, SW
P.O. BOX 20669
ROANOKE, VIRGINIA 24018
PHONE: (540) 774-4411
FAX: (540) 772-9445
WWW.LUMSDENPC.COM

DATE: "REVISED JANUARY 5, 2026" December 29, 2025
COMM. NO.: 25-259
SCALE: 1" = 100'
SHEET 1 OF 1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