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Traffic Impact Study for the proposed

NKU MIXED-USE DEVELOPMENT

Northern Kentucky University, City of Highland Heights, Kentucky

prepared for:

Fairmount Properties
1138 W 9th Street
Cleveland, OH 44113

THE KLEINGERS GROUP

6305 Centre Park Drive
West Chester, OH 45069
p. 513-779-7851
f. 513-779-7852

TABLE OF CONTENTS

List of Figures, Tables, and Appendices

FIGURES

TABLES

APPENDICES

This study was conducted to analyze the impact of the proposed mixed-use development, near the Northern Kentucky University campus. The development will occur on three sites along Louie B. Nunn Drive, west of US 27, in the City of Highland Heights, Kentucky.

The proposed development will occur on three development sites. Site A, located in the northwest corner of US 27 at Nunn Drive, will consist of a 68,000 square foot medical office building and on-site parking structure. The development will have two access drives. One access drive via Nunn Drive (right-in/right-out) and one full access drive opposite Faren Drive. Site A will be constructed in the first phase of development.

Site B is located in the southwest quadrant of US 27 at Nunn Drive. Site B will include a 150 unit apartment building, a 110 room hotel, 6,250 square foot retail shopping center, and a mixture of quality restaurants and high turnover restaurants. The site will be served by a full access driveway to the proposed Clara Drive Extension, and two full access driveways to Marshall Lane. In addition, the site will have a right-in/right-out driveway on US 27 and a right-in/right-out driveway on Nunn Drive. Site B will be built in the second phase of development.

Site C is located south of Nunn drive, and west of the proposed Clara Drive extension. This site will consist of a 150 unit apartment building, intended for student housing. Site C will also be constructed in the second phase of development.

Traffic counts were collected in the study area during typical AM and PM peak times on Thursday, February 15, 2018 and Tuesday, March 20, 2018. Traffic volumes from the highest AM and PM peak hours, in combination with a projected growth rate, were used to develop projected background traffic volumes. The development is projected to generate a total of 505 AM peak trips and 637 PM peak trips to and from the sites. These trips were added to the background traffic to generate total traffic volumes.

According to the turn lane warrant analysis, a southbound right-turn lane is warranted into the Site B driveway on US 27. In addition, a westbound left-turn lane is warranted on Nunn Drive at the Clara Drive extension.

The following roadway improvements are recommended to be completed prior to opening of each phase of development:

<u>Phase 1</u>

1. Construct a driveway connecting Site A to the existing 90 degree turn, where Wilson Road meets Faren Drive. Align the site driveway so that Faren Drive aligns directly opposite the site driveway. Operate the intersection a 3-way stop.
2. Construct a right-in/right-out driveway from Site A connecting to Nunn Drive. Provide signing and channelization to clearly designate the driveway as right-turn out only.
3. Place a “Do Not Block Intersection” sign (with supplemental pavement markings) on NB Sunset Drive, immediately south of Wilson Road.

Phase 2

Prior to opening of the Phase 2 development:

1. Extend Clara Drive from its existing terminus at Marshall Drive to a new intersection at Nunn Drive. Operate the intersection of Clara Drive/Marshall Lane as a 3-way stop.
2. Construct a driveway to/from Clara Drive extension to Site B.
3. Construct a right-in/right-out driveway from Site B connecting to Nunn Drive, between US 27 and Clara Drive Extension. Provide signing and channelization to clearly designate the driveway as right-turn out only.
4. Construct a right-in/right-out driveway from Site B connecting to US 27. Provide channelization and "No Left Turn" signs to prevent exiting from attempting to enter NB US 27 from this driveway.
5. Construct a full access driveway from Site B to Marshall Lane, directly opposite the driveway for Montgomery Cyclery. Operate the intersection as a 4-way stop.
6. Construct a full access driveway from Site B to Marshall Lane, approximately 250' west of the Montgomery Cyclery 4-way stop location. The driveway will be within the limits of an existing vertical curve, with plenty of sight distance in each direction. It is expected that motorists exiting this driveway will have a clear view of traffic at the adjacent 3-way stop (Clara Drive to the west) and the 4-way stop (Montgomery Cyclery to the east).
7. Construct a driveway from Site C, connecting with the Clara Drive Extension.
8. Construct a driveway from Site C connecting to the Arena access driveway.
9. Construct a 125' turn bay (75' storage pus 50' taper) for westbound Nunn Drive traffic at Clara Drive Extension.
10. Construct a 125' turn bay (75' storage pus 50' taper) for southbound US 27 traffic turning right into the Site B driveway.
11. Place a "Do Not Block Intersection" sign (with supplemental pavement markings) on EB Nunn Drive, immediately west of the Site B driveway.
12. Modify the lane usage on the north approach of US 27 at Nunn Drive. SB US 27 at Nunn Drive currently provides two through lanes and one exclusive right-turn-only lane. However, south of the intersection, US 27 provides three receiving lanes. Therefore, an additional through lane on SB US 27 can be created by restriping the existing SB RT lane to designate it as a shared through/right lane. Capacity analyses indicate that the overall intersection operation can be improved from LOS E to LOS D in the PM peak hour. This change is equally beneficial under both build and no-build scenarios.
13. Institute a program to study/optimize the traffic signal system along US 27 at regular intervals. It is recommended that these optimization studies be completed at 5 year (maximum) intervals.

This study was conducted to analyze the impact of the proposed mixed-use development, near the Northern Kentucky University campus. The development will occur on three sites along Louie B. Nunn Drive, west of US 27, in the City of Highland Heights, Kentucky. A Project Location Map is provided as Figure 2A (next page).

This report builds upon a Memorandum of Understanding (MOU) which was prepared at the outset of this study to document the traffic data collection and various assumptions which were used for the traffic volume projections. The MOU is included in Appendix A.

This report includes a complete description of the data collection, traffic volume projections, capacity analysis, and the resulting conclusions and recommendations. The key input and assumptions are described in the subsequent sections of this report.

2.1 DEVELOPMENT DESCRIPTION

The proposed site development will consist of three development sites:

- Site A will consist of a 68,000 square foot medical office building and on-site parking structure.
- Site B will include a 150 unit apartment building, a 110 room hotel, 6,250 square foot retail shopping center, and a mixture of quality restaurants and high turnover restaurants.
- Site C will consist of a 150 unit apartment building, intended for student housing.

A preliminary site plan is included in Appendix A of this report as part of the MOU. It should be noted that Site A will be developed in 2019, in Phase 1. Sites B and C will be built prior to the year 2021, in Phase 2.

2.2 STUDY AREA

The study area for the proposed development includes the nearby intersections which are considered the most likely to be impacted by the proposed development traffic. The study area includes the following intersections:

- US 27 (Alexandria Pike) at Sunset Drive
- US 27 at Louie B. Nunn Drive
- US 27 at Marshall Lane
- US 27 at Johns Hill Road
- Sunset Drive at Wilson Road (North Intersection)
- Sunset Drive at Wilson Road (South Intersection)
- Clara Drive Extension at Louie B. Nunn Drive
- Clara Drive Extension/Clara Drive/Marshall Lane

The following site access points are also included in the study:

- Site A Driveway at Faren Drive/Wilson Road
- Site A Driveway at Louie B. Nunn Drive (Right In/Right Out)
- Site B Driveway at Louie B. Nunn Drive (Right In/Right Out)
- Marshall Lane at West Site B Driveway
- Marshall Lane at East Site B Driveway (opposite the Montgomery Cyclery Driveway)
- Site B Driveway at US 27 (Right In/Right Out)

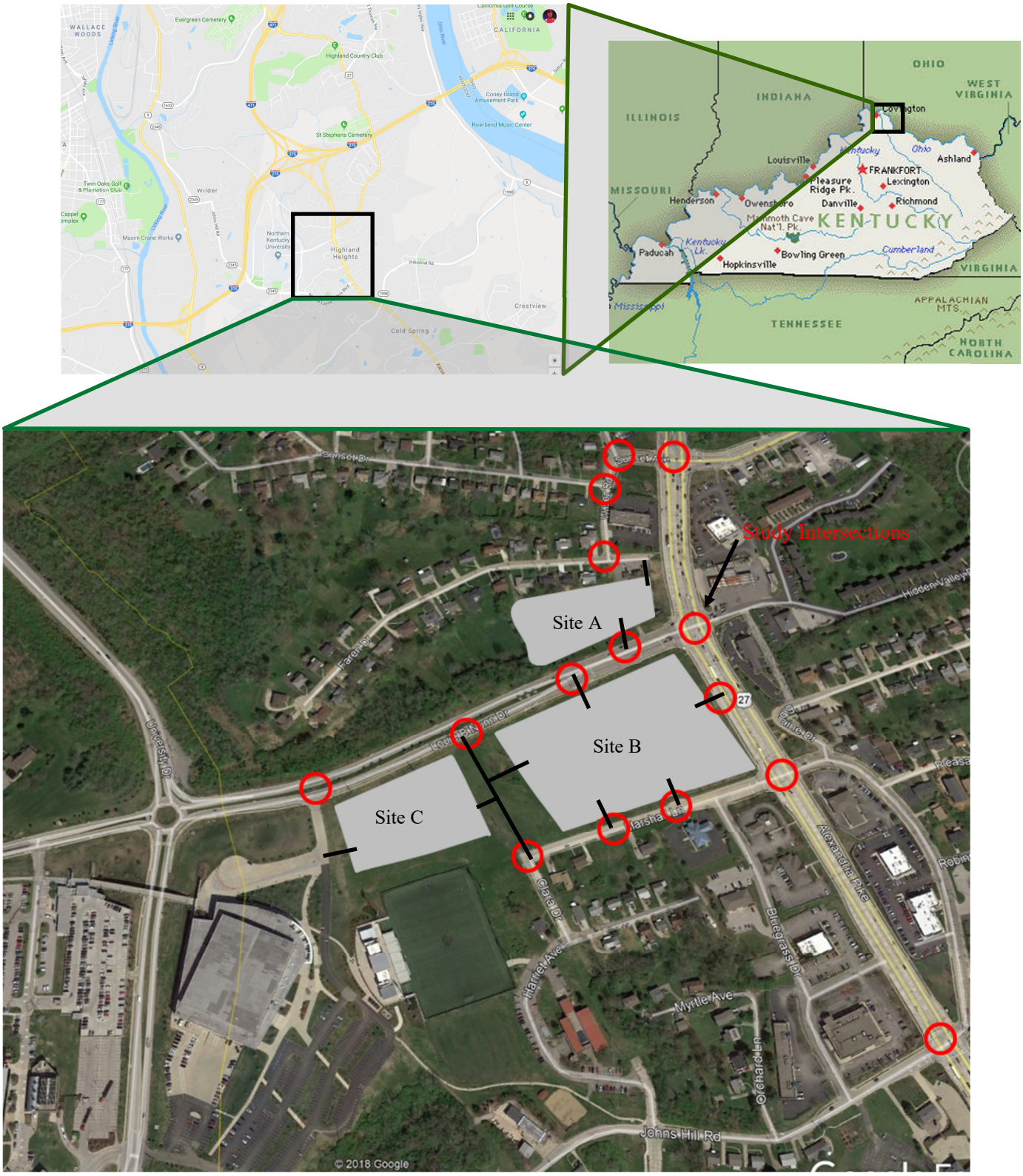


Figure 2A
Project Location Map

3.1 AREA LAND USE

This site is located just east of the Northern Kentucky University (NKU) campus. Land use north of the project site is primarily single-family residential, with some commercial property along US 27. South of the project site, land use includes a mix of office, retail, and restaurant businesses along Blue Grass Drive. A small residential neighborhood is also adjacent to the site, accessed from Clara Drive.

3.2 SITE ACCESSIBILITY

The proposed development will have primary access from Sunset Drive, Louie B Dunn Drive, and Marshall Lane. The majority of site traffic will travel to the site on US 27, with other site traffic expected to arrive from University Drive.

Along the site frontage, US 27 is a seven-lane arterial, with a posted speed limit of 35 miles per hour. To the north, US 27 connects to interchange ramps at I-275/I-471, which provides convenient access to the Ohio-Kentucky-Indiana Tri-State Region. US 27 carries over 40,000 vehicles per day, with directional traffic NB in the AM peak hour (towards the interchange) and SB in the afternoon (away from the interchange). Traffic signals along US 27 are interconnected as an integrated traffic signal system, to maximize traffic progression along the US route.

Louie B. Nunn Drive is a wide boulevard with two lanes in each direction. Nunn Drive has a posted speed limit of 35 MPH, and serves as the primary entrance point to NKU. Nunn Drive has an ADT of approximately 5,000 vehicles per day.

Marshall Lane is a collector route with a posted speed limit of 20 MPH. An existing 3-way stop is provided at the existing driveway with Montgomery Cyclery. In addition, a two-way stop is provided to the existing 2-leg intersection between Clara Dive and Marshall Lane. Traffic volumes on Marshall Lane are very low, with an ADT of less than 300 vehicles per day.

3.3 EXISTING TRAFFIC VOLUMES

Traffic counts were collected in the study area during typical AM and PM peak times on Thursday, February 15, 2018 and Tuesday, March 20, 2018. According to those counts, the morning peak hour occurs from 7:15 AM to 8:15 AM, and the afternoon peak hour occurs from 4:30 PM to 5:30 PM. The traffic volume data is provided in Appendix A, as part of the MOU. Exhibits AM-1 and PM-1 in the MOU summarize the existing AM and PM peak hour turning movement volume, respectively.

4.1 PROJECTED BACKGROUND (NON-SITE) TRAFFIC VOLUMES

For this study, traffic growth rates were projected using the KYTC "Traffic Growth Calculation" spreadsheet. ADT's on US 27 were input into the spreadsheet for the year's 2011 to 2016. Based on the information provided, a 1.2 percent annual growth rate was used to project the counted volumes to the analysis years of 2019 (Phase 1 opening year), 2021 (Phase 2 opening year) and 2031 (design year). The resulting projected traffic volumes are used as the no-build traffic volumes for this study. The no-build traffic volumes are presented in Figures AM-2 through AM-4 and PM-2 through PM-4 in Appendix A. The growth rate calculations are also included in Appendix A.

4.2 ESTIMATED SITE-GENERATED TRAFFIC VOLUMES

The assumed trip generation rates were based on data published by the Institute of Transportation Engineers' *Trip Generation Manual, 9th Edition*. The trips for Site B were reduced, slightly, to account for internal trip interaction (e.g., retail to residential, residential to restaurant, etc.). A complete description of the calculations and internal trip reductions are provided in the MOU in Appendix A. The resulting assumed trip generation for each site is summarized in Table 4A, below.

SITE A	ENTER NO.	EXIT NO.	TOTAL TRIPS
Medical Office Building			
Weekday A.M. Peak Hour	**130**	**34**	**164**
Weekday P.M. Peak Hour	**58**	**148**	**206**

SITE B	ENTER NO.	EXIT NO.	TOTAL TRIPS
Hotel & Apartment			
Weekday A.M. Peak Hour	50	87	137
Weekday P.M. Peak Hour	92	61	153
Retail			
Weekday A.M. Peak Hour	18	11	29
Weekday P.M. Peak Hour	38	39	77
Restaurant			
Weekday A.M. Peak Hour	77	64	141
Weekday P.M. Peak Hour	97	59	156
AM PEAK HOUR - Total	**145**	**162**	**307**
PM PEAK HOUR - Total	**227**	**159**	**386**

SITE C	ENTER NO.	EXIT NO.	TOTAL TRIPS
Student Apartment			
Weekday A.M. Peak Hour	**7**	**27**	**34**
Weekday P.M. Peak Hour	**29**	**16**	**45**

Table 4A—Summary of Site Generated Traffic

The traffic generated by the development was assigned to the roadway system as discussed in Section 4.3 of this report.

4.3 TRIP DISTRIBUTION

The MOU in Appendix A provides a complete description of the assumptions used to assign site generated traffic to the roadway system. Following completion of the MOU, the proposed site plan was adjusted, slightly, to include the following changes:

- The full access driveway from Site B to Nunn Drive was converted to a right-in/right-out only driveway;
- The intersection of Clara Drive Extension at Nunn Drive was converted to a full movement intersection;
- A new driveway was added to connect Site B to Clara Drive Extension.

The proposed site changes affected how site generated traffic was assigned to the roadway, for Site B and Site C. The revised site generated traffic, based on the current site plan, is provided in Appendix B.

4.4 PROJECTED TOTAL TRAFFIC VOLUMES

The projected 2019, 2021, and 2031 no-build volumes were combined with the assumed site-generated traffic volumes to calculate the projected build traffic volumes. The resulting total traffic volumes are also provided in Appendix B.

5.0 TRAFFIC ANALYSIS

Projected 2019, 2021, and 2031 no-build and build traffic volumes were analyzed at each study area intersection to determine the impacts of the proposed development. The analysis included turn lane warrants, capacity analyses, and storage length calculations, as described in the subsections below.

5.1 TURN LANE WARRANT ANALYSIS

Turn lane warrant analysis procedures as required by KYTC were used to identify locations where turn lane pockets would be warranted. The analyses for right-turn lanes, which were based on design year 2031 conditions, are summarized in Table 5A below.

Right-Turn Lane Warrants

Intersection	Turn Movement	Speed Limit	Turn Volume	Advancing Volume	Time Period	Comments
Right-Turn Lane Nunn Drive to Site A	WB Right	35	52	621	AM Peak, 2031	Right-Turn Lane is not warranted
Right-Turn Lane Nunn Drive to Arena Driveway	EB Right	35	5	590	PM Peak, 2031	Right-Turn Lane is not warranted
Right-Turn Lane Nunn Drive to Clara Drive Extension	EB Right	35	0	597	PM Peak, 2031	Right-Turn Lane is not warranted
Right-Turn Lane Nunn Drive to Site B Driveway	EB Right	35	23	623	PM Peak, 2031	Right-Turn Lane is not warranted
Right-Turn Lane US 27 to Site B Driveway	SB Right	35	34	2412	PM Peak, 2031	**Right-Turn Lane is warranted**
Right-Turn Lane Marshall Ln to Site B East Driveway	WB Right	20	68	88	PM Peak, 2031	Right-Turn Lane is not warranted
Right-Turn Lane Marshall Ln to Site B West Driveway	WB Right	20	11	20	PM Peak, 2031	Right-Turn Lane is not warranted

Left-Turn Lane Warrants

Intersection	Turn Movement	Left Turn Volume	Advancing Volume	Opposing	Speed Limit	# of Thru Lanes	% T	Time Period	Comments
Left-Turn Lane Nunn Drive to Clara Drive	WB Left	111	473	597	35	2	2%	PM Peak, 2031	**Left-Turn Lane is warranted**

Table 5A: Turn Lane Warrant Analysis

The turn lane warrant analysis is provided for each location in Appendix C. According to these analyses, a southbound right-turn lane is warranted at the Site B driveway on US 27, and a left-turn lane is warranted at westbound Nunn Drive to the Clara Drive extension. These turn lanes were assumed to be included with the development, and are included in the capacity analysis.

5.2 CAPACITY ANALYSIS

A Synchro model was developed for each analysis scenario, to assess traffic operations within the study area. The model results were exported to HCM reports, in conformance with KYTC guidelines for traffic impact studies. It should be noted that current (2010) HCM methodologies can not directly calculate delay for a lane group with a combined dual turning lane/through lane. Therefore, 2000 HCM report reports were used for the signalized intersections for this study.

The analysis was used to determine the Level of Service (LOS) of the study area intersections. The LOS represents an intersection's measure of effectiveness and is used to determine the impacts on the intersection from the proposed development. LOS values range from "A" (best) to "F" (failing). A peak hour factor of 0.92 was used for all of the capacity analyses. In addition, the existing cycle lengths (160 seconds AM, 170 seconds PM) was applied to each analysis scenario.

An overall summary of the average delay (seconds per vehicle) and level of service is summarized for each scenario in Table 5B, on page 5-6. Summary tables for each of the seven analysis scenarios are provided in Appendix D These tables provide a summary of LOS and delay for each individual lane group. In addition, the individual capacity analysis summary reports, as generated in HCM format from Synchro, are also contained in Appendix D.

It should be noted that as part of this study, drone video recordings were collected for both AM and PM peak hour conditions. The video captures aerial images of key operational characteristics within the study area, including intersection queuing. The video was used to calibrate/validate the Synchro model with the actual conditions as documented in the videos. As a result, it was concluded that the Synchro model default values for lane capacity, and assumed travel speeds based on existing speed limits, accurately reflect conditions as captured in the aerial videos.

Existing Conditions—Year 2018

Synchro models were developed to assess existing traffic conditions during the AM and PM commuter peak hours. The results of these analysis indicate that:

- The signalized intersections within the study area are operating at LOS C or better during peak hours, except the intersection of Alexandria Pike at Sunset Drive which operates at LOS D in the evening peak hour.
- All volume/capacity (V/C) ratios for individual intersections are less than 1.0. In other words, each intersection provides sufficient capacity to accommodate peak hour traffic.
- Northbound and southbound through movements (US 27) are operating at LOS B or better at the Johns Hill Road and Marshall Lane intersections. US 27 through movements are operating at LOS C or better at the Nunn Drive intersections. US 27 through movements are also operating at LOS C or better at the Sunset drive intersection, with the exception of the northbound through movement which is operation at LOS D during the PM peak hour.
- Several individual side street movements are operating at LOS E and LOS F during peak hours.
- All stop–sign-controlled movements at non-signalized intersections (Wilson Road at Sunset north and Wilson Road at Sunset south) operate at LOS A, except the southbound movement at the north intersection which operates at LOS B.

It should also be noted that the HCM methodology is indicating that the intersection of Wilson Road at Sunset Drive north intersection is working at a good level of service (LOS B, 11.7 seconds/veh delay for the southbound stop-sign-controlled movement) during the PM peak hour. The HCM methodology assumes that the intersection is in an isolated location, and is not impacted by upstream conditions. For this particular instance, the Wilson/Sunset intersection is located very near the US 27/Sunset intersection. As a result, queue lengths frequently build on the west approach at the US 27 intersection, which blocks egress opportunities from Wilson Road. Field observations and Simtraffic reports confirm that delays from Wilson Road are much heavier in the afternoon peak hour, and can approach 60 seconds or more, depending on the queuing at US 27.

The movements on the US 27 corridor which are experiencing heavy delays are predominantly side street and protected only left-turn movements. This delay is mainly associated with the long cycle lengths, which are necessary to maintain effective progression for the heavy traffic volumes on US 27 (Alexandria Pike). As a consequence, side street movements and protected only left-turn movements experience long delays within the traffic signal cycle, waiting for the green phase.

Design Year 2019 No-Build Conditions

Synchro models were used to asses traffic conditions for the Design Year 2019, under no-build conditions. According to the analysis, year 2019 no-build traffic conditions are expected to be very similar to year 2018 conditions. The projected annual growth rate of 1% is expected to have a very minor impact on overall intersection performance.

Design Year 2019 Build Conditions

Synchro models were developed to assess traffic conditions for the design year 2019, with Phase 1 (Site A) constructed and operational. Analysis of this scenario show that the proposed site driveways (Site A driveway/Wilson Rd/Faren Drive and Site A driveway\Nunn Drive) will operate at excellent levels of service. In addition, the analysis indicate that other intersections will operate with little to no impact, when compared with the no-build conditions. The most significant impact is expected to occur at the Alexandria Pike/Sunset Drive intersection, in the PM peak hour. The delay on the west approach was shown to increase, resulting in a modest increase in overall intersection delay from 41.3 sec/veh to 45.9 sec/veh.

2021 No-Build

The background traffic for 2021 was used to assess no-build performance at each study area intersection. Once again, with a predicted annual growth rate of just 1%, a very modest increase in background traffic is expected when compared with existing conditions. As a result, predicted traffic operations for the 2021 no-build condition are expected to be very similar to existing conditions.

2021 Build Conditions

The intersections within the study area were assessed under build conditions, in the year 2021. (The design year 2021 represents the opening year of the full development build out.) Based on these analysis, it can be concluded that full build-out of the proposed development will have a very modest impact to operations at most intersections within the study area. However, the site generated traffic, in combination with the assumed traffic growth, will begin approaching the maximum available capacity at the Sunset Drive and the Nunn Drive intersections, in the PM peak hour. The overall intersection V/C ratio at Sunset Drive is predicted to be at 0.96. In addition, the V/C ratio at the Nunn Drive intersection is expected to be 1.02, slightly over capacity.

In order to mitigate this impact, it is recommended that the lane usage on the north approach of US 27 at Nunn Drive be modified. SB US 27 at Nunn Drive currently provides two through lanes and one exclusive right-turn-only lane. However, south of the intersection, US 27 provides three receiving lanes. Therefore, an additional through lane on SB US 27 can be created by restriping the existing SB RT lane to designate it as a shared through/right lane. Capacity analyses indicate that the overall intersection operation can be improved from LOS E to LOS D in the 2031 PM peak hour. (See Table 5C, page 5-7). Analyses show that this improvement would be equally beneficial under both build and no-build scenarios.

The analysis also indicates that most site driveways will operate at good to excellent levels of service during peak hours. The only exception is the right-turn-out from the driveway from Site B to US 27, which is expected to operate at LOS D during the PM peak hour.

2031 No-Build

The background traffic for 2031 was used to assess operations at each study location. The analyses show that the projected 1% annual growth rate will not result in a significant impact to traffic conditions within the study area (when compared with existing conditions), with two notable exceptions:

1) The intersection of Alexandria Pike at Sunset Drive is expected to degrade from 40.8 sec/veh (average delay) in the 2018 PM peak hour to 45.8 sec/veh (average delay) in the 2031 PM peak hour. In particular, a significant increase in delay is predicted for the northbound through movement — increasing from 34.4 sec/veh under existing conditions to 59.6 sec/veh in the design year 2031. The increase in delay is directly attributable to the change in intersection V/C, which is expected to increase from 0.90 to 0.96 within this time period. The V/C ratio for the northbound through movement is expected to increase to 1.02, up from 0.85 under existing conditions.

2) The intersection of Alexandria Pike at Nunn Drive is expected to degrade from LOS C in the 2018 PM peak hour to LOS D in the 2031 PM peak hour. A significant increase in delay is predicted for the southbound through movement — from 17.2 sec/veh under existing conditions to 44.3 sec/veh in the design year 2031. Lane use modifications to improve operation at this location were discussed in the “2021 Build Conditions” sub-section, above.

Although the projected traffic growth is fairly modest, a slight increase in traffic growth can have

a significant impact on intersection operations when the volume/capacity (V/C) ratio is approaching 1.0. The analyses show that the predicted small change in traffic volumes as a result of normal traffic growth will have a significant affect on overall intersection operations at these two locations.

2031 Build Conditions

The intersections within the study area were assessed under build-out conditions, in the year 2031. The capacity analyses indicate that most intersections will operate at a very similar level of service, when compared with the 2031 no-build condition. In addition, analyses also indicate that site driveways will continue to operate at good levels of service, through the design year 2031.

However, the intersection of Alexandria Pike at Sunset Drive is expected to degrade from LOS D (2031 No-Build) to LOS E (2031 Build) in the PM peak hour—with the overall intersection V/C ratio increasing from 0.96 in the no-build scenario to 1.03 in the 2031 build scenario. Although site generated traffic accounts for less than 10% of the total traffic at this intersection, the slight increase in traffic will affect the overall delay considerably, since so little residual capacity is available at this location. It is expected that individual movements will operate with a V/C over 1.0. For example, the V/C ratio for the NB through is expected to be 1.02, given the projected volumes and assumed traffic signal phasing and green time splits.

Options to improve intersection performance are also very limited. Dual turning lanes are already provided on both side street approaches, which negates any opportunities for improving the side streets. In addition, adding a third northbound through lane would be extremely costly. Logically, the lane would need to extend to the ramp split, 0.5 mile north of the intersection. This improvement would necessitate replacement of the traffic signal and at least two sign trusses, including an existing Digital Message Sign (DMS) structure, and could involve significant earth work. In addition, it is likely that this improvement would require an Interchange Modification Study, with FHWA approval.

Similarly, level of service impacts are also expected at the intersection of US 27 at Nunn Drive. The overall intersection delay is expected to increase in the PM peak hour from 41.7 sec/veh (2031 no-build) to 63.4 sec/veh (2031 Build). The overall intersection V/C ratio is expected to increase from 1.02 to 1.13—with individual movements rising well above 1.0. (For example, the SB through movement will increase from 1.06 to 1.13.) Proposed lane use modifications to improve operation at this location were discussed in the “2021-Build” sub-section, previous page.

Under future conditions, it will also be very beneficial to continually monitor and update traffic signal system timing along the US 27 corridor. It is likely that operational improvements can be achieved through signal optimization (e.g., adjustments to the cycle lengths, splits, and offsets). Although individual movements would still be expected to operate with V/C ratios above 1.0., signal optimization could maximize progression along US 27, and maximize opportunities to increase green times for side streets and protected-only left-turn movements.

An overview summary of the capacity analysis for each of the seven study scenarios is provided

below

SUMMARY		Existing		2019 No-Build		2019 Build		2021 No-Build		2021 Build		2031 No-Build		2031 Build	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Alexandria Pike at Sunset Dr	AM	C	21.9	C	22.1	C	22.9	C	22.6	C	25.6	C	26.5	C	30.7
	PM	D	40.8	D	41.3	D	45.9	D	42.4	D	52.4	D	52.6	E	62.9
Alexandria Pike at Nunn Dr	AM	C	20.1	C	20.3	B	17.6	C	20.7	C	24.0	C	21.7	C	23.2
	PM	C	28.6	C	28.5	C	30.2	C	30.1	D	41.7	D	45.8	E	63.4
Alexandria Pike at Marshall Lane	AM	A	4.2	A	4.2	A	5.3	A	4.2	A	8.9	A	4.3	A	7.8
	PM	A	7.5	A	7.7	A	7.6	A	7.6	B	10.1	A	8.1	A	10.4
Alexandria Pike at Johns Hill Rd	AM	A	7.8	A	7.8	A	7.9	A	8.0	A	8.0	A	9.3	A	9.6
	PM	B	12.4	B	12.8	B	12.7	B	13.5	B	13.5	B	13.5	B	17.0
Wilson Road at Sunset Drive (North)	AM	A	9.2	A	9.2	A	9.6	A	9.0	A	9.7	A	9.4	A	9.8
	PM	B	11.7	B	11.8	B	13.5	B	11.9	B	13.7	B	12.6	B	14.7
Wilson Road at Sunset Drive (South)	AM	A	9.4	A	9.4	B	10.3	A	9.4	B	10.1	A	9.5	B	10.3
	PM	A	9.8	A	9.8	B	11.6	A	9.8	B	11.7	B	10.0	B	12.1
Wilson Road at Faren Drive	AM	-	-	-	-	A	7.4	-	-	A	7.4	-	-	A	7.4
	PM	-	-	-	-	A	7.2	-	-	A	7.2	-	-	A	7.2
Nunn Dr at Site A Driveway	AM	-	-	-	-	B	10.0	-	-	B	10.2	-	-	B	10.4
	PM	-	-	-	-	A	9.4	-	-	A	9.8	-	-	B	10.0
Nunn Dr at Site B Driveway	AM	-	-	-	-	-	-	-	-	A	9.2	-	-	A	9.2
	PM	-	-	-	-	-	-	-	-	B	10.8	-	-	B	11.1
Nunn Dr at Clara Extension	AM	-	-	-	-	-	-	-	-	B	10.9	-	-	B	11.2
	PM	-	-	-	-	-	-	-	-	C	16.2	-	-	C	17.7
Nunn Dr at Arena Driveway	AM	-	-	-	-	-	-	-	-	A	8.8	-	-	A	8.8
	PM	-	-	-	-	-	-	-	-	B	10.2	-	-	B	10.4
Clara Dr at Marshall Lane	AM	-	-	-	-	-	-	-	-	A	6.9	-	-	A	7.1
	PM	-	-	-	-	-	-	-	-	A	6.6	-	-	A	6.6
Marshall Lane at West Site B Drive	AM	-	-	-	-	-	-	-	-	A	8.6	-	-	A	8.6
	PM	-	-	-	-	-	-	-	-	A	8.7	-	-	A	8.7
Marshall Lane at East Site B Drive	AM	-	-	-	-	-	-	-	-	A	7.0	-	-	A	7.0
	PM	-	-	-	-	-	-	-	-	A	7.1	-	-	A	7.1
Alexandria Pike at Site B Driveway	AM	-	-	-	-	-	-	-	-	B	13.4	-	-	B	14.2
	PM	-	-	-	-	-	-	-	-	D	29.4	-	-	E	35.6

Table 5B: Summary of Capacity Analysis

Notes:
1) Overall intersection Level of Service and overall average delay is shown in this table.
2) Delay and LOS shown for worst performing movement at one-way stop controlled intersections.
3) Level of Service shown does not include improvements to the US 27/Nunn Drive intersection.

The expected delays and levels of service for the intersection at Alexandria Pike at Nunn Drive, given the proposed lane use modifications proposed in the “2021 Build” subsection, are provided in Table 5C (next page).

With Improvements		2021 Build		2031 No-Build		2031 Build	
		LOS	Delay	LOS	Delay	LOS	Delay
Alexandria Pike at Nunn Dr (Existing)	AM	C	25.6	C	26.5	C	30.7
	PM	D	52.4	D	52.6	E	62.9
Alexandria Pike at Nunn Dr (Improved)	AM	C	21.9	B	19.2	C	22.2
	PM	C	28.2	C	27.9	D	46.5

Table 5C: Capacity Analyses—Alexandria Pike at Nunn Drive (with Improvements)

The proposed improvement at Nunn Drive is expected to significantly improve intersection operation, particularly during the PM Peak Hour.

Capacity analysis summary tables are provided for each analysis scenario in Appendix D The tables provide a summary of LOS and delay for each individual lane group. The summary reports, as generated in HCM format from Synchro, are also contained in Appendix D.

5.3 QUEUING ANALYSIS

As discussed previously, a separate left-turn lane is warranted on WB Nunn Drive at Clara Drive (extension). The proposed storage length was developed based on KYTC standards. Per HD-902.17:

> *On uncontrolled approaches, minimum storage length should be 75 feet. If left turn volume at an uncontrolled approach exceeds 200 vehicles per hour, detailed storage length analysis should be conducted.*

Although the left-turn volume is less than 200 (111 left-turns during the 20131 PM peak hour), a queue length check was performed for this location. HCM analyses show that the maximum 95% queue for this movement is 1 vehicle (in the design year 2031 condition). Therefore, the 75' storage length plus the standard 50' taper length is recommended for this turn bay.

A southbound right-turn lane is also warranted for the right-turn-in movement from US 27 to the Site B driveway. Once again, the 75' storage length and a 50' taper is recommended for this turn bay, to meet KYTC standards.

A check was also made to determine if existing storage bays were sufficient to accommodate the expected queues at key signalized intersections. Per HD-902.17:

> *At signalized intersections, storage length may be determined by Figure 8. More detailed storage length requirements may be provided by capacity analysis.*

For purposes of this assessment, the intersections were analyzed in Simtraffic, using the expected 95% queue lengths generated by the software. The results of those assessments are summarized in Table 5D.

2031 PM Peak Hour			Eastbound			Westbound			Northbound			Southbound		
			LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	LT	THRU	RT
Alexandria Pike at Sunset Dr	No-Build	No Improvements	207'			360'			358'	644'		528'	515'	
	Build	No Improvements	215'			341'			343'	607'		563'	536'	
	Build	Imp. Nunn	222'			380'			350'	674'		594'	639'	
	Available Storage		150'			275'			260'	-		430'	-	
Alexandria Pike at Nunn Dr	No-Build	No Improvements	463'		69'	71'	262'		119'	590'		192'	702'	
	Build	No Improvements	354'		86'	136'	286'		177'	318'		240'	556'	
	Build	With Improvements	385'		53'	121'	230'		161'	267'		191'	605'	
	Available Storage		750'			160'	-		200'	-		170'	-	

Table 5D: Predicted 95th Percentile Queue Lengths at Signalized Intersections

As shown in the Table, the high volume of traffic in combination with the long cycle lengths is expected to create storage back ups which exceed the available storage during peak time periods. It is important to note that overflow conditions are expected to exist for both the build and no-build conditions. It should also be noted that SimTraffic queue lengths are estimated by considering the network, as a whole. For this analysis, SimTraffic considered bottlenecks downstream to estimate traffic flow (and queue lengths) for each movement. Therefore, the predicted queue lengths can be affected significantly with small adjustments to signal timing assumptions. The estimated queue lengths are provided as general approximations, with acknowledgement that the expected queues would change if traffic signal timings were adjusted.

It is also particularly interesting to note that the queuing analysis for the eastbound approach of Nunn Drive at US 27 indicate that a 385' max queue is expected. The available storage space from US 27 to the Clara Drive extension is 750'; therefore, this queue lengths would not be expected to extend beyond the Clara Drive Extension intersection. However, it is possible that queue length may occasionally block egress from the right-out-only driveway to Site B, particularly if the signal timing adjustments were implemented to subtract side street green time in favor of adding green time to serve the US 27 through traffic volumes.

6.1 FINDINGS

The following findings were made during the traffic impact study process:

1. Heavy traffic volumes on US 27 require relatively long cycle lengths, to facilitate efficient traffic flow along the corridor. These long cycle lengths create long delays for adjacent side street movements and protected only left-turn phases.
2. Traffic growth on US 27 is expected to be approximately 1% per year, through the design year 2031. The relatively minor traffic growth, however is expected to diminish level of service at the two largest intersections within the study area: US 27 at Sunset Drive, and US 27 at Nunn Drive. By the design year, it is expected that V/C ratios for individual movements will exceed 1.0 in the design year 2031, under no-build conditions.
3. The proposed site configuration is expected to provide good to excellent levels of service at each site driveway. The only notable operational concern is expected to occur for the right-turn-out from the Site B driveway to US 27, which is expected to operate at LOS E in the afternoon peak hour. However, the site provides other egress opportunities, which will allow site patrons to avoid using this driveway during afternoon time periods, if they choose to do so.
4. Traffic generated by the proposed development is not expected to result in a significant impact to traffic operations along US 27. The most notable exception will occur at the US 27/Sunset Drive intersection, where LOS is expected to diminish from LOS D in 2031 no-build to LOS E in 2031 build , in the PM peak hour.
5. The projected increase in background traffic volumes is expected to diminish the level of service at the US 27/Nunn Drive intersection from LOS C (2018 PM peak hour) to LOS D (2031 PM peak hour, no-build). The addition of site generated traffic will further degrade this intersection to LOS E in the 2031 Build PM peak hour, under existing intersection geometry.
6. The intersection of Wilson Road at Sunset Drive is located less than 150' west of the intersection of Sunset Drive at US 27. This configuration results in very short storage capacities on the west leg of Sunset at US 27. As a result, traffic backups on Sunset Drive can block egress from Wilson Road, particularly during the peak evening time periods.
7. Traffic growth on US 27, in combination with the current long cycle lengths, can be expected to result in long queues at congested intersections. In some instances, the queue lengths are likely to exceed available storage bays. This finding is true for both build and no-build conditions.
8. The available storage between US 27 and the Clara Drive extension is approximately 750'. The expected 95% queue length for eastbound Nunn Drive at US 27 is approximately 350'. Therefore, queue lengths forming on Nunn Drive are not expected to affect traffic operations at the Clara Drive Extension intersection.
9. Marshall Lane will continue to operate at good levels of service, for both build and no-build scenarios.
10. Significant impacts to intersection performance at Johns Hill/US 27 are not expected.

6.2 RECOMMENDATIONS

The recommended roadway improvements for each phase of development are discussed below:

Phase 1

1. Construct a driveway connecting Site A to the existing 90 degree turn, where Wilson Road meets Faren Drive. Align the site driveway so that Faren Drive aligns directly opposite the site driveway. Operate the intersection a 3-way stop.
2. Construct a right-in/right-out driveway from Site A connecting to Nunn Drive. Provide signing and channelization to clearly designate the driveway as right-turn out only.
3. Place a "Do Not Block Intersection" sign (with supplemental pavement markings) on NB Sunset Drive, immediately south of Wilson Road.

Phase 2

Prior to opening of the Phase 2 development:

1. Extend Clara Drive from its existing terminus at Marshall Drive to a new intersection at Nunn Drive. Operate the intersection of Clara Drive/Marshall Lane as a 3-way stop.
2. Construct a driveway to/from Clara Drive extension to Site B.
3. Construct a right-in/right-out driveway from Site B connecting to Nunn Drive, between US 27 and Clara Drive Extension. Provide signing and channelization to clearly designate the driveway as right -turn out only.
4. Construct a right-in/right-out driveway from Site B connecting to US 27. Provide channelization and "No Left Turn" signs to prevent exiting from attempting to enter NB US 27 from this driveway.
5. Construct a full access driveway from Site B to Marshall Lane, directly opposite the driveway for Montgomery Cyclery. Operate the intersection as a 4-way stop.
6. Construct a full access driveway from Site B to Marshall Lane, approximately 250' west of the Montgomery Cyclery 4-way stop location. The driveway will be within the limits of an existing vertical curve, with plenty of sight distance in each direction. It is expected that motorists exiting this driveway will have a clear view of traffic at the adjacent 3-way stop (Clara Drive to the west) and the 4-way stop (Montgomery Cyclery to the east).
7. Construct a driveway from Site C, connecting with the Clara Drive Extension.
8. Construct a driveway from Site C connecting to the Arena access driveway.
9. Construct a 125' turn bay (75' storage pus 50' taper) for westbound Nunn Drive traffic at Clara Drive Extension.
10. Construct a 125' turn bay (75' storage pus 50' taper) for southbound US 27 traffic turning right into

the Site B driveway.

11. Place a "Do Not Block Intersection" sign (with supplemental pavement markings) on EB Nunn Drive, immediately west of the Site B driveway.
12. Modify the lane usage on the north approach of US 27 at Nunn Drive. SB US 27 at Nunn Drive currently provides two through lanes and one exclusive right-turn-only lane. However, south of the intersection, US 27 provides three receiving lanes. Therefore, an additional through lane on SB US 27 can be created by restriping the existing SB RT lane to designate it as a shared through/right lane. Capacity analyses indicate that the overall intersection operation can be improved from LOS E to LOS D in the PM peak hour. This change is equally beneficial under both build and no-build scenarios.
13. Institute a program to study/optimize the traffic signal system along US 27 at regular intervals. It is recommended that these optimization studies be completed at 5 year (maximum) intervals.

Supplemental analyses were completed to confirm that the proposed site access system would be adequate to accommodate Fall Semester traffic conditions. A summary of this analysis is contained in Appendix F.

6.3 POSSIBLE FUTURE IMPROVEMENTS

The City of Highland Heights is considering an improvement to connect Sunset Drive directly with US 27. Under this concept, Wilson Road would tee into Sunset Drive from the south, approximately 150; west of the existing north leg of Wilson Road. The proposed concept is intended to improve the connection from University Drive to US 27. The proposed improvement is not expected to either improve nor degrade accessibility to Site A. In addition, the plan would not be expected to improve operations for the north leg of Wilson Road, since the intersection will remain close to US 27. This intersection will be impacted by queues from US 27 in the same general way as the existing configuration.

Memorandum of Understanding

THE KLEINGERS GROUP

CINCINNATI
COLUMBUS
DAYTON
LOUISVILLE

6305 Centre Park Drive
West Chester, OH 45069
phone 513.779.7851
fax 513.779.7852
www.kleingers.com

TO: Linzy Brefeld, KYTC; Dave Geohegan, City of Highland Heights

CC: FILE

FROM: Mark W. Nolt, PE, PTOE

DATE: April 9, 2018

RE: MOU – NKU Mixed Use Development

A traffic impact study will be performed to analyze the impacts of a proposed mixed-use development to be located along Louie B Nunn Drive between US 27 and University Drive, as shown below. This memorandum of understanding contains collected traffic data, site-generated trip calculations, study assumptions, and proposed methodologies to be used in the study. It is requested that the KYTC and the City of Highland Heights stakeholders provide comments/concurrence on the MOU prior to Kleingers performing the analyses for the study.

Study Area and Traffic Data
Based on preliminary coordination with KYTC and the City of Highland Heights, the proposed study area was defined, and traffic counts were collected to define the existing traffic volumes. The following intersections were counted, and are included in the Traffic Impact Study:

- Alexandria Pike at Sunset Drive
- Alexandria Pike at Louie B. Nunn Drive
- Alexandria Pike at Marshall Lane
- Alexandria Pike at Johns Hill Road
- Sunset Drive at Wilson Road (North Intersection)
- Sunset Drive at Wilson Road (South Intersection)
- Marshall Lane at Bluegrass Drive
- Marshall Lane at Montgomery Cycles Driveway

The following site access points are also included in the study:

- Site A Driveway at Faren Drive/Wilson Road
- Site A Driveway at Louie B. Nunn Drive (Right In/Right Out)
- Site B Driveway at Alexandria Pike (Right In/Right Out)
- Site B Driveway at Louie B. Nunn Drive
- Site C Clara Drive Extension at Louie B. Nunn Drive (Right In/Right Out)
- Site C Driveway at Louie B. Nunn Drive/BB&T Arena Driveway (Right In/Right Out)
- Site C Clara Drive Extension/Clara Drive/Marshall Lane

Turning movement counts were collected and are summarized in tables attached to this memo. Based on the collected data, the morning and afternoon peak hours were determined to occur from 7:15 to 8:15 AM and 4:30 to 5:30 PM, respectively. See Figures AM-1 and PM-1, attached to this memo.

No-Build Traffic Volumes
The traffic volumes, as counted, were inflated to the project opening year/Phase 1 (2019), opening year/full-build (2021) and future design year (2031) using an average annual growth rate. For this study, a traffic growth rate of 1.2% per year was developed using the KYTC "TIS-Forecast" spreadsheet tool. Traffic volumes were projected to the target years assuming linear growth:

- 2019 No-Build Traffic, assuming 1.20% increase for annual growth (2018 adjusted traffic volumes x 1.012) – See Figures AM-2 and PM-2, attached to this memo.
- 2021 No-Build Traffic, assuming 1.20% growth for 3 years (2018 adjusted traffic volumes x 1.036) – See Figures AM-3 and PM-3, attached to this memo.
- 2031 No-Build Traffic, assuming 1.20% growth for 13 years (2018 adjusted traffic volumes x 1.156) – See Figures AM-4 and PM-4, attached to this memo.

Site Generated Traffic
The proposed development is expected to consist of construction on three separate sites. The following development sizes are assumed for this study:

Site A – Medical Office Building – 68,000 Square Feet

Site B – Mixed Use
- Apartments – 150 Dwelling Units
- Hotel – 110 Rooms
- Retail – 6,250 square feet, gross leasable area

- Restaurants
  - 6,250 square feet Quality Restaurant
  - 12,500 square feet High Turnover (Sit-Down) Restaurant

Site C – Student Apartments – 130 Dwelling Units

The trip generation rates were based on data published by ITE, as shown in the summary sheets are attached to this memo. The expected trip generation, per ITE methodology, is summarized in the following tables.

ITE Trip Generation – Site A

CONDITION	AVERAGE RATE EQUATION	SITE-GENERATED TRIPS				
		ENTERING TRIPS		EXITING TRIPS		TOTAL
		PCT	NO.	PCT	NO.	TRIPS
Medical Office	ITE Land Use Code 720	68,000 sf				
Weekday A.M. Peak Hour	*T = 2.39 X*	79%	**130**	21%	**34**	**164**
Weekday P.M. Peak Hour	*Ln(T) = 0.90 LN(X)+1.53*	28%	**58**	72%	**148**	**206**

ITE Trip Generation – Site B

CONDITION	AVERAGE RATE EQUATION	SITE-GENERATED TRIPS				
		ENTERING TRIPS		EXITING TRIPS		TOTAL
		PCT	NO.	PCT	NO.	TRIPS
Apartments	ITE Land Use Code 220	150 Dwelling Units				
Weekday A.M. Peak Hour	*T = 0.49(X) + 3.73*	20%	**15**	80%	**62**	**77**
Weekday P.M. Peak Hour	*T = 0.55(X) + 17.65*	65%	**65**	35%	**35**	**100**
Hotel	ITE Land Use Code 310	110 Rooms				
Weekday AM Peak Hour	*T = 0.53 X*	59%	**35**	41%	**25**	**60**
Weekday PM Peak Hour	*T = 0.60 X*	51%	**34**	49%	**33**	**67**
Retail	ITE Land Use Code 820	6,250 sf				
Weekday A.M. Peak Hour	*Ln(T) = 0.61 LN(X)+2.24*	62%	**18**	38%	**11**	**29**
Weekday P.M. Peak Hour	*Ln(T) = 0.67 LN(X)+3.31*	48%	**45**	52%	**48**	**93**
Quality Restaurant	ITE Land Use Code 930	6,250 sf				
Weekday A.M. Peak Hour	*T = 0.81 X*	50%	**3**	50%	**3**	**6**
Weekday P.M. Peak Hour	*T = 7.49 X*	67%	**31**	33%	**16**	**47**
High Turnover Restaurant	ITE Land Use Code 932	12,500 sf				
Weekday A.M. Peak Hour	*T = 10.81 X*	55%	**74**	45%	**61**	**135**
Weekday P.M. Peak Hour	*T = 9.85 X*	60%	**74**	40%	**49**	**123**

It should be noted that Site B is a mixed-use development and, therefore, a percentage of the trips will be internal (originating from the same site). The estimated internal trips for the AM and PM peak hours are summarized on the next page.

Site B Internal Trips – PM Peak

Project: NKU Traffic Impact Study
Project #:
Time Period: PM Peak
Description: Internal Capture Trip Reductions
By:

Internally Captured Trips

* % internally captured trips can be found on pages 93 & 94 of the ITE publication Trip Generation Handbook, 2nd Edition

Development Type A: Residential/Hotel

ITE LU Code: 220 & 310

	Total	Internal	External
Enter	99	7	92
Exit	68	7	61
Total	167	14	153
%	100%	8%	92%

Enter from External: 92
Exit to External: 61

From A to B: %* 9%, # 6
To A from B: %* 9%, # 9
From A to C: %* 5%, # 3
To A from C: %* 5%, # 5

Balanced: 4
Balanced: 4
Balanced: 3
Balanced: 3

To B from A: %* 9%, # 4
From B to A: %* 9%, # 4
To C from A: %* 5%, # 5
From C to A: %* 5%, # 3

Development Type B: Retail

ITE LU Code: 820

	Total	Internal	External
Enter	45	7	38
Exit	48	9	39
Total	93	16	77
%	100%	17%	83%

Exit to External: 39
Enter from External: 38

To B from C: %* 10%, # 5
From C to B: %* 5%, # 3
Balanced: 3

From B to C: %* 10%, # 5
To C from B: %* 5%, # 5
Balanced: 5

Development Type C: Restaurant

ITE LU Code: 930 & 931

	Total	Internal	External
Enter	105	8	97
Exit	65	6	59
Total	170	14	156
%	100%	8%	92%

Enter from External: 97
Exit to External: 59

ITE Trip Generation – Site C

CONDITION	AVERAGE RATE EQUATION	SITE-GENERATED TRIPS				
		ENTERING TRIPS		EXITING TRIPS		TOTAL
		PCT	NO.	PCT	NO.	TRIPS
Apartments	ITE Land Use Code 220	150 Dwelling Units				
Weekday A.M. Peak Hour	*T = 0.49(X) + 3.73*	20%	**13**	80%	**54**	**67**
Weekday P.M. Peak Hour	*T = 0.55(X) + 17.65*	65%	**58**	35%	**31**	**89**

The trip generation rates given above are not directly applicable to this land use. The proposed apartments will be used for student housing and will be immediately adjacent to the NKY campus. It is likely that the majority of trips during the AM and PM peak hours will be made walking or biking -- and would therefore result in a significantly lower trip generation. To be conservative, it was assumed that the student apartment building **would generate approximately 50% of trips listed above**. (Note that this assumption conflicts with the original direction provided at the KYTC kickoff meeting. During that meeting, Kleingers was directed to use full trip generation rates for this land use. However, the apartment development on Site C, which is intended as student housing, was not included in the development plan at the time of that meeting.)

It should also be noted that the following assumptions were applied to this study to provide conservative traffic volume projections:

- No deduction is provided for internal trips in the AM Peak Hour.
- The internal trip rates were reduced from the internal rates published by ITE.
- A rate for interaction between Residential/Hotel and Restaurant land uses is not provided. A rate of 5% was conservatively used for this study.
- No reduction for pass-by trips is assumed in this study.

The total trips assumed for each site is summarized in the tables below.

SITE A

CONDITION	ENTER NO.	EXIT NO.	TOTAL TRIPS
Medical Office Building			
Weekday A.M. Peak Hour	**130**	**34**	**164**
Weekday P.M. Peak Hour	**58**	**148**	**206**

SITE B

CONDITION	ENTER NO.	EXIT NO.	TOTAL TRIPS
Hotel & Apartment			
Weekday A.M. Peak Hour	50	87	137
Weekday P.M. Peak Hour	92	61	153
Retail			
Weekday A.M. Peak Hour	18	11	29
Weekday P.M. Peak Hour	38	39	77
Restaurant			
Weekday A.M. Peak Hour	77	64	141
Weekday P.M. Peak Hour	97	59	156
AM PEAK HOUR - Total	**145**	**162**	**307**
PM PEAK HOUR - Total	**227**	**159**	**386**

SITE C

CONDITION	ENTER NO.	EXIT NO.	TOTAL TRIPS
Student Apartment			
Weekday A.M. Peak Hour	**7**	**27**	**34**
Weekday P.M. Peak Hour	**29**	**16**	**45**

The directional distribution for the site generated trips was developed based on estimated travel patterns to and from the proposed development sites as shown in Figures AM-5, AM-6, AM-7 (AM Peak Hour) and PM-5, PM-6, PM-7 (PM Peak Hour).

Proposed Analysis

Turn lane analyses will be performed according to KYTC methodologies for the proposed site access drives on Alexandria Pike and Louis B. Nunn Drive. If warranted, turn lane conceptual geometrics will be determined in accordance with KYTC standards.

Capacity analyses at each of the study area intersections will be performed during the two peak periods (weekday AM and PM) according to the KYTC guidelines for the following scenarios:

- Existing Conditions
- No-Build Conditions – 2019 Traffic Volumes
- Phase 1 Build Conditions – 2019 Traffic Volumes
- No-Build Conditions – 2021 Traffic Volumes
- Full Build Conditions – 2021 Traffic Volumes

- No-Build Conditions – 2031 Traffic Volumes
- Full Build Conditions – 2031 Traffic Volumes

Phase 1 Build Conditions will include background traffic for the design year 2019 and development generated traffic for Site A. Build Conditions for the design years 2021 and 2031 will include background traffic for those design years, plus full-build site generated traffic. The analysis will be performed assuming that the planned improvement to add a southbound lane on Alexandria Pike from Marshall Lane to John's Hill Road will be in place for each of the build and no-build scenarios.

Capacity analyses will be performed using Synchro Capacity Analysis Software. The results of the queuing observations at one of the study intersections will be compared with the queues and delays generated by the analysis of existing conditions. Model adjustments needed to align the traffic model with existing conditions will be applied to all study intersections where applicable. The capacity analyses results will be summarized and tabulated in the report. **Kleinger's requests that KYTC provide existing local and signal system timing for the traffic signals within the project area.**

A queuing analysis will be performed at each of the study intersections. The queuing analysis will focus on the demand for vehicular storage compared to the current available storage, the results of which will be summarized in the report.

A high-level traffic opinion narrative will also be provided regarding the impact of potential improvements near the east end of Sunset Drive, which would provide an improved connection between Alexandria Pike and Three-Mile Road. This traffic opinion would reference previously collected traffic data as well as the traffic data collected as part of this study. The opinion would also reference the conceptual Sunset Drive improvement plan provided by the City of Highland Heights.

According to NKU officials, the Fall Semester will generate traffic which is approximately 10% higher than traffic associated with Winter/Spring Semester (as counted). As part of this study, an analysis will be completed to assess traffic operation for the site driveways and adjacent intersections for the fall semester conditions. This analysis will be performed for the 2031 full-build condition, only.

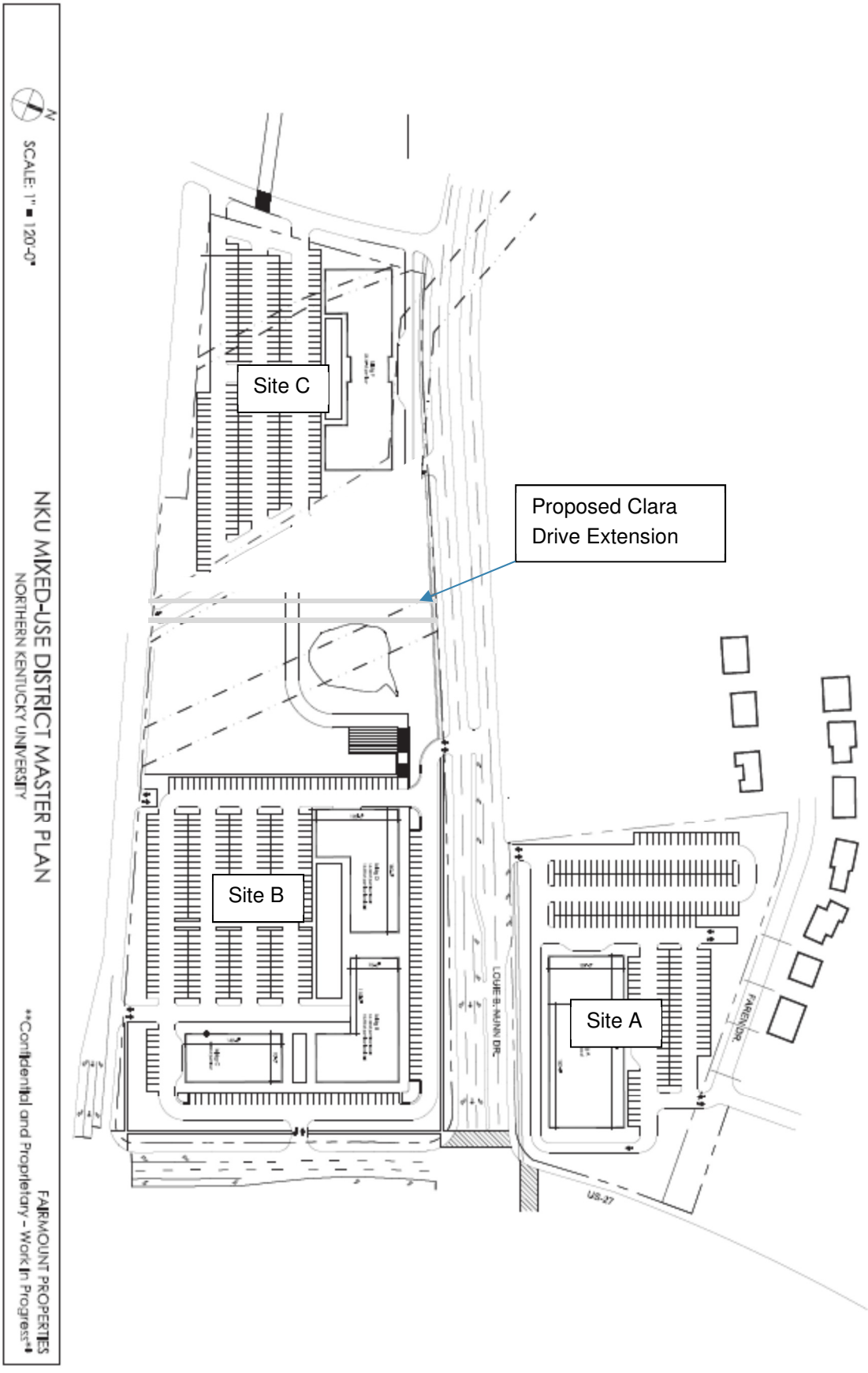
Please note that the site planning for this development is an iterative and on-going process. Kleingers is working with the developer to test multiple access options along Nunn Drive, including:

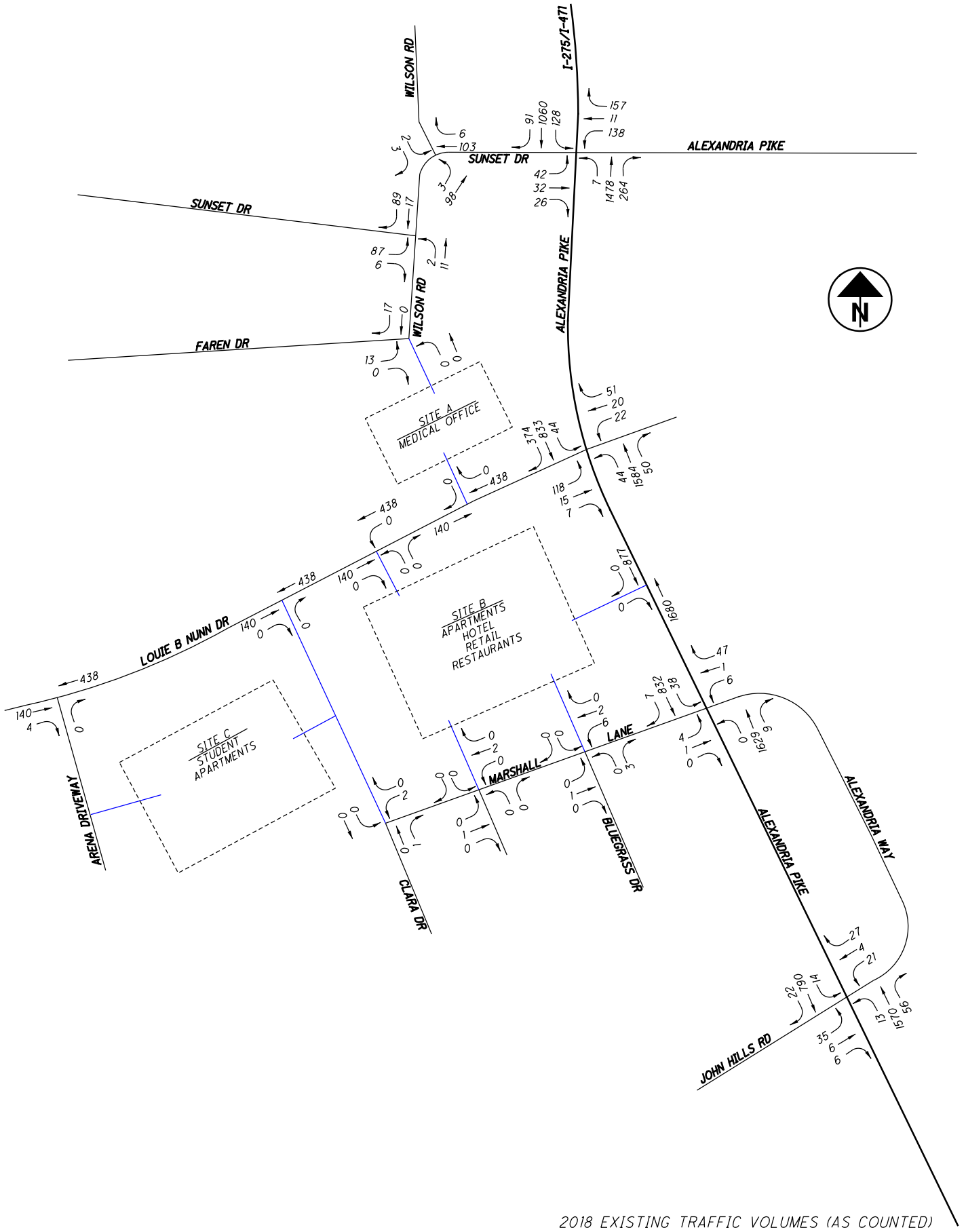
- Option 1 – Right-In/Right-Out (RI/RO) access at Clara Drive Extension and full access at Site B driveway;
- Option 2 – RI/RO at both locations listed in Option 1;
- Option 3 – Full access at both locations listed in Option 1;
- Option 4 – Right-in/Right-out (RI/RO) access at Site B driveway and full access at Clara Drive Extension;

A traffic impact study report will be prepared to document the processes and results of the analyses, and will list the applicable findings, conclusions, and recommendations related to the traffic impacts of the proposed project. The study will be based on the preferred access plan, as developed from analysis of the four options defined above -- and will be fully described and analyzed in the report.

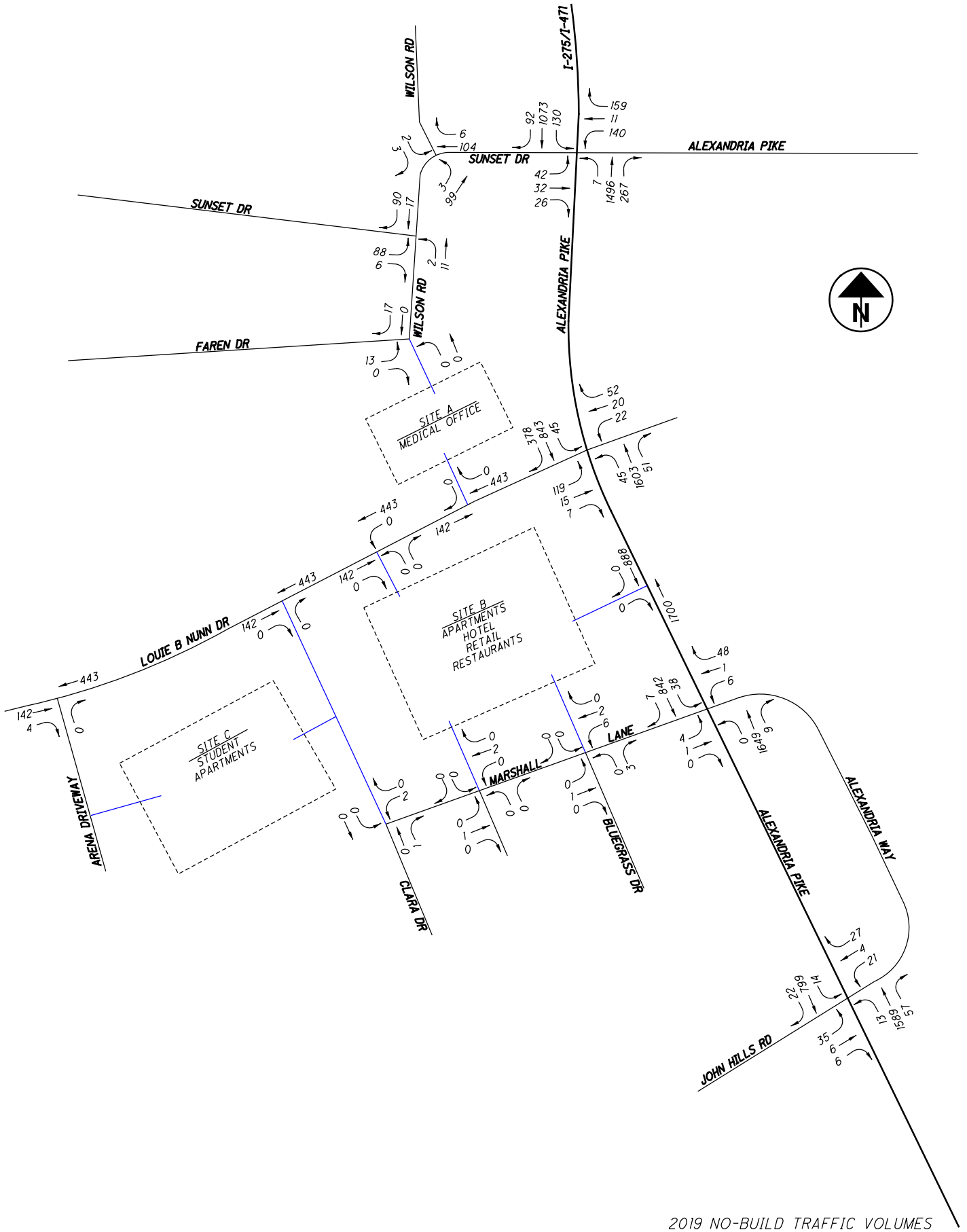
It is requested that KYTC and the City of Highland Heights stakeholders provide comments/concurrence on the above described assumptions and methodologies.

If you have any questions, please don't hesitate to contact me at 513-779-7851 or mark.nolt@kleingers.com.


SCALE: 1" = 120'-0"
NKU MIXED-USE DISTRICT MASTER PLAN
NORTHERN KENTUCKY UNIVERSITY
FAIRMOUNT PROPERTIES
Confidential and Proprietary - Work in Progress
Site C
Proposed Clara Drive Extension
Site B
Site A
LOUIE B. NUNN DR.
FAREWAY DR.
US-27



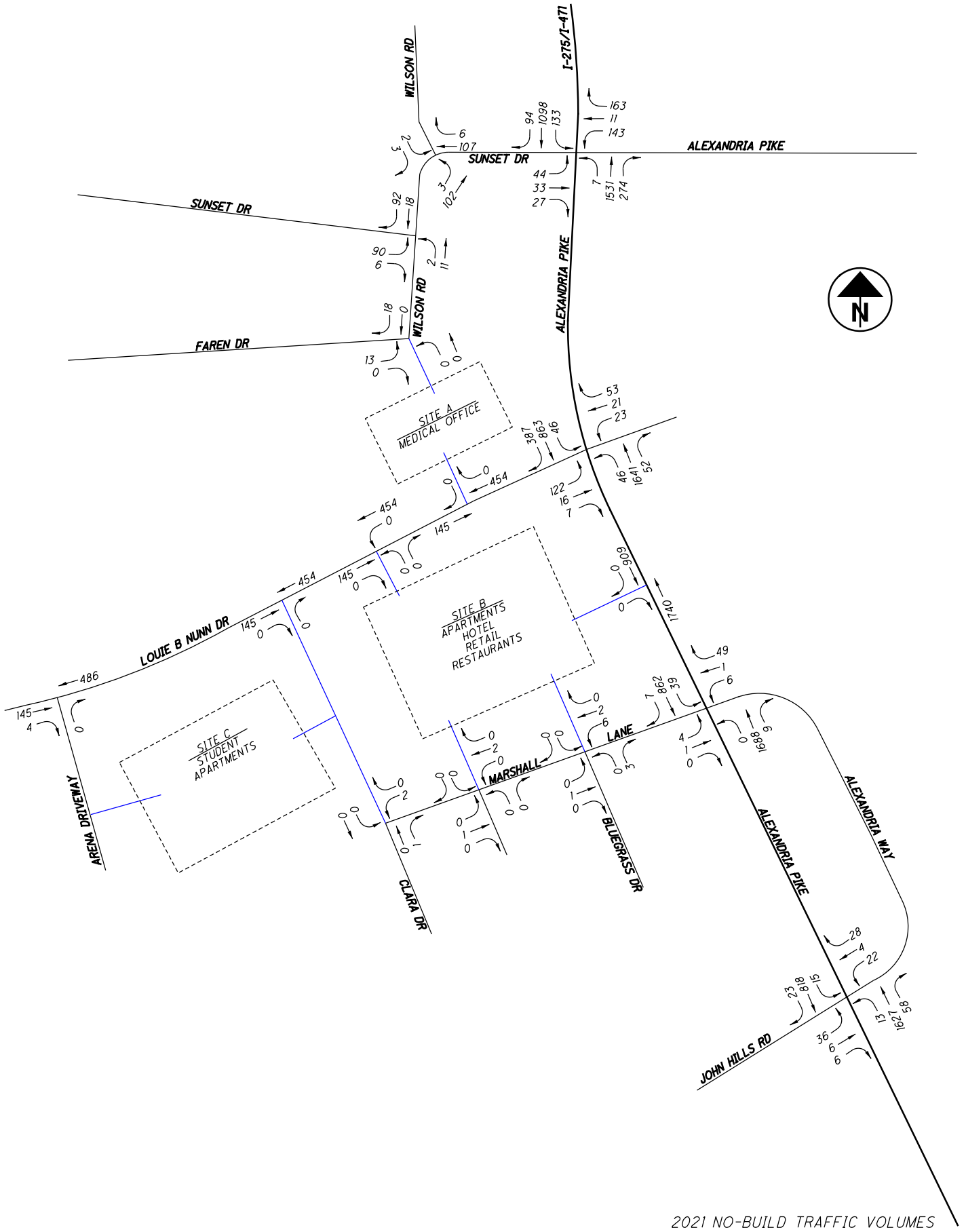
2018 EXISTING TRAFFIC VOLUMES (AS COUNTED)



2019 NO-BUILD TRAFFIC VOLUMES

THE KLEINGERS GROUP
Civil Engineering ▸ Land Surveying ▸ Landscape Architecture

FIGURE AM-2
APRIL 7, 2018

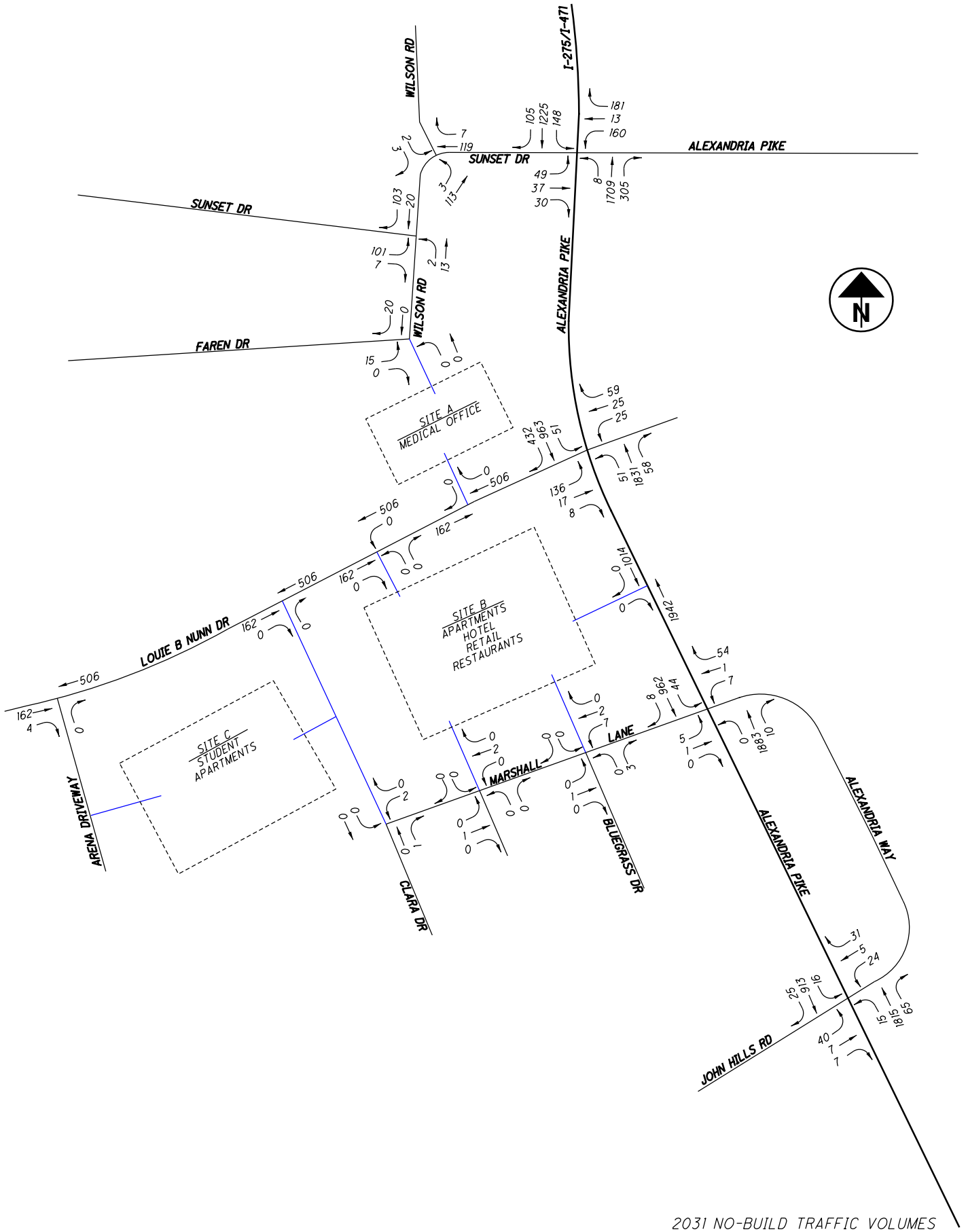


2021 NO-BUILD TRAFFIC VOLUMES

THE KLEINGERS GROUP
Civil Engineering ▸ Land Surveying ▸ Landscape Architecture

FIGURE AM-3
APRIL 7, 2018

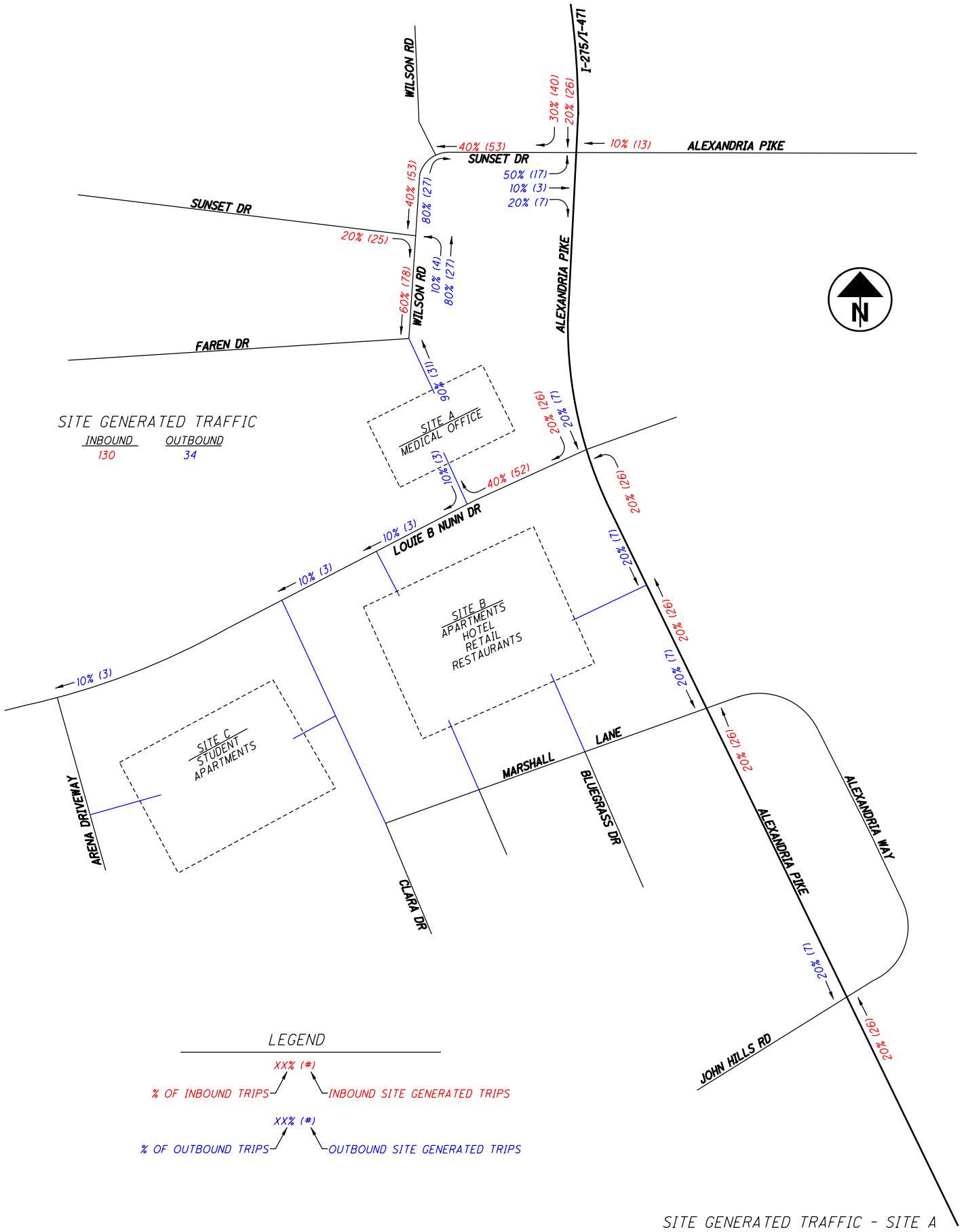
TRAFFIC FORECAST
AM PEAK HOUR



2031 NO-BUILD TRAFFIC VOLUMES

THE KLEINGERS GROUP
Civil Engineering ▸ Land Surveying ▸ Landscape Architecture

FIGURE AM-4
APRIL 7, 2018



SITE GENERATED TRAFFIC

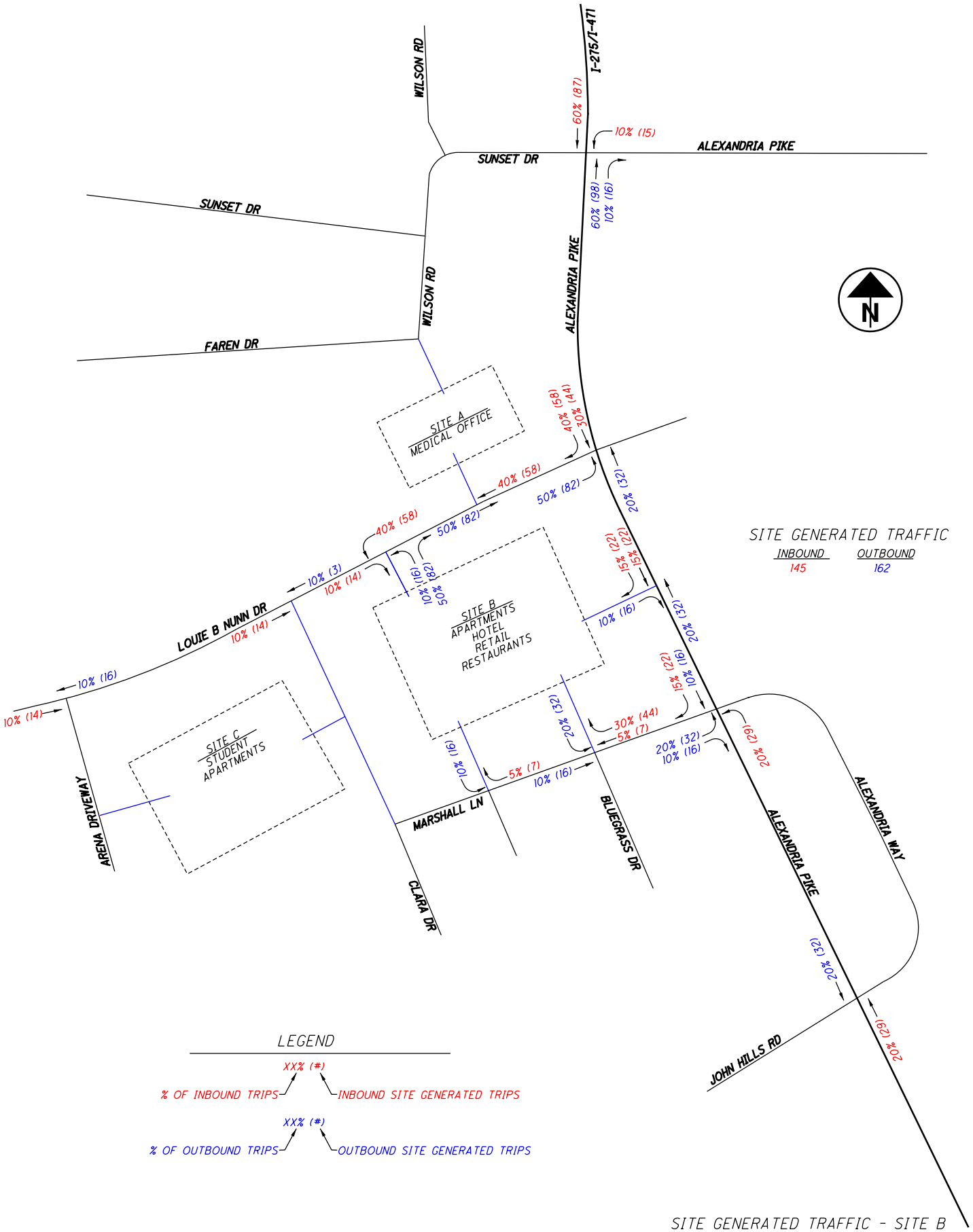
INBOUND	OUTBOUND
130	34

LEGEND

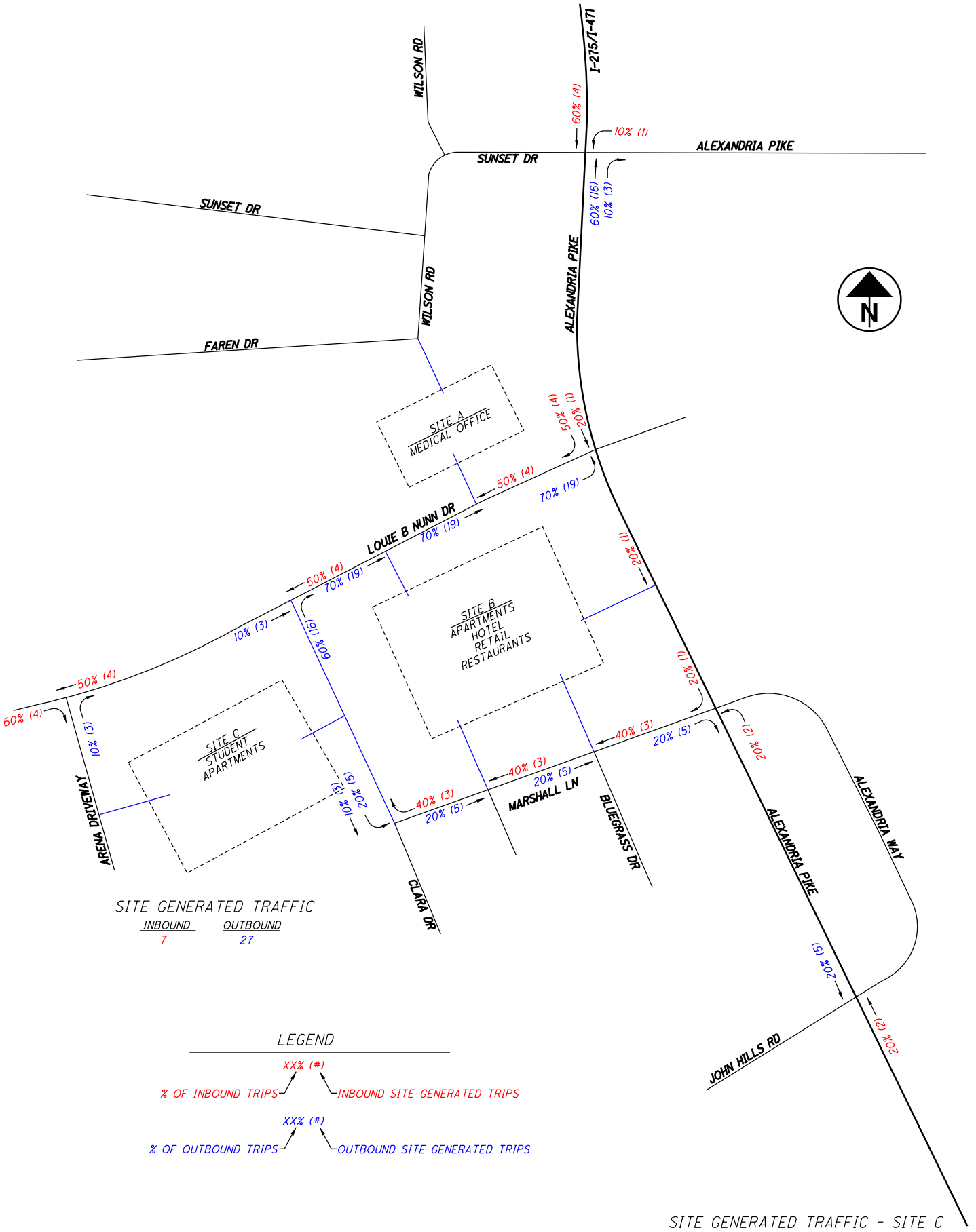
XX% (#)
% OF INBOUND TRIPS — INBOUND SITE GENERATED TRIPS

XX% (#)
% OF OUTBOUND TRIPS — OUTBOUND SITE GENERATED TRIPS

SITE GENERATED TRAFFIC - SITE A



SITE GENERATED TRAFFIC - SITE B



SITE GENERATED TRAFFIC

INBOUND	OUTBOUND
7	27

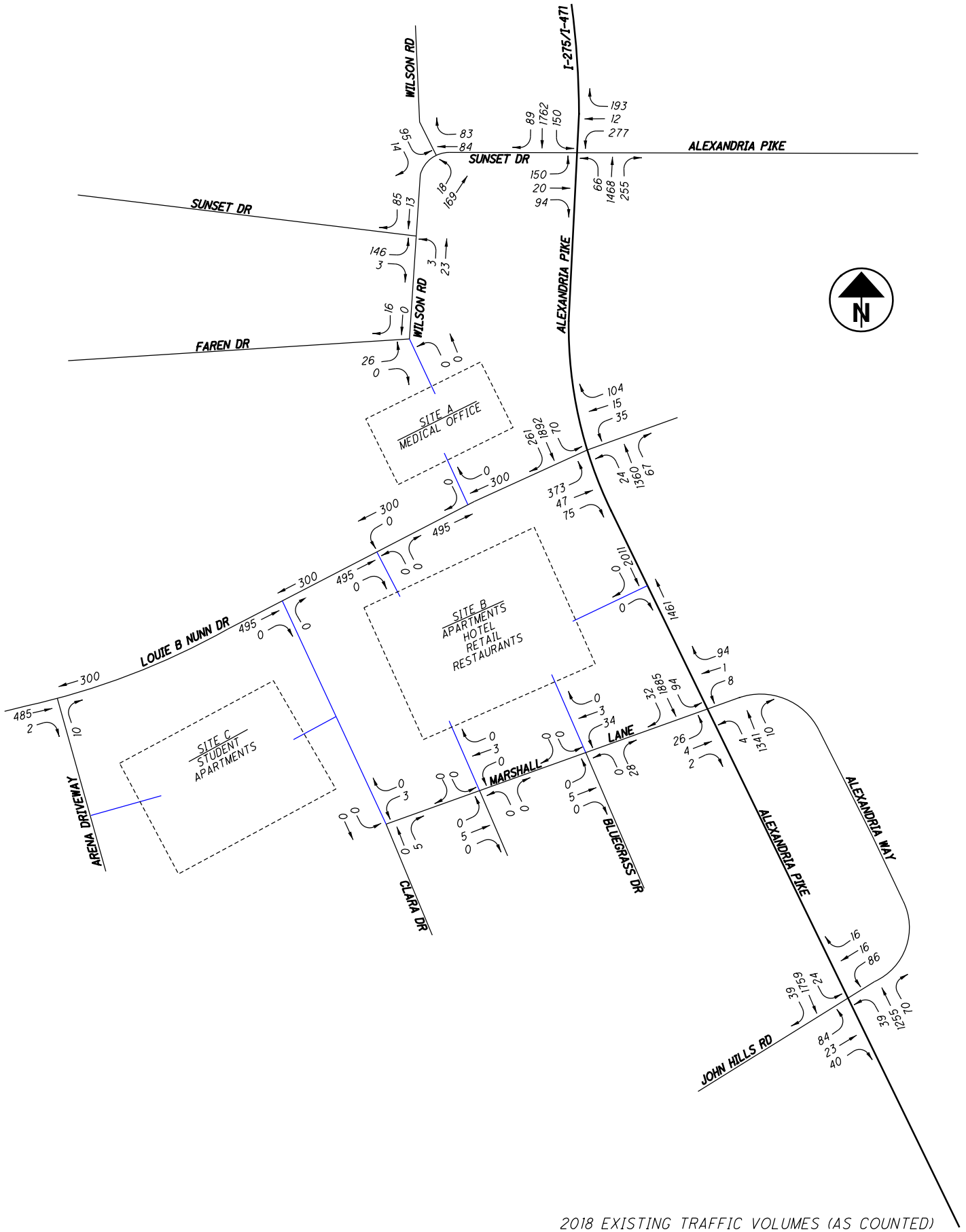
LEGEND

XX% (#)
% OF INBOUND TRIPS — INBOUND SITE GENERATED TRIPS

XX% (#)
% OF OUTBOUND TRIPS — OUTBOUND SITE GENERATED TRIPS

SITE GENERATED TRAFFIC - SITE C

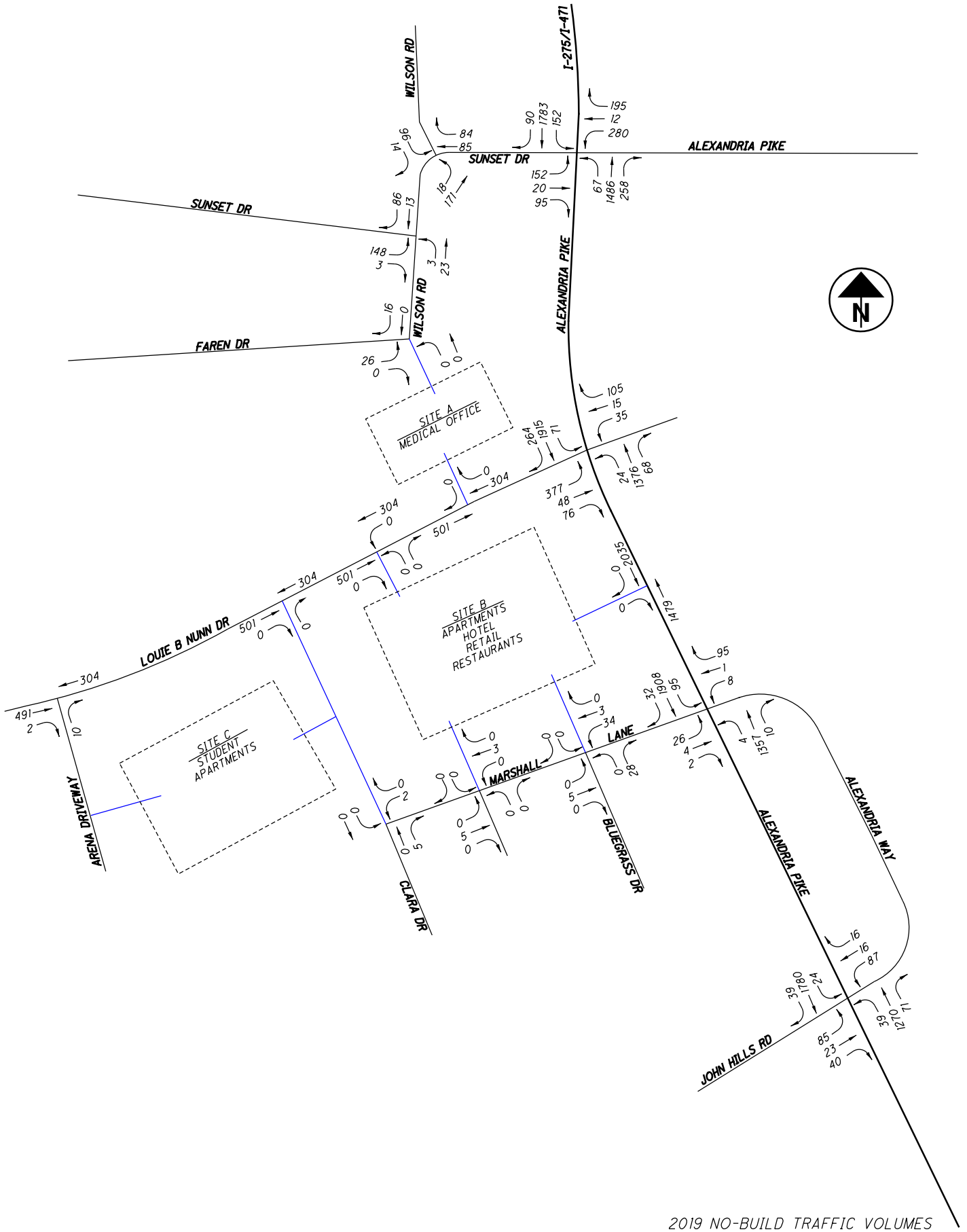
TRAFFIC FORECAST
PM PEAK HOUR



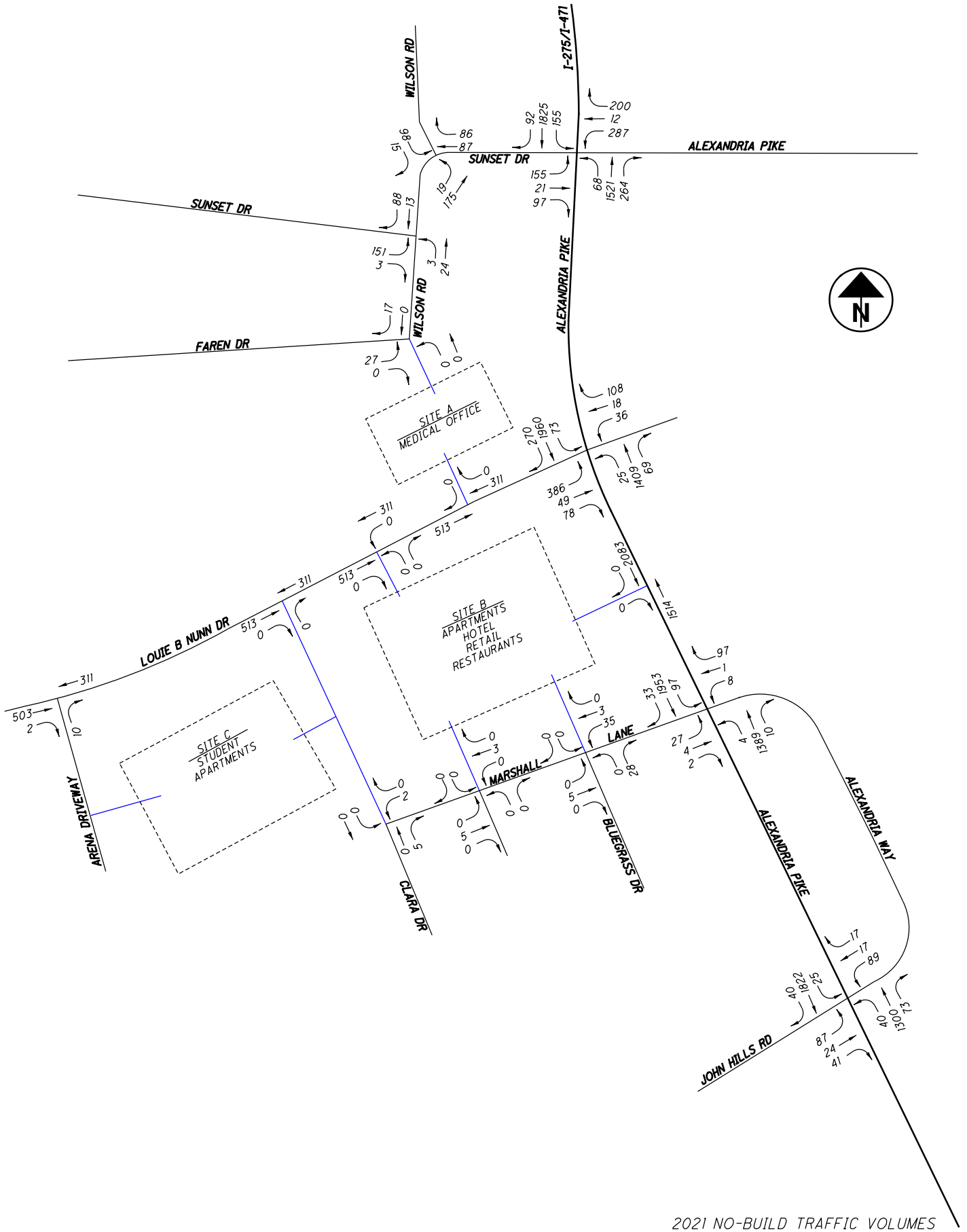
2018 EXISTING TRAFFIC VOLUMES (AS COUNTED)

THE KLEINGERS GROUP
Civil Engineering ▸ Land Surveying ▸ Landscape Architecture

FIGURE PM-1
APRIL 7, 2018



2019 NO-BUILD TRAFFIC VOLUMES

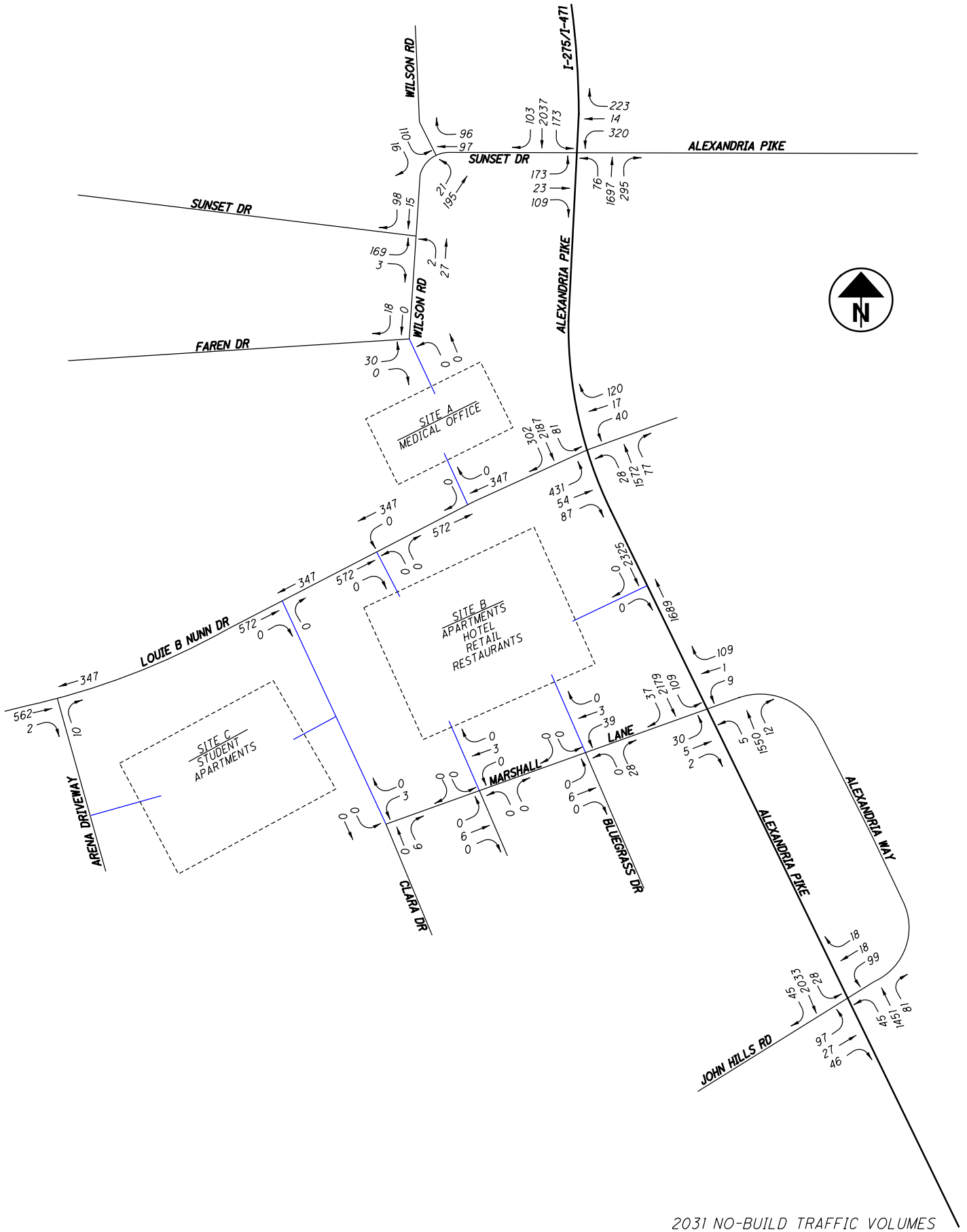


2021 NO-BUILD TRAFFIC VOLUMES

THE KLEINGERS GROUP
Civil Engineering ▸ Land Surveying ▸ Landscape Architecture

FIGURE PM-3
APRIL 7, 2018

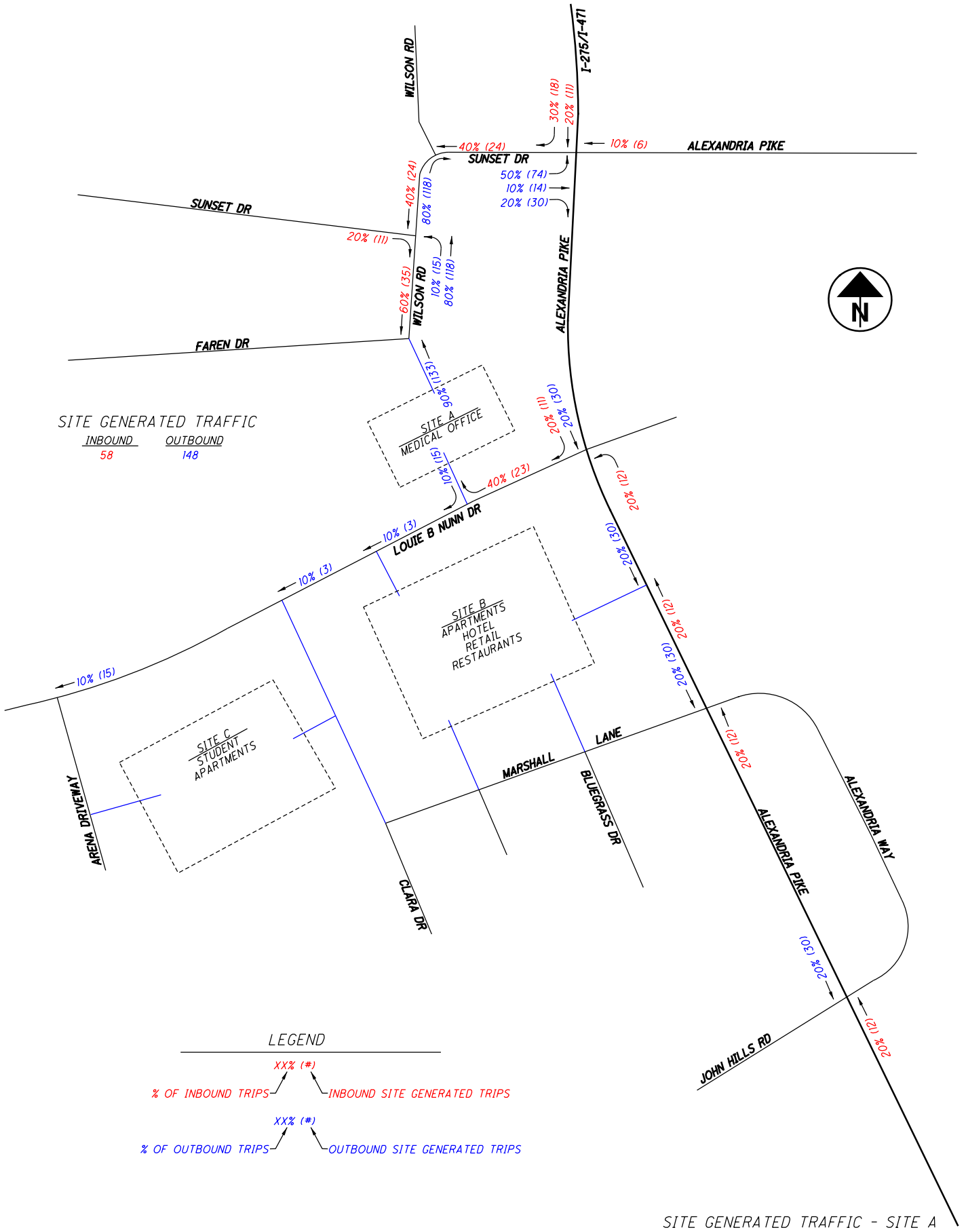
TRAFFIC FORECAST
PM PEAK HOUR



2031 NO-BUILD TRAFFIC VOLUMES

THE KLEINGERS GROUP
Civil Engineering ▸ Land Surveying ▸ Landscape Architecture

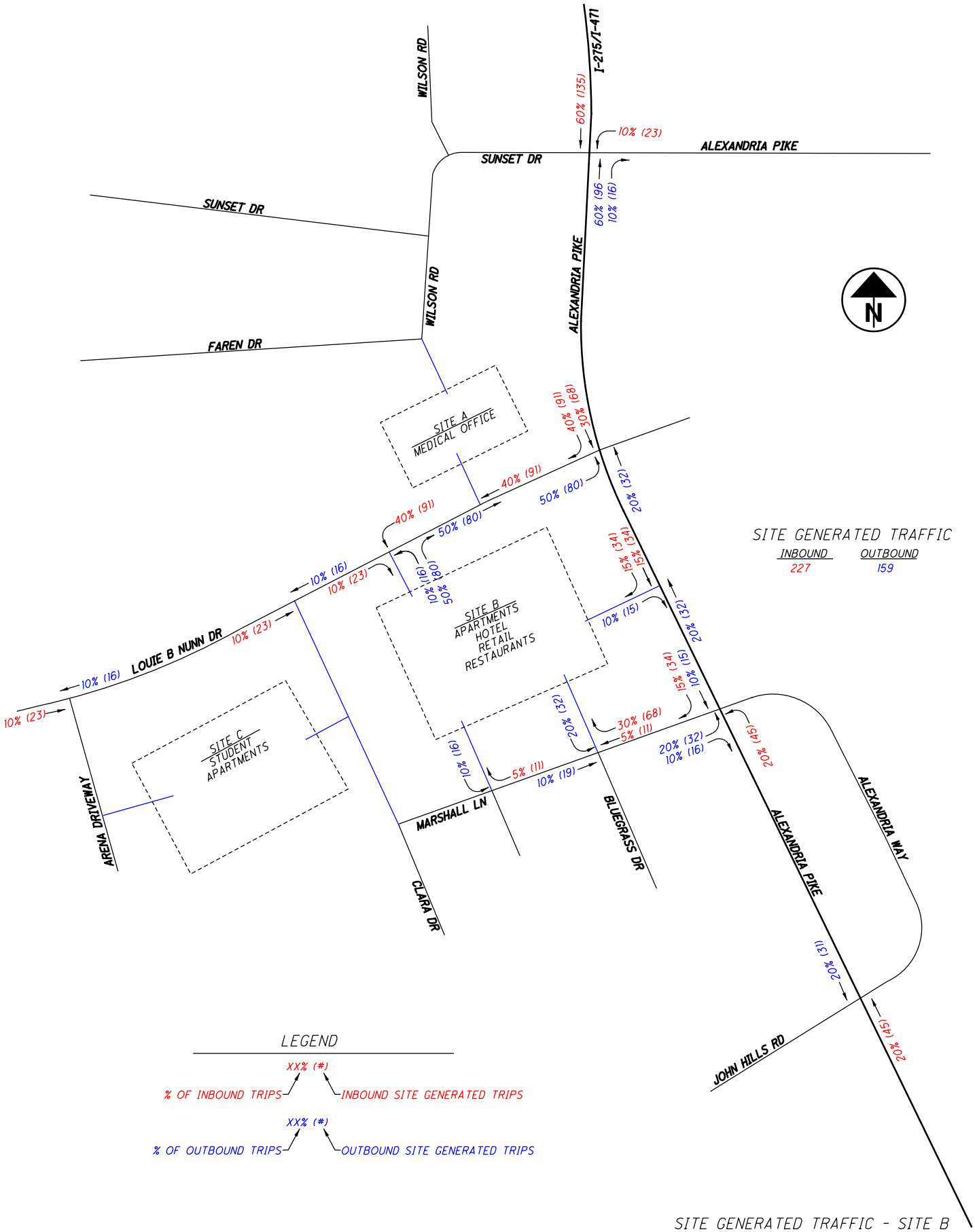
FIGURE PM-4
APRIL 7, 2018



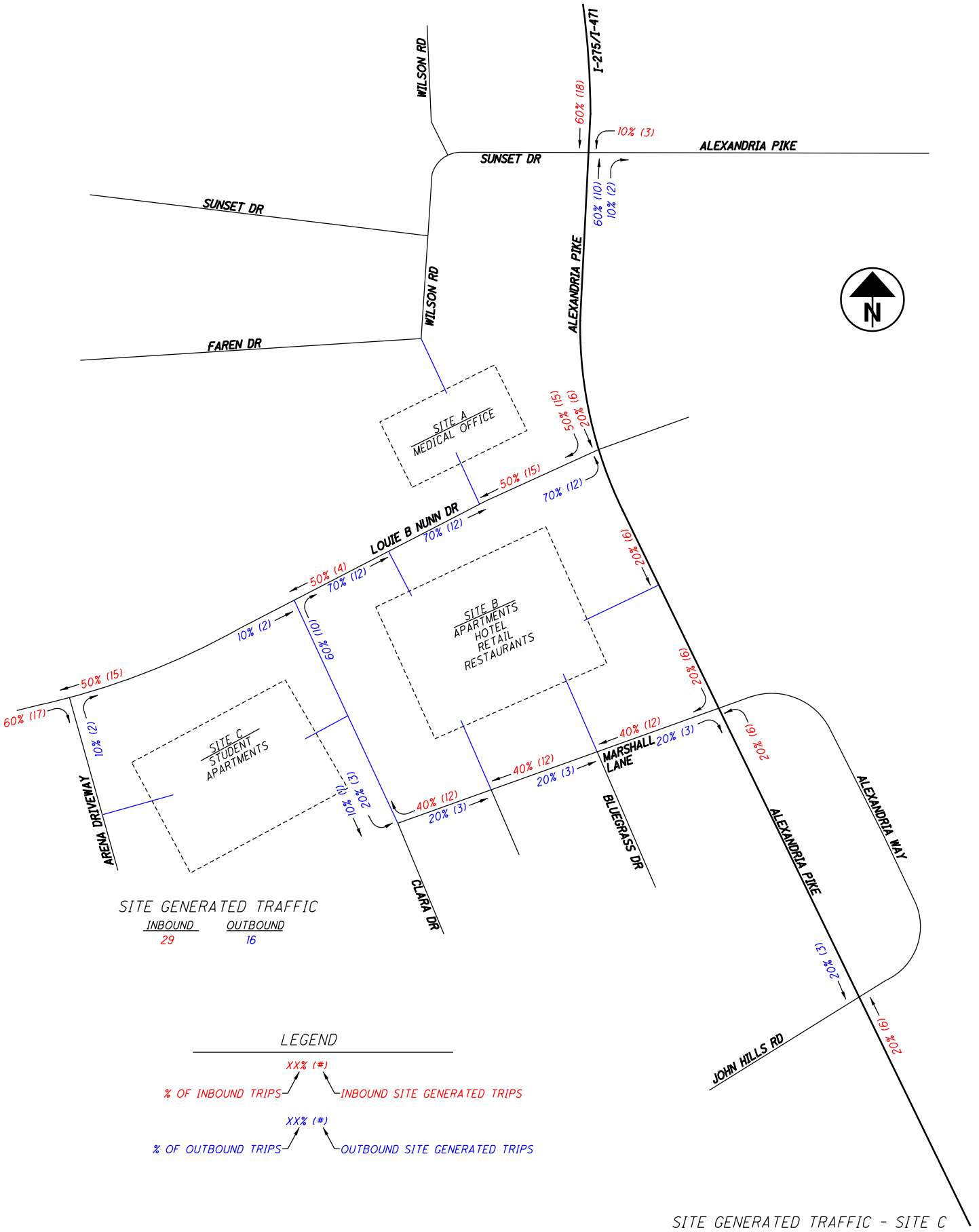
SITE GENERATED TRAFFIC - SITE A

THE KLEINGERS GROUP
Civil Engineering ▸ Land Surveying ▸ Landscape Architecture

FIGURE PM-5
APRIL 7, 2018



SITE GENERATED TRAFFIC - SITE B



SITE GENERATED TRAFFIC

INBOUND	OUTBOUND
29	16

LEGEND

XX% (#)
% OF INBOUND TRIPS — INBOUND SITE GENERATED TRIPS

XX% (#)
% OF OUTBOUND TRIPS — OUTBOUND SITE GENERATED TRIPS

SITE GENERATED TRAFFIC - SITE C

KYTC GROWTH RATE CALCULATIONS

Base Year	**2018**	**Number of Counts**	**6**
Future Year	**2031**	**Growth Rate**	**1.20%**
Years Back	**8**		

stn	Hwycntyname	Rtprefix	Rtnum	Rtsuffix	2016	2015	2014	2013	2012	2011
019A89			41681(16) STA A89		41681	42895	40746	38869	37375	41500

Historical Traffic Volume Summary

Station Details:

Sta ID:	019A89
Sta Type:	Full Coverage
Map:	MapIt
District:	6
County:	Campbell
Route:	019-US-0027 -000
Route Desc:	ALEXANDRIA PIKE

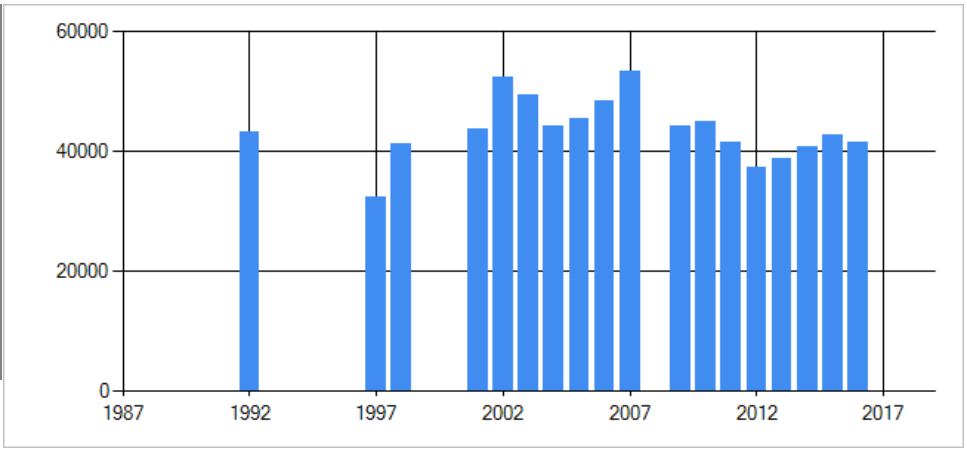
Begin MP:	16.15
Begin Desc:	KY 2345 (MARTHA L COLLINS BLV)
End Mp:	16.7340
End Desc:	KY 471 (I 471-US 27 CONNECTOR)
Impact Year:	
Year Added:	

Newest Count:

AADT:	41681
Year:	2016
% Single:	2.8320
% Combo:	1.8060
K Factor:	8.10
D Factor:	58

Definitions:
Sta. ID - Three digit county number + station number
MP - milepoint
Impact Year – year of significant change to traffic pattern within station segment
AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway
% Single – single unit truck volume as a percentage of the AADT
% Combo – combination truck volume as a percentage of the AADT
K Factor – peak hour volume as a percentage of the AADT
D Factor – percentage of peak hour volume flowing in the peak direction

Year	AADT	Year	AADT	Year	AADT
2018		2008		1998	41200
2017		2007	53400	1997	32300
2016	41681	2006	48500	1996	
2015	42895	2005	45400	1995	
2014	40746	2004	44400	1994	
2013	38869	2003	49500	1993	
2012	37375	2002	52500	1992	43200
2011	41500	2001	43800	1991	
2010	45100	2000		1990	
2009	44300	1999		1989	



Apartment
(220)

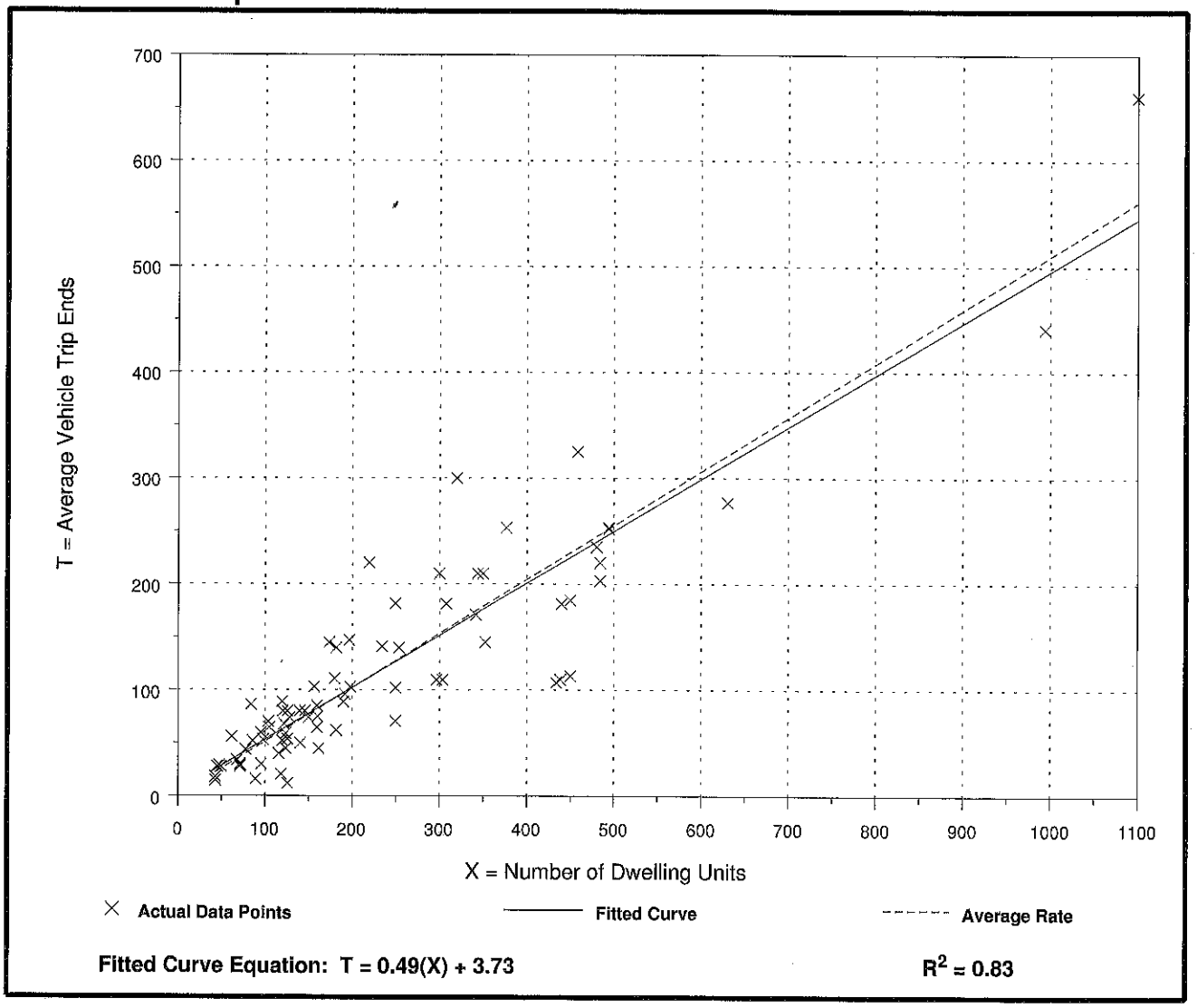
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 78
Avg. Number of Dwelling Units: 235
Directional Distribution: 20% entering, 80% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.10 - 1.02	0.73

Data Plot and Equation



Fitted Curve Equation: T = 0.49(X) + 3.73

R^2 = 0.83

Apartment
(220)

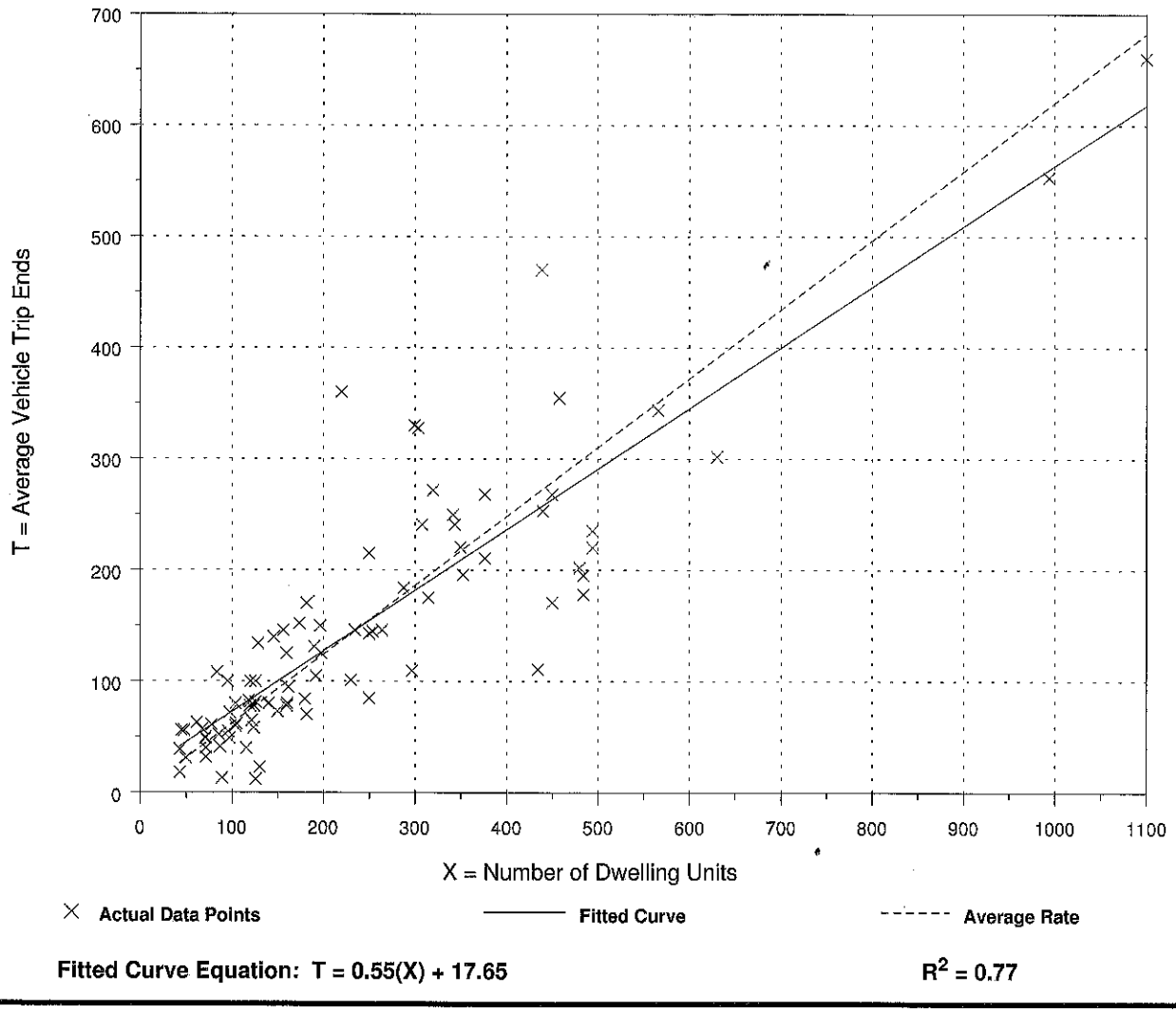
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 90
Avg. Number of Dwelling Units: 233
Directional Distribution: 65% entering, 35% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.62	0.10 - 1.64	0.82

Data Plot and Equation



Fitted Curve Equation: T = 0.55(X) + 17.65

R^2 = 0.77

Hotel
(310)

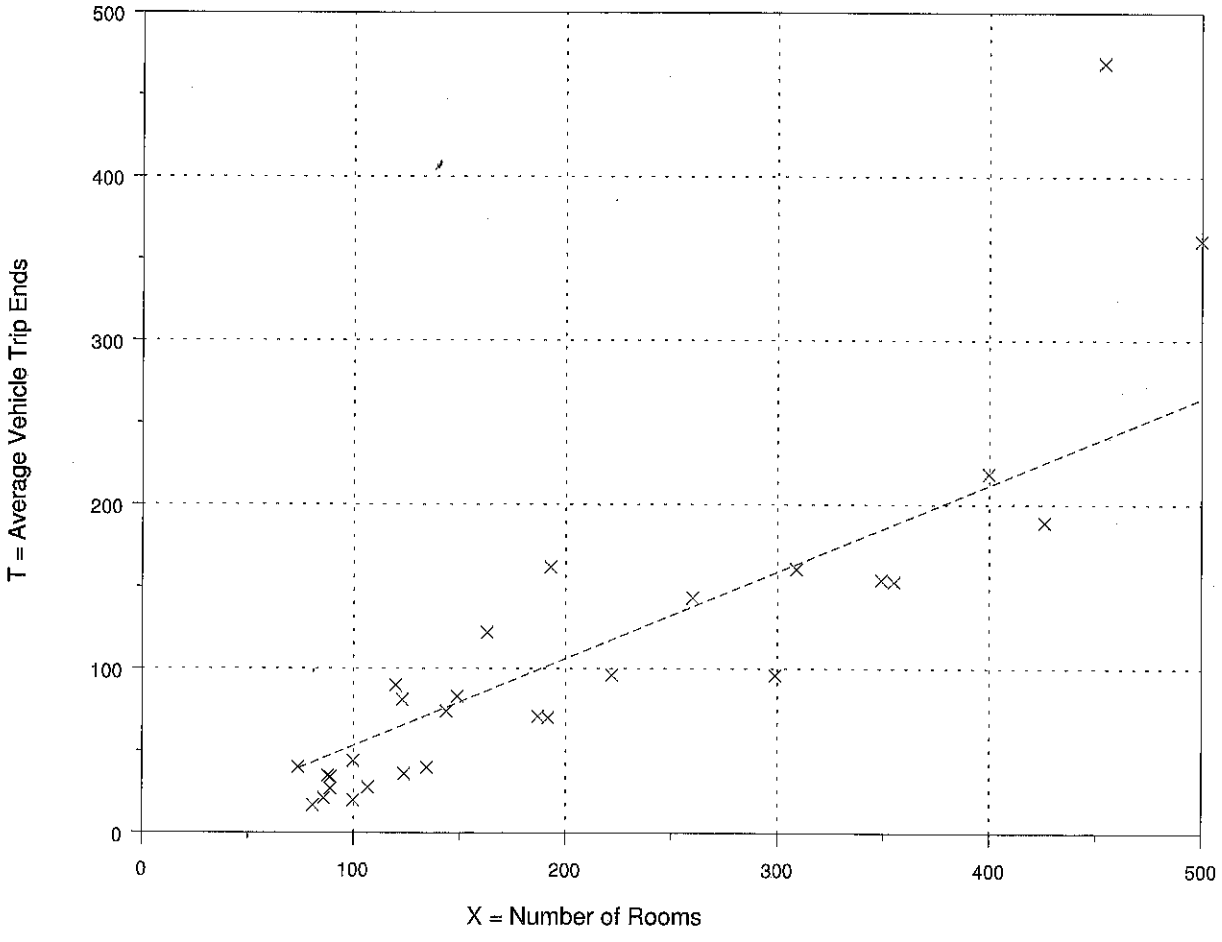
Average Vehicle Trip Ends vs: **Rooms**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 29
Average Number of Rooms: 204
Directional Distribution: 59% entering, 41% exiting

Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.53	0.20 - 1.03	0.76

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2 = ****

Hotel
(310)

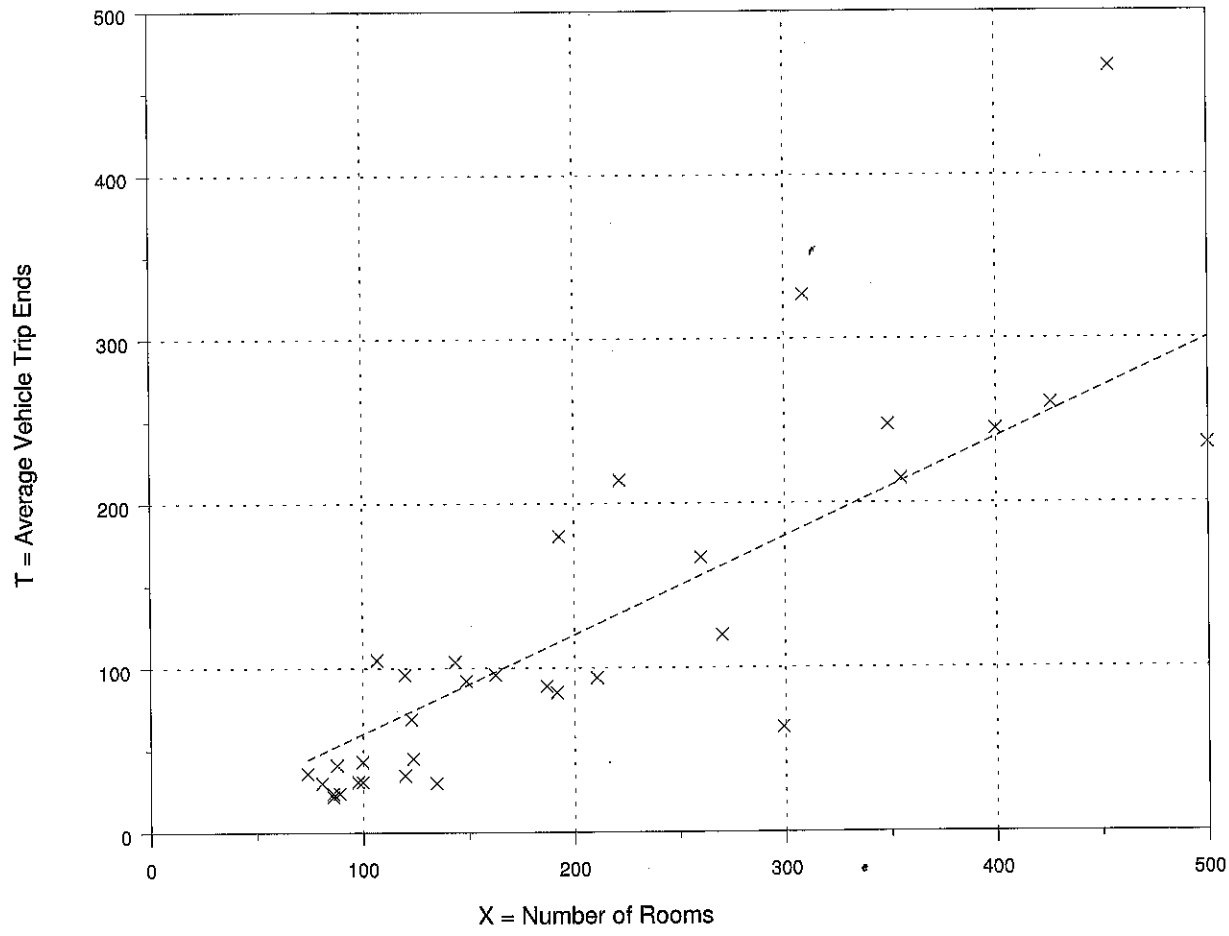
Average Vehicle Trip Ends vs: Rooms
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 33
Average Number of Rooms: 200
Directional Distribution: 51% entering, 49% exiting

Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.60	0.21 - 1.06	0.81

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2 = ****

Medical-Dental Office Building
(720)

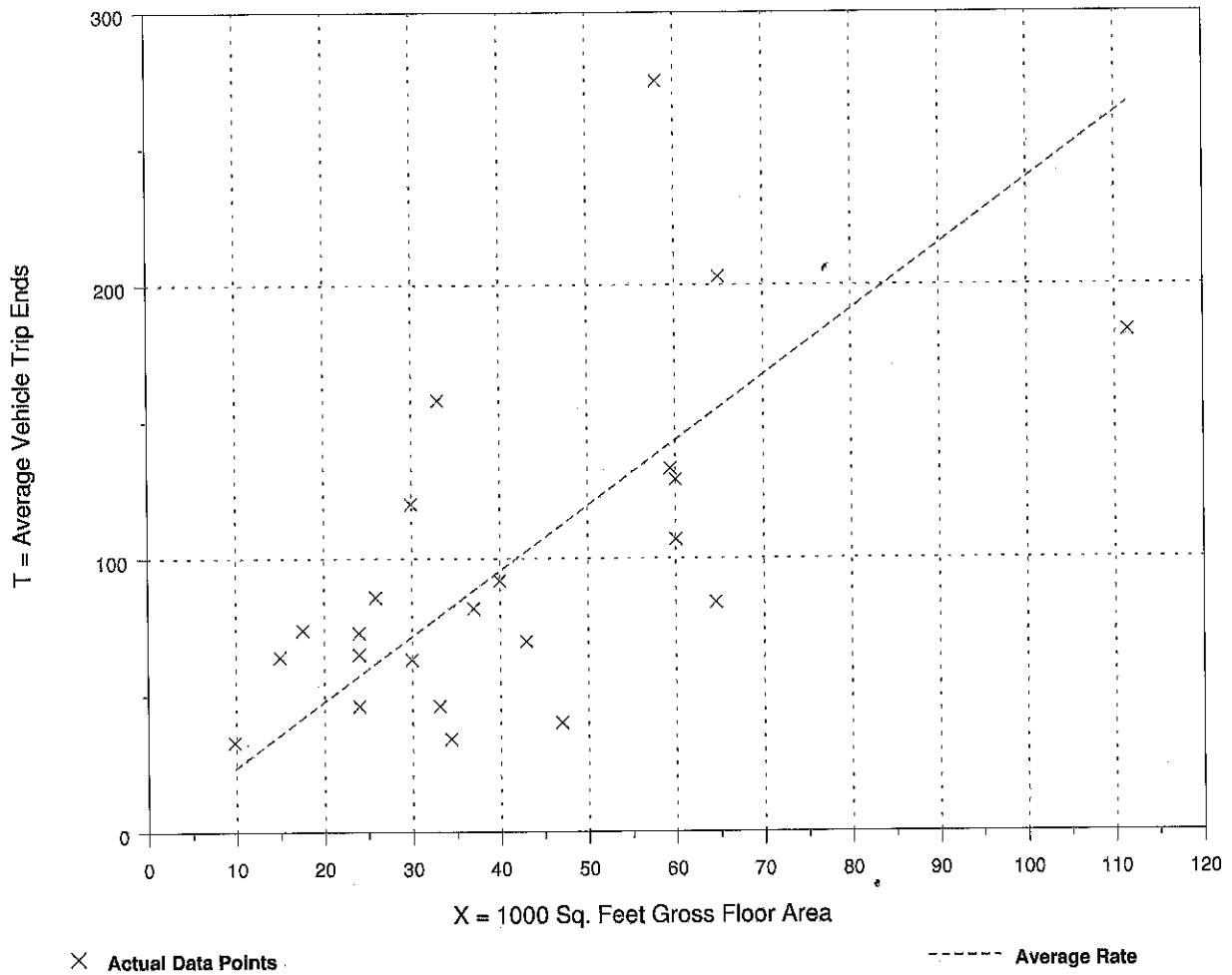
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 23
Average 1000 Sq. Feet GFA: 41
Directional Distribution: 79% entering, 21% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
2.39	0.85 - 4.79	1.89

Data Plot and Equation



Fitted Curve Equation: Not given

R^2 = ****

Medical-Dental Office Building
(720)

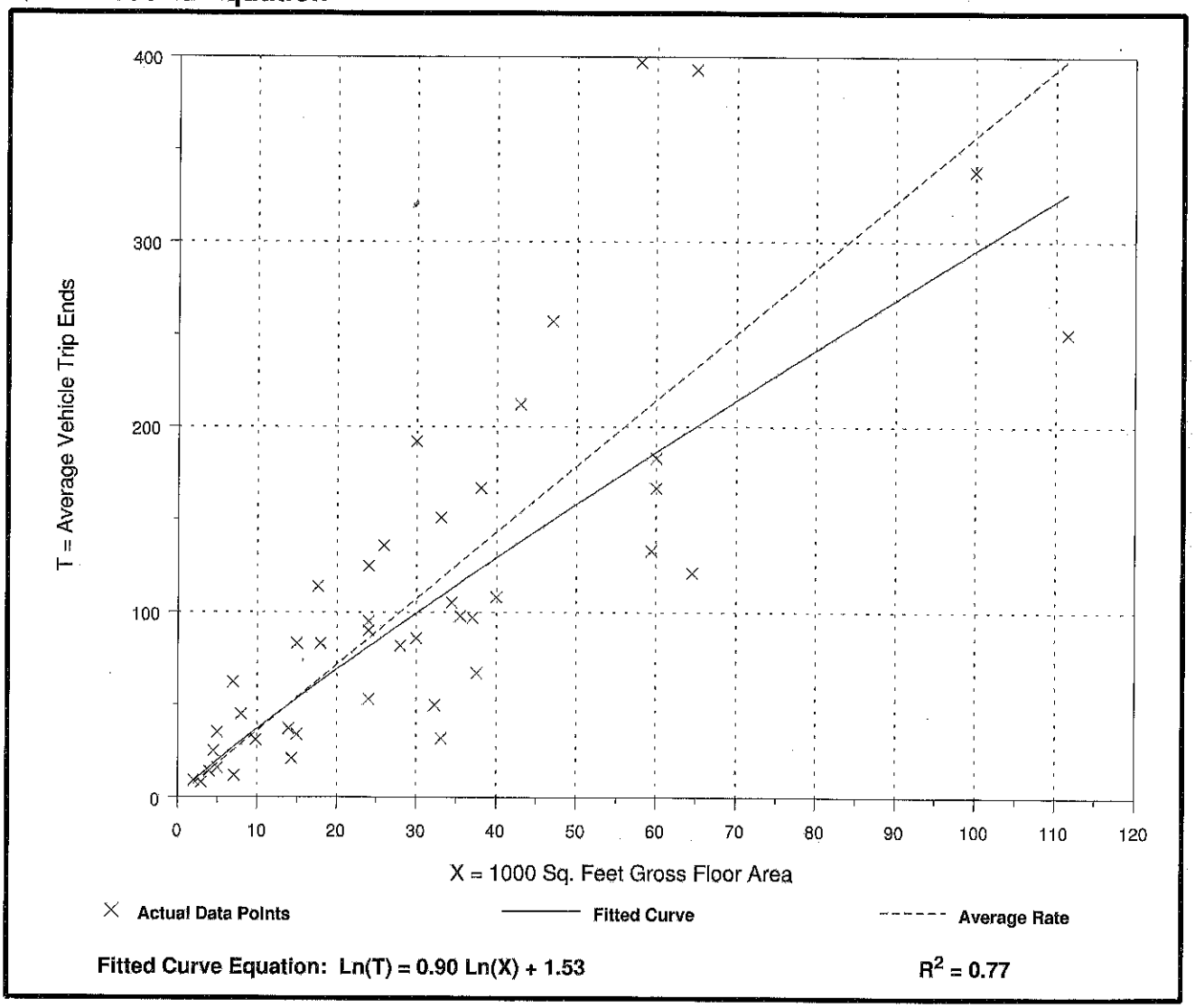
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 43
Average 1000 Sq. Feet GFA: 31
Directional Distribution: 28% entering, 72% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
3.57	0.97 - 8.86	2.47

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.90 Ln(X) + 1.53

R^2 = 0.77

Shopping Center
(820)

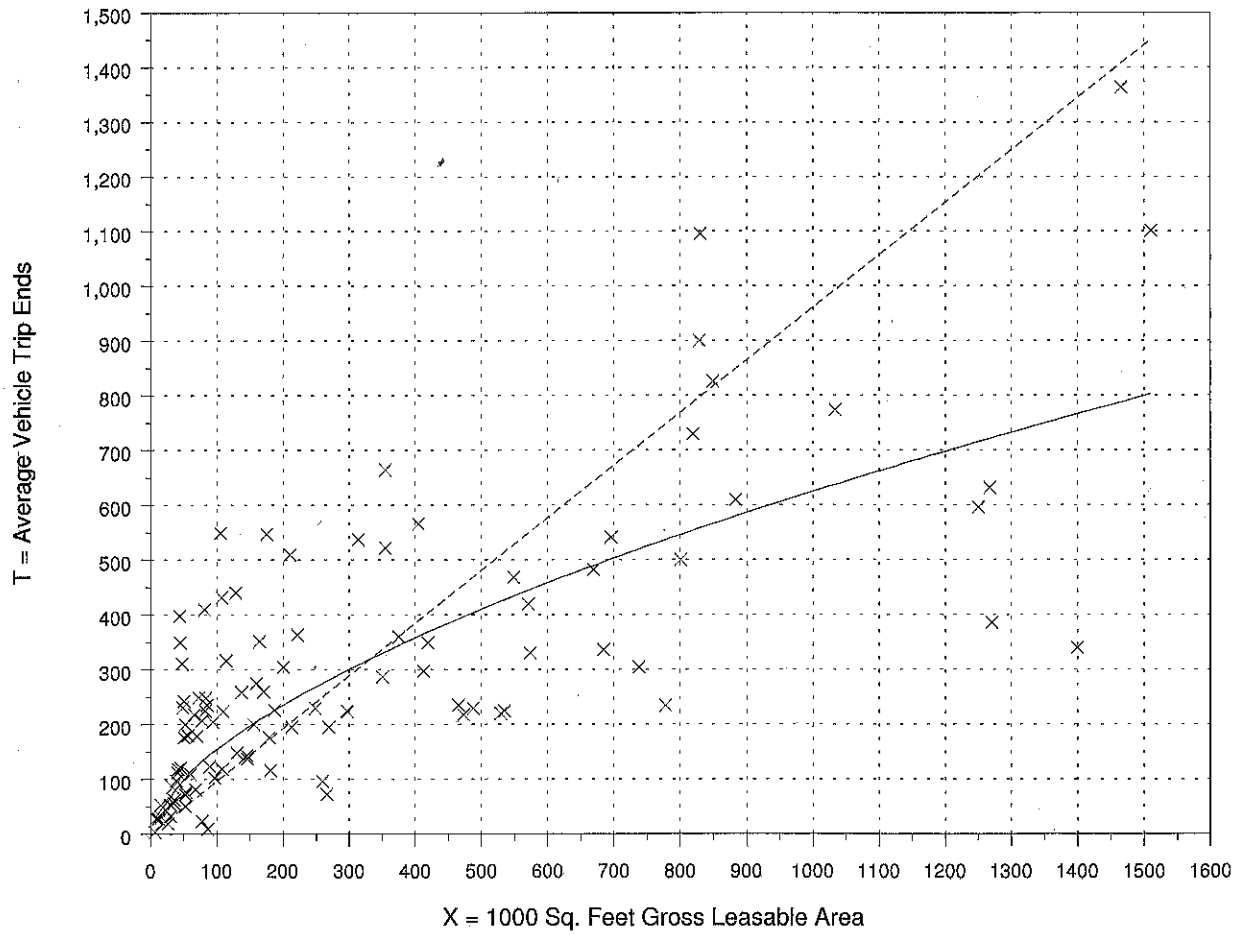
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Leasable Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 104
Average 1000 Sq. Feet GLA: 310
Directional Distribution: 62% entering, 38% exiting

Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
0.96	0.10 - 9.05	1.31

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.61 Ln(X) + 2.24 $R^2 = 0.56$

Shopping Center
(820)

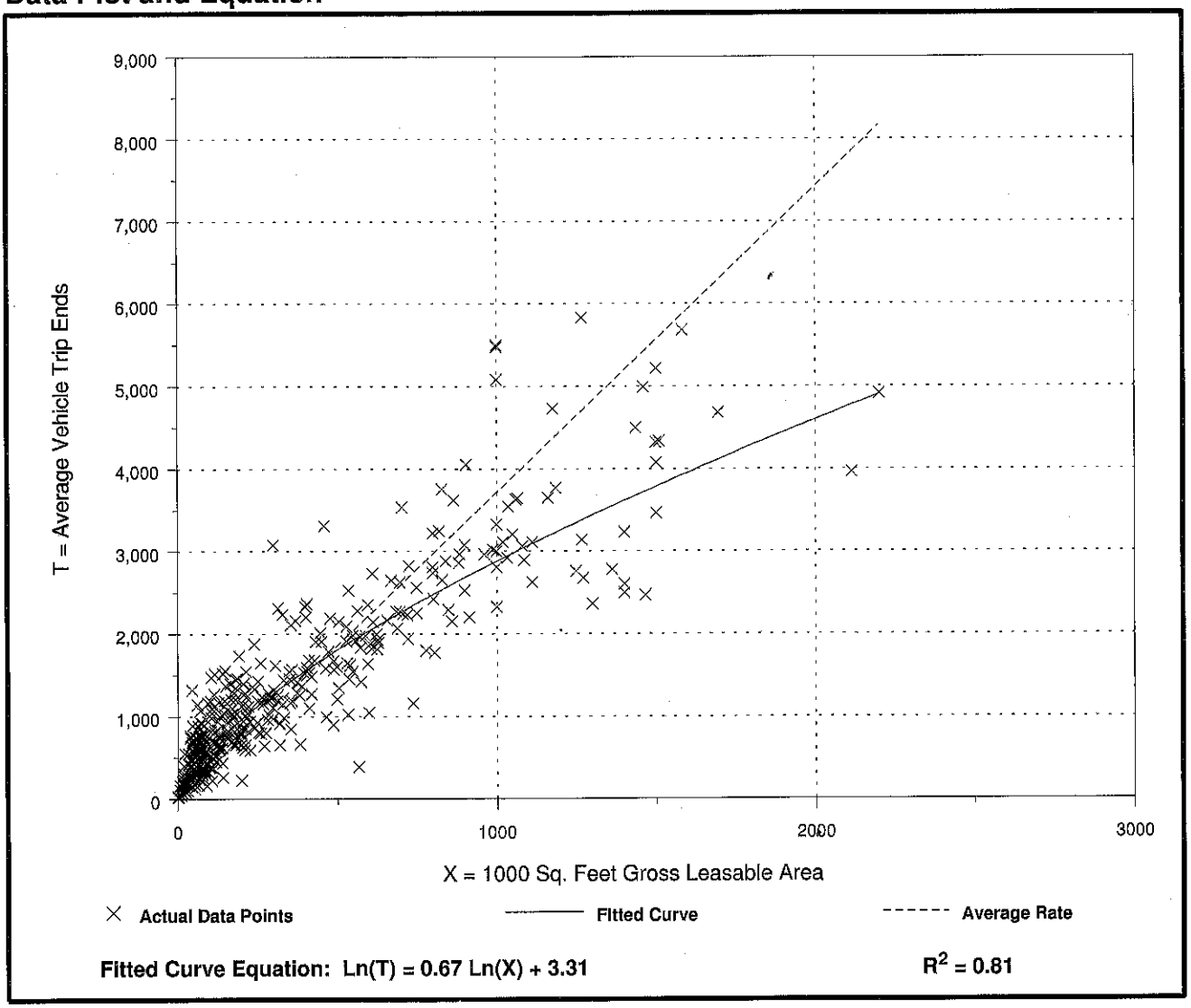
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Leasable Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 426
Average 1000 Sq. Feet GLA: 376
Directional Distribution: 48% entering, 52% exiting

Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
3.71	0.68 - 29.27	2.74

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.67 Ln(X) + 3.31

R^2 = 0.81

Quality Restaurant
(931)

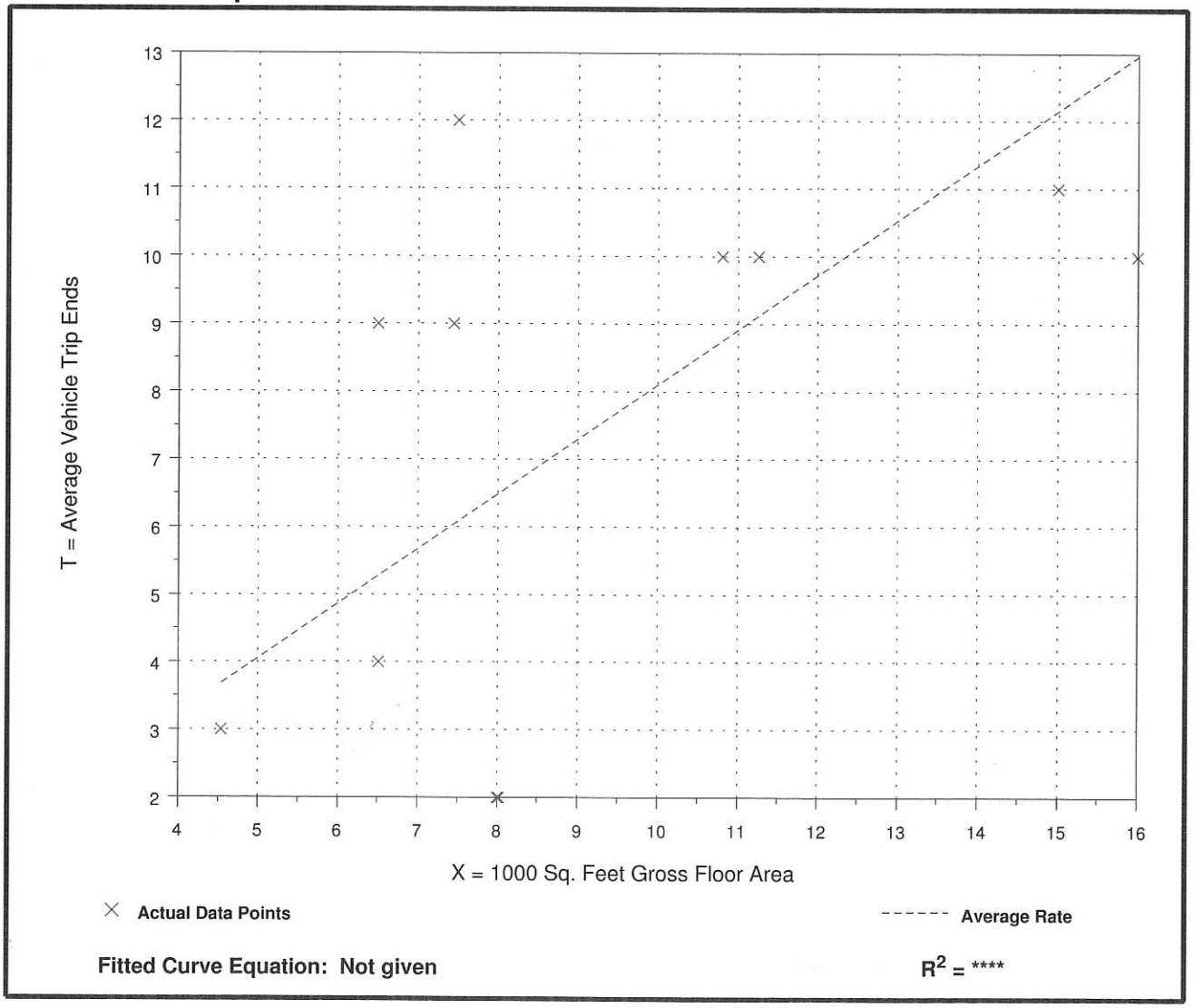
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 11
Average 1000 Sq. Feet GFA: 9
Directional Distribution: Not available

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.81	0.25 - 1.60	0.93

Data Plot and Equation



Fitted Curve Equation: Not given

R^2 = ****

Quality Restaurant
(931)

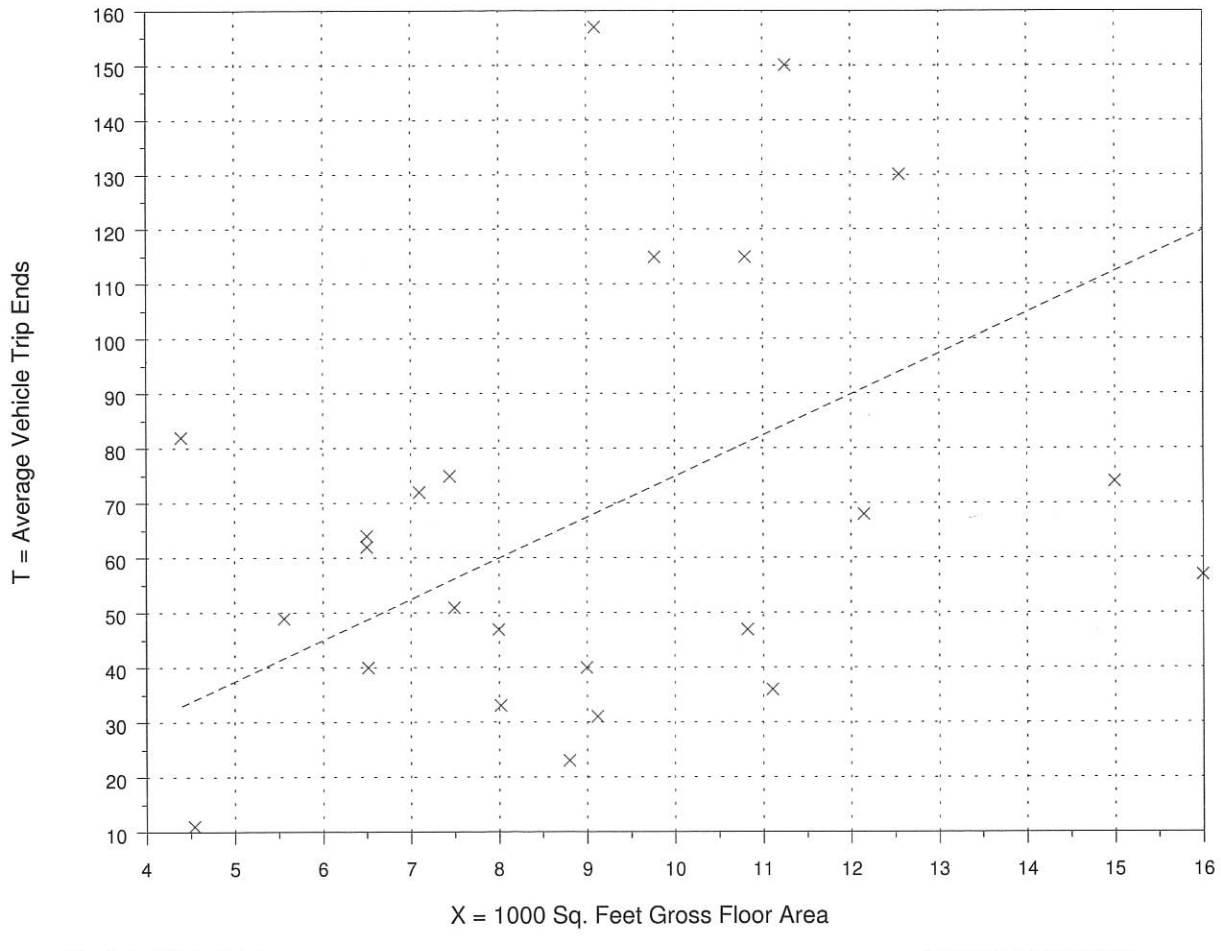
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 24
Average 1000 Sq. Feet GFA: 9
Directional Distribution: 67% entering, 33% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
7.49	2.42 - 18.64	4.89

Data Plot and Equation



× Actual Data Points

------ Average Rate

Fitted Curve Equation: Not given

R^2 = ****

High-Turnover (Sit-Down) Restaurant
(932)

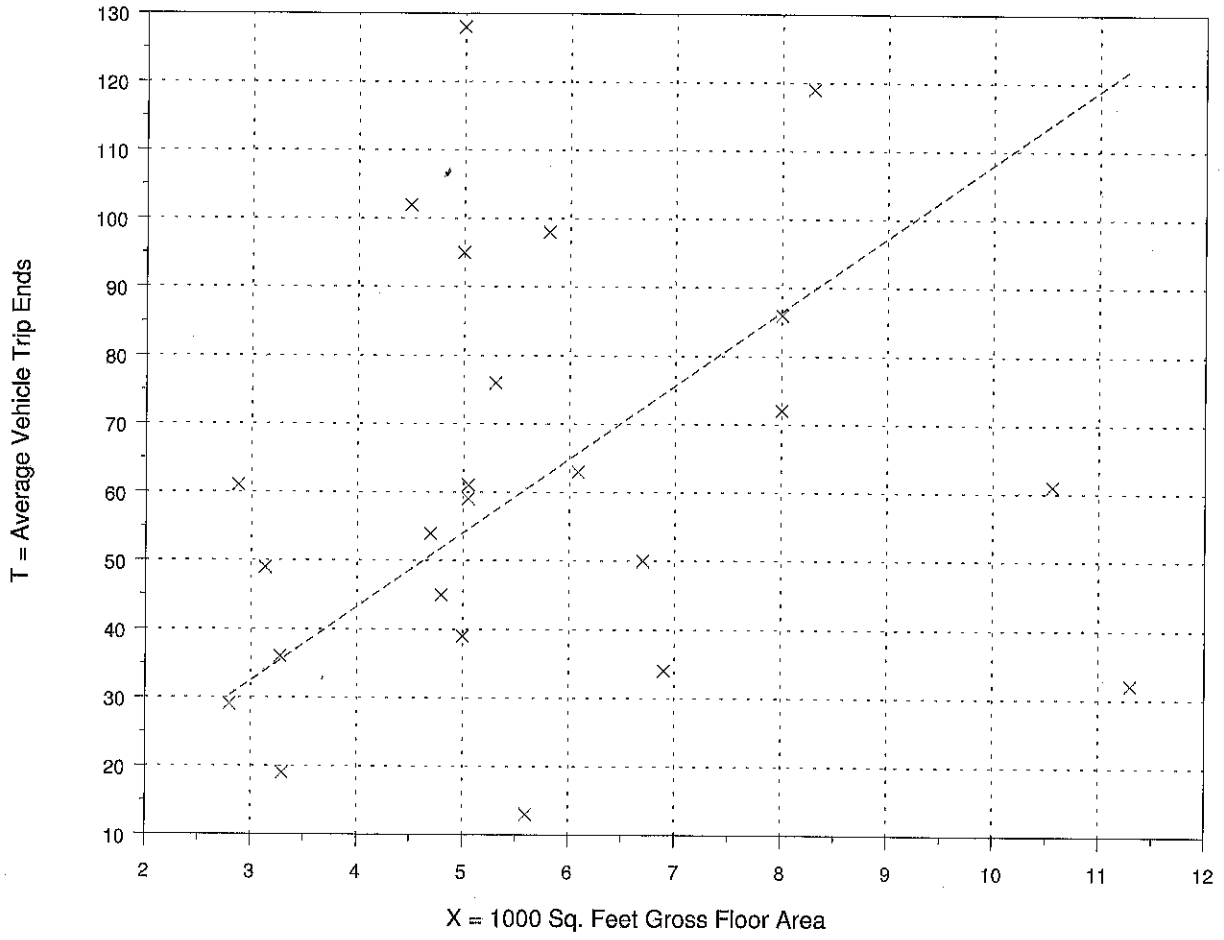
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 24
Average 1000 Sq. Feet GFA: 6
Directional Distribution: 55% entering, 45% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
10.81	2.32 - 25.60	6.59

Data Plot and Equation



× Actual Data Points

------ Average Rate

Fitted Curve Equation: Not given

R^2 = ****

High-Turnover (Sit-Down) Restaurant
(932)

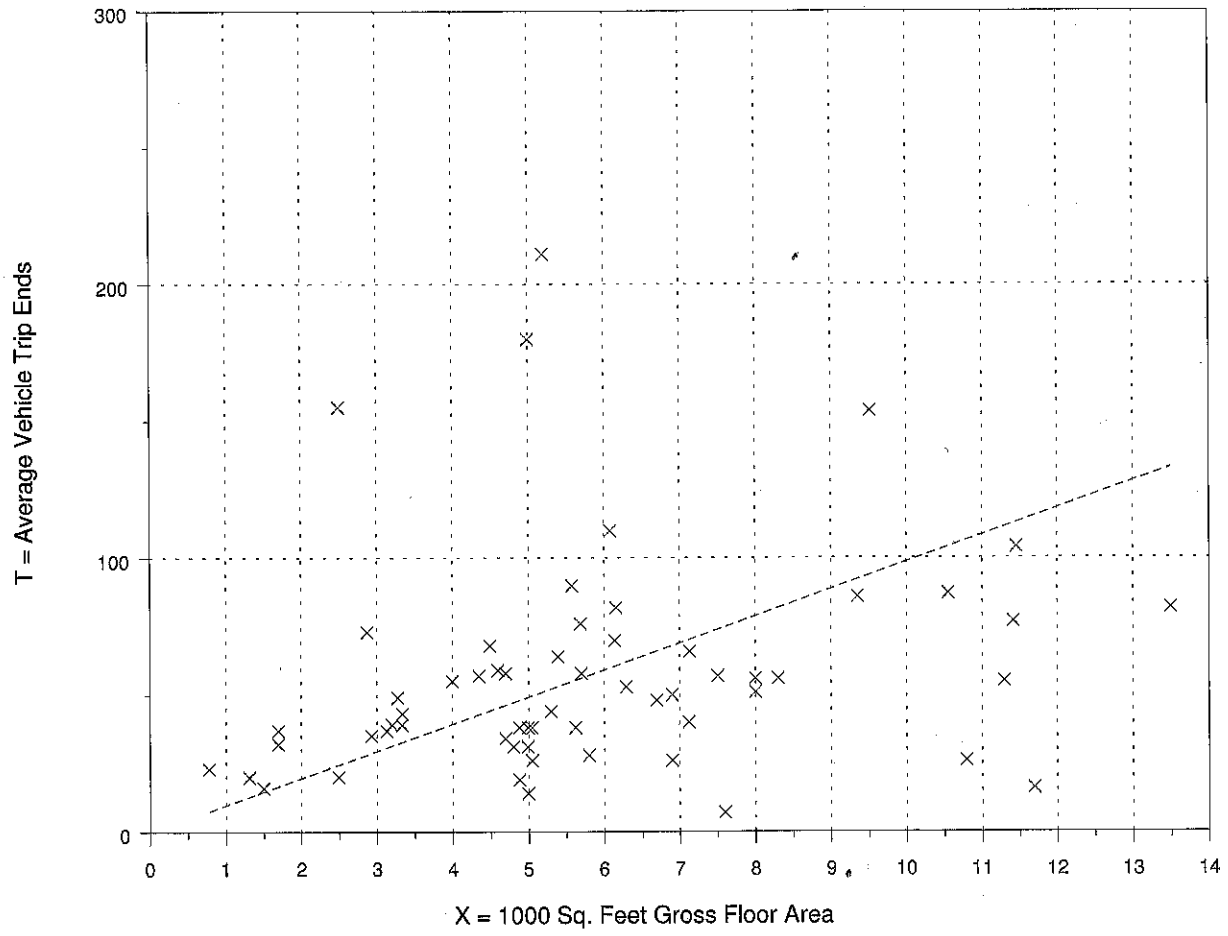
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 60
Average 1000 Sq. Feet GFA: 6
Directional Distribution: 60% entering, 40% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
9.85	0.92 - 62.00	8.54

Data Plot and Equation



Fitted Curve Equation: Not given

R^2 = ****

Turning Movement Counts Summary Table

The Kleingers Group
6305 Centre Park Drive, West Chester, OH 45069
513-779-7851

Location: Johns Hill Road at Alexandira Pike
Date of Counts: Thursday, February 15, 2018
Performed By: TKG Staff

AM	EB Johns Hill				WB Johns Hill				NB Alexandria Pike				SB Alexandria Pike			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	7	0	2	0	0	0	5	0	6	438	11	0	5	144	2	0
7:15 to 7:30 am	4	1	0	0	2	0	9	0	6	424	11	0	2	163	2	0
7:30 to 7:45 am	9	0	1	0	4	1	4	0	3	421	16	0	5	151	2	0
7:45 to 8:00 am	11	3	3	0	7	3	7	0	0	380	16	1	4	244	7	0
8:00 to 8:15 am	11	2	2	0	8	0	7	0	4	345	13	0	3	232	11	0
8:15 to 8:30 am	6	1	4	0	6	2	4	0	6	332	21	0	4	168	6	0
8:30 to 8:45 am	13	2	1	0	5	2	4	0	5	348	14	0	3	170	12	0
8:45 to 9:00 am	12	2	6	0	4	1	5	0	8	251	13	0	2	201	7	0
9:00 to 9:15 am	10	0	9	0	8	1	3	0	9	257	14	0	4	148	9	0
9:15 to 9:30 am	10	2	7	0	11	4	2	0	9	234	8	0	1	152	11	0
9:30 to 9:45 am	5	4	7	0	6	3	3	0	6	248	10	0	4	174	10	0
9:45 to 10:00 am	8	4	5	0	13	4	1	0	5	223	11	0	5	160	5	0
AM Peak Hr Vol.	35	6	6	0	21	4	27	0	13	1570	56	1	14	790	22	0
Peak Hr Factor	0.80	0.50	0.50		0.66	0.33	0.75		0.54	0.93	0.88	0.25	0.70	0.81	0.50	

PM	EB Johns Hill				WB Johns Hill				NB Alexandria Pike				SB Alexandria Pike			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:00 to 4:15 pm	13	5	22	0	17	3	0	0	12	278	13	1	9	390	10	0
4:15 to 4:30 pm	25	6	6	0	17	6	3	0	11	272	17	0	3	372	9	0
4:30 to 4:45 pm	24	8	15	0	20	2	2	1	10	325	18	0	6	415	8	0
4:45 to 5:00 pm	19	2	11	0	20	6	3	0	8	255	18	0	6	458	11	0
5:00 to 5:15 pm	24	8	10	0	21	6	3	0	9	337	14	0	4	452	14	0
5:15 to 5:30 pm	17	5	4	0	25	2	8	0	12	338	20	0	8	434	6	0
5:30 to 5:45 pm	15	5	13	0	18	2	10	0	8	256	12	0	7	463	13	0
5:45 to 6:00 pm	15	5	10	0	22	4	5	0	11	248	14	0	4	391	12	0
6:00 to 6:15 pm	16	2	18	0	16	5	6	0	9	247	12	0	4	343	19	0
6:15 to 6:30 pm	20	1	9	0	17	1	2	0	7	271	13	0	5	371	14	0
6:30 to 6:45 pm	18	3	8	0	15	1	4	0	12	218	11	0	6	315	12	0
6:45 to 7:00 pm	11	1	10	0	10	6	3	0	8	222	12	0	6	247	13	0
PM Peak Hr Vol.	84	23	40	0	86	16	16	1	39	1255	70	0	24	1759	39	0
Peak Hr Factor	0.88	0.72	0.67		0.86	0.67	0.50	0.25	0.81	0.93	0.88		0.75	0.96	0.70	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Johns Hill				WB Johns Hill				NB Alexandria Pike				SB Alexandria Pike			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am	0	0	0	0	0	0	0	0	0	7	0	0	0	13	0	0
7:15 to 7:30 am	0	0	0	0	0	0	0	0	1	18	0	0	0	13	0	0
7:30 to 7:45 am	0	0	0	0	0	0	0	0	0	12	1	0	0	20	0	0
7:45 to 8:00 am	1	0	1	0	0	0	0	0	0	14	0	0	0	14	0	0
8:00 to 8:15 am	0	0	0	0	0	0	0	0	0	17	0	0	0	14	0	0
8:15 to 8:30 am	0	0	1	0	0	0	0	0	0	11	0	0	0	8	0	0
8:30 to 8:45 am	0	0	0	0	0	0	0	0	0	15	0	0	0	11	0	0
8:45 to 9:00 am	0	0	0	0	0	0	0	0	0	18	0	0	0	14	0	0
9:00 to 9:15 am	0	0	0	0	0	0	0	0	0	11	1	0	0	13	0	0
9:15 to 9:30 am	0	0	1	0	0	0	0	0	0	13	0	0	0	15	0	0
9:30 to 9:45 am	0	0	0	0	1	0	1	0	0	17	1	0	0	29	0	0
9:45 to 10:00 am	0	0	0	0	0	0	0	0	0	16	0	0	0	20	0	0
AM Peak HV	1	0	2	0	0	0	0	0	0	54	1	0	0	56	0	0
% Peak HV	3%		33%							3%	2%			7%		

HV - PM	EB Johns Hill				WB Johns Hill				NB Alexandria Pike				SB Alexandria Pike			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:00 to 4:15 pm	1	0	0	0	0	0	0	0	0	9	0	0	0	9	0	0
4:15 to 4:30 pm	0	0	0	0	0	0	0	0	0	12	0	0	0	5	0	0
4:30 to 4:45 pm	0	0	1	0	0	0	0	0	1	6	0	0	0	9	0	0
4:45 to 5:00 pm	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0	0
5:00 to 5:15 pm	0	0	0	0	0	0	0	0	0	5	0	0	0	10	0	0
5:15 to 5:30 pm	0	0	0	0	0	0	0	0	0	9	0	0	0	5	0	0
5:30 to 5:45 pm	0	0	0	0	0	0	0	0	0	2	0	0	0	7	0	0
5:45 to 6:00 pm	0	0	0	0	0	0	0	0	0	6	0	0	0	10	0	0
6:00 to 6:15 pm	0	0	0	0	0	0	0	0	0	6	0	0	0	9	0	0
6:15 to 6:30 pm	0	0	0	0	0	0	0	0	0	10	0	0	0	8	0	0
6:30 to 6:45 pm	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	0
6:45 to 7:00 pm	0	0	0	0	0	0	0	0	0	5	0	0	0	3	0	0
AM Peak HV	0	0	1	0	0	0	0	0	1	25	0	0	0	29	0	0
% Peak HV			3%						3%	2%				2%		

Turning Movement Counts Summary Table

The Kleingers Group
6305 Centre Park Drive, West Chester, OH 45069
513-779-7851

Location: Marshall Lane at Alexandira Pike
Date of Counts: Thursday, February 15, 2018
Performed By: TKG Staff

AM	EB Marshall Lane				WB Marshall Lane				NB Alexandria Pike				SB Alexandria Pike			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	1	0	0	0	0	0	13	0	0	450	1	0	7	147	0	0
7:15 to 7:30 am	0	0	0	0	2	0	11	0	0	439	1	0	6	170	1	0
7:30 to 7:45 am	3	0	0	0	1	1	12	0	0	436	1	0	11	175	2	0
7:45 to 8:00 am	1	0	0	0	1	0	15	0	0	394	3	0	8	246	3	0
8:00 to 8:15 am	0	1	0	0	2	0	9	0	0	360	4	0	13	241	1	0
8:15 to 8:30 am	3	0	0	0	1	0	11	0	0	339	2	0	10	184	4	0
8:30 to 8:45 am	3	0	0	0	3	0	17	0	0	357	2	0	15	180	5	0
8:45 to 9:00 am	1	0	0	0	2	0	14	0	1	284	2	0	8	211	3	0
9:00 to 9:15 am	3	1	0	0	1	1	13	0	0	260	2	0	12	169	2	0
9:15 to 9:30 am	2	0	0	0	1	0	9	0	0	243	3	0	5	161	2	0
9:30 to 9:45 am	2	1	1	0	1	0	10	0	0	262	1	0	15	192	4	1
9:45 to 10:00 am	4	0	0	0	3	3	14	0	0	230	0	0	19	176	5	0
AM Peak Hr Vol.	4	1	0	0	6	1	47	0	0	1629	9	0	38	832	7	0
Peak Hr Factor	0.33	0.25			0.75	0.25	0.78			0.93	0.56		0.73	0.85	0.58	

PM	EB Marshall Lane				WB Marshall Lane				NB Alexandria Pike				SB Alexandria Pike			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:00 to 4:15 pm	4	1	3	0	2	0	14	0	2	288	1	1	19	396	3	0
4:15 to 4:30 pm	4	0	0	0	2	0	15	0	1	298	2	0	18	400	9	0
4:30 to 4:45 pm	7	0	0	0	0	0	22	0	1	346	2	0	31	457	8	0
4:45 to 5:00 pm	5	1	0	0	4	0	23	0	0	277	3	0	21	465	8	0
5:00 to 5:15 pm	5	1	1	0	3	0	20	0	1	361	2	0	23	484	9	0
5:15 to 5:30 pm	9	2	1	0	1	1	29	0	2	357	3	0	19	479	7	0
5:30 to 5:45 pm	7	1	0	0	2	0	16	0	0	287	2	1	31	515	6	0
5:45 to 6:00 pm	3	0	0	0	1	0	24	0	0	269	2	0	20	397	2	0
6:00 to 6:15 pm	5	0	1	0	0	0	11	0	1	263	2	0	15	378	2	0
6:15 to 6:30 pm	6	0	2	0	0	0	15	0	1	294	2	0	14	400	2	0
6:30 to 6:45 pm	8	0	0	0	0	0	22	0	0	235	1	0	19	317	2	0
6:45 to 7:00 pm	0	0	2	0	0	1	15	0	2	233	3	0	15	283	2	0
PM Peak Hr Vol.	26	4	2	0	8	1	94	0	4	1341	10	0	94	1885	32	0
Peak Hr Factor	0.72	0.50	0.50		0.50	0.25	0.81		0.50	0.93	0.83		0.76	0.97	0.89	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Marshall Lane				WB Marshall Lane				NB Alexandria Pike				SB Alexandria Pike			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am	0	0	0	0	0	0	2	0	0	8	0	0	0	14	0	0
7:15 to 7:30 am	0	0	0	0	0	0	0	0	0	17	0	0	0	13	0	0
7:30 to 7:45 am	1	0	0	0	0	0	0	0	0	13	0	0	0	19	0	0
7:45 to 8:00 am	0	0	0	0	0	0	1	0	0	15	0	0	0	15	0	0
8:00 to 8:15 am	0	0	0	0	0	0	0	0	0	18	0	0	1	13	0	0
8:15 to 8:30 am	0	0	0	0	0	0	1	0	0	11	0	0	0	8	0	0
8:30 to 8:45 am	0	0	0	0	0	0	0	0	0	15	0	0	0	14	0	0
8:45 to 9:00 am	0	0	0	0	0	0	0	0	0	21	0	0	0	14	1	0
9:00 to 9:15 am	0	0	0	0	0	0	1	0	0	11	0	0	1	10	0	0
9:15 to 9:30 am	0	0	0	0	0	0	1	0	0	14	0	0	0	15	0	0
9:30 to 9:45 am	0	0	0	0	0	0	0	0	0	18	0	0	0	33	0	0
9:45 to 10:00 am	0	0	0	0	0	0	0	0	0	15	0	0	0	17	1	0
AM Peak HV	1	0	0	0	0	0	2	0	0	57	0	0	1	55	0	0
% Peak HV	25%						4%			3%			3%	7%		

HV - PM	EB Marshall Lane				WB Marshall Lane				NB Alexandria Pike				SB Alexandria Pike			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:00 to 4:15 pm	0	0	0	0	0	0	0	0	0	11	0	0	0	9	0	0
4:15 to 4:30 pm	0	0	0	0	0	0	0	0	0	13	0	0	0	6	0	0
4:30 to 4:45 pm	0	0	0	0	0	0	1	0	0	7	0	0	0	9	0	0
4:45 to 5:00 pm	0	0	0	0	0	0	0	0	0	5	0	0	0	6	0	0
5:00 to 5:15 pm	0	0	0	0	0	0	0	0	0	6	0	0	0	9	0	0
5:15 to 5:30 pm	0	0	0	0	0	0	0	0	0	10	0	0	0	5	0	0
5:30 to 5:45 pm	0	0	0	0	0	0	0	0	0	2	0	0	0	7	0	0
5:45 to 6:00 pm	0	0	0	0	0	0	0	0	0	7	0	0	0	8	0	0
6:00 to 6:15 pm	0	0	0	0	0	0	0	0	0	6	0	0	0	9	0	0
6:15 to 6:30 pm	0	0	0	0	0	0	0	0	0	10	0	0	0	9	0	0
6:30 to 6:45 pm	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0	0
6:45 to 7:00 pm	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0	0
AM Peak HV	0	0	0	0	0	0	1	0	0	28	0	0	0	29	0	0
% Peak HV							1%			2%				2%		

Turning Movement Counts Summary Table

The Kleingers Group
6305 Centre Park Drive, West Chester, OH 45069
513-779-7851

Location: Marshall Lane at Bluegrass Drive
Date of Counts: Thursday, February 15, 2018
Performed By: TKG Staff

AM	EB Marshall Lane				WB Marshall Lane				NB Bluegrass Dr							
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am		1	0	0	0	0		0	0		0	0				
7:15 to 7:30 am		0	0	0	1	0		0	0		0	0				
7:30 to 7:45 am		1	0	0	2	1		0	0		2	0				
7:45 to 8:00 am		0	0	0	3	0		0	0		1	0				
8:00 to 8:15 am		0	0	0	0	1		0	0		0	0				
8:15 to 8:30 am		3	0	0	2	1		0	0		1	0				
8:30 to 8:45 am		1	0	0	6	0		0	0		1	0				
8:45 to 9:00 am		0	0	0	4	0		0	0		1	0				
9:00 to 9:15 am		0	0	0	3	0		0	0		4	0				
9:15 to 9:30 am		0	0	0	3	0		0	0		3	0				
9:30 to 9:45 am		2	1	0	4	1		0	0		2	0				
9:45 to 10:00 am		1	0	0	4	3		0	0		4	0				
AM Peak Hr Vol.	0	1	0	0	6	2	0	0	0	0	3	0	0	0	0	0
Peak Hr Factor		0.25			0.50	0.50					0.38					

PM	EB Marshall Lane				WB Marshall Lane				NB Bluegrass Dr				0			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:00 to 4:15 pm		2	0	0	4	1		0	0		4	0				
4:15 to 4:30 pm		0	0	0	8	1		0	0		4	0				
4:30 to 4:45 pm		2	0	0	9	0		0	0		5	0				
4:45 to 5:00 pm		0	0	0	7	0		1	0		5	0				
5:00 to 5:15 pm		1	0	0	9	1		0	0		6	0				
5:15 to 5:30 pm		2	0	0	9	2		0	0		12	0				
5:30 to 5:45 pm		0	0	0	4	3		0	0		6	0				
5:45 to 6:00 pm		0	0	0	2	0		0	0		3	0				
6:00 to 6:15 pm		2	0	0	2	2		0	1		5	0				
6:15 to 6:30 pm		3	1	0	4	1		0	1		9	0				
6:30 to 6:45 pm		0	0	0	2	0		0	0		3	0				
6:45 to 7:00 pm		1	0	0	2	4		0	0		1	0				
PM Peak Hr Vol.	0	5	0	0	34	3	0	1	0	0	28	0	0	0	0	0
Peak Hr Factor		0.63			0.94	0.38		0.25			0.58					

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Marshall Lane				WB Marshall Lane				NB Bluegrass Dr				0			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am		0	0	0	0	0		0	0		0	0				
7:15 to 7:30 am		0	0	0	0	0		0	0		0	0				
7:30 to 7:45 am		0	0	0	0	0		0	0		1	0				
7:45 to 8:00 am		0	0	0	0	0		0	0		0	0				
8:00 to 8:15 am		0	0	0	0	0		0	0		0	0				
8:15 to 8:30 am		0	0	0	0	0		0	0		0	0				
8:30 to 8:45 am		0	0	0	0	0		0	0		0	0				
8:45 to 9:00 am		0	0	0	1	0		0	0		0	0				
9:00 to 9:15 am		0	0	0	0	0		0	0		0	0				
9:15 to 9:30 am		0	0	0	0	0		0	0		0	0				
9:30 to 9:45 am		0	0	0	0	0		0	0		0	0				
9:45 to 10:00 am		1	0	0	0	1		0	0		0	0				
AM Peak HV	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
% Peak HV											33%					

HV - PM	EB Marshall Lane				WB Marshall Lane				NB Bluegrass Dr				0			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:00 to 4:15 pm		0	0	0	0	0		0	0		0	0				
4:15 to 4:30 pm		0	0	0	0	0		0	0		0	0				
4:30 to 4:45 pm		0	0	0	0	0		0	0		0	0				
4:45 to 5:00 pm		0	0	0	0	0		0	0		0	0				
5:00 to 5:15 pm		0	0	0	0	0		0	0		0	0				
5:15 to 5:30 pm		0	0	0	0	0		0	0		0	0				
5:30 to 5:45 pm		0	0	0	0	0		0	0		0	0				
5:45 to 6:00 pm		0	0	0	0	0		0	0		0	0				
6:00 to 6:15 pm		0	0	0	0	0		0	0		0	0				
6:15 to 6:30 pm		0	0	0	0	0		0	0		0	0				
6:30 to 6:45 pm		0	0	0	0	0		0	0		0	0				
6:45 to 7:00 pm		0	0	0	0	0		0	0		0	0				
AM Peak HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peak HV																

Turning Movement Counts Summary Table

The Kleingers Group
6305 Centre Park Drive, West Chester, OH 45069
513-779-7851

Location: Alexandria Pike at Nunn Drive/Hidden Valley Drive
Date of Counts: Thursday, February 15, 2018
Performed By: TKG Staff

AM	EB Nunn Drive				WB Hidden Valley Dr				NB Alexandria Pike				SB Alexandria Pike			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
6:00 to 6:15 am	16	3	1	0	2	0	9	0	3	335	6	0	1	61	14	0
6:15 to 6:30 am	15	1	2	0	0	0	8	0	3	420	12	0	8	101	19	0
6:30 to 6:45 am	16	5	2	0	1	2	19	0	3	498	9	0	4	105	27	0
6:45 to 7:00 am	15	0	3	0	3	2	14	0	5	468	13	0	7	167	42	0
7:00 to 7:15 am	27	3	1	0	2	3	14	0	4	410	14	0	8	156	46	0
7:15 to 7:30 am	39	2	1	0	2	5	11	0	7	429	15	0	12	165	46	0
7:30 to 7:45 am	31	6	2	0	7	5	16	0	11	440	11	0	12	177	92	0
7:45 to 8:00 am	29	5	3	0	9	8	13	0	15	374	14	0	10	250	120	0
8:00 to 8:15 am	19	2	1	0	4	2	11	0	11	341	10	0	10	241	116	0
8:15 to 8:30 am	22	1	3	0	3	7	17	0	6	331	16	0	10	191	109	0
8:30 to 8:45 am	19	6	1	0	6	5	31	0	10	347	16	0	15	180	97	0
8:45 to 9:00 am	12	0	5	0	3	4	9	0	11	274	12	0	10	217	168	0
9:00 to 9:15 am	29	2	4	0	4	7	11	0	15	248	11	0	11	168	221	0
9:15 to 9:30 am	33	2	3	0	3	9	14	0	8	241	10	0	16	151	149	0
9:30 to 9:45 am	29	3	2	0	7	2	12	0	3	258	15	0	6	207	45	0
9:45 to 10:00 am	21	0	6	0	3	4	19	0	4	228	17	0	11	187	51	0
AM Peak Hr Vol.	118	15	7	0	22	20	51	0	44	1584	50	0	44	833	374	0
Peak Hr Factor	0.76	0.63	0.58		0.61	0.63	0.80		0.73	0.90	0.83		0.92	0.83	0.78	

PM	EB Nunn Drive				WB Hidden Valley Dr				NB Alexandria Pike				SB Alexandria Pike			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
2:00 to 2:15 pm	53	8	12	0	10	7	20	0	8	241	8	0	11	289	37	0
2:15 to 2:30 pm	61	10	8	0	5	4	19	0	3	248	13	0	16	256	45	0
2:30 to 2:45 pm	67	4	10	0	11	9	13	0	7	312	13	0	20	316	47	0
2:45 to 3:00 pm	87	5	14	0	5	8	19	0	14	272	10	0	19	304	71	0
3:00 to 3:15 pm	146	20	34	0	10	3	23	0	7	293	12	0	14	364	49	0
3:15 to 3:30 pm	121	4	11	0	8	6	29	0	2	259	17	0	15	393	45	0
3:30 to 3:45 pm	58	9	8	0	8	2	22	0	8	329	18	0	12	447	36	0
3:45 to 4:00 pm	70	9	12	0	10	4	19	0	3	286	12	0	18	430	47	0
4:00 to 4:15 pm	95	4	13	0	8	10	19	0	3	275	13	0	11	397	38	0
4:15 to 4:30 pm	100	9	15	0	8	5	5	0	8	303	11	0	19	415	73	0
4:30 to 4:45 pm	117	9	30	0	13	2	28	0	10	353	17	0	14	451	65	0
4:45 to 5:00 pm	105	14	10	0	7	6	24	0	6	272	17	0	21	460	64	0
5:00 to 5:15 pm	85	14	19	0	9	3	26	0	5	370	14	0	20	498	57	0
5:15 to 5:30 pm	66	10	16	0	6	4	26	0	3	365	19	0	15	483	75	0
5:30 to 5:45 pm	79	6	17	0	13	7	14	0	10	287	12	0	24	480	86	0
5:45 to 6:00 pm	72	13	11	0	13	13	23	0	15	264	10	0	19	390	110	0
6:00 to 6:15 pm	83	6	14	0	4	7	17	0	7	260	10	0	11	412	100	0
6:15 to 6:30 pm	54	10	9	0	4	6	18	0	6	292	17	0	17	398	47	0
6:30 to 6:45 pm	45	7	10	0	4	7	18	0	7	251	9	0	17	323	44	0
6:45 to 7:00 pm	53	5	13	0	11	4	9	0	11	231	9	0	21	288	44	0
PM Peak Hr Vol.	373	47	75	0	35	15	104	0	24	1360	67	0	70	1892	261	0
Peak Hr Factor	0.80	0.84	0.63		0.67	0.63	0.93		0.60	0.92	0.88		0.83	0.95	0.87	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Nunn Drive				WB Hidden Valley Dr				NB Alexandria Pike				SB Alexandria Pike			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
6:00 to 6:15 am	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0
6:15 to 6:30 am	0	1	1	0	0	0	1	0	0	0	0	0	0	0	1	0
6:30 to 6:45 am	1	1	0	0	1	0	0	0	0	1	0	0	0	1	0	0
6:45 to 7:00 am	0	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0
7:00 to 7:15 am	0	1	0	0	1	0	0	0	1	0	0	0	0	0	1	0
7:15 to 7:30 am	0	1	0	0	0	0	0	0	1	1	0	0	0	0	1	0
7:30 to 7:45 am	0	1	0	0	2	0	1	0	0	0	4	0	1	0	0	0
7:45 to 8:00 am	1	1	0	0	0	0	1	0	1	0	0	0	3	0	0	0
AM Peak HV	1	4	1	0	2	1	0	0	2	2	1	0	0	1	2	0
% Peak HV	1%	27%	14%		9%	5%			5%	0%	2%			0%	1%	

HV - PM	EB Nunn Drive				WB Hidden Valley Dr				NB Alexandria Pike				SB Alexandria Pike			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
2:00 to 2:15 pm	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
2:15 to 2:30 pm	2	2	0	0	0	1	0	0	0	1	0	0	0	1	3	0
2:30 to 2:45 pm	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 to 3:00 pm	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0
3:00 to 3:15 pm	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0
3:15 to 3:30 pm	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 to 3:45 pm	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
3:45 to 4:00 pm	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0
AM Peak HV	1	2	1	0	0	4	0	0	0	0	0	0	0	1	0	0
% Peak HV	0%	4%	1%			27%								0%		

The Kleingers Group
6305 Centre Park Drive, West Chester, OH 45069
513-779-7851

Turning Movement Counts Summary Table

Location: Sunset Avenue at Alexandria Pike / I-275 & I-471 Ramp
Date of Counts: Thursday, February 15, 2018 Performed By: TKG Staff

AM	EB Sunset Drive				WB Alexandria Pike				NB Alexandria Pike				SB I-275/I-471 Ramp			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	6	1	7	0	21	1	28	0	1	427	39	0	20	182	2	0
7:15 to 7:30 am	17	2	4	0	24	3	36	0	1	410	61	0	29	195	15	0
7:30 to 7:45 am	13	10	6	0	27	1	40	0	2	371	66	0	34	223	16	0
7:45 to 8:00 am	5	12	6	0	33	4	38	0	3	383	78	0	35	347	33	0
8:00 to 8:15 am	7	8	10	0	54	3	43	0	1	314	59	0	30	295	27	0
8:15 to 8:30 am	3	4	3	0	44	5	33	0	2	300	45	0	25	233	22	0
8:30 to 8:45 am	8	3	5	0	32	4	33	0	2	375	44	0	23	280	27	0
8:45 to 9:00 am	9	3	4	0	33	2	35	0	6	260	32	0	45	327	26	0
9:00 to 9:15 am	6	2	5	0	39	3	30	0	2	254	30	0	32	361	10	0
9:15 to 9:30 am	7	2	4	0	35	0	24	0	3	258	24	0	22	282	8	0
9:30 to 9:45 am	6	2	5	0	43	1	22	0	1	266	23	0	27	208	7	0
9:45 to 10:00 am	9	1	6	0	42	4	30	0	1	233	47	0	39	194	11	0
AM Peak Hr Vol.	42	32	26	0	138	11	157	0	7	1478	264	0	128	1060	91	0
Peak Hr Factor	0.62	0.67	0.65		0.64	0.69	0.91		0.58	0.90	0.85		0.91	0.76	0.69	

PM	EB Sunset Drive				WB Alexandria Pike				NB Alexandria Pike				SB I-275/I-471 Ramp			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:00 to 4:15 pm	31	4	23	0	49	4	39	0	14	318	51	0	36	384	18	0
4:15 to 4:30 pm	38	4	13	0	82	3	40	0	12	308	60	0	32	375	17	1
4:30 to 4:45 pm	29	4	18	0	73	3	48	0	23	399	51	0	37	413	22	0
4:45 to 5:00 pm	28	5	15	0	64	3	48	0	13	345	64	0	32	460	28	0
5:00 to 5:15 pm	41	5	33	0	68	1	53	0	13	393	66	0	36	445	19	0
5:15 to 5:30 pm	52	6	28	0	72	5	44	0	17	331	74	0	45	444	20	0
5:30 to 5:45 pm	42	7	25	0	65	6	39	0	17	326	64	0	31	502	25	0
5:45 to 6:00 pm	25	4	33	0	81	5	41	0	23	290	60	0	39	406	24	0
6:00 to 6:15 pm	27	5	20	0	93	2	36	0	8	265	57	0	38	372	17	0
6:15 to 6:30 pm	20	5	27	0	54	6	37	0	19	300	59	0	29	373	28	0
6:30 to 6:45 pm	22	2	24	0	50	5	35	0	23	221	68	0	47	313	14	0
6:45 to 7:00 pm	22	2	21	0	64	3	37	0	22	228	42	0	28	248	19	0
PM Peak Hr Vol.	150	20	94	0	277	12	193	0	66	1468	255	0	150	1762	89	0
Peak Hr Factor	0.72	0.83	0.71		0.95	0.60	0.91		0.72	0.92	0.86		0.83	0.96	0.79	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Sunset Drive				WB Alexandria Pike				NB Alexandria Pike				SB I-275/I-471 Ramp			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am	0	0	0	0	1	0	2	0	0	9	2	0	0	14	0	0
7:15 to 7:30 am	0	0	0	0	1	0	0	0	0	12	3	0	1	13	0	0
7:30 to 7:45 am	0	0	0	0	4	0	0	0	1	13	2	0	0	18	0	0
7:45 to 8:00 am	0	0	1	0	6	0	0	0	0	10	5	0	0	11	0	0
8:00 to 8:15 am	0	0	0	0	2	0	0	0	0	12	0	0	1	14	0	0
8:15 to 8:30 am	0	0	0	0	1	0	1	0	0	14	2	0	2	4	0	0
8:30 to 8:45 am	0	0	0	0	2	0	1	0	1	16	1	0	2	13	0	0
8:45 to 9:00 am	0	0	0	0	2	0	1	0	1	16	2	0	1	11	0	0
9:00 to 9:15 am	0	1	0	0	1	0	0	0	0	10	2	0	0	12	0	0
9:15 to 9:30 am	0	0	0	0	1	0	0	0	1	14	2	0	0	16	1	0
9:30 to 9:45 am	0	0	1	0	3	0	0	0	0	14	0	0	1	30	1	0
9:45 to 10:00 am	0	1	0	0	2	0	0	0	0	20	1	0	2	20	0	0
AM Peak HV	0	0	1	0	13	0	1	0	1	49	9	0	3	47	0	0
% Peak HV			4%		9%		1%		14%	3%	3%		2%	4%		

HV - PM	EB Sunset Drive				WB Alexandria Pike				NB Alexandria Pike				SB I-275/I-471 Ramp			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:00 to 4:15 pm	0	0	0	0	4	0	0	0	0	11	1	0	0	6	0	0
4:15 to 4:30 pm	0	0	0	0	2	0	0	0	0	10	2	0	0	4	0	0
4:30 to 4:45 pm	0	0	0	0	1	0	0	0	0	7	0	0	0	8	0	0
4:45 to 5:00 pm	0	0	0	0	1	0	0	0	0	6	2	0	1	5	0	0
5:00 to 5:15 pm	0	0	0	0	2	0	0	0	0	6	0	0	0	8	1	0
5:15 to 5:30 pm	0	0	0	0	1	0	0	0	0	5	2	0	0	4	0	0
5:30 to 5:45 pm	1	0	0	0	1	1	0	0	0	5	1	0	2	6	0	0
5:45 to 6:00 pm	0	0	0	0	0	0	0	0	0	7	1	0	0	10	0	0
6:00 to 6:15 pm	0	0	0	0	2	0	1	0	0	5	1	0	0	7	0	0
6:15 to 6:30 pm	0	0	0	0	0	0	0	0	1	8	2	0	0	9	0	0
6:30 to 6:45 pm	0	0	0	0	2	0	2	0	0	4	2	0	0	3	0	0
6:45 to 7:00 pm	0	0	0	0	2	0	0	0	0	5	1	0	0	3	0	0
AM Peak HV	0	0	0	0	5	0	0	0	0	24	4	0	1	25	1	0
% Peak HV					2%					2%	2%		1%	1%	1%	

Turning Movement Counts Summary Table

Location: Sunset Drive at Wilson Road

Date of Counts: Tuesday, March 20, 2018

The Kleingers Group
6305 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Sunset Drive				WB N/A				NB Wilson Road				SB Wilson Road			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	19		0						2	0				4	10	
7:15 to 7:30 am	13		0						0	0				2	10	
7:30 to 7:45 am	17		2						1	4				2	19	
7:45 to 8:00 am	16		1						1	2				10	26	
8:00 to 8:15 am	21		3						0	5				3	22	
8:15 to 8:30 am	5		0						1	5				3	17	
8:30 to 8:45 am	13		0						1	2				3	20	
8:45 to 9:00 am	9		1						0	4				4	21	
	Orange movements included in counted volume figure, all other movements were calculated using February 15th counted volumes and adding/removing highlighted orange volumes.															
AM Peak Hr Vol.	67	0	6	0	0	0	0	0	2	11	0	0	0	17	77	0
Peak Hr Factor	0.80		0.50						0.50	0.55				0.43	0.74	

PM	EB Sunset Drive				WB N/A				NB Wilson Road				SB Wilson Road			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:00 to 4:15 pm	37		1						0	5				1	11	
4:15 to 4:30 pm	29		1						1	5				5	18	
4:30 to 4:45 pm	40		0						0	9				4	14	
4:45 to 5:00 pm	29		2						0	4				3	18	
5:00 to 5:15 pm	38		0						1	7				3	21	
5:15 to 5:30 pm	49		1						2	3				3	19	
5:30 to 5:45 pm	53		2						0	4				4	20	
5:45 to 6:00 pm	33		0						0	3				2	20	
	Orange movements included in counted volume figure, all other movements were calculated using February 15th counted volumes and adding/removing highlighted orange volumes.															
PM Peak Hr Vol.	156	0	3	0	0	0	0	0	3	23	0	0	0	13	72	0
Peak Hr Factor	0.80		0.38						0.38	0.64				0.81	0.86	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Sunset Drive				WB N/A				NB Wilson Road				SB Wilson Road			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am																
7:45 to 8:00 am																
8:00 to 8:15 am																
8:15 to 8:30 am																
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peak HV																

HV - PM	EB Sunset Drive				WB N/A				NB Wilson Road				SB Wilson Road			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:00 to 4:15 pm																
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm																
5:00 to 5:15 pm																
5:15 to 5:30 pm																
5:30 to 5:45 pm																
5:45 to 6:00 pm																
AM Peak HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peak HV																

Turning Movement Counts Summary Table

Location: Business Access at Sunset Dr & Wilson Road
Date of Counts: Tuesday, March 20, 2018

The Kleingers Group
6305 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Sunset Avenue				WB Sunset Avenue				NB N/A				SB Business Access			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am	0	19				14	0						1		0	
7:15 to 7:30 am	0	13				12	2						0		0	
7:30 to 7:45 am	2	19				20	2						1		1	
7:45 to 8:00 am	1	17				35	1						0		1	
8:00 to 8:15 am	0	26				24	1						1		1	
8:15 to 8:30 am	0	10				20	3						1		0	
8:30 to 8:45 am	2	13				23	1						0		0	
8:45 to 9:00 am	0	13				25	0						0		0	
	Orange movements included in counted volume figure, all other movements were calculated using February 15th counted volumes and adding/removing highlighted orange volumes.															
AM Peak Hr Vol.	3	75	0	0	0	91	6	0	0	0	0	0	2	0	3	0
Peak Hr Factor	0.38	0.72				0.65	0.75						0.50		0.75	

PM	EB Sunset Avenue				WB Sunset Avenue				NB N/A				SB Business Access			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:00 to 4:15 pm	4	25				8	31						17		2	
4:15 to 4:30 pm	5	28				21	28						25		4	
4:30 to 4:45 pm	6	42				16	18						30		3	
4:45 to 5:00 pm	3	27				20	27						22		0	
5:00 to 5:15 pm	5	41				23	14						21		4	
5:15 to 5:30 pm	4	45				16	24						22		7	
5:30 to 5:45 pm	5	55				18	34						30		5	
5:45 to 6:00 pm	4	33				16	16						27		7	
	Orange movements included in counted volume figure, all other movements were calculated using February 15th counted volumes and adding/removing highlighted orange volumes.															
PM Peak Hr Vol.	18	155	0	0	0	75	83	0	0	0	0	0	95	0	14	0
Peak Hr Factor	0.75	0.86				0.82	0.77						0.79		0.50	

Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

HV - AM	EB Sunset Avenue				WB Sunset Avenue				NB N/A				SB Business Access			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am																
7:15 to 7:30 am																
7:30 to 7:45 am																
7:45 to 8:00 am																
8:00 to 8:15 am																
8:15 to 8:30 am																
8:30 to 8:45 am																
8:45 to 9:00 am																
AM Peak HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peak HV																

HV - PM	EB Sunset Avenue				WB Sunset Avenue				NB N/A				SB Business Access			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:00 to 4:15 pm																
4:15 to 4:30 pm																
4:30 to 4:45 pm																
4:45 to 5:00 pm																
5:00 to 5:15 pm																
5:15 to 5:30 pm																
5:30 to 5:45 pm																
5:45 to 6:00 pm																
AM Peak HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Peak HV																

Turning Movement Counts Summary Table

Location: Arena Access at Louie B Nunn Drive

Date of Counts: Tuesday, March 20, 2018

The Kleingers Group
6305 Centre Park Drive, West Chester, OH 45069
513-779-7851

Performed By: TKG Staff

AM	EB Louie B Nunn Dr.				WB Louie B Nunn Dr.				NB Arena Access				SB N/A			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
7:00 to 7:15 am		28	0			35					0					
7:15 to 7:30 am		31	1			60					0					
7:30 to 7:45 am		61	1			91					0					
7:45 to 8:00 am		33	1			155					0					
8:00 to 8:15 am		24	1			148					0					
8:15 to 8:30 am		22	1			124					0					
8:30 to 8:45 am		27	3			136					0					
8:45 to 9:00 am		34	1			178					0					
	Yellow movements included in counted volume figure, all other movements were calculated using February 15th counted volumes and adding/removing highlighted orange volumes.															
AM Peak Hr Vol.	0	149	4	0	0	454	0	0	0	0	0	0	0	0	0	0
Peak Hr Factor		0.61	1.00			0.73										

PM	EB Louie B Nunn Dr.				WB Louie B Nunn Dr.				NB Arena Access				SB N/A			
	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED	LEFT	THRU	RIGHT	PED
4:00 to 4:15 pm		143	0			90					3					
4:15 to 4:30 pm		172	3			125					1					
4:30 to 4:45 pm		153	0			100					3					
4:45 to 5:00 pm		119	2			104					3					
5:00 to 5:15 pm		107	0			95					4					
5:15 to 5:30 pm		113	0			92					0					
5:30 to 5:45 pm		93	0			89					2					
5:45 to 6:00 pm		109	0			120					2					
	Yellow movements included in counted volume figure, all other movements were calculated using February 15th counted volumes and adding/removing highlighted orange volumes.															
PM Peak Hr Vol.	0	492	2	0	0	391	0	0	0	0	10	0	0	0	0	0
Peak Hr Factor		0.80	0.25			0.94					0.63					

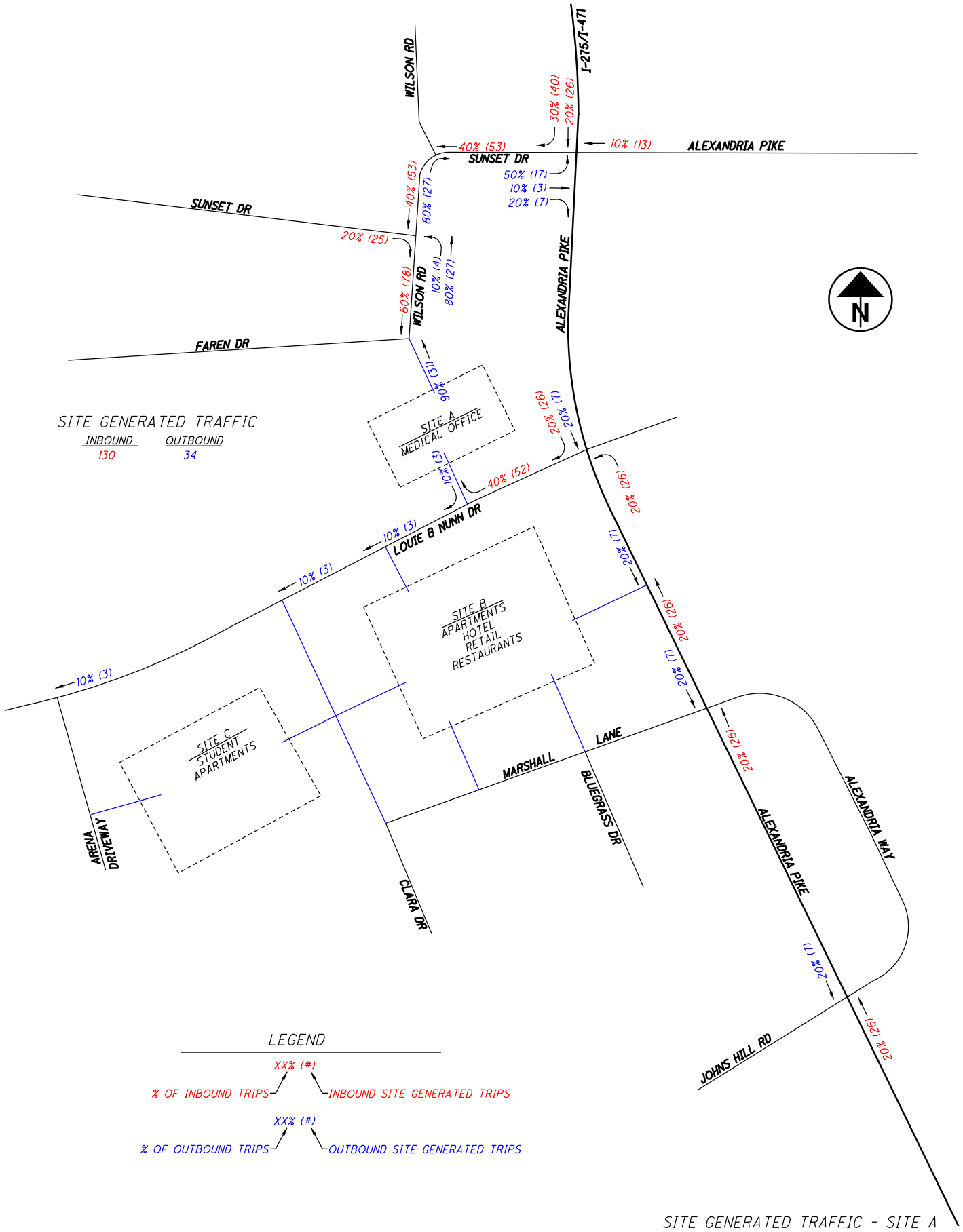
Peak Hour Times: AM 7:30 to 8:30 PM 4:30 to 5:30

Heavy Vehicle Volumes

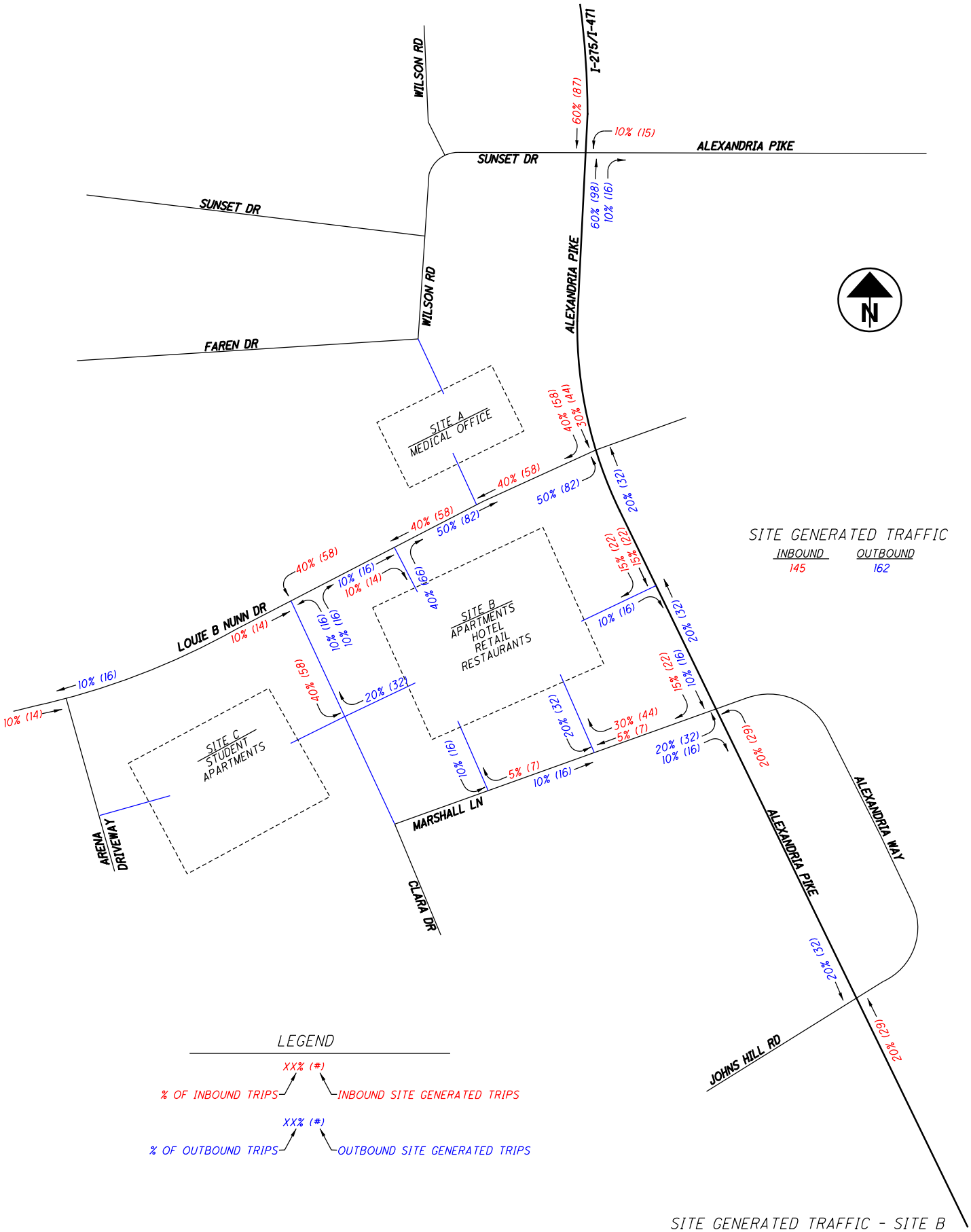
HV - AM	EB Louie B Nunn Dr.				WB Louie B Nunn Dr.				NB Arena Access				SB N/A			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
7:00 to 7:15 am		0	0	0	0	0		0	0		0	0				
7:15 to 7:30 am		2	0	0	0	1		0	0		0	0				
7:30 to 7:45 am		0	0	0	0	3		0	0		0	0				
7:45 to 8:00 am		2	0	0	0	4		0	0		0	0				
8:00 to 8:15 am		0	0	0	0	1		0	0		0	0				
8:15 to 8:30 am		2	0	0	0	0		0	0		0	0				
8:30 to 8:45 am		0	0	0	0	1		0	0		0	0				
8:45 to 9:00 am		3	0	0	0	2		0	0		0	0				
AM Peak HV	0	4	0	0	0	8	0	0	0	0	0	0	0	0	0	0
% Peak HV		3%				2%										

HV - PM	EB Louie B Nunn Dr.				WB Louie B Nunn Dr.				NB Arena Access				SB N/A			
	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	
4:00 to 4:15 pm		1	0	0	0	1		0	0		0	0				
4:15 to 4:30 pm		2	1	0	0	0		0	0		0	0				
4:30 to 4:45 pm		0	0	0	0	1		0	0		0	0				
4:45 to 5:00 pm		1	0	0	0	2		0	0		0	0				
5:00 to 5:15 pm		0	0	0	0	1		0	0		0	0				
5:15 to 5:30 pm		1	0	0	0	0		0	0		0	0				
5:30 to 5:45 pm		0	0	0	0	1		0	0		0	0				
5:45 to 6:00 pm		1	0	0	0	0		0	0		0	0				
AM Peak HV	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	0
% Peak HV		0%				1%										

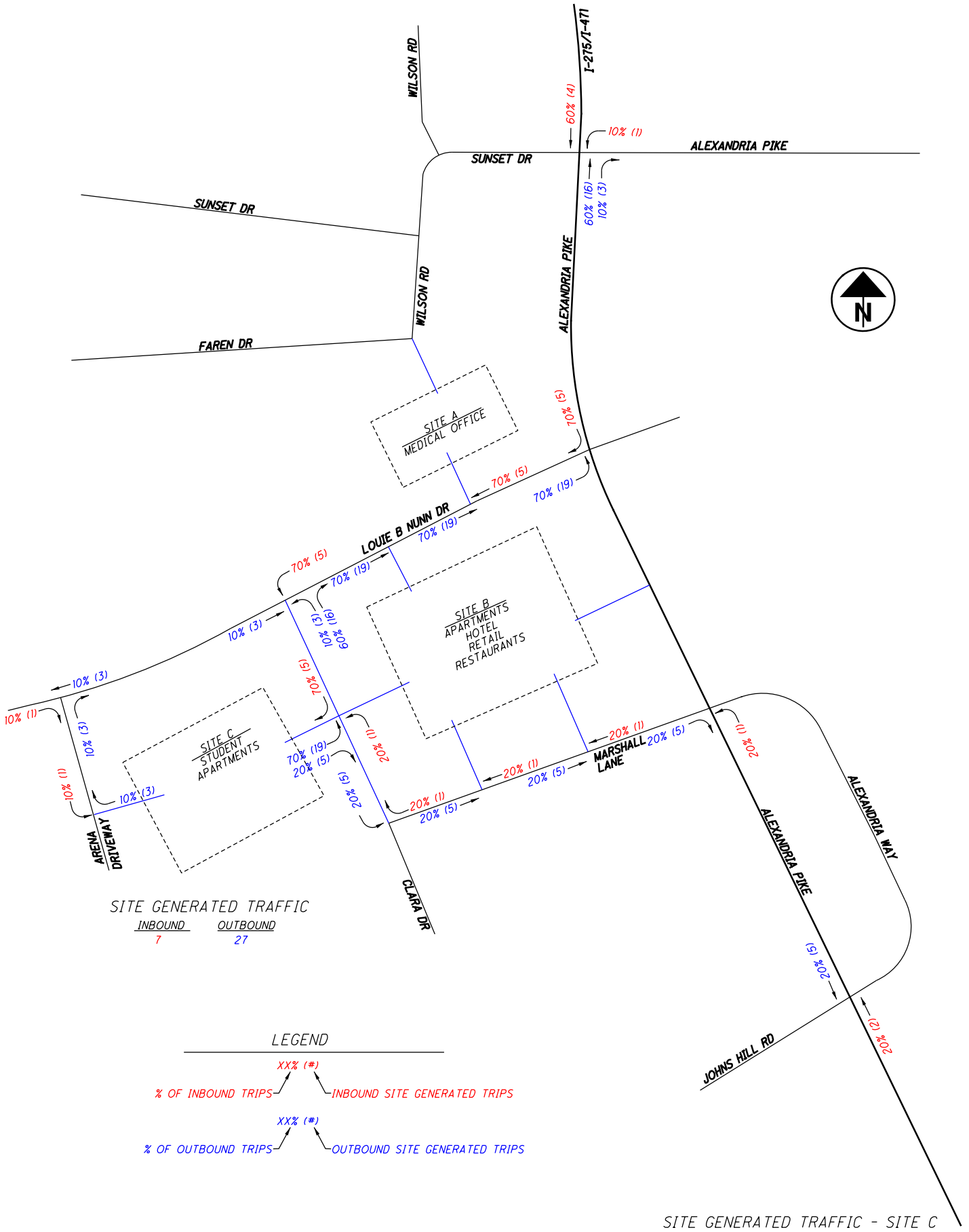
Projected Total Traffic Volume Calculations



SITE GENERATED TRAFFIC - SITE A



SITE GENERATED TRAFFIC - SITE B



SITE GENERATED TRAFFIC

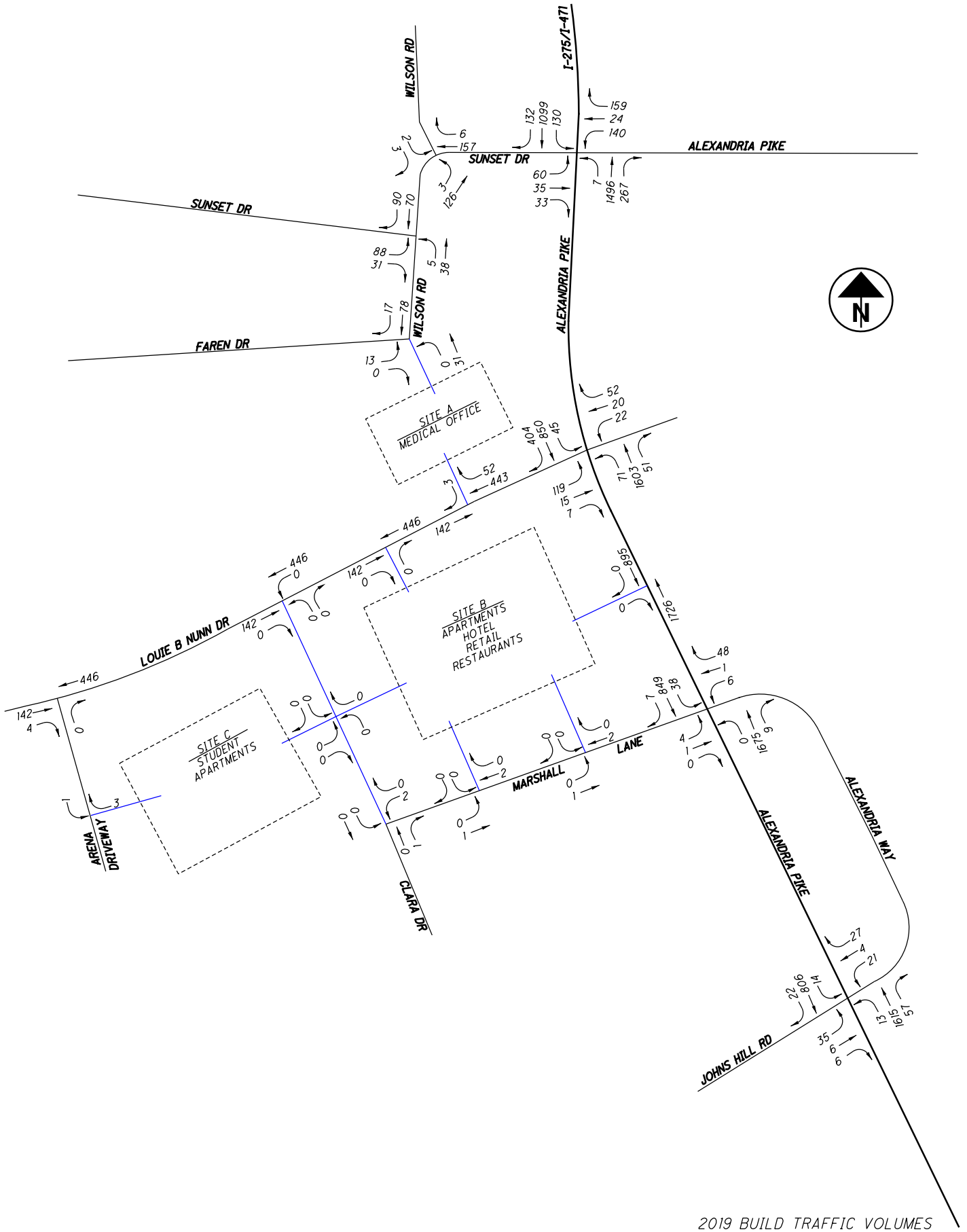
INBOUND	OUTBOUND
7	27

LEGEND

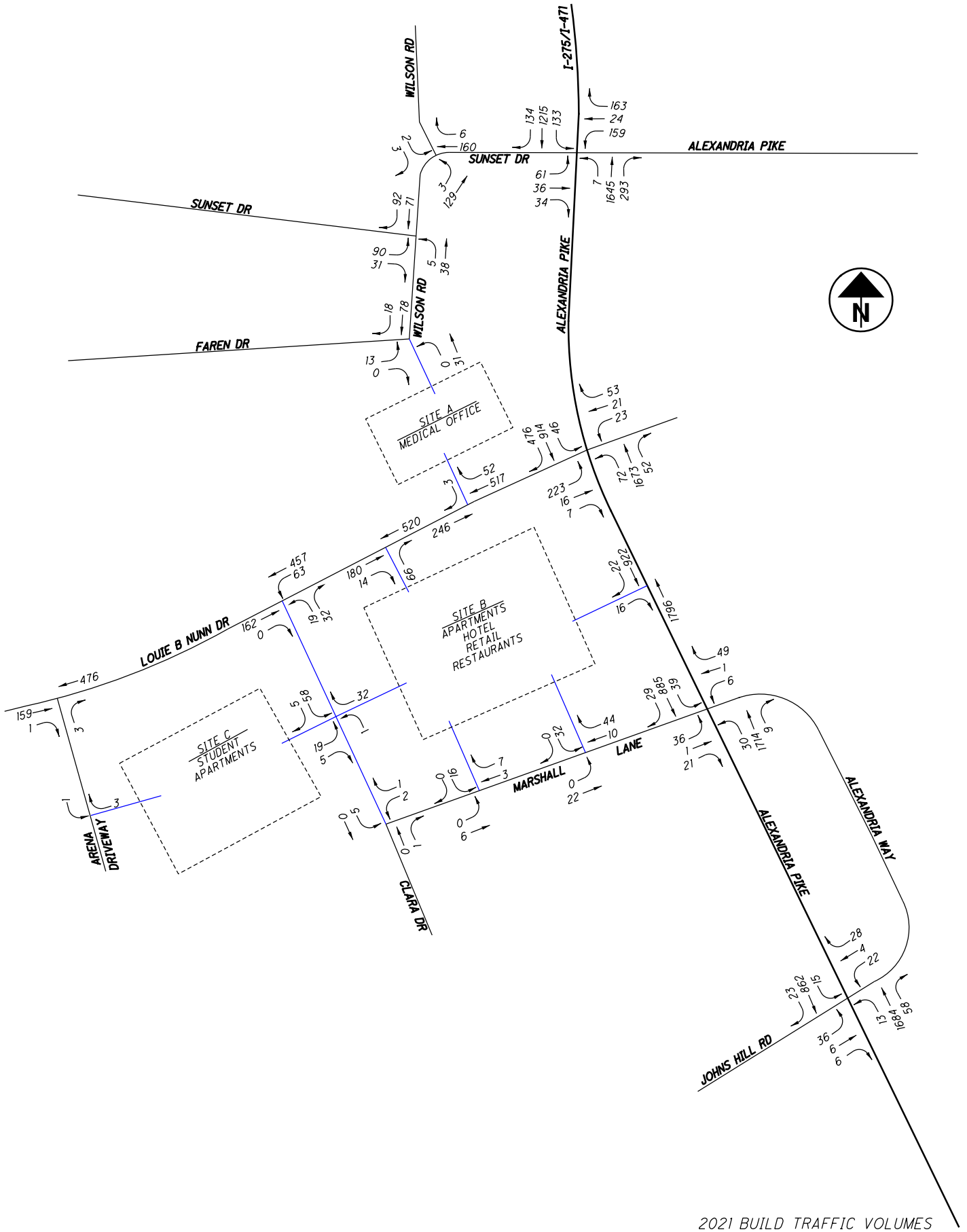
XX% (#)
% OF INBOUND TRIPS — INBOUND SITE GENERATED TRIPS

XX% (#)
% OF OUTBOUND TRIPS — OUTBOUND SITE GENERATED TRIPS

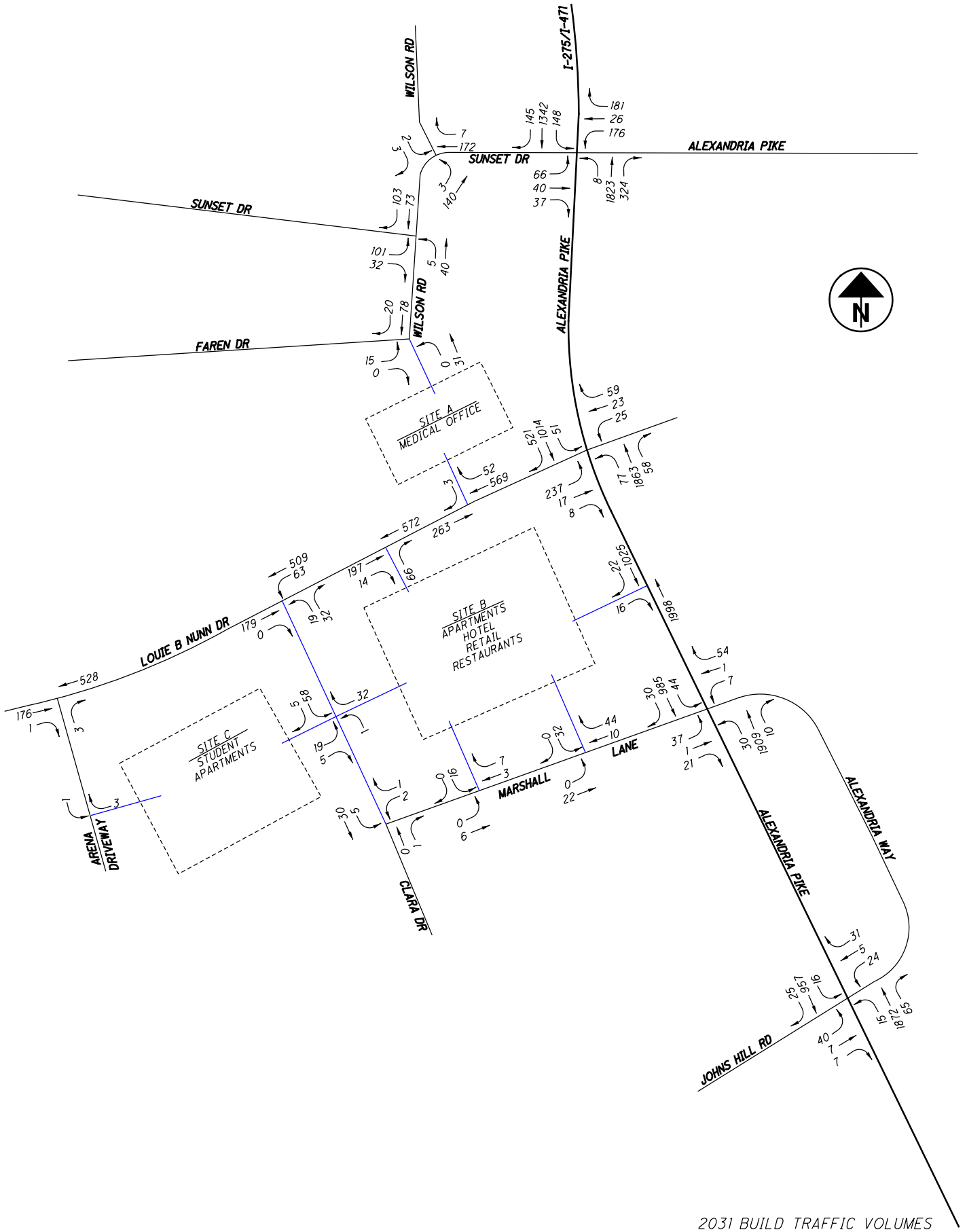
SITE GENERATED TRAFFIC - SITE C



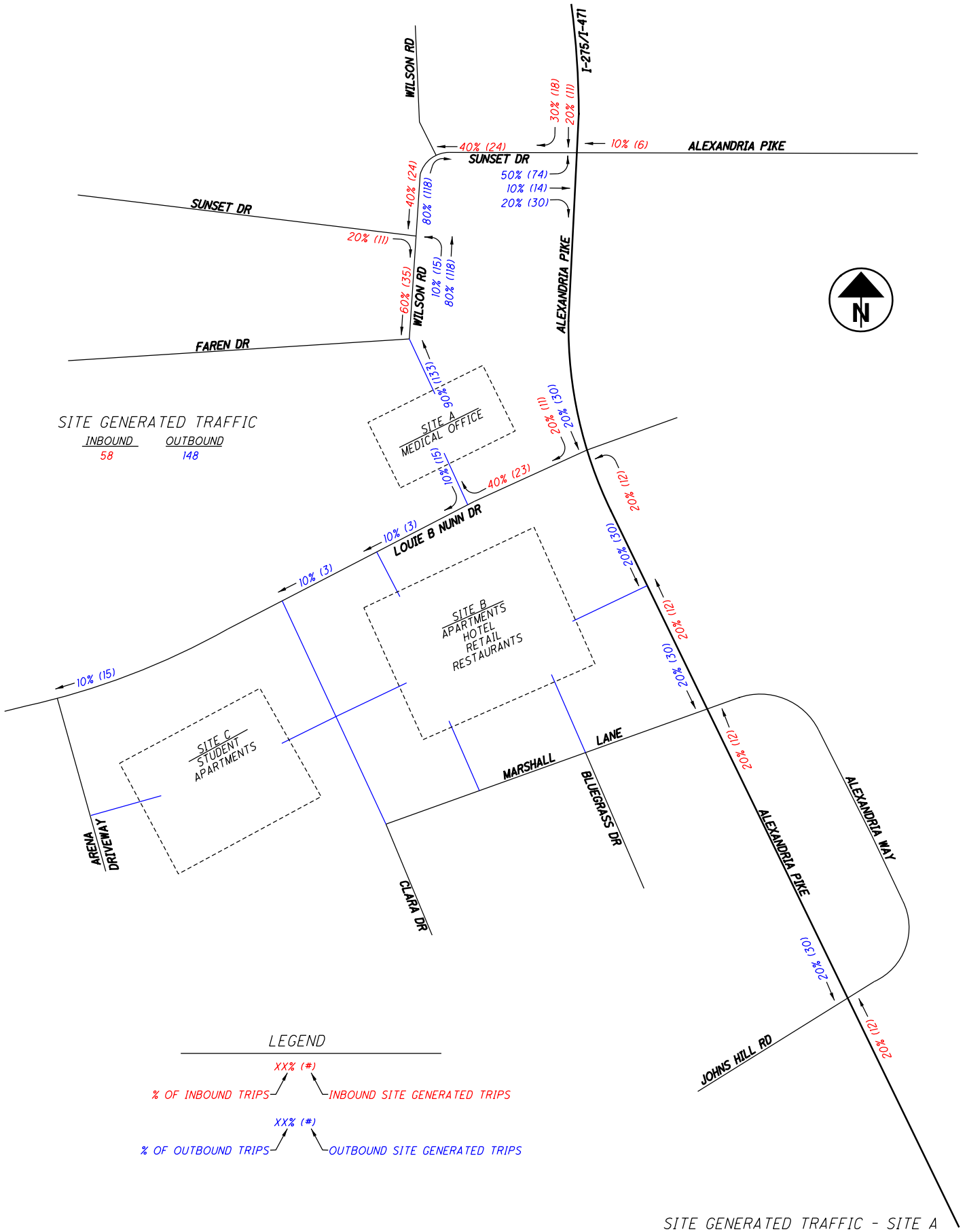
2019 BUILD TRAFFIC VOLUMES



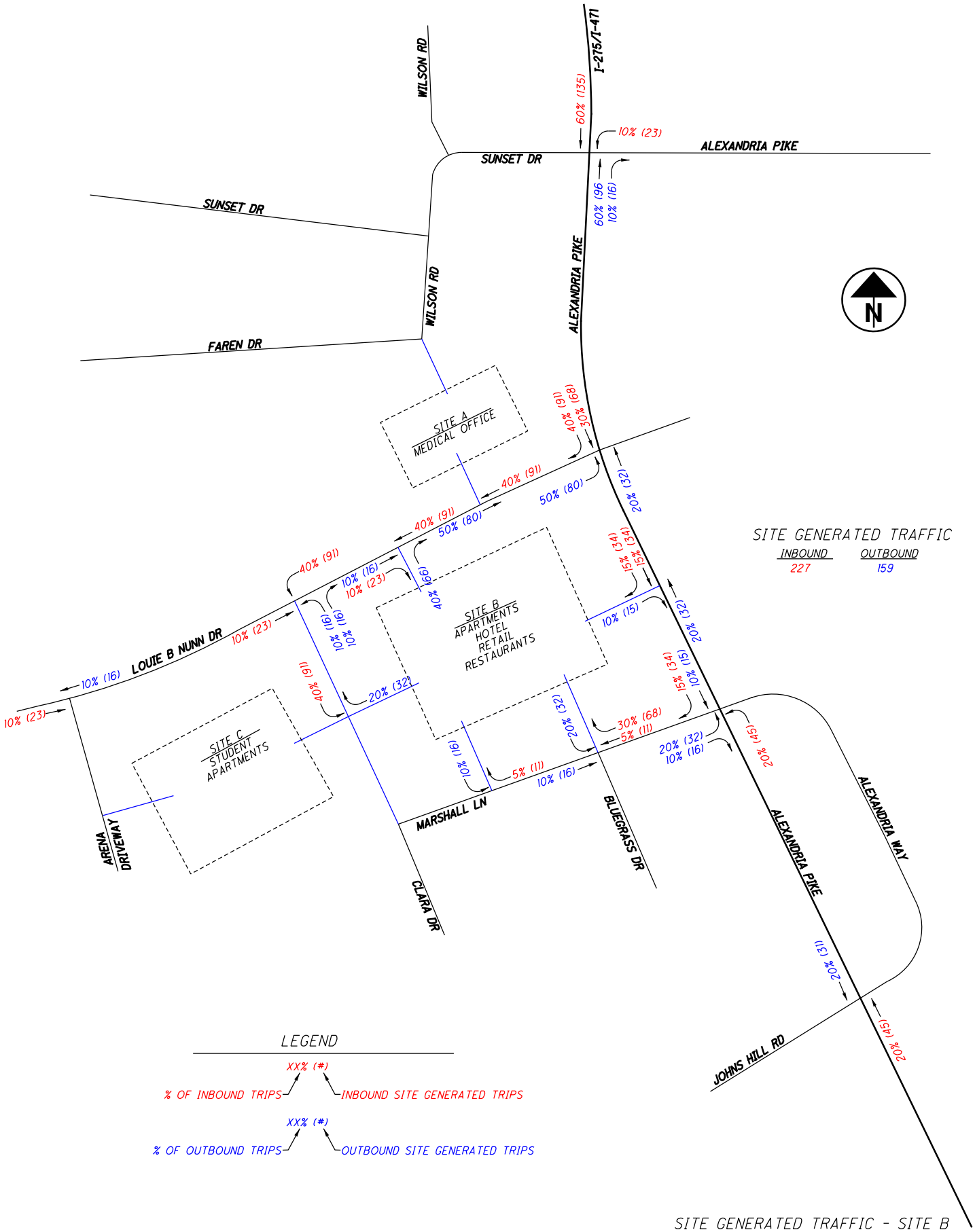
2021 BUILD TRAFFIC VOLUMES



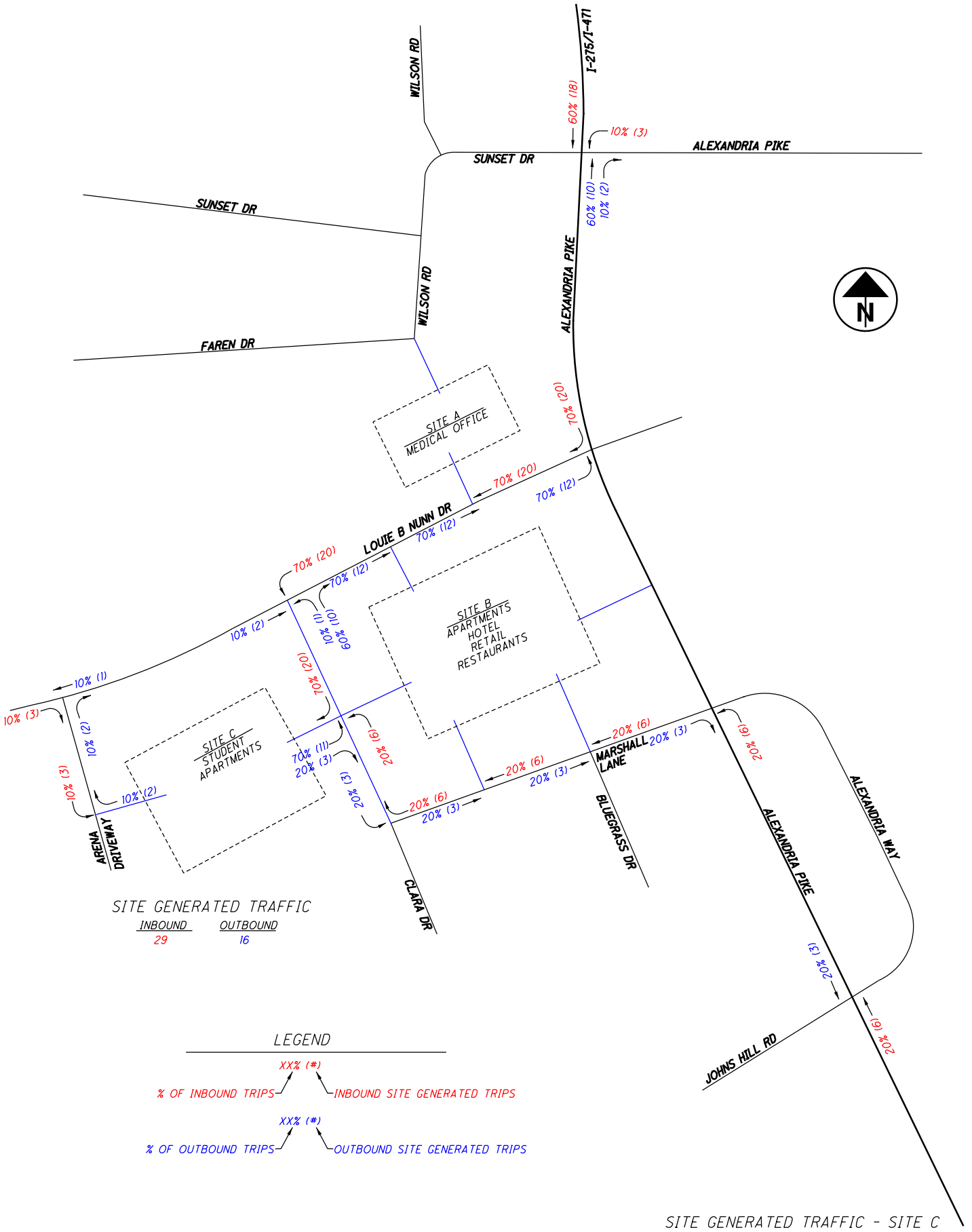
2031 BUILD TRAFFIC VOLUMES



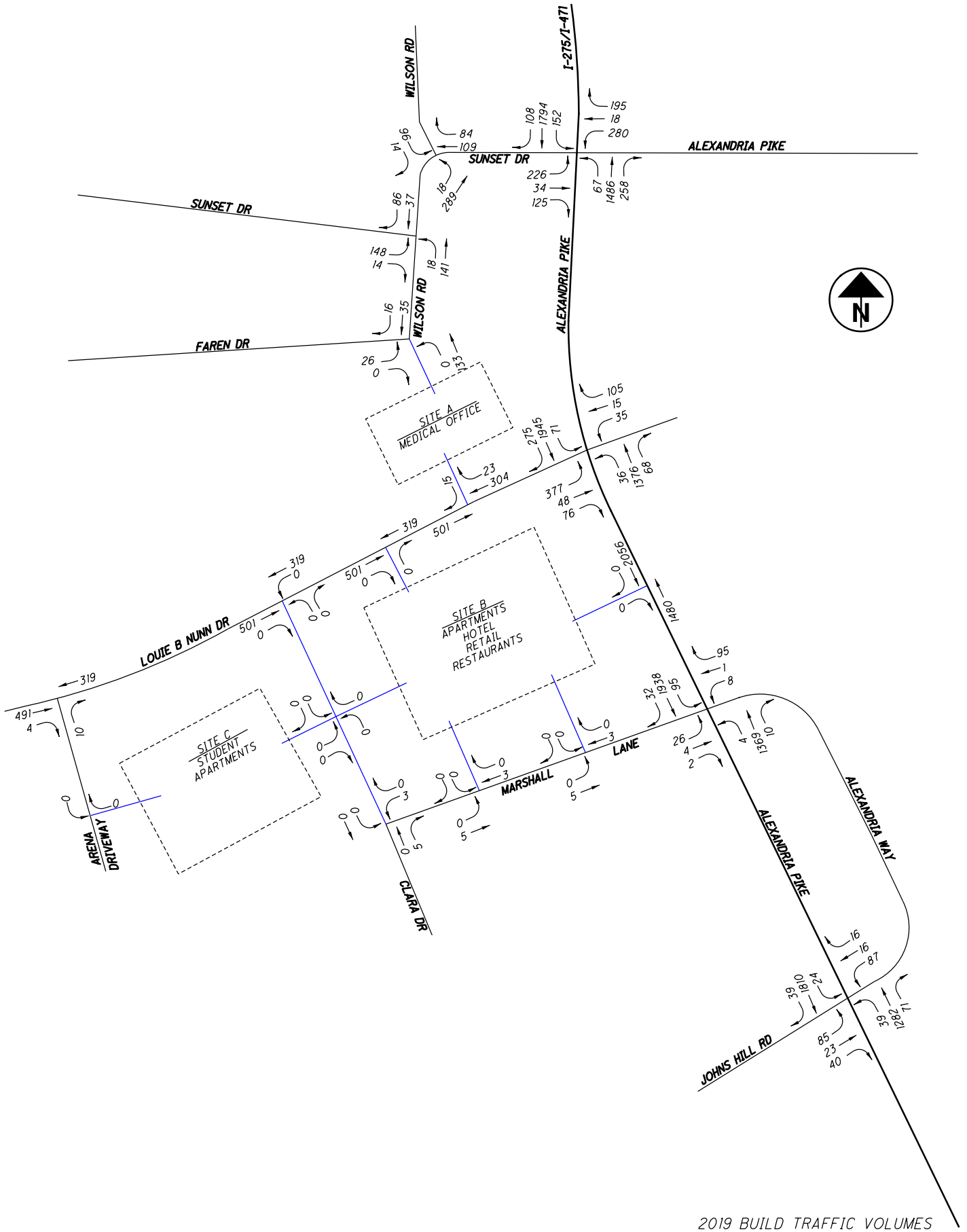
SITE GENERATED TRAFFIC - SITE A



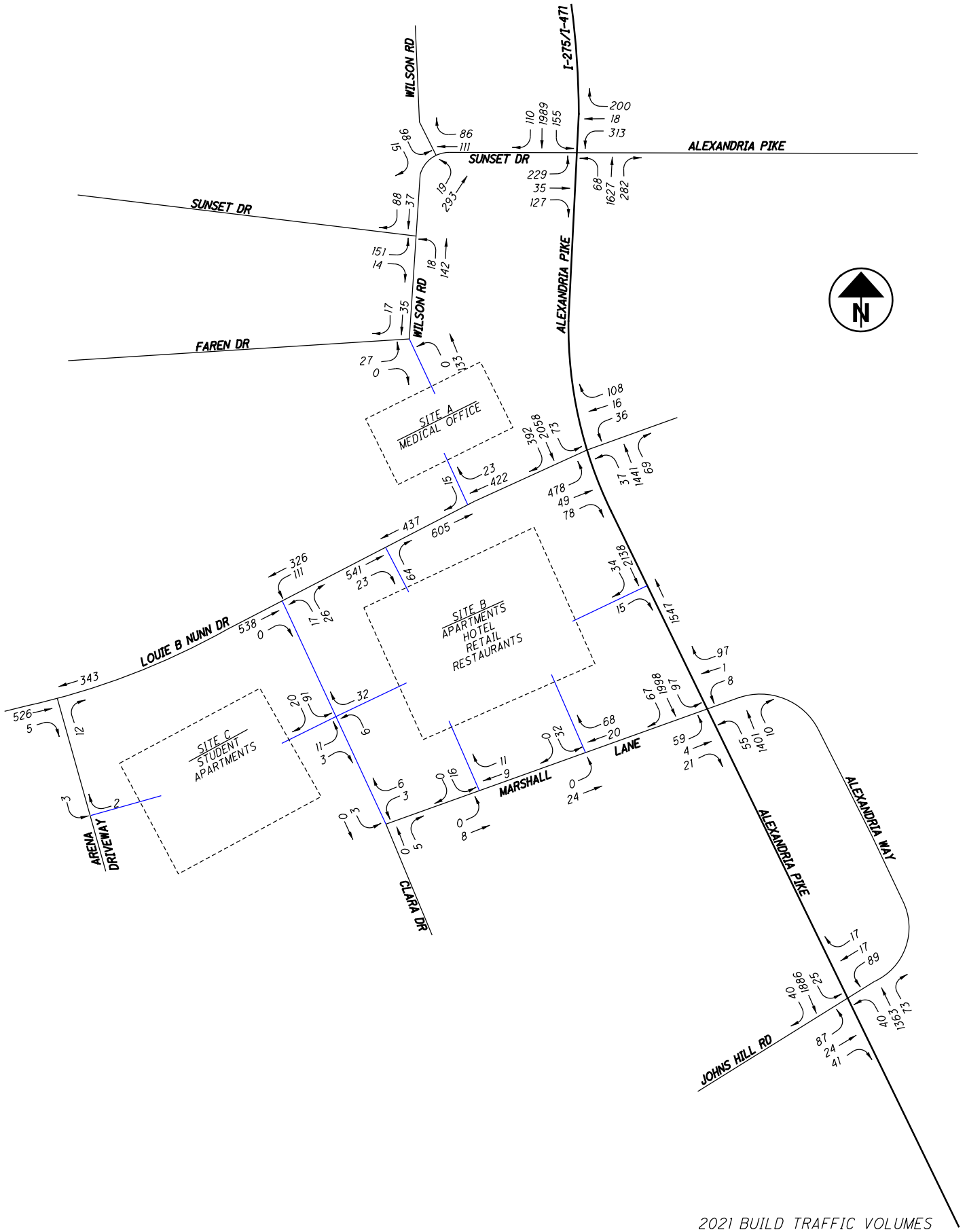
SITE GENERATED TRAFFIC - SITE B



SITE GENERATED TRAFFIC - SITE C

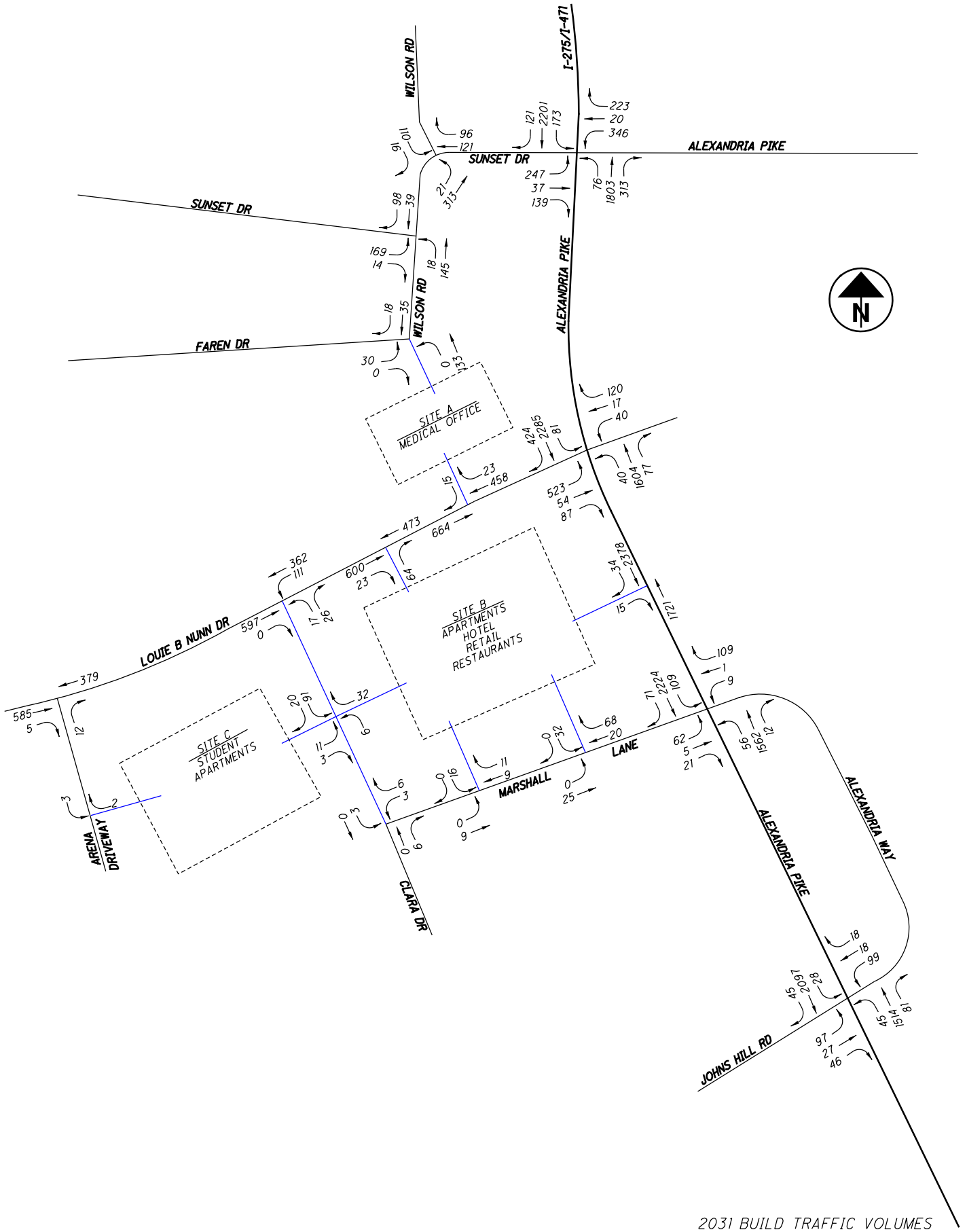


2019 BUILD TRAFFIC VOLUMES



2021 BUILD TRAFFIC VOLUMES

TRAFFIC FORECAST
PM PEAK HOUR



2031 BUILD TRAFFIC VOLUMES

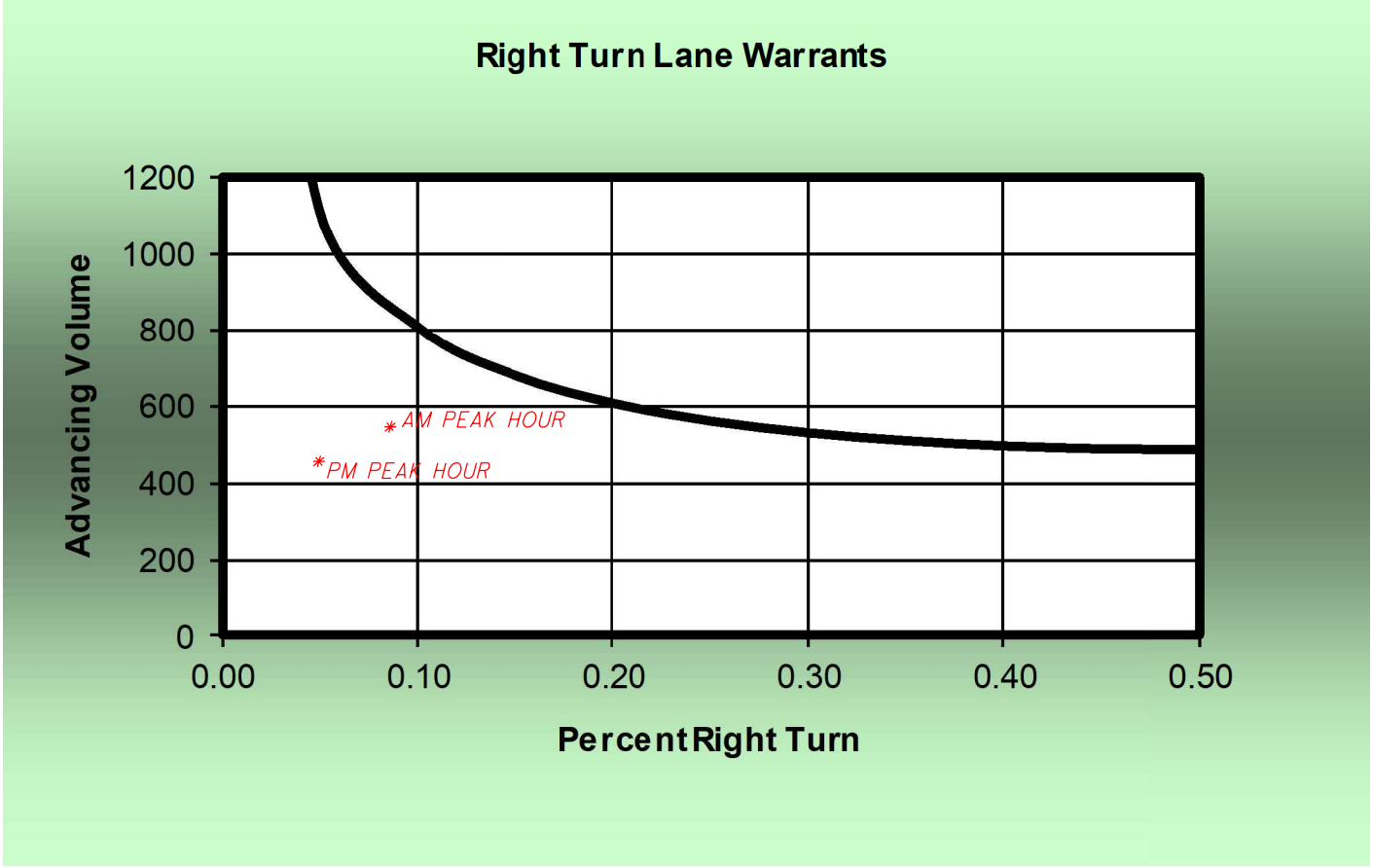
THE KLEINGERS GROUP
Civil Engineering ▸ Land Surveying ▸ Landscape Architecture

FIGURE PM-10
APRIL 7, 2018

Turn Lane Warrant Analysis

NUNN DRIVE AT SITE A DRIVEWAY

DESIGN CURVE FOR 35 MPH DESIGN SPEED

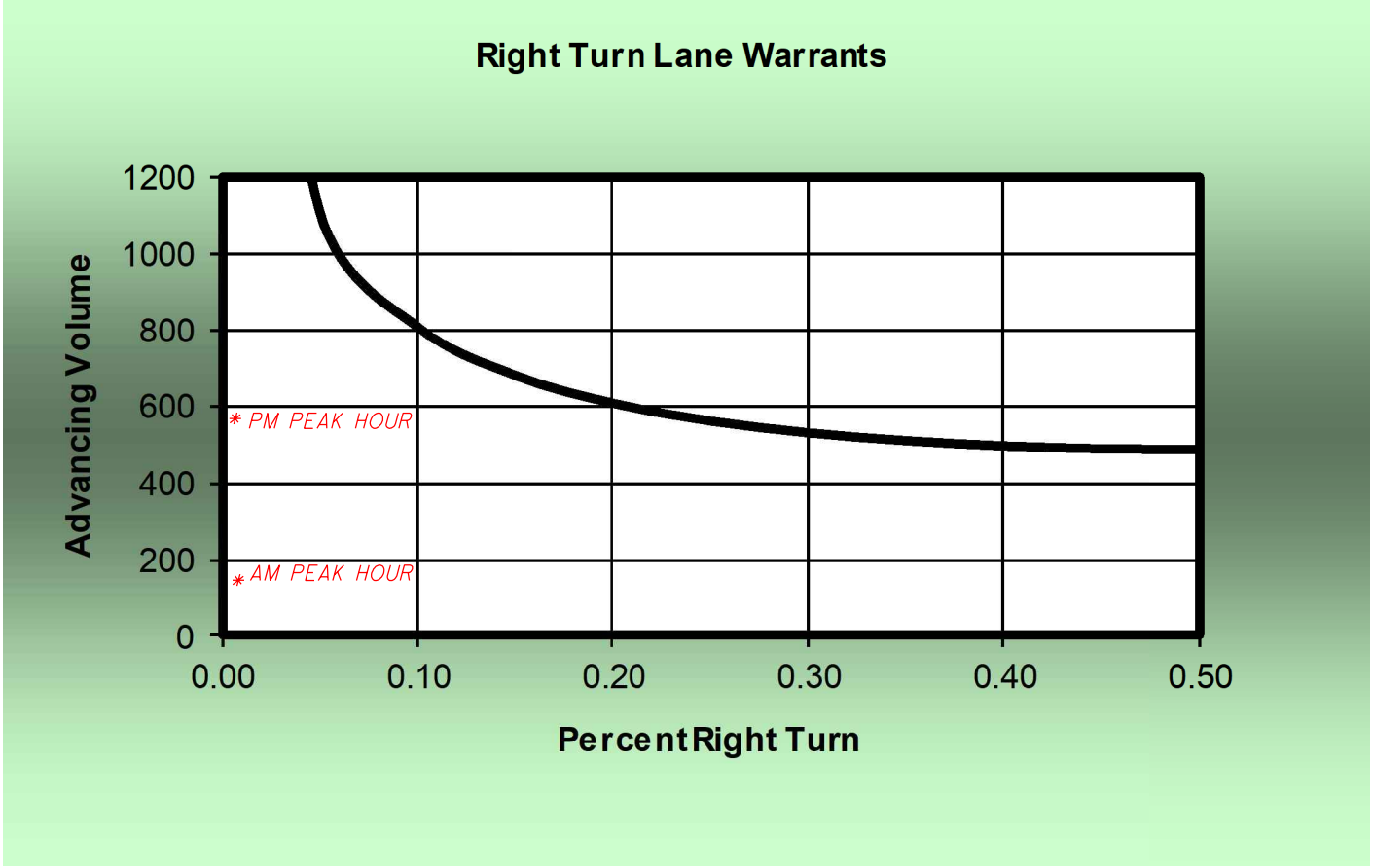


DESIGN YEAR 2031 TRAFFIC VOLUMES

	ADVANCING VOLUMES	RIGHT TURNS	RIGHT TURN %	NOTE
AM PEAK	621	52	0.08	DOES NOT MEET WARRANT
PM PEAK	481	23	0.05	DOES NOT MEET WARRANT

NUNN DRIVE AT ARENA DRIVEWAY

DESIGN CURVE FOR 35 MPH DESIGN SPEED

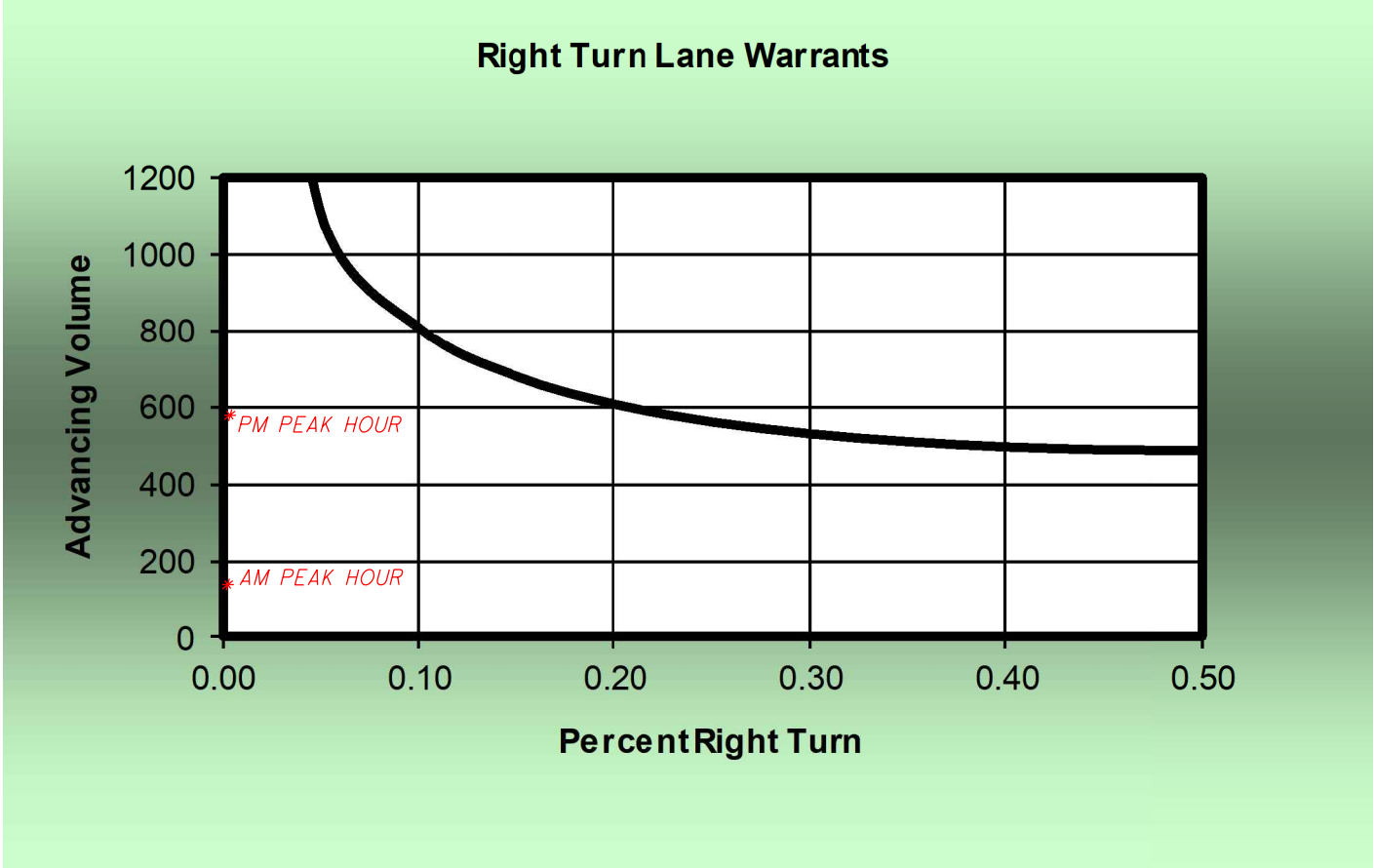


DESIGN YEAR 2031 TRAFFIC VOLUMES

	ADVANCING VOLUMES	RIGHT TURNS	RIGHT TURN %	NOTE
AM PEAK	177	1	0.01	DOES NOT MEET WARRANT
PM PEAK	590	5	0.01	DOES NOT MEET WARRANT

NUNN DRIVE AT CLARA DR EXTENSION

DESIGN CURVE FOR 35 MPH DESIGN SPEED

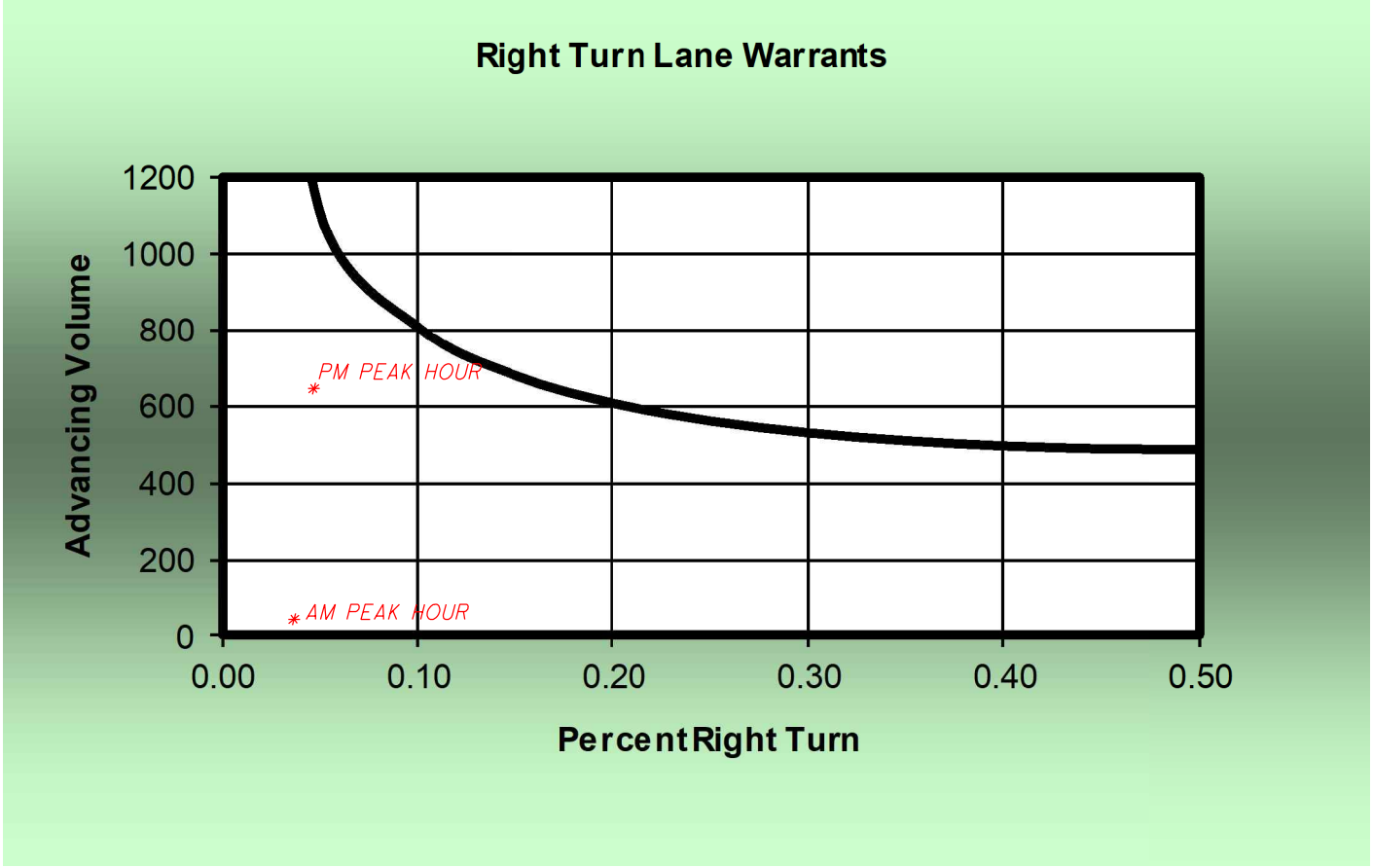


DESIGN YEAR 2031 TRAFFIC VOLUMES

	ADVANCING VOLUMES	RIGHT TURNS	RIGHT TURN %	NOTE
AM PEAK	179	0	0.00	DOES NOT MEET WARRANT
PM PEAK	597	0	0.00	DOES NOT MEET WARRANT

NUNN DRIVE AT SITE B DRIVEWAY

DESIGN CURVE FOR 35 MPH DESIGN SPEED

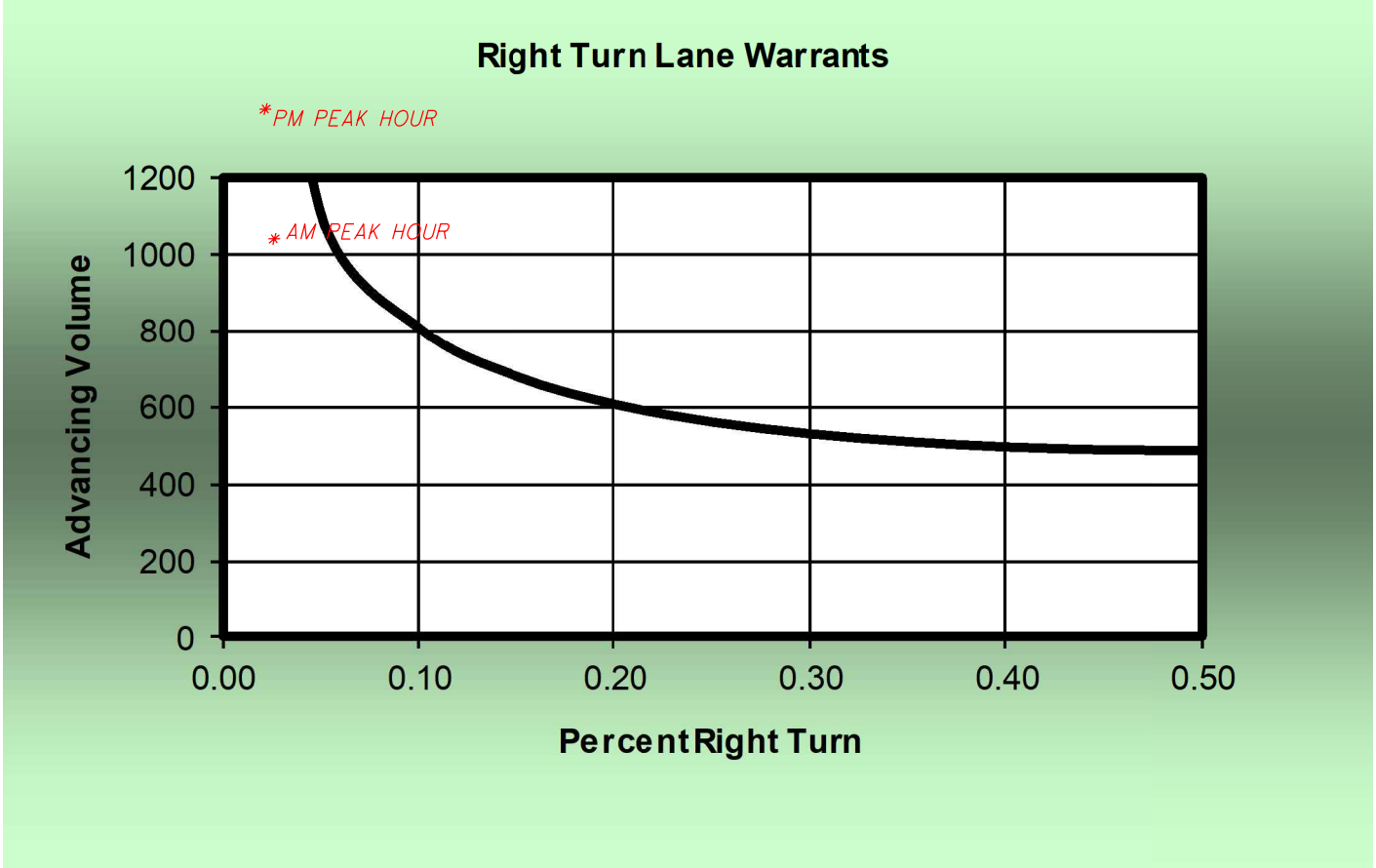


DESIGN YEAR 2031 TRAFFIC VOLUMES

	ADVANCING VOLUMES	RIGHT TURNS	RIGHT TURN %	NOTE
AM PEAK	211	14	0.07	DOES NOT MEET WARRANT
PM PEAK	623	23	0.04	DOES NOT MEET WARRANT

US 27 AT SITE B DRIVEWAY

DESIGN CURVE FOR 35 MPH DESIGN SPEED



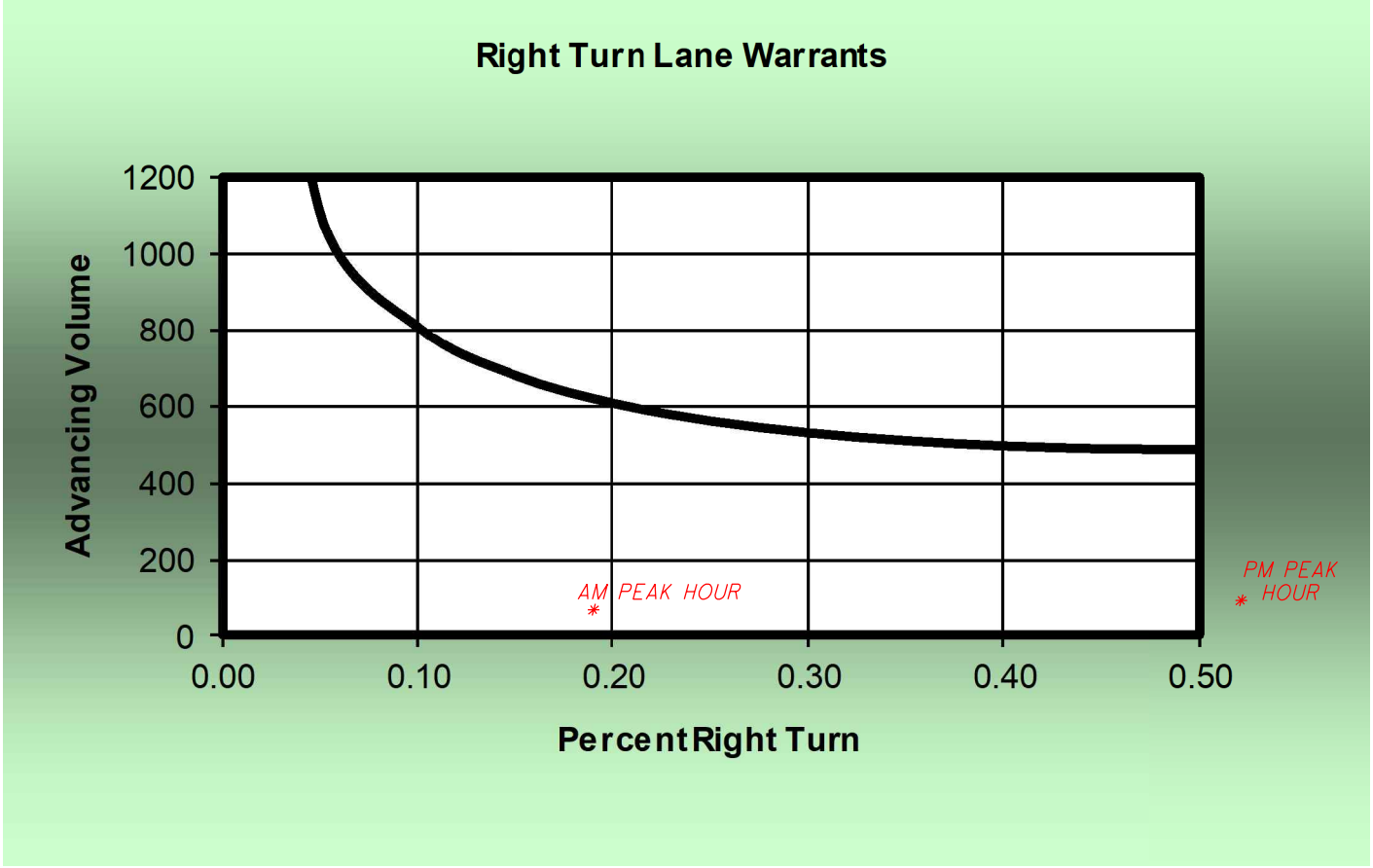
DESIGN YEAR 2031 TRAFFIC VOLUMES

	ADVANCING VOLUMES	RIGHT TURNS	RIGHT TURN %	NOTE
AM PEAK	1047	22	0.02	DOES NOT MEET WARRANT
PM PEAK	2412	34	0.02	MEETS WARRANT *

* - WARRANT MET PER KYTC INTERACTIVE SPREADSHEET (PM PEAK)

MARSHALL LANE AT SITE B EAST DRIVEWAY

DESIGN CURVE FOR 35 MPH DESIGN SPEED

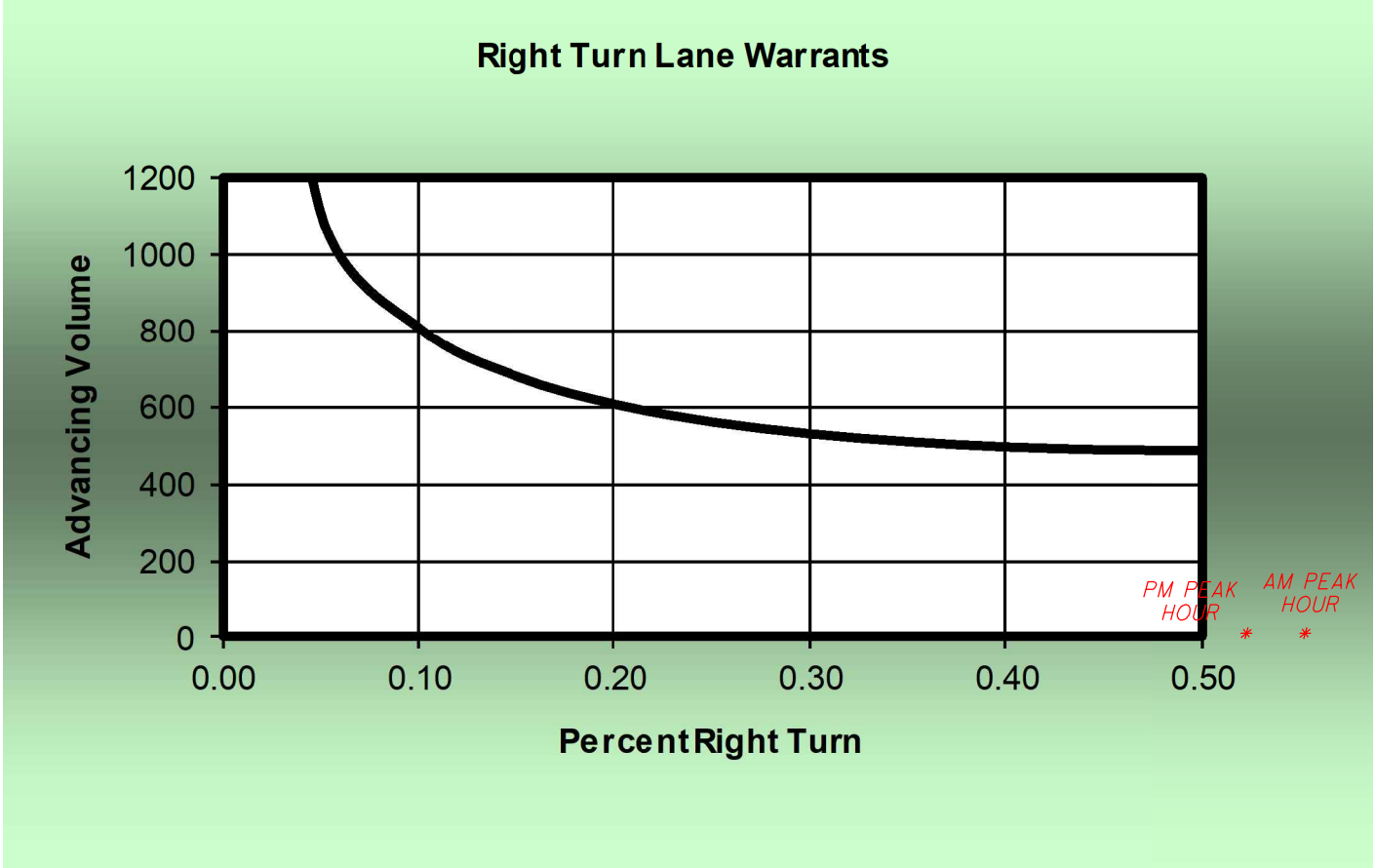


DESIGN YEAR 2031 TRAFFIC VOLUMES

	ADVANCING VOLUMES	RIGHT TURNS	RIGHT TURN %	NOTE
AM PEAK	54	10	0.19	DOES NOT MEET WARRANT
PM PEAK	88	68	0.77	DOES NOT MEET WARRANT

MARSHALL LANE AT SITE B WEST DRIVEWAY

DESIGN CURVE FOR 35 MPH DESIGN SPEED



DESIGN YEAR 2031 TRAFFIC VOLUMES

	ADVANCING VOLUMES	RIGHT TURNS	RIGHT TURN %	NOTE
AM PEAK	10	7	0.70	DOES NOT MEET WARRANT
PM PEAK	20	11	0.55	DOES NOT MEET WARRANT

WB NUNN DRIVE AT CLARA DRIVE EXTENSION

AM PEAK HOUR

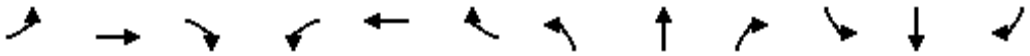
PM PEAK HOUR

DESIGN YEAR 2031 TRAFFIC VOLUMES

	Oppos	ADVANCING VOLUMES	LEFT TURNS	LEFT TURN %	NOTE
AM PEAK	179	572	63	0.11	MEETS WARRANT
PM PEAK	597	473	111	0.19	MEETS WARRANT

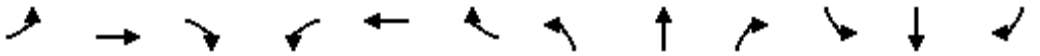
Capacity Analysis Reports

2018 Existing Conditions		Eastbound			Westbound			Northbound			Southbound			INT.
		LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	
Alexandria Pike at Sunset Dr	AM	78.0 E	78.0 E	72.3 E	77.2 E	77.0 E	54.2 D	178.4 F	16.0 B	4.1 A	79.7 E	9.9 A		21.9 C
	PM	86.2 F	87.5 F	71.5 E	95.8 F	94.3 F	54.9 D	73.4 E	34.4 D	13.6 B	97.1 F	28.1 C		40.8 D
Alexandria Pike at Nunn Dr	AM	76.9 E	76.3 E	68.3 E	74.2 E	74.6 E		99.6 F	9.4 A		85.1 F	11.2 B	35.4 D	20.1 C
	PM	110.8 F	109.4 F	62.7 E	84.1 E	84.2 E		110.9 F	11.8 B		105.8 F	17.2 B	2.0 A	28.6 C
Alexandria Pike at Marshall Lane	AM	75.2 E	74.4 E	74.4 E	75.9 E	74.8 E		- -	1.7 A		95.0 F	0.1 A		4.2 A
	PM	97.1 F	76.2 E	75.9 E	77.0 E	76.5 E		102.1 F	4.7 A		88.7 F	0.3 A		7.5 A
Alexandria Pike at Johns Hill Rd	AM	82.1 F		71.0 E	74.9 E		71.1 E	3.4 A	6.7 A	3.1 A	3.2 A	2.0 A	3.1 A	7.8 A
	PM	101.5 F		65.2 E	103.9 F		65.1 E	19.7 B	10.0 B	6.0 A	0.6 A	2.4 A	0.2 A	12.4 B
Wilson Road at Sunset Drive (North)	AM	No Movements			Free			7.5 A	Free		9.2 A			N/A
	PM				Free			7.6 A	Free		11.7 B			N/A
Wilson Road at Sunset Drive (South)	AM	9.4 A			No Movements			7.4 A	Free		Free			N/A
	PM	9.8 A						7.4 A	Free		Free			N/A



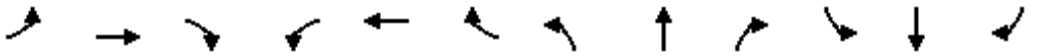
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	32	26	138	11	157	7	1478	264	128	1060	91
Future Volume (vph)	42	32	26	138	11	157	7	1478	264	128	1060	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1701	1534	1715	1726	1583	1770	3539	1615	1770	5025	
Flt Permitted	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1701	1534	1715	1726	1583	1770	3539	1615	1770	5025	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	35	28	150	12	171	8	1607	287	139	1152	99
RTOR Reduction (vph)	0	2	24	0	0	111	0	0	69	0	5	0
Lane Group Flow (vph)	41	41	1	81	81	60	8	1607	218	139	1247	0
Heavy Vehicles (%)	0%	0%	0%	0%	2%	2%	2%	2%	0%	2%	2%	2%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	8.1	8.1	8.1	12.9	12.9	30.7	1.0	95.2	95.2	17.8	112.0	
Effective Green, g (s)	8.1	8.1	8.1	12.9	12.9	30.7	1.0	95.2	95.2	17.8	112.0	
Actuated g/C Ratio	0.05	0.05	0.05	0.08	0.08	0.19	0.01	0.60	0.60	0.11	0.70	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	86	86	77	138	139	368	11	2105	960	196	3517	
v/s Ratio Prot	0.02	c0.02		c0.05	0.05	0.02	0.00	c0.45		c0.08	0.25	
v/s Ratio Perm			0.00			0.02			0.13			
v/c Ratio	0.48	0.48	0.02	0.59	0.58	0.16	0.73	0.76	0.23	0.71	0.35	
Uniform Delay, d1	73.9	73.9	72.2	71.0	71.0	53.9	79.4	24.0	15.2	68.6	9.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.83	0.57	0.24	1.00	1.00	
Incremental Delay, d2	4.1	4.1	0.1	6.2	6.1	0.2	112.8	2.4	0.5	11.1	0.3	
Delay (s)	78.0	78.0	72.3	77.2	77.0	54.2	178.4	16.0	4.1	79.7	9.9	
Level of Service	E	E	E	E	E	D	F	B	A	E	A	
Approach Delay (s)		76.7			65.3			14.9			16.8	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



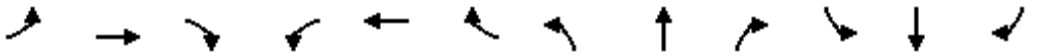
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	20	94	277	12	193	66	1468	255	150	1762	89
Future Volume (vph)	150	20	94	277	12	193	66	1468	255	150	1762	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.98	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1642	1534	1681	1692	1583	1805	3539	1583	1770	5053	
Flt Permitted	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1642	1534	1681	1692	1583	1805	3539	1583	1770	5053	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	22	102	301	13	210	72	1596	277	163	1915	97
RTOR Reduction (vph)	0	4	81	0	0	82	0	0	71	0	3	0
Lane Group Flow (vph)	99	95	8	157	157	128	72	1596	206	163	2009	0
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	0%	2%	2%	2%	2%	0%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	14.7	14.7	14.7	19.6	19.6	38.7	13.6	90.6	90.6	19.1	96.1	
Effective Green, g (s)	14.7	14.7	14.7	19.6	19.6	38.7	13.6	90.6	90.6	19.1	96.1	
Actuated g/C Ratio	0.09	0.09	0.09	0.12	0.12	0.23	0.08	0.53	0.53	0.11	0.57	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	148	141	132	193	195	420	144	1886	843	198	2856	
v/s Ratio Prot	0.06	c0.06		c0.09	0.09	0.03	0.04	c0.45		0.09	c0.40	
v/s Ratio Perm			0.01			0.05			0.13			
v/c Ratio	0.67	0.68	0.06	0.81	0.81	0.31	0.50	0.85	0.24	0.82	0.70	
Uniform Delay, d1	75.3	75.3	71.3	73.4	73.3	54.5	74.9	33.8	21.3	73.8	26.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.90	0.61	1.00	1.00	
Incremental Delay, d2	10.9	12.1	0.2	22.4	20.9	0.4	2.2	3.9	0.5	23.3	1.5	
Delay (s)	86.2	87.5	71.5	95.8	94.3	54.9	73.4	34.4	13.6	97.1	28.1	
Level of Service	F	F	E	F	F	D	E	C	B	F	C	
Approach Delay (s)		82.1			78.9			32.9			33.3	
Approach LOS		F			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	40.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	15	7	22	20	51	44	1584	50	44	833	374
Future Volume (vph)	118	15	7	22	20	51	44	1584	50	44	833	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1711	1583	1805	1696		1770	5065		1805	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1711	1583	1805	1696		1770	5065		1805	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	16	8	24	22	55	48	1722	54	48	905	407
RTOR Reduction (vph)	0	0	7	0	52	0	0	1	0	0	0	140
Lane Group Flow (vph)	72	72	1	24	25	0	48	1775	0	48	905	267
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	0%	0%	2%	2%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	12.2	12.2	12.2	8.4	8.4		8.5	105.0		8.4	104.9	104.9
Effective Green, g (s)	12.2	12.2	12.2	8.4	8.4		8.5	105.0		8.4	104.9	104.9
Actuated g/C Ratio	0.08	0.08	0.08	0.05	0.05		0.05	0.66		0.05	0.66	0.66
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	128	130	120	94	89		94	3323		94	2320	1037
v/s Ratio Prot	c0.04	0.04		0.01	c0.01		c0.03	c0.35		0.03	0.26	
v/s Ratio Perm			0.00									0.17
v/c Ratio	0.56	0.55	0.01	0.26	0.28		0.51	0.53		0.51	0.39	0.26
Uniform Delay, d1	71.3	71.3	68.3	72.8	72.9		73.7	14.6		73.8	12.7	11.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.29	0.61		1.09	0.84	3.05
Incremental Delay, d2	5.6	5.0	0.0	1.4	1.7		4.3	0.6		4.4	0.5	0.6
Delay (s)	76.9	76.3	68.3	74.2	74.6		99.6	9.4		85.1	11.2	35.4
Level of Service	E	E	E	E	E		F	A		F	B	D
Approach Delay (s)		76.2			74.5			11.8			21.0	
Approach LOS		E			E			B			C	

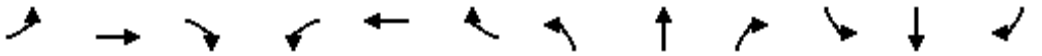
Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	373	47	75	35	15	104	24	1360	67	70	1892	261
Future Volume (vph)	373	47	75	35	15	104	24	1360	67	70	1892	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1703	1583	1770	1618		1770	5049		1770	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1703	1583	1770	1618		1770	5049		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	405	51	82	38	16	113	26	1478	73	76	2057	284
RTOR Reduction (vph)	0	0	70	0	96	0	0	3	0	0	0	57
Lane Group Flow (vph)	227	229	12	38	33	0	26	1548	0	76	2057	227
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	24.7	24.7	24.7	7.5	7.5		5.0	99.7		12.1	106.8	106.8
Effective Green, g (s)	24.7	24.7	24.7	7.5	7.5		5.0	99.7		12.1	106.8	106.8
Actuated g/C Ratio	0.15	0.15	0.15	0.04	0.04		0.03	0.59		0.07	0.63	0.63
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	244	247	230	78	71		52	2961		125	2223	994
v/s Ratio Prot	c0.14	0.13		c0.02	0.02		0.01	0.31		c0.04	c0.58	
v/s Ratio Perm			0.01									0.14
v/c Ratio	0.93	0.93	0.05	0.49	0.47		0.50	0.52		0.61	0.93	0.23
Uniform Delay, d1	71.8	71.8	62.6	79.4	79.3		81.3	21.0		76.6	28.1	13.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.28	0.53		1.30	0.39	0.12
Incremental Delay, d2	39.0	37.6	0.1	4.7	4.9		7.0	0.6		6.1	6.3	0.4
Delay (s)	110.8	109.4	62.7	84.1	84.2		110.9	11.8		105.8	17.2	2.0
Level of Service	F	F	E	F	F		F	B		F	B	A
Approach Delay (s)		102.9			84.2			13.4			18.2	
Approach LOS		F			F			B			B	

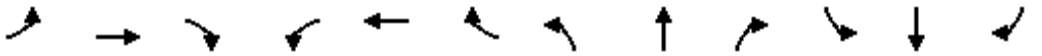
Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



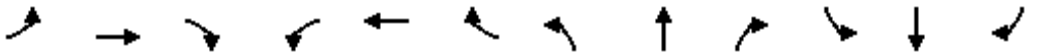
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1	0	6	1	47	0	1629	9	38	832	7
Future Volume (vph)	4	1	0	6	1	47	0	1629	9	38	832	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.91		1.00	0.91	
Frt	1.00	1.00		1.00	0.85			1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1805	1900		1805	1620			5082		1805	5079	
Flt Permitted	0.72	1.00		0.76	1.00			1.00		0.95	1.00	
Satd. Flow (perm)	1374	1900		1439	1620			5082		1805	5079	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	1	0	7	1	51	0	1771	10	41	904	8
RTOR Reduction (vph)	0	0	0	0	49	0	0	0	0	0	0	0
Lane Group Flow (vph)	4	1	0	7	3	0	0	1781	0	41	912	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	5.8	5.8		5.8	5.8			126.8		7.9	141.2	
Effective Green, g (s)	5.8	5.8		5.8	5.8			126.8		7.9	141.2	
Actuated g/C Ratio	0.04	0.04		0.04	0.04			0.79		0.05	0.88	
Clearance Time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	49	68		52	58			4027		89	4482	
v/s Ratio Prot		0.00			0.00			c0.35		c0.02	0.18	
v/s Ratio Perm	0.00			c0.00								
v/c Ratio	0.08	0.01		0.13	0.05			0.44		0.46	0.20	
Uniform Delay, d1	74.5	74.3		74.7	74.4			5.3		74.0	1.3	
Progression Factor	1.00	1.00		1.00	1.00			0.27		1.24	0.02	
Incremental Delay, d2	0.7	0.1		1.2	0.4			0.3		3.5	0.1	
Delay (s)	75.2	74.4		75.9	74.8			1.7		95.0	0.1	
Level of Service	E	E		E	E			A		F	A	
Approach Delay (s)		75.1			74.9			1.7			4.2	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



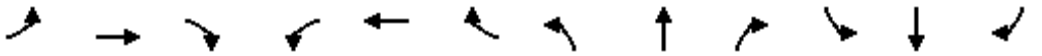
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	4	2	8	1	94	4	1341	10	94	1885	32
Future Volume (vph)	26	4	2	8	1	94	4	1341	10	94	1885	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1900	1615	1805	1618		1805	5080		1805	5074	
Flt Permitted	0.45	1.00	1.00	0.76	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	859	1900	1615	1435	1618		1805	5080		1805	5074	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	4	2	9	1	102	4	1458	11	102	2049	35
RTOR Reduction (vph)	0	0	2	0	96	0	0	0	0	0	1	0
Lane Group Flow (vph)	28	4	0	9	7	0	4	1469	0	102	2083	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	9.4	9.4	9.4	9.4	9.4		1.4	126.2		14.9	139.7	
Effective Green, g (s)	9.4	9.4	9.4	9.4	9.4		1.4	126.2		14.9	139.7	
Actuated g/C Ratio	0.06	0.06	0.06	0.06	0.06		0.01	0.74		0.09	0.82	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	47	105	89	79	89		14	3771		158	4169	
v/s Ratio Prot		0.00			0.00		0.00	0.29		c0.06	c0.41	
v/s Ratio Perm	c0.03		0.00	0.01								
v/c Ratio	0.60	0.04	0.00	0.11	0.07		0.29	0.39		0.65	0.50	
Uniform Delay, d1	78.4	76.0	75.9	76.3	76.2		83.8	7.9		75.0	4.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.10	0.55		1.14	0.03	
Incremental Delay, d2	18.6	0.1	0.0	0.6	0.4		9.6	0.3		3.5	0.2	
Delay (s)	97.1	76.2	75.9	77.0	76.5		102.1	4.7		88.7	0.3	
Level of Service	F	E	E	E	E		F	A		F	A	
Approach Delay (s)		93.4			76.6			4.9			4.4	
Approach LOS		F			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	6	6	21	4	27	13	1570	56	14	790	22
Future Volume (vph)	35	6	6	21	4	27	13	1570	56	14	790	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1793	1583		1822	1615	1770	3539	1615	1805	3539	1583
Flt Permitted		0.74	1.00		0.73	1.00	0.30	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)		1383	1583		1379	1615	563	3539	1615	235	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	7	7	23	4	29	14	1707	61	15	859	24
RTOR Reduction (vph)	0	0	7	0	0	27	0	0	12	0	0	5
Lane Group Flow (vph)	0	45	0	0	27	2	14	1707	49	15	859	19
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	0%	0%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		9.3	9.3		9.3	9.3	129.2	129.2	129.2	128.8	128.8	128.8
Effective Green, g (s)		9.3	9.3		9.3	9.3	129.2	129.2	129.2	128.8	128.8	128.8
Actuated g/C Ratio		0.06	0.06		0.06	0.06	0.81	0.81	0.81	0.81	0.81	0.81
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		80	92		80	93	472	2857	1304	208	2848	1274
v/s Ratio Prot							0.00	c0.48		0.00	c0.24	
v/s Ratio Perm		c0.03	0.00		0.02	0.00	0.02		0.03	0.06		0.01
v/c Ratio		0.56	0.00		0.34	0.02	0.03	0.60	0.04	0.07	0.30	0.02
Uniform Delay, d1		73.4	71.0		72.4	71.0	3.3	5.7	3.1	7.2	4.0	3.1
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.43	0.43	1.00
Incremental Delay, d2		8.8	0.0		2.5	0.1	0.0	0.9	0.1	0.1	0.3	0.0
Delay (s)		82.1	71.0		74.9	71.1	3.4	6.7	3.1	3.2	2.0	3.1
Level of Service		F	E		E	E	A	A	A	A	A	A
Approach Delay (s)		80.6			72.9			6.5			2.0	
Approach LOS		F			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	23	40	86	16	16	39	1255	70	24	1759	39
Future Volume (vph)	84	23	40	86	16	16	39	1255	70	24	1759	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1828	1615		1823	1615	1805	3539	1615	1805	3539	1615
Flt Permitted		0.60	1.00		0.56	1.00	0.06	1.00	1.00	0.18	1.00	1.00
Satd. Flow (perm)		1133	1615		1067	1615	111	3539	1615	344	3539	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	25	43	93	17	17	42	1364	76	26	1912	42
RTOR Reduction (vph)	0	0	38	0	0	15	0	0	17	0	0	11
Lane Group Flow (vph)	0	116	5	0	110	2	42	1364	59	26	1912	31
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		21.4	21.4		21.4	21.4	126.0	126.0	126.0	123.8	123.8	123.8
Effective Green, g (s)		21.4	21.4		21.4	21.4	126.0	126.0	126.0	123.8	123.8	123.8
Actuated g/C Ratio		0.13	0.13		0.13	0.13	0.74	0.74	0.74	0.73	0.73	0.73
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		142	203		134	203	135	2623	1197	277	2577	1176
v/s Ratio Prot							0.01	c0.39		0.00	c0.54	
v/s Ratio Perm		0.10	0.00		c0.10	0.00	0.22		0.04	0.07		0.02
v/c Ratio		0.82	0.03		0.82	0.01	0.31	0.52	0.05	0.09	0.74	0.03
Uniform Delay, d1		72.4	65.2		72.4	65.0	18.4	9.3	5.9	10.3	13.7	6.4
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.04	0.04	0.02
Incremental Delay, d2		29.1	0.1		31.5	0.0	1.3	0.7	0.1	0.1	1.8	0.0
Delay (s)		101.5	65.2		103.9	65.1	19.7	10.0	6.0	0.6	2.4	0.2
Level of Service		F	E		F	E	B	B	A	A	A	A
Approach Delay (s)		91.7			98.7			10.1			2.3	
Approach LOS		F			F			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.3

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	3	3	98	103	6
Future Vol, veh/h	2	3	3	98	103	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	3	3	107	112	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	229	116	119	0	-	0
Stage 1	116	-	-	-	-	-
Stage 2	113	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	759	936	1469	-	-	-
Stage 1	909	-	-	-	-	-
Stage 2	912	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	757	936	1469	-	-	-
Mov Cap-2 Maneuver	757	-	-	-	-	-
Stage 1	907	-	-	-	-	-
Stage 2	912	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	9.2	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1469	-	855	-	-
HCM Lane V/C Ratio	0.002	-	0.006	-	-
HCM Control Delay (s)	7.5	-	9.2	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	3

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	95	14	18	169	84	83
Future Vol, veh/h	95	14	18	169	84	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	103	15	20	184	91	90

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	360	136	181	0	-	0
Stage 1	136	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	639	913	1394	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	813	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	630	913	1394	-	-	-
Mov Cap-2 Maneuver	630	-	-	-	-	-
Stage 1	878	-	-	-	-	-
Stage 2	813	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	11.7	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1394	-	656	-	-
HCM Lane V/C Ratio	0.014	-	0.181	-	-
HCM Control Delay (s)	7.6	-	11.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	87	6	2	11	17	89
Future Vol, veh/h	87	6	2	11	17	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	95	7	2	12	18	97

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	83	67	115	0	-	0
Stage 1	67	-	-	-	-	-
Stage 2	16	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	924	1002	1487	-	-	-
Stage 1	961	-	-	-	-	-
Stage 2	1012	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	923	1002	1487	-	-	-
Mov Cap-2 Maneuver	923	-	-	-	-	-
Stage 1	960	-	-	-	-	-
Stage 2	1012	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1487	-	928	-	-
HCM Lane V/C Ratio	0.001	-	0.109	-	-
HCM Control Delay (s)	7.4	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	5.4

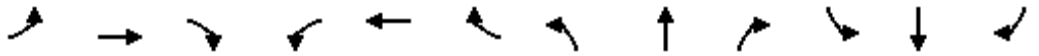
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	146	3	3	23	13	85
Future Vol, veh/h	146	3	3	23	13	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	159	3	3	25	14	92

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	91	60	106	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	31	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	914	1011	1498	-	-	-
Stage 1	968	-	-	-	-	-
Stage 2	997	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	912	1011	1498	-	-	-
Mov Cap-2 Maneuver	912	-	-	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	997	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.9	0
HCM LOS	A		

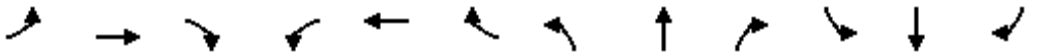
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1498	-	914	-	-
HCM Lane V/C Ratio	0.002	-	0.177	-	-
HCM Control Delay (s)	7.4	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

2019 No-Build Conditions		Eastbound			Westbound			Northbound			Southbound			INT.
		LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	
Alexandria Pike at Sunset Dr	AM	78.0 E	78.0 E	72.3 E	77.8 E	77.6 E	54.0 D	177.7 F	16.4 B	4.2 A	80.0 F	10.0 A		22.1 C
	PM	85.8 F	87.8 F	71.4 E	97.4 F	96.4 F	55.1 E	74.6 E	35.3 D	13.5 B	98.7 F	28.2 C		41.3 D
Alexandria Pike at Nunn Dr	AM	76.9 E	76.9 E	68.3 E	74.2 E	74.6 E		99.7 F	9.6 A		85.3 F	11.3 B	35.3 D	20.3 C
	PM	108.3 F	107.4 F	62.2 E	83.8 E	84.5 E		109.6 F	12.2 B		105.3 F	17.3 B	1.1 A	28.5 C
Alexandria Pike at Marshall Lane	AM	75.2 E	74.4 E	74.4 E	75.9 E	74.8 E		- -	1.7 A		95.1 F	0.1 A		4.2 A
	PM	97.0 F	76.1 E	75.8 E	76.9 E	76.4 E		102.5 F	4.7 A		92.6 F	0.3 A		7.7 A
Alexandria Pike at Johns Hill Rd	AM	82.1 F		71.0 E	75.1 E		71.1 E	3.4 A	6.7 A	3.1 A	3.3 A	2.0 A	3.1 A	7.8 A
	PM	102.8 F		65.0 E	106.5 F		64.9 E	20.7 B	10.2 A	6.0 A	0.7 A	2.6 A	0.2 A	12.8 B
Wilson Road at Sunset Drive (North)	AM	No Movements			Free			7.5 A	Free		0.0	9.2 A		N/A
	PM							7.6 A			11.8 B			N/A
Wilson Road at Sunset Drive (South)	AM	9.4 A			No Movements			7.4 A	Free		Free			N/A
	PM	9.8 A						7.4 A						N/A



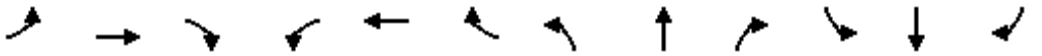
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	32	26	140	11	159	7	1496	267	130	1073	92
Future Volume (vph)	42	32	26	140	11	159	7	1496	267	130	1073	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1701	1534	1681	1697	1583	1770	3539	1583	1770	5025	
Flt Permitted	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1701	1534	1681	1697	1583	1770	3539	1583	1770	5025	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	35	28	152	12	173	8	1626	290	141	1166	100
RTOR Reduction (vph)	0	2	24	0	0	110	0	0	70	0	5	0
Lane Group Flow (vph)	41	41	1	82	82	63	8	1626	220	141	1261	0
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	8.1	8.1	8.1	13.1	13.1	31.0	1.0	94.9	94.9	17.9	111.8	
Effective Green, g (s)	8.1	8.1	8.1	13.1	13.1	31.0	1.0	94.9	94.9	17.9	111.8	
Actuated g/C Ratio	0.05	0.05	0.05	0.08	0.08	0.19	0.01	0.59	0.59	0.11	0.70	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	86	86	77	137	138	371	11	2099	938	198	3511	
v/s Ratio Prot	0.02	c0.02		c0.05	0.05	0.02	0.00	c0.46		c0.08	0.25	
v/s Ratio Perm			0.00			0.02			0.14			
v/c Ratio	0.48	0.48	0.02	0.60	0.59	0.17	0.73	0.77	0.23	0.71	0.36	
Uniform Delay, d1	73.9	73.9	72.2	70.9	70.9	53.8	79.4	24.5	15.4	68.6	9.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.82	0.57	0.24	1.00	1.00	
Incremental Delay, d2	4.1	4.1	0.1	6.9	6.7	0.2	112.4	2.5	0.5	11.4	0.3	
Delay (s)	78.0	78.0	72.3	77.8	77.6	54.0	177.7	16.4	4.2	80.0	10.0	
Level of Service	E	E	E	E	E	D	F	B	A	F	A	
Approach Delay (s)		76.7			65.5			15.2			17.0	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	20	95	280	12	195	67	1486	258	152	1783	90
Future Volume (vph)	152	20	95	280	12	195	67	1486	258	152	1783	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.98	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1644	1534	1681	1695	1583	1805	3539	1583	1770	5053	
Flt Permitted	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1644	1534	1681	1695	1583	1805	3539	1583	1770	5053	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	165	22	103	304	13	212	73	1615	280	165	1938	98
RTOR Reduction (vph)	0	3	83	0	0	82	0	0	71	0	3	0
Lane Group Flow (vph)	99	97	8	158	159	130	73	1615	209	165	2033	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%	0%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	14.8	14.8	14.8	19.5	19.5	38.6	13.3	90.6	90.6	19.1	96.4	
Effective Green, g (s)	14.8	14.8	14.8	19.5	19.5	38.6	13.3	90.6	90.6	19.1	96.4	
Actuated g/C Ratio	0.09	0.09	0.09	0.11	0.11	0.23	0.08	0.53	0.53	0.11	0.57	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	149	143	133	192	194	419	141	1886	843	198	2865	
v/s Ratio Prot	0.06	c0.06		c0.09	0.09	0.03	0.04	c0.46		0.09	c0.40	
v/s Ratio Perm			0.01			0.05			0.13			
v/c Ratio	0.66	0.68	0.06	0.82	0.82	0.31	0.52	0.86	0.25	0.83	0.71	
Uniform Delay, d1	75.2	75.3	71.2	73.6	73.5	54.6	75.3	34.1	21.4	73.9	26.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.91	0.61	1.00	1.00	
Incremental Delay, d2	10.6	12.5	0.2	23.9	22.9	0.4	2.5	4.1	0.5	24.9	1.5	
Delay (s)	85.8	87.8	71.4	97.4	96.4	55.1	74.6	35.3	13.5	98.7	28.2	
Level of Service	F	F	E	F	F	E	E	D	B	F	C	
Approach Delay (s)		82.0			80.1			33.7			33.5	
Approach LOS		F			F			C			C	

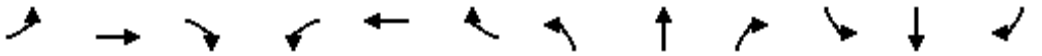
Intersection Summary			
HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	15	7	22	20	52	45	1603	51	45	843	378
Future Volume (vph)	119	15	7	22	20	52	45	1603	51	45	843	378
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1703	1583	1770	1661		1770	5062		1770	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1703	1583	1770	1661		1770	5062		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	129	16	8	24	22	57	49	1742	55	49	916	411
RTOR Reduction (vph)	0	0	7	0	54	0	0	1	0	0	0	142
Lane Group Flow (vph)	72	73	1	24	25	0	49	1796	0	49	916	269
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	12.2	12.2	12.2	8.5	8.5		8.6	104.7		8.6	104.7	104.7
Effective Green, g (s)	12.2	12.2	12.2	8.5	8.5		8.6	104.7		8.6	104.7	104.7
Actuated g/C Ratio	0.08	0.08	0.08	0.05	0.05		0.05	0.65		0.05	0.65	0.65
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	128	129	120	94	88		95	3312		95	2315	1035
v/s Ratio Prot	0.04	c0.04		0.01	c0.02		c0.03	c0.35		0.03	0.26	
v/s Ratio Perm			0.00									0.17
v/c Ratio	0.56	0.57	0.01	0.26	0.28		0.52	0.54		0.52	0.40	0.26
Uniform Delay, d1	71.3	71.3	68.3	72.7	72.8		73.7	14.8		73.7	12.9	11.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.30	0.61		1.10	0.84	3.01
Incremental Delay, d2	5.6	5.6	0.0	1.4	1.8		4.3	0.6		4.5	0.5	0.6
Delay (s)	76.9	76.9	68.3	74.2	74.6		99.7	9.6		85.3	11.3	35.3
Level of Service	E	E	E	E	E		F	A		F	B	D
Approach Delay (s)		76.5			74.5			12.0			21.1	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

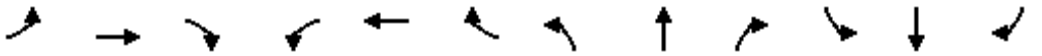
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	377	48	76	35	15	105	24	1376	68	71	1915	264
Future Volume (vph)	377	48	76	35	15	105	24	1376	68	71	1915	264
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1704	1583	1770	1618		1770	5049		1770	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1704	1583	1770	1618		1770	5049		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	410	52	83	38	16	114	26	1496	74	77	2082	287
RTOR Reduction (vph)	0	0	71	0	95	0	0	3	0	0	0	57
Lane Group Flow (vph)	230	232	12	38	35	0	26	1567	0	77	2082	230
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	25.2	25.2	25.2	7.6	7.6		5.0	99.0		12.2	106.2	106.2
Effective Green, g (s)	25.2	25.2	25.2	7.6	7.6		5.0	99.0		12.2	106.2	106.2
Actuated g/C Ratio	0.15	0.15	0.15	0.04	0.04		0.03	0.58		0.07	0.62	0.62
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	249	252	234	79	72		52	2940		127	2210	988
v/s Ratio Prot	c0.14	0.14		0.02	c0.02		0.01	0.31		c0.04	c0.59	
v/s Ratio Perm			0.01									0.15
v/c Ratio	0.92	0.92	0.05	0.48	0.49		0.50	0.53		0.61	0.94	0.23
Uniform Delay, d1	71.5	71.4	62.2	79.3	79.3		81.3	21.5		76.6	29.1	14.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.26	0.54		1.30	0.34	0.05
Incremental Delay, d2	36.8	36.0	0.1	4.6	5.2		6.9	0.7		5.9	7.6	0.4
Delay (s)	108.3	107.4	62.2	83.8	84.5		109.6	12.2		105.3	17.3	1.1
Level of Service	F	F	E	F	F		F	B		F	B	A
Approach Delay (s)		100.9			84.4			13.8			18.2	
Approach LOS		F			F			B			B	

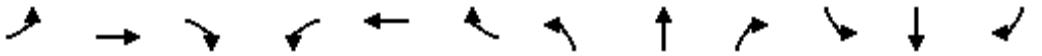
Intersection Summary			
HCM 2000 Control Delay	28.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



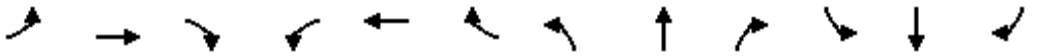
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1	0	6	1	48	0	1649	9	38	842	7
Future Volume (vph)	4	1	0	6	1	48	0	1649	9	38	842	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.91		1.00	0.91	
Frt	1.00	1.00		1.00	0.85			1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1805	1900		1805	1620			5081		1770	5079	
Flt Permitted	0.72	1.00		0.76	1.00			1.00		0.95	1.00	
Satd. Flow (perm)	1373	1900		1439	1620			5081		1770	5079	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	1	0	7	1	52	0	1792	10	41	915	8
RTOR Reduction (vph)	0	0	0	0	50	0	0	0	0	0	0	0
Lane Group Flow (vph)	4	1	0	7	3	0	0	1802	0	41	923	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	5.8	5.8		5.8	5.8			126.7		8.0	141.2	
Effective Green, g (s)	5.8	5.8		5.8	5.8			126.7		8.0	141.2	
Actuated g/C Ratio	0.04	0.04		0.04	0.04			0.79		0.05	0.88	
Clearance Time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	49	68		52	58			4023		88	4482	
v/s Ratio Prot		0.00			0.00			c0.35		c0.02	0.18	
v/s Ratio Perm	0.00			c0.00								
v/c Ratio	0.08	0.01		0.13	0.05			0.45		0.47	0.21	
Uniform Delay, d1	74.5	74.3		74.7	74.4			5.4		73.9	1.3	
Progression Factor	1.00	1.00		1.00	1.00			0.27		1.24	0.02	
Incremental Delay, d2	0.7	0.1		1.2	0.4			0.3		3.7	0.1	
Delay (s)	75.2	74.4		75.9	74.8			1.7		95.1	0.1	
Level of Service	E	E		E	E			A		F	A	
Approach Delay (s)		75.1			74.9			1.7			4.2	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	4	2	8	1	95	4	1357	10	95	1908	32
Future Volume (vph)	26	4	2	8	1	95	4	1357	10	95	1908	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1900	1615	1805	1618		1805	5080		1805	5074	
Flt Permitted	0.45	1.00	1.00	0.76	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	850	1900	1615	1435	1618		1805	5080		1805	5074	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	4	2	9	1	103	4	1475	11	103	2074	35
RTOR Reduction (vph)	0	0	2	0	97	0	0	0	0	0	1	0
Lane Group Flow (vph)	28	4	0	9	7	0	4	1486	0	103	2108	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	9.5	9.5	9.5	9.5	9.5		1.4	126.0		15.0	139.6	
Effective Green, g (s)	9.5	9.5	9.5	9.5	9.5		1.4	126.0		15.0	139.6	
Actuated g/C Ratio	0.06	0.06	0.06	0.06	0.06		0.01	0.74		0.09	0.82	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	47	106	90	80	90		14	3765		159	4166	
v/s Ratio Prot		0.00			0.00		0.00	0.29		c0.06	c0.42	
v/s Ratio Perm	c0.03		0.00	0.01								
v/c Ratio	0.60	0.04	0.00	0.11	0.08		0.29	0.39		0.65	0.51	
Uniform Delay, d1	78.4	75.9	75.8	76.2	76.1		83.8	8.0		74.9	4.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.11	0.55		1.18	0.03	
Incremental Delay, d2	18.6	0.1	0.0	0.6	0.4		9.5	0.3		4.0	0.2	
Delay (s)	97.0	76.1	75.8	76.9	76.4		102.5	4.7		92.6	0.3	
Level of Service	F	E	E	E	E		F	A		F	A	
Approach Delay (s)		93.3			76.5			5.0			4.6	
Approach LOS		F			E			A			A	

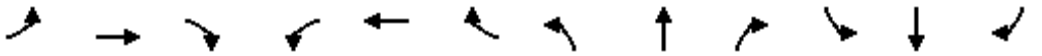
Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	6	6	21	4	27	13	1589	57	14	799	22
Future Volume (vph)	35	6	6	21	4	27	13	1589	57	14	799	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1787	1583		1787	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.74	1.00		0.73	1.00	0.30	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)		1379	1583		1352	1583	558	3539	1583	224	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	7	7	23	4	29	14	1727	62	15	868	24
RTOR Reduction (vph)	0	0	7	0	0	27	0	0	12	0	0	5
Lane Group Flow (vph)	0	45	0	0	27	2	14	1727	50	15	868	19
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		9.3	9.3		9.3	9.3	129.2	129.2	129.2	128.8	128.8	128.8
Effective Green, g (s)		9.3	9.3		9.3	9.3	129.2	129.2	129.2	128.8	128.8	128.8
Actuated g/C Ratio		0.06	0.06		0.06	0.06	0.81	0.81	0.81	0.81	0.81	0.81
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		80	92		78	92	468	2857	1278	199	2848	1274
v/s Ratio Prot							0.00	c0.49		0.00	c0.25	
v/s Ratio Perm		c0.03	0.00		0.02	0.00	0.02		0.03	0.06		0.01
v/c Ratio		0.56	0.00		0.35	0.02	0.03	0.60	0.04	0.08	0.30	0.02
Uniform Delay, d1		73.4	71.0		72.4	71.0	3.3	5.8	3.1	7.4	4.0	3.1
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.43	0.43	1.00
Incremental Delay, d2		8.8	0.0		2.7	0.1	0.0	1.0	0.1	0.2	0.3	0.0
Delay (s)		82.1	71.0		75.1	71.1	3.4	6.7	3.1	3.3	2.0	3.1
Level of Service		F	E		E	E	A	A	A	A	A	A
Approach Delay (s)		80.6			73.0			6.6			2.1	
Approach LOS		F			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	23	40	87	16	16	39	1270	71	24	1780	39
Future Volume (vph)	85	23	40	87	16	16	39	1270	71	24	1780	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1828	1615		1823	1615	1805	3539	1615	1805	3539	1615
Flt Permitted		0.59	1.00		0.56	1.00	0.06	1.00	1.00	0.18	1.00	1.00
Satd. Flow (perm)		1121	1615		1062	1615	105	3539	1615	336	3539	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	25	43	95	17	17	42	1380	77	26	1935	42
RTOR Reduction (vph)	0	0	38	0	0	15	0	0	17	0	0	11
Lane Group Flow (vph)	0	117	5	0	112	2	42	1380	60	26	1935	31
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		21.6	21.6		21.6	21.6	125.8	125.8	125.8	123.7	123.7	123.7
Effective Green, g (s)		21.6	21.6		21.6	21.6	125.8	125.8	125.8	123.7	123.7	123.7
Actuated g/C Ratio		0.13	0.13		0.13	0.13	0.74	0.74	0.74	0.73	0.73	0.73
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		142	205		134	205	129	2618	1195	271	2575	1175
v/s Ratio Prot							0.01	c0.39		0.00	c0.55	
v/s Ratio Perm		0.10	0.00		c0.11	0.00	0.23		0.04	0.07		0.02
v/c Ratio		0.82	0.03		0.84	0.01	0.33	0.53	0.05	0.10	0.75	0.03
Uniform Delay, d1		72.3	65.0		72.5	64.9	19.2	9.4	6.0	10.6	13.9	6.4
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.05	0.06	0.03
Incremental Delay, d2		30.5	0.1		34.1	0.0	1.5	0.8	0.1	0.1	1.8	0.0
Delay (s)		102.8	65.0		106.5	64.9	20.7	10.2	6.0	0.7	2.6	0.2
Level of Service		F	E		F	E	C	B	A	A	A	A
Approach Delay (s)		92.7			101.0			10.3			2.6	
Approach LOS		F			F			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.3

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	3	3	98	104	6
Future Vol, veh/h	2	3	3	98	104	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	3	3	107	113	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	230	117	120	0	-	0
Stage 1	117	-	-	-	-	-
Stage 2	113	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	758	935	1468	-	-	-
Stage 1	908	-	-	-	-	-
Stage 2	912	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	756	935	1468	-	-	-
Mov Cap-2 Maneuver	756	-	-	-	-	-
Stage 1	906	-	-	-	-	-
Stage 2	912	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	9.2	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1468	-	854	-	-
HCM Lane V/C Ratio	0.002	-	0.006	-	-
HCM Control Delay (s)	7.5	-	9.2	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	96	14	18	171	85	84
Future Vol, veh/h	96	14	18	171	85	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	104	15	20	186	92	91

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	364	138	183	0	-	0
Stage 1	138	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	635	910	1392	-	-	-
Stage 1	889	-	-	-	-	-
Stage 2	812	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	626	910	1392	-	-	-
Mov Cap-2 Maneuver	626	-	-	-	-	-
Stage 1	877	-	-	-	-	-
Stage 2	812	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	11.8	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1392	-	652	-	-
HCM Lane V/C Ratio	0.014	-	0.183	-	-
HCM Control Delay (s)	7.6	-	11.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	88	6	2	11	17	90
Future Vol, veh/h	88	6	2	11	17	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	96	7	2	12	18	98

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	83	67	116	0	-	0
Stage 1	67	-	-	-	-	-
Stage 2	16	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	924	1002	1485	-	-	-
Stage 1	961	-	-	-	-	-
Stage 2	1012	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	923	1002	1485	-	-	-
Mov Cap-2 Maneuver	923	-	-	-	-	-
Stage 1	960	-	-	-	-	-
Stage 2	1012	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1485	-	928	-	-
HCM Lane V/C Ratio	0.001	-	0.11	-	-
HCM Control Delay (s)	7.4	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	148	3	3	23	13	86
Future Vol, veh/h	148	3	3	23	13	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	161	3	3	25	14	93

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	92	61	107	0	-	0
Stage 1	61	-	-	-	-	-
Stage 2	31	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	913	1010	1497	-	-	-
Stage 1	967	-	-	-	-	-
Stage 2	997	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	911	1010	1497	-	-	-
Mov Cap-2 Maneuver	911	-	-	-	-	-
Stage 1	965	-	-	-	-	-
Stage 2	997	-	-	-	-	-

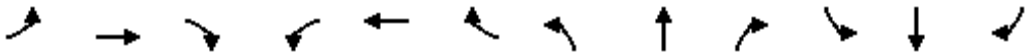
Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1497	-	913	-	-
HCM Lane V/C Ratio	0.002	-	0.18	-	-
HCM Control Delay (s)	7.4	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

2019 Build Conditions		Eastbound			Westbound			Northbound			Southbound			INT.
		LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	
Alexandria Pike at Sunset Dr	AM	86.8 F	86.8 F	72.3 E	79.1 E	78.8 E	54.7 D	178.1 F	16.2 B	2.1 A	82.6 F	10.4 B		22.9 C
	PM	101.5 F	108.0 F	69.0 E	101.0 F	101.0 F	55.3 E	74.4 E	38.6 D	15.5 B	100.6 F	30.9 C		45.9 D
Alexandria Pike at Nunn Dr	AM	76.9 E	76.9 E	68.3 E	74.2 E	74.6 E		91.6 F	5.8 A		98.6 F	11.0 B	23.7 C	17.6 B
	PM	111.4 F	110.5 F	62.5 E	84.7 F	85.9 F		112.8 F	11.8 B		103.5 F	20.4 B	1.7 A	30.2 C
Alexandria Pike at Marshall Lane	AM	75.1 E	74.4 E	74.4 E	75.9 E	74.8 E		- -	3.3 A		75.6 E	1.2 A		5.3 A
	PM	96.9 F	76.0 E	75.7 E	76.8 E	76.4 E		100.3 F	5.0 A		91.9 F	0.3 A		7.6 A
Alexandria Pike at Johns Hill Rd	AM	82.1 F		70.8 E	74.7 E		70.9 E	3.4 A	7.0 A	3.2 A	3.5 A	1.8 A	3.1 A	7.9 A
	PM	103.7 F		64.9 E	108.2 F		64.7 E	22.4 C	10.3 B	6.1 A	0.6 A	2.4 A	0.2 A	12.7 B
Wilson Road at Sunset Drive (North)	AM	No Movements			Free			7.6 A	Free		9.6 A			N/A
	PM							7.7 A			13.5 B			N/A
Wilson Road at Sunset Drive (South)	AM	10.3 B			No Movements			7.6 A	Free		Free			N/A
	PM	11.6 B						7.5 A						N/A
Wilson Road at Faren Drive	AM	7.4 A			6.7 A			No Movements			7.6 A			7.4 A
	PM	7.5 A			7.0 A						7.5 A			7.2 A
Nunn Dr at Site A Driveway	AM	Free			Free						-		10.0 B	N/A
	PM										-		9.4 A	N/A

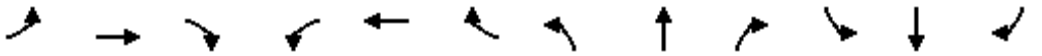
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	35	33	140	24	159	7	1496	267	130	1099	132
Future Volume (vph)	60	35	33	140	24	159	7	1496	267	130	1099	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	0.99	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1691	1534	1681	1719	1583	1805	3539	1583	1770	5014	
Flt Permitted	0.95	0.99	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1691	1534	1681	1719	1583	1805	3539	1583	1770	5014	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	38	36	152	26	173	8	1626	290	141	1195	143
RTOR Reduction (vph)	0	2	30	0	0	90	0	0	74	0	8	0
Lane Group Flow (vph)	53	52	2	88	90	83	8	1626	216	141	1330	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%	0%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	8.1	8.1	8.1	13.5	13.5	30.9	1.0	95.0	95.0	17.4	111.4	
Effective Green, g (s)	8.1	8.1	8.1	13.5	13.5	30.9	1.0	95.0	95.0	17.4	111.4	
Actuated g/C Ratio	0.05	0.05	0.05	0.08	0.08	0.19	0.01	0.59	0.59	0.11	0.70	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	86	85	77	141	145	370	11	2101	939	192	3490	
v/s Ratio Prot	c0.03	0.03		0.05	c0.05	0.02	0.00	c0.46		c0.08	0.27	
v/s Ratio Perm			0.00			0.03			0.14			
v/c Ratio	0.62	0.61	0.02	0.62	0.62	0.22	0.73	0.77	0.23	0.73	0.38	
Uniform Delay, d1	74.4	74.4	72.2	70.8	70.8	54.4	79.4	24.4	15.3	69.1	10.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.83	0.56	0.10	1.00	1.00	
Incremental Delay, d2	12.4	12.4	0.1	8.3	8.0	0.3	112.0	2.5	0.5	13.5	0.3	
Delay (s)	86.8	86.8	72.3	79.1	78.8	54.7	178.1	16.2	2.1	82.6	10.4	
Level of Service	F	F	E	E	E	D	F	B	A	F	B	
Approach Delay (s)		83.5			67.0			14.7			17.3	
Approach LOS		F			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	226	34	125	280	18	195	67	1486	258	152	1794	108
Future Volume (vph)	226	34	125	280	18	195	67	1486	258	152	1794	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1650	1534	1681	1699	1583	1805	3539	1583	1770	5048	
Flt Permitted	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1650	1534	1681	1699	1583	1805	3539	1583	1770	5048	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	246	37	136	304	20	212	73	1615	280	165	1950	117
RTOR Reduction (vph)	0	2	109	0	0	82	0	0	73	0	4	0
Lane Group Flow (vph)	148	147	13	161	163	130	73	1615	207	165	2063	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%	0%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	17.7	17.7	17.7	19.4	19.4	38.3	13.3	88.0	88.0	18.9	93.6	
Effective Green, g (s)	17.7	17.7	17.7	19.4	19.4	38.3	13.3	88.0	88.0	18.9	93.6	
Actuated g/C Ratio	0.10	0.10	0.10	0.11	0.11	0.23	0.08	0.52	0.52	0.11	0.55	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	178	171	159	191	193	417	141	1831	819	196	2779	
v/s Ratio Prot	0.09	c0.09		0.10	c0.10	0.03	0.04	c0.46		0.09	c0.41	
v/s Ratio Perm			0.01			0.05			0.13			
v/c Ratio	0.83	0.86	0.08	0.84	0.84	0.31	0.52	0.88	0.25	0.84	0.74	
Uniform Delay, d1	74.7	74.9	68.8	73.8	73.8	54.9	75.3	36.4	22.7	74.1	29.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.92	0.65	1.00	1.00	
Incremental Delay, d2	26.8	33.1	0.2	27.2	27.2	0.4	2.5	5.2	0.6	26.5	1.8	
Delay (s)	101.5	108.0	69.0	101.0	101.0	55.3	74.4	38.6	15.5	100.6	30.9	
Level of Service	F	F	E	F	F	E	E	D	B	F	C	
Approach Delay (s)		94.4			82.9			36.7			36.0	
Approach LOS		F			F			D			D	

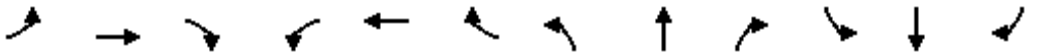
Intersection Summary			
HCM 2000 Control Delay	45.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	15	7	22	20	52	71	1603	51	45	850	404
Future Volume (vph)	119	15	7	22	20	52	71	1603	51	45	850	404
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1703	1583	1770	1661		1770	5062		1770	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1703	1583	1770	1661		1770	5062		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	129	16	8	24	22	57	77	1742	55	49	924	439
RTOR Reduction (vph)	0	0	7	0	54	0	0	2	0	0	0	162
Lane Group Flow (vph)	72	73	1	24	25	0	77	1795	0	49	924	277
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	12.2	12.2	12.2	8.5	8.5		12.3	104.7		8.6	101.0	101.0
Effective Green, g (s)	12.2	12.2	12.2	8.5	8.5		12.3	104.7		8.6	101.0	101.0
Actuated g/C Ratio	0.08	0.08	0.08	0.05	0.05		0.08	0.65		0.05	0.63	0.63
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	128	129	120	94	88		136	3312		95	2233	999
v/s Ratio Prot	0.04	c0.04		0.01	c0.02		c0.04	c0.35		0.03	0.26	
v/s Ratio Perm			0.00									0.18
v/c Ratio	0.56	0.57	0.01	0.26	0.28		0.57	0.54		0.52	0.41	0.28
Uniform Delay, d1	71.3	71.3	68.3	72.7	72.8		71.3	14.8		73.7	14.7	13.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.22	0.35		1.28	0.71	1.75
Incremental Delay, d2	5.6	5.6	0.0	1.4	1.8		4.9	0.6		4.4	0.5	0.7
Delay (s)	76.9	76.9	68.3	74.2	74.6		91.6	5.8		98.6	11.0	23.7
Level of Service	E	E	E	E	E		F	A		F	B	C
Approach Delay (s)		76.5			74.5			9.3			18.0	
Approach LOS		E			E			A			B	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

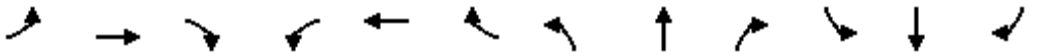
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	377	48	76	35	15	105	36	1376	68	71	1945	275
Future Volume (vph)	377	48	76	35	15	105	36	1376	68	71	1945	275
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1704	1583	1770	1618		1770	5049		1770	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1704	1583	1770	1618		1770	5049		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	410	52	83	38	16	114	39	1496	74	77	2114	299
RTOR Reduction (vph)	0	0	71	0	95	0	0	3	0	0	0	60
Lane Group Flow (vph)	230	232	12	38	35	0	39	1567	0	77	2114	239
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	24.9	24.9	24.9	7.3	7.3		6.6	99.6		12.2	105.2	105.2
Effective Green, g (s)	24.9	24.9	24.9	7.3	7.3		6.6	99.6		12.2	105.2	105.2
Actuated g/C Ratio	0.15	0.15	0.15	0.04	0.04		0.04	0.59		0.07	0.62	0.62
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	246	249	231	76	69		68	2958		127	2190	979
v/s Ratio Prot	c0.14	0.14		0.02	c0.02		0.02	0.31		c0.04	c0.60	
v/s Ratio Perm			0.01									0.15
v/c Ratio	0.93	0.93	0.05	0.50	0.51		0.57	0.53		0.61	0.97	0.24
Uniform Delay, d1	71.7	71.7	62.4	79.6	79.6		80.3	21.1		76.6	30.7	14.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.27	0.53		1.28	0.34	0.09
Incremental Delay, d2	39.7	38.7	0.1	5.1	6.3		10.5	0.6		5.7	9.9	0.4
Delay (s)	111.4	110.5	62.5	84.7	85.9		112.8	11.8		103.5	20.4	1.7
Level of Service	F	F	E	F	F		F	B		F	C	A
Approach Delay (s)		103.6			85.6			14.3			20.7	
Approach LOS		F			F			B			C	

Intersection Summary			
HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

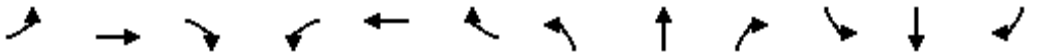
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1	0	6	1	48	0	1675	9	38	846	7
Future Volume (vph)	4	1	0	6	1	48	0	1675	9	38	846	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.91		1.00	0.91	
Frt	1.00	1.00		1.00	0.85			1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863		1770	1589			5081		1770	5079	
Flt Permitted	0.72	1.00		0.76	1.00			1.00		0.95	1.00	
Satd. Flow (perm)	1346	1863		1410	1589			5081		1770	5079	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	1	0	7	1	52	0	1821	10	41	920	8
RTOR Reduction (vph)	0	0	0	0	50	0	0	0	0	0	0	0
Lane Group Flow (vph)	4	1	0	7	3	0	0	1831	0	41	928	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	5.8	5.8		5.8	5.8			126.7		8.0	141.2	
Effective Green, g (s)	5.8	5.8		5.8	5.8			126.7		8.0	141.2	
Actuated g/C Ratio	0.04	0.04		0.04	0.04			0.79		0.05	0.88	
Clearance Time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	48	67		51	57			4023		88	4482	
v/s Ratio Prot		0.00			0.00			c0.36		c0.02	0.18	
v/s Ratio Perm	0.00			c0.00								
v/c Ratio	0.08	0.01		0.14	0.05			0.46		0.47	0.21	
Uniform Delay, d1	74.5	74.3		74.7	74.4			5.4		73.9	1.4	
Progression Factor	1.00	1.00		1.00	1.00			0.55		0.97	0.79	
Incremental Delay, d2	0.7	0.1		1.2	0.4			0.3		3.6	0.1	
Delay (s)	75.3	74.4		75.9	74.8			3.3		75.6	1.2	
Level of Service	E	E		E	E			A		E	A	
Approach Delay (s)		75.1			74.9			3.3			4.3	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

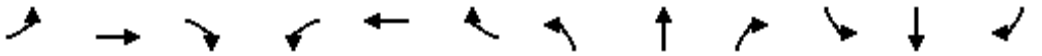
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	4	2	8	1	95	4	1369	10	95	1938	32
Future Volume (vph)	26	4	2	8	1	95	4	1369	10	95	1938	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1586		1770	5080		1770	5073	
Flt Permitted	0.45	1.00	1.00	0.76	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	838	1863	1583	1407	1586		1770	5080		1770	5073	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	4	2	9	1	103	4	1488	11	103	2107	35
RTOR Reduction (vph)	0	0	2	0	97	0	0	0	0	0	1	0
Lane Group Flow (vph)	28	4	0	9	7	0	4	1499	0	103	2141	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	9.6	9.6	9.6	9.6	9.6		1.4	125.7		15.2	139.5	
Effective Green, g (s)	9.6	9.6	9.6	9.6	9.6		1.4	125.7		15.2	139.5	
Actuated g/C Ratio	0.06	0.06	0.06	0.06	0.06		0.01	0.74		0.09	0.82	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	47	105	89	79	89		14	3756		158	4162	
v/s Ratio Prot		0.00			0.00		0.00	0.30		c0.06	c0.42	
v/s Ratio Perm	c0.03		0.00	0.01								
v/c Ratio	0.60	0.04	0.00	0.11	0.08		0.29	0.40		0.65	0.51	
Uniform Delay, d1	78.3	75.8	75.7	76.2	76.0		83.8	8.2		74.8	4.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.08	0.57		1.17	0.03	
Incremental Delay, d2	18.6	0.1	0.0	0.6	0.4		9.5	0.3		4.1	0.2	
Delay (s)	96.9	76.0	75.7	76.8	76.4		100.3	5.0		91.9	0.3	
Level of Service	F	E	E	E	E		F	A		F	A	
Approach Delay (s)		93.2			76.4			5.2			4.5	
Approach LOS		F			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

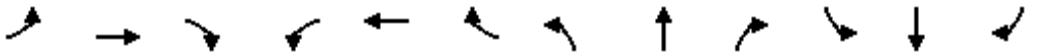
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	6	6	21	4	27	13	1615	57	14	806	22
Future Volume (vph)	36	6	6	21	4	27	13	1615	57	14	806	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1787	1583		1787	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.74	1.00		0.73	1.00	0.30	1.00	1.00	0.12	1.00	1.00
Satd. Flow (perm)		1377	1583		1351	1583	552	3539	1583	215	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	7	7	23	4	29	14	1755	62	15	876	24
RTOR Reduction (vph)	0	0	7	0	0	27	0	0	12	0	0	5
Lane Group Flow (vph)	0	46	0	0	27	2	14	1755	50	15	876	19
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		9.5	9.5		9.5	9.5	129.0	129.0	129.0	128.6	128.6	128.6
Effective Green, g (s)		9.5	9.5		9.5	9.5	129.0	129.0	129.0	128.6	128.6	128.6
Actuated g/C Ratio		0.06	0.06		0.06	0.06	0.81	0.81	0.81	0.80	0.80	0.80
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		81	93		80	93	463	2853	1276	192	2844	1272
v/s Ratio Prot							0.00	c0.50		0.00	c0.25	
v/s Ratio Perm		c0.03	0.00		0.02	0.00	0.02		0.03	0.06		0.01
v/c Ratio		0.57	0.00		0.34	0.02	0.03	0.62	0.04	0.08	0.31	0.02
Uniform Delay, d1		73.3	70.8		72.2	70.9	3.4	6.0	3.1	7.9	4.1	3.1
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.43	0.37	1.00
Incremental Delay, d2		8.8	0.0		2.5	0.1	0.0	1.0	0.1	0.2	0.3	0.0
Delay (s)		82.1	70.8		74.7	70.9	3.4	7.0	3.2	3.5	1.8	3.1
Level of Service		F	E		E	E	A	A	A	A	A	A
Approach Delay (s)		80.6			72.8			6.8			1.9	
Approach LOS		F			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	23	40	87	16	16	39	1282	71	24	1810	39
Future Volume (vph)	85	23	40	87	16	16	39	1282	71	24	1810	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1792	1583		1787	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.59	1.00		0.56	1.00	0.05	1.00	1.00	0.17	1.00	1.00
Satd. Flow (perm)		1102	1583		1044	1583	95	3539	1583	323	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	25	43	95	17	17	42	1393	77	26	1967	42
RTOR Reduction (vph)	0	0	37	0	0	15	0	0	17	0	0	12
Lane Group Flow (vph)	0	117	6	0	112	2	42	1393	60	26	1967	30
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		21.8	21.8		21.8	21.8	125.6	125.6	125.6	123.4	123.4	123.4
Effective Green, g (s)		21.8	21.8		21.8	21.8	125.6	125.6	125.6	123.4	123.4	123.4
Actuated g/C Ratio		0.13	0.13		0.13	0.13	0.74	0.74	0.74	0.73	0.73	0.73
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		141	202		133	202	122	2614	1169	260	2568	1149
v/s Ratio Prot							0.01	c0.39		0.00	c0.56	
v/s Ratio Perm		0.11	0.00		c0.11	0.00	0.24		0.04	0.07		0.02
v/c Ratio		0.83	0.03		0.84	0.01	0.34	0.53	0.05	0.10	0.77	0.03
Uniform Delay, d1		72.3	64.8		72.4	64.7	20.8	9.6	6.0	11.0	14.4	6.5
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.04	0.03	0.03
Incremental Delay, d2		31.4	0.1		35.7	0.0	1.7	0.8	0.1	0.1	2.0	0.0
Delay (s)		103.7	64.9		108.2	64.7	22.4	10.3	6.1	0.6	2.4	0.2
Level of Service		F	E		F	E	C	B	A	A	A	A
Approach Delay (s)		93.3			102.4			10.5			2.3	
Approach LOS		F			F			B			A	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.3

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	3	5	126	157	6
Future Vol, veh/h	2	3	5	126	157	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	3	5	137	171	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	322	175	178	0	-	0
Stage 1	175	-	-	-	-	-
Stage 2	147	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	676	874	1410	-	-	-
Stage 1	860	-	-	-	-	-
Stage 2	885	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	673	874	1410	-	-	-
Mov Cap-2 Maneuver	673	-	-	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	885	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	9.6	0.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1410	-	781	-	-
HCM Lane V/C Ratio	0.004	-	0.007	-	-
HCM Control Delay (s)	7.6	-	9.6	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	96	14	18	289	109	84
Future Vol, veh/h	96	14	18	289	109	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	104	15	20	314	118	91

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	518	164	209	0	-	0
Stage 1	164	-	-	-	-	-
Stage 2	354	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	521	886	1374	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	715	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	513	886	1374	-	-	-
Mov Cap-2 Maneuver	513	-	-	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	715	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	13.5	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1374	-	542	-	-
HCM Lane V/C Ratio	0.014	-	0.221	-	-
HCM Control Delay (s)	7.7	-	13.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.8	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	88	31	18	38	70	90
Future Vol, veh/h	88	31	18	38	70	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	96	34	20	41	76	98

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	206	125	174	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	81	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	787	931	1415	-	-	-
Stage 1	906	-	-	-	-	-
Stage 2	947	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	776	931	1415	-	-	-
Mov Cap-2 Maneuver	776	-	-	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	947	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	2.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1415	-	811	-	-
HCM Lane V/C Ratio	0.014	-	0.159	-	-
HCM Control Delay (s)	7.6	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	148	14	18	141	37	86
Future Vol, veh/h	148	14	18	141	37	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	161	15	20	153	40	93

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	280	87	133	0	-	0
Stage 1	87	-	-	-	-	-
Stage 2	193	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	714	977	1464	-	-	-
Stage 1	941	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	703	977	1464	-	-	-
Mov Cap-2 Maneuver	703	-	-	-	-	-
Stage 1	927	-	-	-	-	-
Stage 2	845	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1464	-	720	-	-
HCM Lane V/C Ratio	0.013	-	0.245	-	-
HCM Control Delay (s)	7.5	0	11.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1	-	-

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	0	0	31	78	17
Future Vol, veh/h	13	0	0	31	78	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	14	0	0	34	85	18
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.4	6.7	7.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	82%
Vol Thru, %	0%	0%	0%
Vol Right, %	0%	100%	18%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	13	31	95
LT Vol	13	0	78
Through Vol	0	0	0
RT Vol	0	31	17
Lane Flow Rate	14	34	103
Geometry Grp	1	1	1
Degree of Util (X)	0.017	0.033	0.116
Departure Headway (Hd)	4.308	3.492	4.041
Convergence, Y/N	Yes	Yes	Yes
Cap	826	1017	889
Service Time	2.358	1.542	2.054
HCM Lane V/C Ratio	0.017	0.033	0.116
HCM Control Delay	7.4	6.7	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.1	0.4

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	26	0	0	133	35	16
Future Vol, veh/h	26	0	0	133	35	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	28	0	0	145	38	17
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.5	7	7.5
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	69%
Vol Thru, %	0%	0%	0%
Vol Right, %	0%	100%	31%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	26	133	51
LT Vol	26	0	35
Through Vol	0	0	0
RT Vol	0	133	16
Lane Flow Rate	28	145	55
Geometry Grp	1	1	1
Degree of Util (X)	0.034	0.137	0.064
Departure Headway (Hd)	4.307	3.417	4.147
Convergence, Y/N	Yes	Yes	Yes
Cap	829	1044	862
Service Time	2.344	1.455	2.18
HCM Lane V/C Ratio	0.034	0.139	0.064
HCM Control Delay	7.5	7	7.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.5	0.2

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	142	443	52	0	15
Future Vol, veh/h	0	142	443	52	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	0	154	482	57	0	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	270
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	-	0	734
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	734
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	734
HCM Lane V/C Ratio	-	-	-	0.022
HCM Control Delay (s)	-	-	-	10
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.2

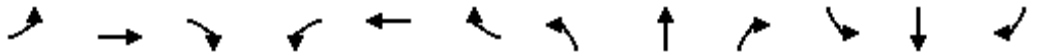
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↱			↱
Traffic Vol, veh/h	0	501	304	23	0	15
Future Vol, veh/h	0	501	304	23	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	0	545	330	25	0	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	178
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	-	0	841
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	841
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

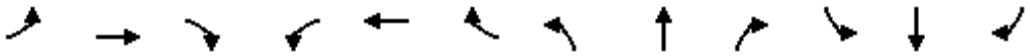
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	841
HCM Lane V/C Ratio	-	-	-	0.019
HCM Control Delay (s)	-	-	-	9.4
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.1

2021 No-Build Conditions		Eastbound			Westbound			Northbound			Southbound			INT.
		LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	
Alexandria Pike at Sunset Dr	AM	78.0 E	77.8 E	72.1 E	78.0 E	76.9 E	53.8 D	176.1 F	17.2 B	4.3 A	80.5 F	10.2 B		22.6 C
	PM	86.5 F	88.2 F	71.2 E	99.0 F	98.4 F	54.9 D	74.4 E	37.2 E	13.6 B	99.3 F	29.1 C		42.4 D
Alexandria Pike at Nunn Dr	AM	76.6 E	77.0 E	68.0 E	74.1 E	74.6 E		100.2 F	10.0 A		86.1 F	11.5 B	36.0 D	20.7 C
	PM	111.8 F	112.1 F	62.2 E	84.7 E	91.8 F		111.3 F	12.1 B		105.6 F	19.4 C	1.1 A	30.1 C
Alexandria Pike at Marshall Lane	AM	75.2 E	74.4 E	74.4 -	75.9 E	74.8 E		- -	1.8 A		94.5 F	0.1 A		4.2 A
	PM	100.0 F	75.9 E	75.6 E	76.7 E	76.3 E		102.0 F	4.8 A		91.2 F	0.3 A		7.6 A
Alexandria Pike at Johns Hill Rd	AM	82.2 F		71.0 E	75.2 E		71.1 E	3.4 A	6.9 A	3.1 A	3.6 A	2.0 A	3.1 A	8.0 A
	PM	105.6 F		64.6 E	109.7 F		64.5 E	23.3 C	10.6 B	6.2 A	0.7 A	3.2 A	0.2 A	13.5 B
Wilson Road at Sunset Drive (North)	AM	No Movements			Free			7.5 A	Free		9.0 A			N/A
	PM							7.6 A			11.9 B			N/A
Wilson Road at Sunset Drive (South)	AM	9.4 A			No Movements			7.4 A	Free		Free			N/A
	PM	9.8 A						7.4 A						N/A



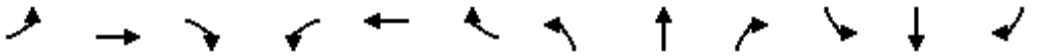
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	33	27	143	11	163	7	1531	274	133	1098	94
Future Volume (vph)	44	33	27	143	11	163	7	1531	274	133	1098	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1702	1534	1681	1702	1583	1805	3539	1583	1770	5033	
Flt Permitted	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1702	1534	1681	1702	1583	1805	3539	1583	1770	5033	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	36	29	155	12	177	8	1664	298	145	1193	102
RTOR Reduction (vph)	0	2	25	0	0	106	0	0	71	0	5	0
Lane Group Flow (vph)	43	42	1	84	83	71	8	1664	227	145	1290	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%	0%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	8.3	8.3	8.3	13.3	13.3	31.5	1.0	94.2	94.2	18.2	111.4	
Effective Green, g (s)	8.3	8.3	8.3	13.3	13.3	31.5	1.0	94.2	94.2	18.2	111.4	
Actuated g/C Ratio	0.05	0.05	0.05	0.08	0.08	0.20	0.01	0.59	0.59	0.11	0.70	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	88	88	79	139	141	375	11	2083	931	201	3504	
v/s Ratio Prot	c0.03	0.02		c0.05	0.05	0.02	0.00	c0.47		c0.08	0.26	
v/s Ratio Perm			0.00			0.02			0.14			
v/c Ratio	0.49	0.48	0.02	0.60	0.59	0.19	0.73	0.80	0.24	0.72	0.37	
Uniform Delay, d1	73.8	73.7	72.0	70.8	70.7	53.6	79.4	25.5	15.8	68.5	9.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.81	0.56	0.24	1.00	1.00	
Incremental Delay, d2	4.2	4.1	0.1	7.2	6.2	0.2	111.5	2.9	0.5	12.0	0.3	
Delay (s)	78.0	77.8	72.1	78.0	76.9	53.8	176.1	17.2	4.3	80.5	10.2	
Level of Service	E	E	E	E	E	D	F	B	A	F	B	
Approach Delay (s)		76.6			65.3			15.9			17.3	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	21	97	287	12	200	68	1521	264	155	1825	92
Future Volume (vph)	155	21	97	287	12	200	68	1521	264	155	1825	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.98	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1641	1534	1681	1694	1583	1805	3539	1583	1770	5053	
Flt Permitted	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1641	1534	1681	1694	1583	1805	3539	1583	1770	5053	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	168	23	105	312	13	217	74	1653	287	168	1984	100
RTOR Reduction (vph)	0	4	83	0	0	82	0	0	72	0	3	0
Lane Group Flow (vph)	102	99	8	162	163	135	74	1653	215	168	2081	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%	0%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	15.0	15.0	15.0	19.7	19.7	39.0	13.3	90.0	90.0	19.3	96.0	
Effective Green, g (s)	15.0	15.0	15.0	19.7	19.7	39.0	13.3	90.0	90.0	19.3	96.0	
Actuated g/C Ratio	0.09	0.09	0.09	0.12	0.12	0.23	0.08	0.53	0.53	0.11	0.56	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	151	144	135	194	196	423	141	1873	838	200	2853	
v/s Ratio Prot	0.06	c0.06		c0.10	0.10	0.04	0.04	c0.47		0.09	c0.41	
v/s Ratio Perm			0.01			0.05			0.14			
v/c Ratio	0.68	0.69	0.06	0.84	0.83	0.32	0.52	0.88	0.26	0.84	0.73	
Uniform Delay, d1	75.1	75.2	71.0	73.6	73.5	54.5	75.3	35.3	21.8	73.8	27.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.91	0.60	1.00	1.00	
Incremental Delay, d2	11.3	12.9	0.2	25.5	24.9	0.4	2.7	5.0	0.6	25.4	1.7	
Delay (s)	86.5	88.2	71.2	99.0	98.4	54.9	74.4	37.2	13.6	99.3	29.1	
Level of Service	F	F	E	F	F	D	E	D	B	F	C	
Approach Delay (s)		82.4			81.2			35.2			34.3	
Approach LOS		F			F			D			C	

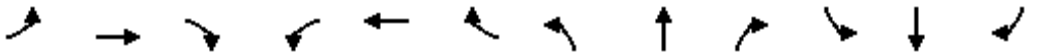
Intersection Summary			
HCM 2000 Control Delay	42.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	74.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	16	7	23	21	53	46	1641	52	46	863	387
Future Volume (vph)	122	16	7	23	21	53	46	1641	52	46	863	387
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1703	1583	1770	1663		1770	5062		1770	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1703	1583	1770	1663		1770	5062		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	133	17	8	25	23	58	50	1784	57	50	938	421
RTOR Reduction (vph)	0	0	7	0	55	0	0	1	0	0	0	147
Lane Group Flow (vph)	74	76	1	25	26	0	50	1840	0	50	938	274
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	12.5	12.5	12.5	8.6	8.6		8.7	104.2		8.7	104.2	104.2
Effective Green, g (s)	12.5	12.5	12.5	8.6	8.6		8.7	104.2		8.7	104.2	104.2
Actuated g/C Ratio	0.08	0.08	0.08	0.05	0.05		0.05	0.65		0.05	0.65	0.65
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	131	133	123	95	89		96	3296		96	2304	1030
v/s Ratio Prot	0.04	c0.04		0.01	c0.02		c0.03	c0.36		0.03	0.27	
v/s Ratio Perm			0.00									0.17
v/c Ratio	0.56	0.57	0.01	0.26	0.29		0.52	0.56		0.52	0.41	0.27
Uniform Delay, d1	71.1	71.2	68.0	72.7	72.8		73.6	15.3		73.6	13.2	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.30	0.61		1.10	0.83	3.00
Incremental Delay, d2	5.5	5.8	0.0	1.5	1.8		4.6	0.6		4.8	0.5	0.6
Delay (s)	76.6	77.0	68.0	74.1	74.6		100.2	10.0		86.1	11.5	36.0
Level of Service	E	E	E	E	E		F	B		F	B	D
Approach Delay (s)		76.4			74.5			12.4			21.5	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

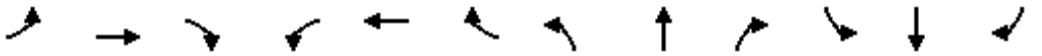
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	386	49	78	36	16	108	25	1409	69	73	1960	270
Future Volume (vph)	386	49	78	36	16	108	25	1409	69	73	1960	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1703	1583	1770	1619		1770	5050		1770	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1703	1583	1770	1619		1770	5050		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	420	53	85	39	17	117	27	1532	75	79	2130	293
RTOR Reduction (vph)	0	0	72	0	93	0	0	3	0	0	0	57
Lane Group Flow (vph)	235	238	13	39	41	0	27	1604	0	79	2130	236
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	25.3	25.3	25.3	7.4	7.4		5.0	99.1		12.2	106.3	106.3
Effective Green, g (s)	25.3	25.3	25.3	7.4	7.4		5.0	99.1		12.2	106.3	106.3
Actuated g/C Ratio	0.15	0.15	0.15	0.04	0.04		0.03	0.58		0.07	0.63	0.63
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	250	253	235	77	70		52	2943		127	2212	989
v/s Ratio Prot	c0.14	0.14		0.02	c0.03		0.02	0.32		c0.04	c0.60	
v/s Ratio Perm			0.01									0.15
v/c Ratio	0.94	0.94	0.05	0.51	0.59		0.52	0.55		0.62	0.96	0.24
Uniform Delay, d1	71.6	71.6	62.1	79.5	79.8		81.3	21.7		76.7	30.0	14.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.27	0.53		1.29	0.32	0.05
Incremental Delay, d2	40.2	40.5	0.1	5.2	12.0		8.0	0.7		6.6	9.6	0.4
Delay (s)	111.8	112.1	62.2	84.7	91.8		111.3	12.1		105.6	19.4	1.1
Level of Service	F	F	E	F	F		F	B		F	B	A
Approach Delay (s)		104.4			90.2			13.8			19.9	
Approach LOS		F			F			B			B	

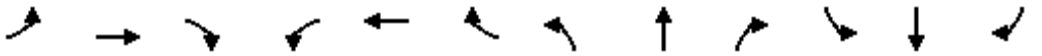
Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



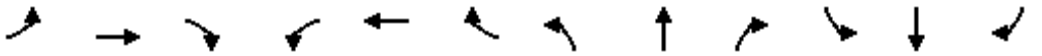
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	1	0	6	1	49	0	1688	9	39	862	7
Future Volume (vph)	4	1	0	6	1	49	0	1688	9	39	862	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.91		1.00	0.91	
Frt	1.00	1.00		1.00	0.85			1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1805	1900		1805	1620			5082		1805	5080	
Flt Permitted	0.72	1.00		0.76	1.00			1.00		0.95	1.00	
Satd. Flow (perm)	1371	1900		1439	1620			5082		1805	5080	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	1	0	7	1	53	0	1835	10	42	937	8
RTOR Reduction (vph)	0	0	0	0	51	0	0	0	0	0	0	0
Lane Group Flow (vph)	4	1	0	7	3	0	0	1845	0	42	945	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	5.8	5.8		5.8	5.8			126.7		8.0	141.2	
Effective Green, g (s)	5.8	5.8		5.8	5.8			126.7		8.0	141.2	
Actuated g/C Ratio	0.04	0.04		0.04	0.04			0.79		0.05	0.88	
Clearance Time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	49	68		52	58			4024		90	4483	
v/s Ratio Prot		0.00			0.00			c0.36		c0.02	0.19	
v/s Ratio Perm	0.00			c0.00								
v/c Ratio	0.08	0.01		0.13	0.05			0.46		0.47	0.21	
Uniform Delay, d1	74.5	74.3		74.7	74.4			5.4		73.9	1.4	
Progression Factor	1.00	1.00		1.00	1.00			0.27		1.23	0.02	
Incremental Delay, d2	0.7	0.1		1.2	0.4			0.3		3.6	0.1	
Delay (s)	75.2	74.4		75.9	74.8			1.8		94.5	0.1	
Level of Service	E	E		E	E			A		F	A	
Approach Delay (s)		75.1			74.9			1.8			4.1	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



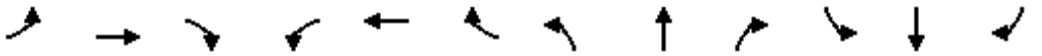
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	4	2	8	1	97	4	1389	10	97	1953	33
Future Volume (vph)	27	4	2	8	1	97	4	1389	10	97	1953	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1900	1615	1805	1618		1805	5080		1805	5074	
Flt Permitted	0.44	1.00	1.00	0.76	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	832	1900	1615	1435	1618		1805	5080		1805	5074	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	4	2	9	1	105	4	1510	11	105	2123	36
RTOR Reduction (vph)	0	0	2	0	99	0	0	0	0	0	1	0
Lane Group Flow (vph)	29	4	0	9	7	0	4	1521	0	105	2158	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	9.7	9.7	9.7	9.7	9.7		1.4	125.6		15.2	139.4	
Effective Green, g (s)	9.7	9.7	9.7	9.7	9.7		1.4	125.6		15.2	139.4	
Actuated g/C Ratio	0.06	0.06	0.06	0.06	0.06		0.01	0.74		0.09	0.82	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	47	108	92	81	92		14	3753		161	4160	
v/s Ratio Prot		0.00			0.00		0.00	0.30		c0.06	c0.43	
v/s Ratio Perm	c0.03		0.00	0.01								
v/c Ratio	0.62	0.04	0.00	0.11	0.08		0.29	0.41		0.65	0.52	
Uniform Delay, d1	78.3	75.7	75.6	76.1	75.9		83.8	8.3		74.8	4.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.10	0.55		1.17	0.03	
Incremental Delay, d2	21.7	0.1	0.0	0.6	0.4		9.4	0.3		3.5	0.2	
Delay (s)	100.0	75.9	75.6	76.7	76.3		102.0	4.8		91.2	0.3	
Level of Service	F	E	E	E	E		F	A		F	A	
Approach Delay (s)		95.9			76.3			5.0			4.5	
Approach LOS		F			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	6	6	22	4	28	13	1627	58	15	818	23
Future Volume (vph)	36	6	6	22	4	28	13	1627	58	15	818	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1823	1615		1822	1615	1805	3539	1615	1805	3539	1313
Flt Permitted		0.74	1.00		0.72	1.00	0.29	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)		1404	1615		1376	1615	555	3539	1615	216	3539	1313
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	7	7	24	4	30	14	1768	63	16	889	25
RTOR Reduction (vph)	0	0	7	0	0	28	0	0	12	0	0	5
Lane Group Flow (vph)	0	46	0	0	28	2	14	1768	51	16	889	20
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	23%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		9.3	9.3		9.3	9.3	129.2	129.2	129.2	128.8	128.8	128.8
Effective Green, g (s)		9.3	9.3		9.3	9.3	129.2	129.2	129.2	128.8	128.8	128.8
Actuated g/C Ratio		0.06	0.06		0.06	0.06	0.81	0.81	0.81	0.81	0.81	0.81
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		81	93		79	93	466	2857	1304	193	2848	1056
v/s Ratio Prot							0.00	c0.50		0.00	c0.25	
v/s Ratio Perm		c0.03	0.00		0.02	0.00	0.02		0.03	0.07		0.02
v/c Ratio		0.57	0.00		0.35	0.02	0.03	0.62	0.04	0.08	0.31	0.02
Uniform Delay, d1		73.4	71.0		72.5	71.0	3.4	5.9	3.1	7.9	4.1	3.1
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.43	0.43	1.00
Incremental Delay, d2		8.8	0.0		2.7	0.1	0.0	1.0	0.1	0.2	0.3	0.0
Delay (s)		82.2	71.0		75.2	71.1	3.4	6.9	3.1	3.6	2.0	3.1
Level of Service		F	E		E	E	A	A	A	A	A	A
Approach Delay (s)		80.7			73.1			6.8			2.1	
Approach LOS		F			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	24	41	89	17	17	40	1300	73	25	1822	40
Future Volume (vph)	87	24	41	89	17	17	40	1300	73	25	1822	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1828	1615		1823	1615	1805	3539	1615	1805	3539	1615
Flt Permitted		0.58	1.00		0.55	1.00	0.05	1.00	1.00	0.17	1.00	1.00
Satd. Flow (perm)		1109	1615		1045	1615	93	3539	1615	320	3539	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	26	45	97	18	18	43	1413	79	27	1980	43
RTOR Reduction (vph)	0	0	39	0	0	16	0	0	17	0	0	12
Lane Group Flow (vph)	0	121	6	0	115	2	43	1413	62	27	1980	31
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		22.1	22.1		22.1	22.1	125.3	125.3	125.3	123.2	123.2	123.2
Effective Green, g (s)		22.1	22.1		22.1	22.1	125.3	125.3	125.3	123.2	123.2	123.2
Actuated g/C Ratio		0.13	0.13		0.13	0.13	0.74	0.74	0.74	0.72	0.72	0.72
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		144	209		135	209	120	2608	1190	258	2564	1170
v/s Ratio Prot							0.01	c0.40		0.00	c0.56	
v/s Ratio Perm		0.11	0.00		c0.11	0.00	0.25		0.04	0.07		0.02
v/c Ratio		0.84	0.03		0.85	0.01	0.36	0.54	0.05	0.10	0.77	0.03
Uniform Delay, d1		72.2	64.6		72.3	64.4	21.5	9.8	6.1	11.5	14.6	6.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.05	0.08	0.02
Incremental Delay, d2		33.4	0.1		37.3	0.0	1.8	0.8	0.1	0.2	2.1	0.0
Delay (s)		105.6	64.6		109.7	64.5	23.3	10.6	6.2	0.7	3.2	0.2
Level of Service		F	E		F	E	C	B	A	A	A	A
Approach Delay (s)		94.5			103.6			10.7			3.1	
Approach LOS		F			F			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.5

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	3	2	11	107	6
Future Vol, veh/h	2	3	2	11	107	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	3	2	12	116	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	136	120	123	0	-	0
Stage 1	120	-	-	-	-	-
Stage 2	16	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	857	931	1464	-	-	-
Stage 1	905	-	-	-	-	-
Stage 2	1007	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	856	931	1464	-	-	-
Mov Cap-2 Maneuver	856	-	-	-	-	-
Stage 1	904	-	-	-	-	-
Stage 2	1007	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	9	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1464	-	899	-	-
HCM Lane V/C Ratio	0.001	-	0.006	-	-
HCM Control Delay (s)	7.5	-	9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	98	15	19	175	87	86
Future Vol, veh/h	98	15	19	175	87	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	16	21	190	95	93

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	374	142	188	0	-	0
Stage 1	142	-	-	-	-	-
Stage 2	232	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	627	906	1386	-	-	-
Stage 1	885	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	618	906	1386	-	-	-
Mov Cap-2 Maneuver	618	-	-	-	-	-
Stage 1	872	-	-	-	-	-
Stage 2	807	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	11.9	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1386	-	645	-	-
HCM Lane V/C Ratio	0.015	-	0.19	-	-
HCM Control Delay (s)	7.6	-	11.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	90	6	2	11	18	92
Future Vol, veh/h	90	6	2	11	18	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	98	7	2	12	20	100

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	86	70	120	0	-	0
Stage 1	70	-	-	-	-	-
Stage 2	16	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	920	998	1480	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	1012	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	919	998	1480	-	-	-
Mov Cap-2 Maneuver	919	-	-	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	1012	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1480	-	924	-	-
HCM Lane V/C Ratio	0.001	-	0.113	-	-
HCM Control Delay (s)	7.4	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	5.4

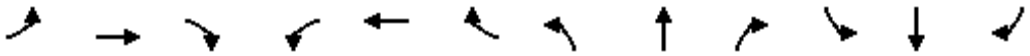
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	151	3	3	24	13	88
Future Vol, veh/h	151	3	3	24	13	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	164	3	3	26	14	96

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	94	62	110	0	-	0
Stage 1	62	-	-	-	-	-
Stage 2	32	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	911	1009	1493	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	996	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	909	1009	1493	-	-	-
Mov Cap-2 Maneuver	909	-	-	-	-	-
Stage 1	964	-	-	-	-	-
Stage 2	996	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1493	-	911	-	-
HCM Lane V/C Ratio	0.002	-	0.184	-	-
HCM Control Delay (s)	7.4	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

2021 Build Conditions		Eastbound			Westbound			Northbound			Southbound			INT.
		LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	
Alexandria Pike at Sunset Dr	AM	87.9 F	87.9 F	72.3 E	81.2 F	80.4 F	54.1 D	175.8 F	22.8 C	4.3 A	83.2 F	11.1 B		25.6 C
	PM	101.5 F	110.3 F	68.9 E	112.1 F	109.7 F	54.7 D	75.7 E	52.2 D	19.6 B	102.3 F	35.0 D		52.4 D
Alexandria Pike at Nunn Dr	AM	89.0 F	90.5 F	64.9 E	74.1 E	74.6 E		87.0 F	11.3 B		98.9 F	13.1 B	30.8 C	24.0 C
	PM	110.1 F	107.7 F	58.1 E	103.5 F	128.1 F		116.3 F	14.1 B		101.8 F	42.0 C	1.8 A	41.7 D
Alexandria Pike at Marshall Lane	AM	80.1 F	71.4 E	71.5 E	72.2 E	71.7 E		86.4 F	3.7 A		78.6 E	4.9 A		8.9 A
	PM	104.8 F	71.2 E	71.1 E	71.7 E	71.6 E		92.2 F	5.4 A		95.7 F	0.6 A		10.1 B
Alexandria Pike at Johns Hill Rd	AM	82.1 F		70.8 E	74.8 E		70.9 E	3.5 A	7.3 A	3.2 A	2.6 A	1.7 A	3.1 A	8.0 A
	PM	105.4 F		64.3 E	107.7 F		64.1 E	28.3 C	11.9 B	6.7 A	0.3 A	2.7 A	0.2 A	13.5 B
Wilson Road at Sunset Drive (North)	AM	No Movements			Free			7.6 A	Free		9.7 A			N/A
	PM							7.7 A			13.7 B			N/A
Wilson Road at Sunset Drive (South)	AM	10.1 B			No Movements			7.6 A	Free		Free			N/A
	PM	11.7 B						7.5 A						N/A
Wilson Road at Faren Drive	AM	7.4 A			6.7 A			No Movements			7.6 A			7.4 A
	PM	7.5 A			7.0 A						7.5 A			7.2 A
Nunn Dr at Site A Driveway	AM	Free			Free			No Movements			-		10.2 B	N/A
	PM										-		9.8 A	N/A
Nunn Dr at Site B Driveway	AM	Free			Free			-		9.2 A	No Movements			N/A
	PM							-		10.8 B				N/A
Nunn Dr at Clara Extension	AM	Free			7.7 A	Free		10.9 B			No Movements			N/A
	PM				9.1 A			16.2 C						N/A
Nunn Dr at Arena Driveway	AM	Free			Free			-		8.8 A	No Movements			N/A
	PM							-		10.2 B				N/A
Clara Dr at Marshall Lane	AM	No Movements			6.9 A			6.3 A			7.1 A			6.9 A
	PM				6.6 A			6.3 A			7.1 A			6.6 A
Marshall Lane at West Site B Drive	AM	-		0.0 A	Free			No Movements			8.6 A			N/A
	PM	-		0.0 A							8.7 A			N/A
Marshall Lane at East Site B Drive	AM	7.1 A			6.7 A			- -			7.4 A			7.0 A
	PM	7.2 A			6.9 A			- -			7.5 A			7.1 A
Alexandria Pike at Site B Driveway	AM	-		13.4 B	No Movements			Free			Free			N/A
	PM	-		29.4 D										N/A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	36	34	159	24	163	7	1643	293	133	1215	134
Future Volume (vph)	61	36	34	159	24	163	7	1643	293	133	1215	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1692	1534	1681	1715	1583	1805	3539	1583	1770	5019	
Flt Permitted	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1692	1534	1681	1715	1583	1805	3539	1583	1770	5019	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	39	37	173	26	177	8	1786	318	145	1321	146
RTOR Reduction (vph)	0	2	31	0	0	90	0	0	75	0	7	0
Lane Group Flow (vph)	54	53	2	99	100	87	8	1786	243	145	1460	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%	0%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	8.1	8.1	8.1	14.2	14.2	31.9	1.0	94.0	94.0	17.7	110.7	
Effective Green, g (s)	8.1	8.1	8.1	14.2	14.2	31.9	1.0	94.0	94.0	17.7	110.7	
Actuated g/C Ratio	0.05	0.05	0.05	0.09	0.09	0.20	0.01	0.59	0.59	0.11	0.69	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	86	85	77	149	152	379	11	2079	930	195	3472	
v/s Ratio Prot	c0.03	0.03		c0.06	0.06	0.03	0.00	c0.50		c0.08	0.29	
v/s Ratio Perm			0.00			0.03			0.15			
v/c Ratio	0.63	0.62	0.02	0.66	0.66	0.23	0.73	0.86	0.26	0.74	0.42	
Uniform Delay, d1	74.5	74.5	72.2	70.6	70.5	53.7	79.4	27.5	16.1	69.0	10.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.68	0.23	1.00	1.00	
Incremental Delay, d2	13.5	13.5	0.1	10.6	9.8	0.3	107.4	4.0	0.6	14.2	0.4	
Delay (s)	87.9	87.9	72.3	81.2	80.4	54.1	175.8	22.8	4.3	83.2	11.1	
Level of Service	F	F	E	F	F	D	F	C	A	F	B	
Approach Delay (s)		84.3			68.2			20.6			17.6	
Approach LOS		F			E			C			B	

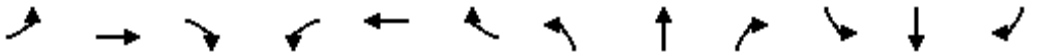
Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
1: Alexandria Pike & Sunset Dr (North Intersection)

06/03/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	229	35	127	313	18	200	68	1627	282	155	1988	110
Future Volume (vph)	229	35	127	313	18	200	68	1627	282	155	1988	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1651	1534	1681	1698	1583	1805	3539	1583	1770	5050	
Flt Permitted	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1651	1534	1681	1698	1583	1805	3539	1583	1770	5050	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	249	38	138	340	20	217	74	1768	307	168	2161	120
RTOR Reduction (vph)	0	2	111	0	0	82	0	0	74	0	4	0
Lane Group Flow (vph)	149	150	13	180	180	135	74	1768	233	168	2277	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%	0%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	17.8	17.8	17.8	20.2	20.2	39.2	13.3	87.0	87.0	19.0	92.7	
Effective Green, g (s)	17.8	17.8	17.8	20.2	20.2	39.2	13.3	87.0	87.0	19.0	92.7	
Actuated g/C Ratio	0.10	0.10	0.10	0.12	0.12	0.23	0.08	0.51	0.51	0.11	0.55	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	179	172	160	199	201	425	141	1811	810	197	2753	
v/s Ratio Prot	0.09	c0.09		c0.11	0.11	0.04	0.04	c0.50		0.09	c0.45	
v/s Ratio Perm			0.01			0.05			0.15			
v/c Ratio	0.83	0.87	0.08	0.90	0.90	0.32	0.52	0.98	0.29	0.85	0.83	
Uniform Delay, d1	74.6	75.0	68.7	73.9	73.9	54.3	75.3	40.5	23.8	74.1	32.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.80	1.00	1.00	
Incremental Delay, d2	26.8	35.3	0.2	38.1	35.9	0.4	2.5	13.1	0.6	28.2	3.0	
Delay (s)	101.5	110.3	68.9	112.1	109.7	54.7	75.7	52.2	19.6	102.3	35.0	
Level of Service	F	F	E	F	F	D	E	D	B	F	D	
Approach Delay (s)		95.1			89.8			48.4			39.6	
Approach LOS		F			F			D			D	

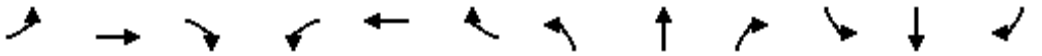
Intersection Summary			
HCM 2000 Control Delay	52.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	223	16	7	23	21	53	72	1673	52	46	914	476
Future Volume (vph)	223	16	7	23	21	53	72	1673	52	46	914	476
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1696	1583	1770	1663		1770	5062		1770	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1696	1583	1770	1663		1770	5062		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	242	17	8	25	23	58	78	1818	57	50	993	517
RTOR Reduction (vph)	0	0	7	0	55	0	0	1	0	0	0	201
Lane Group Flow (vph)	128	131	1	25	26	0	78	1874	0	50	993	316
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	15.9	15.9	15.9	8.6	8.6		12.4	100.8		8.7	97.1	97.1
Effective Green, g (s)	15.9	15.9	15.9	8.6	8.6		12.4	100.8		8.7	97.1	97.1
Actuated g/C Ratio	0.10	0.10	0.10	0.05	0.05		0.08	0.63		0.05	0.61	0.61
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	167	168	157	95	89		137	3189		96	2147	960
v/s Ratio Prot	0.08	c0.08		0.01	c0.02		c0.04	c0.37		0.03	0.28	
v/s Ratio Perm			0.00									0.20
v/c Ratio	0.77	0.78	0.01	0.26	0.29		0.57	0.59		0.52	0.46	0.33
Uniform Delay, d1	70.2	70.3	64.9	72.7	72.8		71.2	17.4		73.6	17.2	15.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.15	0.61		1.28	0.72	1.94
Incremental Delay, d2	18.7	20.1	0.0	1.5	1.8		4.9	0.7		4.6	0.7	0.8
Delay (s)	89.0	90.5	64.9	74.1	74.6		87.0	11.3		98.9	13.1	30.8
Level of Service	F	F	E	E	E		F	B		F	B	C
Approach Delay (s)		89.0			74.5			14.3			21.7	
Approach LOS		F			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

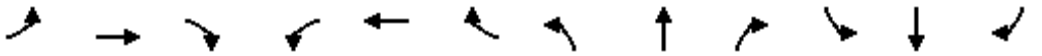
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	478	49	78	36	16	108	37	1441	69	73	2058	392
Future Volume (vph)	478	49	78	36	16	108	37	1441	69	73	2058	392
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1700	1583	1770	1619		1770	5050		1770	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1700	1583	1770	1619		1770	5050		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	520	53	85	39	17	117	40	1566	75	79	2237	426
RTOR Reduction (vph)	0	0	70	0	92	0	0	3	0	0	0	82
Lane Group Flow (vph)	286	287	15	39	42	0	40	1638	0	79	2237	344
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	30.2	30.2	30.2	5.8	5.8		6.0	95.6		12.4	102.0	102.0
Effective Green, g (s)	30.2	30.2	30.2	5.8	5.8		6.0	95.6		12.4	102.0	102.0
Actuated g/C Ratio	0.18	0.18	0.18	0.03	0.03		0.04	0.56		0.07	0.60	0.60
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	298	302	281	60	55		62	2839		129	2123	949
v/s Ratio Prot	c0.17	0.17		0.02	c0.03		0.02	0.32		c0.04	c0.63	
v/s Ratio Perm			0.01									0.22
v/c Ratio	0.96	0.95	0.05	0.65	0.77		0.65	0.58		0.61	1.05	0.36
Uniform Delay, d1	69.3	69.2	58.0	81.1	81.4		80.9	24.1		76.5	34.0	17.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.20	0.55		1.26	0.30	0.07
Incremental Delay, d2	40.8	38.5	0.1	22.4	46.7		19.3	0.8		5.1	31.8	0.6
Delay (s)	110.1	107.7	58.1	103.5	128.1		116.3	14.1		101.8	42.0	1.8
Level of Service	F	F	E	F	F		F	B		F	D	A
Approach Delay (s)		102.3			122.6			16.6			37.5	
Approach LOS		F			F			B			D	

Intersection Summary			
HCM 2000 Control Delay	41.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	96.1%	ICU Level of Service	F
Analysis Period (min)	15		

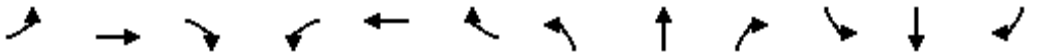
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	1	21	6	1	49	30	1714	9	39	885	29
Future Volume (vph)	36	1	21	6	1	49	30	1714	9	39	885	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1589		1770	5081		1770	5061	
Flt Permitted	0.72	1.00	1.00	0.76	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1345	1863	1583	1410	1589		1770	5081		1770	5061	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	1	23	7	1	53	33	1863	10	42	962	32
RTOR Reduction (vph)	0	0	22	0	50	0	0	0	0	0	2	0
Lane Group Flow (vph)	39	1	1	7	4	0	33	1873	0	42	992	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	8.9	8.9	8.9	8.9	8.9		7.5	123.6		8.0	124.1	
Effective Green, g (s)	8.9	8.9	8.9	8.9	8.9		7.5	123.6		8.0	124.1	
Actuated g/C Ratio	0.06	0.06	0.06	0.06	0.06		0.05	0.77		0.05	0.78	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	74	103	88	78	88		82	3925		88	3925	
v/s Ratio Prot		0.00			0.00		0.02	c0.37		c0.02	0.20	
v/s Ratio Perm	c0.03		0.00	0.00								
v/c Ratio	0.53	0.01	0.01	0.09	0.04		0.40	0.48		0.48	0.25	
Uniform Delay, d1	73.5	71.4	71.4	71.7	71.5		74.1	6.6		74.0	5.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.13	0.51		1.01	0.94	
Incremental Delay, d2	6.6	0.0	0.1	0.5	0.2		2.6	0.3		4.0	0.2	
Delay (s)	80.1	71.4	71.5	72.2	71.7		86.4	3.7		78.6	4.9	
Level of Service	F	E	E	E	E		F	A		E	A	
Approach Delay (s)		76.8			71.8			5.1			7.9	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

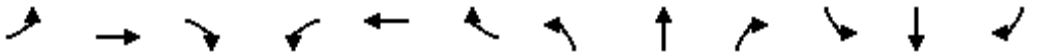
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	4	21	8	1	97	55	1401	10	97	1998	67
Future Volume (vph)	59	4	21	8	1	97	55	1401	10	97	1998	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1586		1770	5080		1770	5060	
Flt Permitted	0.54	1.00	1.00	0.76	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1002	1863	1583	1407	1586		1770	5080		1770	5060	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	4	23	9	1	105	60	1523	11	105	2172	73
RTOR Reduction (vph)	0	0	21	0	96	0	0	0	0	0	2	0
Lane Group Flow (vph)	64	4	2	9	10	0	60	1534	0	105	2243	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	14.7	14.7	14.7	14.7	14.7		11.0	120.4		15.4	124.8	
Effective Green, g (s)	14.7	14.7	14.7	14.7	14.7		11.0	120.4		15.4	124.8	
Actuated g/C Ratio	0.09	0.09	0.09	0.09	0.09		0.06	0.71		0.09	0.73	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	86	161	136	121	137		114	3597		160	3714	
v/s Ratio Prot		0.00			0.01		0.03	0.30		c0.06	c0.44	
v/s Ratio Perm	c0.06		0.00	0.01								
v/c Ratio	0.74	0.02	0.01	0.07	0.07		0.53	0.43		0.66	0.60	
Uniform Delay, d1	75.8	71.1	71.0	71.4	71.4		77.0	10.4		74.7	10.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.15	0.49		1.24	0.04	
Incremental Delay, d2	29.0	0.1	0.0	0.3	0.2		3.6	0.3		2.9	0.2	
Delay (s)	104.8	71.2	71.1	71.7	71.6		92.2	5.4		95.7	0.6	
Level of Service	F	E	E	E	E		F	A		F	A	
Approach Delay (s)		94.8			71.6			8.7			4.9	
Approach LOS		F			E			A			A	

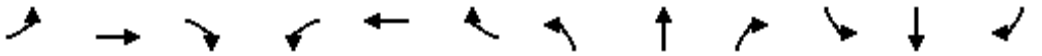
Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	6	6	22	4	28	13	1684	58	15	862	23
Future Volume (vph)	36	6	6	22	4	28	13	1684	58	15	862	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1787	1583		1822	1615	1770	3539	1615	1805	3539	1583
Flt Permitted		0.74	1.00		0.72	1.00	0.28	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)		1376	1583		1376	1615	515	3539	1615	197	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	7	7	24	4	30	14	1830	63	16	937	25
RTOR Reduction (vph)	0	0	7	0	0	28	0	0	12	0	0	5
Lane Group Flow (vph)	0	46	0	0	28	2	14	1830	51	16	937	20
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	0%	0%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		9.5	9.5		9.5	9.5	129.0	129.0	129.0	128.6	128.6	128.6
Effective Green, g (s)		9.5	9.5		9.5	9.5	129.0	129.0	129.0	128.6	128.6	128.6
Actuated g/C Ratio		0.06	0.06		0.06	0.06	0.81	0.81	0.81	0.80	0.80	0.80
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		81	93		81	95	434	2853	1302	178	2844	1272
v/s Ratio Prot							0.00	c0.52		0.00	c0.26	
v/s Ratio Perm		c0.03	0.00		0.02	0.00	0.03		0.03	0.07		0.01
v/c Ratio		0.57	0.00		0.35	0.02	0.03	0.64	0.04	0.09	0.33	0.02
Uniform Delay, d1		73.3	70.8		72.3	70.9	3.5	6.2	3.1	9.0	4.2	3.1
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.26	0.34	1.00
Incremental Delay, d2		8.8	0.0		2.6	0.1	0.0	1.1	0.1	0.2	0.3	0.0
Delay (s)		82.1	70.8		74.8	70.9	3.5	7.3	3.2	2.6	1.7	3.1
Level of Service		F	E		E	E	A	A	A	A	A	A
Approach Delay (s)		80.6			72.8			7.2			1.8	
Approach LOS		F			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	24	41	89	17	17	40	1363	73	25	1886	40
Future Volume (vph)	87	24	41	89	17	17	40	1363	73	25	1886	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1792	1583		1787	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.59	1.00		0.55	1.00	0.04	1.00	1.00	0.15	1.00	1.00
Satd. Flow (perm)		1092	1583		1031	1583	74	3539	1583	281	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	26	45	97	18	18	43	1482	79	27	2050	43
RTOR Reduction (vph)	0	0	39	0	0	16	0	0	18	0	0	12
Lane Group Flow (vph)	0	121	6	0	115	2	43	1482	61	27	2050	31
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		22.5	22.5		22.5	22.5	123.4	123.4	123.4	122.7	122.7	122.7
Effective Green, g (s)		22.5	22.5		22.5	22.5	123.4	123.4	123.4	122.7	122.7	122.7
Actuated g/C Ratio		0.13	0.13		0.13	0.13	0.73	0.73	0.73	0.72	0.72	0.72
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		144	209		136	209	106	2568	1149	243	2554	1142
v/s Ratio Prot							0.01	c0.42		0.00	c0.58	
v/s Ratio Perm		0.11	0.00		c0.11	0.00	0.28		0.04	0.08		0.02
v/c Ratio		0.84	0.03		0.85	0.01	0.41	0.58	0.05	0.11	0.80	0.03
Uniform Delay, d1		72.0	64.2		72.1	64.1	25.8	11.0	6.6	13.4	15.6	6.7
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.01	0.03	0.02
Incremental Delay, d2		33.4	0.1		35.6	0.0	2.5	1.0	0.1	0.2	2.3	0.0
Delay (s)		105.4	64.3		107.7	64.1	28.3	11.9	6.7	0.3	2.7	0.2
Level of Service		F	E		F	E	C	B	A	A	A	A
Approach Delay (s)		94.3			101.8			12.1			2.6	
Approach LOS		F			F			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	3	3	129	160	6
Future Vol, veh/h	2	3	3	129	160	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	3	3	140	174	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	324	178	181	0	-	0
Stage 1	178	-	-	-	-	-
Stage 2	146	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	674	870	1407	-	-	-
Stage 1	858	-	-	-	-	-
Stage 2	886	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	673	870	1407	-	-	-
Mov Cap-2 Maneuver	673	-	-	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	886	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	9.7	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1407	-	779	-	-
HCM Lane V/C Ratio	0.002	-	0.007	-	-
HCM Control Delay (s)	7.6	-	9.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	98	15	19	293	111	86
Future Vol, veh/h	98	15	19	293	111	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	107	16	21	318	121	93

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	528	168	214	0	-	0
Stage 1	168	-	-	-	-	-
Stage 2	360	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	514	881	1368	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	710	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	506	881	1368	-	-	-
Mov Cap-2 Maneuver	506	-	-	-	-	-
Stage 1	854	-	-	-	-	-
Stage 2	710	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	13.7	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1368	-	536	-	-
HCM Lane V/C Ratio	0.015	-	0.229	-	-
HCM Control Delay (s)	7.7	-	13.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.9	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	90	31	5	38	71	92
Future Vol, veh/h	90	31	5	38	71	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	98	34	5	41	77	100

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	178	127	177	0	-	0
Stage 1	127	-	-	-	-	-
Stage 2	51	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	816	929	1411	-	-	-
Stage 1	904	-	-	-	-	-
Stage 2	977	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	813	929	1411	-	-	-
Mov Cap-2 Maneuver	813	-	-	-	-	-
Stage 1	900	-	-	-	-	-
Stage 2	977	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1411	-	840	-	-
HCM Lane V/C Ratio	0.004	-	0.157	-	-
HCM Control Delay (s)	7.6	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	151	14	18	142	37	88
Future Vol, veh/h	151	14	18	142	37	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	164	15	20	154	40	96

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	282	88	136	0	-	0
Stage 1	88	-	-	-	-	-
Stage 2	194	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	712	976	1461	-	-	-
Stage 1	940	-	-	-	-	-
Stage 2	844	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	701	976	1461	-	-	-
Mov Cap-2 Maneuver	701	-	-	-	-	-
Stage 1	926	-	-	-	-	-
Stage 2	844	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1461	-	718	-	-
HCM Lane V/C Ratio	0.013	-	0.25	-	-
HCM Control Delay (s)	7.5	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1	-	-

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	0	0	31	78	18
Future Vol, veh/h	13	0	0	31	78	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	14	0	0	34	85	20
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.4	6.7	7.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	81%
Vol Thru, %	0%	0%	0%
Vol Right, %	0%	100%	19%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	13	31	96
LT Vol	13	0	78
Through Vol	0	0	0
RT Vol	0	31	18
Lane Flow Rate	14	34	104
Geometry Grp	1	1	1
Degree of Util (X)	0.017	0.033	0.117
Departure Headway (Hd)	4.31	3.494	4.034
Convergence, Y/N	Yes	Yes	Yes
Cap	826	1016	891
Service Time	2.36	1.544	2.047
HCM Lane V/C Ratio	0.017	0.033	0.117
HCM Control Delay	7.4	6.7	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.1	0.4

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	0	0	133	35	17
Future Vol, veh/h	27	0	0	133	35	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	29	0	0	145	38	18
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.5	7	7.5
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	67%
Vol Thru, %	0%	0%	0%
Vol Right, %	0%	100%	33%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	27	133	52
LT Vol	27	0	35
Through Vol	0	0	0
RT Vol	0	133	17
Lane Flow Rate	29	145	57
Geometry Grp	1	1	1
Degree of Util (X)	0.035	0.137	0.065
Departure Headway (Hd)	4.309	3.42	4.139
Convergence, Y/N	Yes	Yes	Yes
Cap	828	1044	864
Service Time	2.347	1.457	2.171
HCM Lane V/C Ratio	0.035	0.139	0.066
HCM Control Delay	7.5	7	7.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.5	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	246	517	52	0	3
Future Vol, veh/h	0	246	517	52	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	0	267	562	57	0	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	310
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	-	0	692
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	692
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	692
HCM Lane V/C Ratio	-	-	-	0.005
HCM Control Delay (s)	-	-	-	10.2
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	605	422	23	0	15
Future Vol, veh/h	0	605	422	23	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	0	658	459	25	0	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	242
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	-	0	765
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	765
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	765
HCM Lane V/C Ratio	-	-	-	0.021
HCM Control Delay (s)	-	-	-	9.8
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	180	14	0	520	0	66
Future Vol, veh/h	180	14	0	520	0	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	196	15	0	565	0	72

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	106
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	934
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	934
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	934	-	-	-
HCM Lane V/C Ratio	0.077	-	-	-
HCM Control Delay (s)	9.2	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	541	23	0	437	0	64
Future Vol, veh/h	541	23	0	437	0	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	588	25	0	475	0	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	307
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	695
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	695
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	695	-	-	-
HCM Lane V/C Ratio	0.1	-	-	-
HCM Control Delay (s)	10.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	162	0	63	457	19	32
Future Vol, veh/h	162	0	63	457	19	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	176	0	68	497	21	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	176	0	561	88
Stage 1	-	-	-	-	176	-
Stage 2	-	-	-	-	385	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1412	-	462	959
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	663	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1412	-	440	959
Mov Cap-2 Maneuver	-	-	-	-	440	-
Stage 1	-	-	-	-	803	-
Stage 2	-	-	-	-	663	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	666	-	-	1412	-
HCM Lane V/C Ratio	0.083	-	-	0.048	-
HCM Control Delay (s)	10.9	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	538	0	111	326	17	26
Future Vol, veh/h	538	0	111	326	17	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	585	0	121	354	18	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	585	0	1004	293
Stage 1	-	-	-	-	585	-
Stage 2	-	-	-	-	419	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1000	-	242	709
Stage 1	-	-	-	-	526	-
Stage 2	-	-	-	-	638	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1000	-	213	709
Mov Cap-2 Maneuver	-	-	-	-	213	-
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	638	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	16.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	369	-	-	1000	-
HCM Lane V/C Ratio	0.127	-	-	0.121	-
HCM Control Delay (s)	16.2	-	-	9.1	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.4	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	159	1	0	476	0	3
Future Vol, veh/h	159	1	0	476	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	173	1	0	517	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	87
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	961
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	961
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	961	-	-	-
HCM Lane V/C Ratio	0.003	-	-	-
HCM Control Delay (s)	8.8	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	526	5	0	343	0	12
Future Vol, veh/h	526	5	0	343	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	-	-	-	-	-	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	572	5	0	373	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	289
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	708
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	708
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	708	-	-	-
HCM Lane V/C Ratio	0.018	-	-	-
HCM Control Delay (s)	10.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	1	0	1	5	0
Future Vol, veh/h	2	1	0	1	5	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	1	0	1	5	0
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	6.9	6.3	7.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	67%	100%
Vol Thru, %	0%	0%	0%
Vol Right, %	100%	33%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	1	3	5
LT Vol	0	2	5
Through Vol	0	0	0
RT Vol	1	1	0
Lane Flow Rate	1	3	5
Geometry Grp	1	1	1
Degree of Util (X)	0.001	0.003	0.006
Departure Headway (Hd)	3.31	3.845	4.107
Convergence, Y/N	Yes	Yes	Yes
Cap	1087	936	877
Service Time	1.311	1.847	2.107
HCM Lane V/C Ratio	0.001	0.003	0.006
HCM Control Delay	6.3	6.9	7.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0	0

Intersection	
Intersection Delay, s/veh	6.6
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	6	0	5	3	0
Future Vol, veh/h	3	6	0	5	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	7	0	5	3	0
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	6.6	6.3	7.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	33%	100%
Vol Thru, %	0%	0%	0%
Vol Right, %	100%	67%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	5	9	3
LT Vol	0	3	3
Through Vol	0	0	0
RT Vol	5	6	0
Lane Flow Rate	5	10	3
Geometry Grp	1	1	1
Degree of Util (X)	0.005	0.01	0.004
Departure Headway (Hd)	3.32	3.582	4.122
Convergence, Y/N	Yes	Yes	Yes
Cap	1083	1005	873
Service Time	1.323	1.584	2.124
HCM Lane V/C Ratio	0.005	0.01	0.003
HCM Control Delay	6.3	6.6	7.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0	0

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	6	3	7	16	0
Future Vol, veh/h	0	6	3	7	16	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	7	3	8	17	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	11	0	-	0	14	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	7	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1621	-	-	-	1010	1081
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1021	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1621	-	-	-	1010	1081
Mov Cap-2 Maneuver	-	-	-	-	1010	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1021	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1621	-	-	-	1010
HCM Lane V/C Ratio	-	-	-	-	0.017
HCM Control Delay (s)	0	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	9	11	16	0
Future Vol, veh/h	0	8	9	11	16	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	9	10	12	17	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	22	0	-	0	25	16
Stage 1	-	-	-	-	16	-
Stage 2	-	-	-	-	9	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1607	-	-	-	996	1069
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	1019	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1607	-	-	-	996	1069
Mov Cap-2 Maneuver	-	-	-	-	996	-
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	1019	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1607	-	-	-	996
HCM Lane V/C Ratio	-	-	-	-	0.017
HCM Control Delay (s)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Intersection Delay, s/veh	7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	22	0	0	10	44	0	0	0	32	0	0
Future Vol, veh/h	0	22	0	0	10	44	0	0	0	32	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	24	0	0	11	48	0	0	0	35	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	6.7	0	7.4
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	100%
Vol Thru, %	100%	100%	19%	0%
Vol Right, %	0%	0%	81%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	22	54	32
LT Vol	0	0	0	32
Through Vol	0	22	10	0
RT Vol	0	0	44	0
Lane Flow Rate	0	24	59	35
Geometry Grp	1	1	1	1
Degree of Util (X)	0	0.027	0.057	0.041
Departure Headway (Hd)	4.069	4.005	3.49	4.242
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	894	1025	845
Service Time	2.099	2.029	1.514	2.263
HCM Lane V/C Ratio	0	0.027	0.058	0.041
HCM Control Delay	7.1	7.1	6.7	7.4
HCM Lane LOS	N	A	A	A
HCM 95th-tile Q	0	0.1	0.2	0.1

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	24	0	0	20	68	0	0	0	32	0	0
Future Vol, veh/h	0	24	0	0	20	68	0	0	0	32	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	26	0	0	22	74	0	0	0	35	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	6.9	0	7.5
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	100%
Vol Thru, %	100%	100%	23%	0%
Vol Right, %	0%	0%	77%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	24	88	32
LT Vol	0	0	0	32
Through Vol	0	24	20	0
RT Vol	0	0	68	0
Lane Flow Rate	0	26	96	35
Geometry Grp	1	1	1	1
Degree of Util (X)	0	0.029	0.093	0.042
Departure Headway (Hd)	4.138	4.033	3.517	4.31
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	887	1018	831
Service Time	2.175	2.062	1.543	2.337
HCM Lane V/C Ratio	0	0.029	0.094	0.042
HCM Control Delay	7.2	7.2	6.9	7.5
HCM Lane LOS	N	A	A	A
HCM 95th-tile Q	0	0.1	0.3	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	16	0	1796	922	22
Future Vol, veh/h	0	16	0	1796	922	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	0	17	0	1952	1002	24

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	501	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.1	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	445	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	445	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	445	-	-
HCM Lane V/C Ratio	-	0.039	-	-
HCM Control Delay (s)	-	13.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

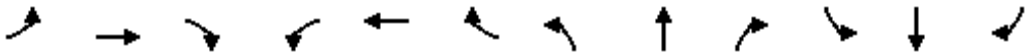
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	0	1547	2138	34
Future Vol, veh/h	0	15	0	1547	2138	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	0	16	0	1682	2324	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1162	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.1	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	164	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	164	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.4	0	0
HCM LOS	D		

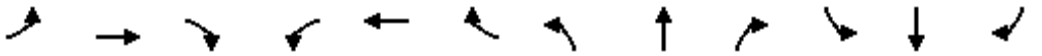
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	164	-	-
HCM Lane V/C Ratio	-	0.099	-	-
HCM Control Delay (s)	-	29.4	-	-
HCM Lane LOS	-	D	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-

2031 No-Build Conditions		Eastbound			Westbound			Northbound			Southbound			INT.
		LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	
Alexandria Pike at Sunset Dr	AM	78.4 E	78.6 E	71.8 E	78.8 E	78.1 E	52.1 D	71.3 E	25.5 C	6.7 A	76.3 E	11.7 B		26.5 C
	PM	90.4 F	90.8 F	70.7 E	105.0 F	104.2 F	54.1 D	75.9 E	59.6 E	14.8 B	108.6 F	34.1 C		52.6 D
Alexandria Pike at Nunn Dr	AM	78.1 E	77.4 E	67.4 E	73.7 E	75.1 E		94.0 F	11.0 B		86.5 F	14.0 B	35.8 D	21.7 C
	PM	127.4 F	127.0 F	61.2 E	96.8 E	201.2 F		169.5 F	12.4 B		103.8 F	44.3 E	0.9 A	45.8 D
Alexandria Pike at Marshall Lane	AM	75.4 E	74.3 E	74.3 E	75.9 E	74.7 E		- -	1.5 A		104.2 F	0.2 A		4.3 A
	PM	129.8 F	75.2 E	74.8 E	75.9 E	75.6 E		107.6 F	5.7 A		89.0 F	0.2 A		8.1 A
Alexandria Pike at Johns Hill Rd	AM	83.6 F		70.4 E	74.7 E		70.6 E	4.2 A	9.7 A	3.8 A	1.4 A	0.9 A	3.3 A	9.3 A
	PM	105.6 F		64.6 E	109.7 F		64.5 E	23.3 C	10.6 B	6.2 A	0.7 A	3.2 A	0.2 A	13.5 B
Wilson Road at Sunset Drive (North)	AM	No Movements			Free			7.5 A	Free		9.4 A			N/A
	PM							7.7 A			12.6 B			N/A
Wilson Road at Sunset Drive (South)	AM	9.5 A			No Movements			7.5 A	Free		Free			N/A
	PM	10.0 B						7.4 A						N/A



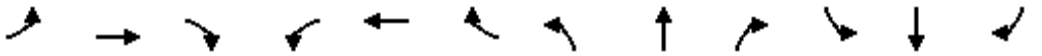
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	37	30	160	13	181	8	1709	305	148	1225	105
Future Volume (vph)	49	37	30	160	13	181	8	1709	305	148	1225	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1703	1534	1681	1702	1583	1805	3539	1583	1770	5033	
Flt Permitted	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1703	1534	1681	1702	1583	1805	3539	1583	1770	5033	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	53	40	33	174	14	197	9	1858	332	161	1332	114
RTOR Reduction (vph)	0	2	28	0	0	94	0	0	76	0	5	0
Lane Group Flow (vph)	47	47	2	94	94	103	9	1858	256	161	1441	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%	0%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	8.6	8.6	8.6	14.2	14.2	34.9	2.0	90.5	90.5	20.7	109.2	
Effective Green, g (s)	8.6	8.6	8.6	14.2	14.2	34.9	2.0	90.5	90.5	20.7	109.2	
Actuated g/C Ratio	0.05	0.05	0.05	0.09	0.09	0.22	0.01	0.57	0.57	0.13	0.68	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	92	91	82	149	151	409	22	2001	895	228	3435	
v/s Ratio Prot	0.03	c0.03		c0.06	0.06	0.03	0.00	c0.52		c0.09	0.29	
v/s Ratio Perm			0.00			0.03			0.16			
v/c Ratio	0.51	0.52	0.02	0.63	0.62	0.25	0.41	0.93	0.29	0.71	0.42	
Uniform Delay, d1	73.7	73.7	71.7	70.4	70.3	51.8	78.4	31.8	18.0	66.7	11.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.57	0.34	1.00	1.00	
Incremental Delay, d2	4.7	4.9	0.1	8.4	7.7	0.3	9.6	7.6	0.6	9.6	0.4	
Delay (s)	78.4	78.6	71.8	78.8	78.1	52.1	71.3	25.5	6.7	76.3	11.7	
Level of Service	E	E	E	E	E	D	E	C	A	E	B	
Approach Delay (s)		76.9			64.9			22.9			18.2	
Approach LOS		E			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	23	109	320	14	223	76	1697	295	173	2037	92
Future Volume (vph)	173	23	109	320	14	223	76	1697	295	173	2037	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.98	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1642	1534	1681	1695	1583	1805	3539	1583	1770	5057	
Flt Permitted	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1642	1534	1681	1695	1583	1805	3539	1583	1770	5057	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	188	25	118	348	15	242	83	1845	321	188	2214	100
RTOR Reduction (vph)	0	4	93	0	0	80	0	0	75	0	3	0
Lane Group Flow (vph)	115	109	10	181	182	162	83	1845	246	188	2311	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%	0%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	15.7	15.7	15.7	20.9	20.9	41.1	13.3	87.2	87.2	20.2	94.1	
Effective Green, g (s)	15.7	15.7	15.7	20.9	20.9	41.1	13.3	87.2	87.2	20.2	94.1	
Actuated g/C Ratio	0.09	0.09	0.09	0.12	0.12	0.24	0.08	0.51	0.51	0.12	0.55	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	158	151	141	206	208	443	141	1815	811	210	2799	
v/s Ratio Prot	c0.07	0.07		c0.11	0.11	0.04	0.05	c0.52		0.11	c0.46	
v/s Ratio Perm			0.01			0.06			0.16			
v/c Ratio	0.73	0.72	0.07	0.88	0.88	0.36	0.59	1.02	0.30	0.90	0.83	
Uniform Delay, d1	75.1	75.0	70.5	73.3	73.3	53.6	75.7	41.4	23.9	73.9	31.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.92	0.59	1.00	1.00	
Incremental Delay, d2	15.4	15.8	0.2	31.7	30.9	0.5	4.1	21.5	0.6	34.7	2.9	
Delay (s)	90.4	90.8	70.7	105.0	104.2	54.1	75.9	59.6	14.8	108.6	34.1	
Level of Service	F	F	E	F	F	D	E	E	B	F	C	
Approach Delay (s)		84.4			84.4			53.8			39.7	
Approach LOS		F			F			D			D	

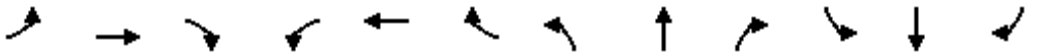
Intersection Summary			
HCM 2000 Control Delay	52.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	17	8	25	25	59	51	1831	58	51	963	423
Future Volume (vph)	136	17	8	25	25	59	51	1831	58	51	963	423
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1703	1583	1770	1666		1770	5062		1770	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1703	1583	1770	1666		1770	5062		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	148	18	9	27	27	64	55	1990	63	55	1047	460
RTOR Reduction (vph)	0	0	8	0	57	0	0	1	0	0	0	157
Lane Group Flow (vph)	83	83	1	27	34	0	55	2052	0	55	1047	303
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	13.2	13.2	13.2	9.1	9.1		9.0	102.7		9.0	102.7	102.7
Effective Green, g (s)	13.2	13.2	13.2	9.1	9.1		9.0	102.7		9.0	102.7	102.7
Actuated g/C Ratio	0.08	0.08	0.08	0.06	0.06		0.06	0.64		0.06	0.64	0.64
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	138	140	130	100	94		99	3249		99	2271	1016
v/s Ratio Prot	c0.05	0.05		0.02	c0.02		c0.03	c0.41		0.03	0.30	
v/s Ratio Perm			0.00									0.19
v/c Ratio	0.60	0.59	0.01	0.27	0.37		0.56	0.63		0.56	0.46	0.30
Uniform Delay, d1	70.9	70.8	67.4	72.3	72.7		73.6	17.3		73.6	14.6	12.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.20	0.59		1.09	0.92	2.77
Incremental Delay, d2	7.2	6.6	0.0	1.5	2.4		5.9	0.8		6.2	0.6	0.7
Delay (s)	78.1	77.4	67.4	73.7	75.1		94.0	11.0		86.5	14.0	35.8
Level of Service	E	E	E	E	E		F	B		F	B	D
Approach Delay (s)		77.2			74.8			13.2			23.0	
Approach LOS		E			E			B			C	

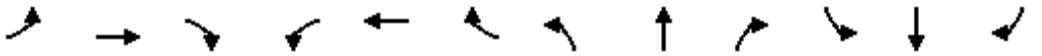
Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



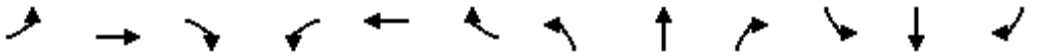
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	431	54	87	40	17	120	28	1572	77	81	2187	302
Future Volume (vph)	431	54	87	40	17	120	28	1572	77	81	2187	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1703	1583	1805	1650		1770	5054		1805	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1703	1583	1805	1650		1770	5054		1805	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	468	59	95	43	18	130	30	1709	84	88	2377	328
RTOR Reduction (vph)	0	0	80	0	84	0	0	3	0	0	0	60
Lane Group Flow (vph)	262	265	15	43	64	0	30	1790	0	88	2377	268
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	0%	0%	2%	2%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	26.5	26.5	26.5	6.5	6.5		3.6	98.3		12.7	107.4	107.4
Effective Green, g (s)	26.5	26.5	26.5	6.5	6.5		3.6	98.3		12.7	107.4	107.4
Actuated g/C Ratio	0.16	0.16	0.16	0.04	0.04		0.02	0.58		0.07	0.63	0.63
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	262	265	246	69	63		37	2922		134	2235	1000
v/s Ratio Prot	c0.16	0.16		0.02	c0.04		0.02	0.35		c0.05	c0.67	
v/s Ratio Perm			0.01									0.17
v/c Ratio	1.00	1.00	0.06	0.62	1.02		0.81	0.61		0.66	1.06	0.27
Uniform Delay, d1	71.8	71.8	61.1	80.5	81.8		82.9	23.4		76.5	31.3	13.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.18	0.49		1.27	0.29	0.04
Incremental Delay, d2	55.6	55.3	0.1	16.2	119.4		71.6	0.9		6.9	35.3	0.4
Delay (s)	127.4	127.0	61.2	96.8	201.2		169.5	12.4		103.8	44.3	0.9
Level of Service	F	F	E	F	F		F	B		F	D	A
Approach Delay (s)		117.1			177.7			15.0			41.1	
Approach LOS		F			F			B			D	

Intersection Summary			
HCM 2000 Control Delay	45.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	99.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



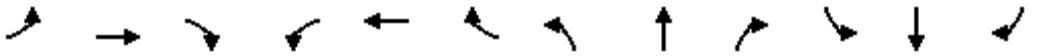
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	1	0	7	1	54	0	1883	10	44	962	8
Future Volume (vph)	5	1	0	7	1	54	0	1883	10	44	962	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.91		1.00	0.91	
Frt	1.00	1.00		1.00	0.85			1.00		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1805	1900		1805	1620			5082		1805	5080	
Flt Permitted	0.72	1.00		0.76	1.00			1.00		0.95	1.00	
Satd. Flow (perm)	1364	1900		1439	1620			5082		1805	5080	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	1	0	8	1	59	0	2047	11	48	1046	9
RTOR Reduction (vph)	0	0	0	0	57	0	0	0	0	0	0	0
Lane Group Flow (vph)	5	1	0	8	3	0	0	2058	0	48	1055	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	5.9	5.9		5.9	5.9			126.2		8.4	141.1	
Effective Green, g (s)	5.9	5.9		5.9	5.9			126.2		8.4	141.1	
Actuated g/C Ratio	0.04	0.04		0.04	0.04			0.79		0.05	0.88	
Clearance Time (s)	6.5	6.5		6.5	6.5			6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	50	70		53	59			4008		94	4479	
v/s Ratio Prot		0.00			0.00			c0.40		c0.03	0.21	
v/s Ratio Perm	0.00			c0.01								
v/c Ratio	0.10	0.01		0.15	0.05			0.51		0.51	0.24	
Uniform Delay, d1	74.5	74.2		74.6	74.4			6.0		73.8	1.4	
Progression Factor	1.00	1.00		1.00	1.00			0.19		1.35	0.06	
Incremental Delay, d2	0.9	0.1		1.3	0.4			0.4		4.2	0.1	
Delay (s)	75.4	74.3		75.9	74.7			1.5		104.0	0.2	
Level of Service	E	E		E	E			A		F	A	
Approach Delay (s)		75.2			74.9			1.5			4.7	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



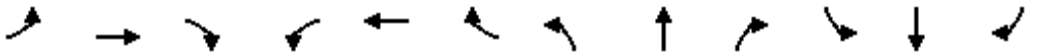
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	5	2	9	1	109	5	1550	12	109	2179	37
Future Volume (vph)	30	5	2	9	1	109	5	1550	12	109	2179	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1900	1615	1805	1617		1805	5080		1805	5074	
Flt Permitted	0.38	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	724	1900	1615	1434	1617		1805	5080		1805	5074	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	5	2	10	1	118	5	1685	13	118	2368	40
RTOR Reduction (vph)	0	0	2	0	111	0	0	0	0	0	1	0
Lane Group Flow (vph)	33	5	0	10	8	0	5	1698	0	118	2407	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	10.5	10.5	10.5	10.5	10.5		1.4	123.6		16.4	138.6	
Effective Green, g (s)	10.5	10.5	10.5	10.5	10.5		1.4	123.6		16.4	138.6	
Actuated g/C Ratio	0.06	0.06	0.06	0.06	0.06		0.01	0.73		0.10	0.82	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	44	117	99	88	99		14	3693		174	4136	
v/s Ratio Prot		0.00			0.01		0.00	0.33		c0.07	c0.47	
v/s Ratio Perm	c0.05		0.00	0.01								
v/c Ratio	0.75	0.04	0.00	0.11	0.08		0.36	0.46		0.68	0.58	
Uniform Delay, d1	78.5	75.0	74.8	75.4	75.2		83.9	9.5		74.2	5.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.12	0.56		1.19	0.03	
Incremental Delay, d2	51.4	0.2	0.0	0.6	0.4		13.4	0.4		1.0	0.1	
Delay (s)	129.8	75.2	74.8	75.9	75.6		107.6	5.7		89.0	0.2	
Level of Service	F	E	E	E	E		F	A		F	A	
Approach Delay (s)		120.3			75.6			6.0			4.4	
Approach LOS		F			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	7	7	24	5	31	15	1815	65	16	913	25
Future Volume (vph)	40	7	7	24	5	31	15	1815	65	16	913	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1823	1615		1824	1615	1805	3539	1615	1805	3539	1313
Flt Permitted		0.74	1.00		0.72	1.00	0.26	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)		1402	1615		1377	1615	491	3539	1615	152	3539	1313
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	8	8	26	5	34	16	1973	71	17	992	27
RTOR Reduction (vph)	0	0	8	0	0	32	0	0	14	0	0	5
Lane Group Flow (vph)	0	51	0	0	31	2	16	1973	57	17	992	22
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	23%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		9.9	9.9		9.9	9.9	126.0	126.0	126.0	128.1	128.1	128.1
Effective Green, g (s)		9.9	9.9		9.9	9.9	126.0	126.0	126.0	128.1	128.1	128.1
Actuated g/C Ratio		0.06	0.06		0.06	0.06	0.79	0.79	0.79	0.80	0.80	0.80
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		86	99		85	99	407	2786	1271	169	2833	1051
v/s Ratio Prot							0.00	c0.56		0.00	c0.28	
v/s Ratio Perm		c0.04	0.00		0.02	0.00	0.03		0.04	0.08		0.02
v/c Ratio		0.59	0.01		0.36	0.02	0.04	0.71	0.04	0.10	0.35	0.02
Uniform Delay, d1		73.1	70.4		72.0	70.5	4.2	8.2	3.7	13.4	4.4	3.2
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.08	0.13	1.00
Incremental Delay, d2		10.5	0.0		2.6	0.1	0.0	1.5	0.1	0.3	0.3	0.0
Delay (s)		83.6	70.4		74.7	70.6	4.2	9.7	3.8	1.4	0.9	3.3
Level of Service		F	E		E	E	A	A	A	A	A	A
Approach Delay (s)		81.8			72.5			9.5			1.0	
Approach LOS		F			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	24	41	89	17	17	40	1300	73	25	1822	40
Future Volume (vph)	87	24	41	89	17	17	40	1300	73	25	1822	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1828	1615		1823	1615	1805	3539	1615	1805	3539	1615
Flt Permitted		0.58	1.00		0.55	1.00	0.05	1.00	1.00	0.17	1.00	1.00
Satd. Flow (perm)		1109	1615		1045	1615	93	3539	1615	320	3539	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	95	26	45	97	18	18	43	1413	79	27	1980	43
RTOR Reduction (vph)	0	0	39	0	0	16	0	0	17	0	0	12
Lane Group Flow (vph)	0	121	6	0	115	2	43	1413	62	27	1980	31
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		22.1	22.1		22.1	22.1	125.3	125.3	125.3	123.2	123.2	123.2
Effective Green, g (s)		22.1	22.1		22.1	22.1	125.3	125.3	125.3	123.2	123.2	123.2
Actuated g/C Ratio		0.13	0.13		0.13	0.13	0.74	0.74	0.74	0.72	0.72	0.72
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		144	209		135	209	120	2608	1190	258	2564	1170
v/s Ratio Prot							0.01	c0.40		0.00	c0.56	
v/s Ratio Perm		0.11	0.00		c0.11	0.00	0.25		0.04	0.07		0.02
v/c Ratio		0.84	0.03		0.85	0.01	0.36	0.54	0.05	0.10	0.77	0.03
Uniform Delay, d1		72.2	64.6		72.3	64.4	21.5	9.8	6.1	11.5	14.6	6.6
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.05	0.08	0.02
Incremental Delay, d2		33.4	0.1		37.3	0.0	1.8	0.8	0.1	0.2	2.0	0.0
Delay (s)		105.6	64.6		109.7	64.5	23.3	10.6	6.2	0.7	3.2	0.2
Level of Service		F	E		F	E	C	B	A	A	A	A
Approach Delay (s)		94.5			103.6			10.7			3.1	
Approach LOS		F			F			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.3

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	3	3	113	119	7
Future Vol, veh/h	2	3	3	113	119	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	3	3	123	129	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	262	133	137	0	-	0
Stage 1	133	-	-	-	-	-
Stage 2	129	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	727	916	1447	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	897	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	726	916	1447	-	-	-
Mov Cap-2 Maneuver	726	-	-	-	-	-
Stage 1	891	-	-	-	-	-
Stage 2	897	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	9.4	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1447	-	829	-	-
HCM Lane V/C Ratio	0.002	-	0.007	-	-
HCM Control Delay (s)	7.5	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	3.3

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	110	16	21	195	97	96
Future Vol, veh/h	110	16	21	195	97	96
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	120	17	23	212	105	104

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	415	157	209	0	-	0
Stage 1	157	-	-	-	-	-
Stage 2	258	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	594	889	1362	-	-	-
Stage 1	871	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	584	889	1362	-	-	-
Mov Cap-2 Maneuver	584	-	-	-	-	-
Stage 1	856	-	-	-	-	-
Stage 2	785	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	12.6	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1362	-	611	-	-
HCM Lane V/C Ratio	0.017	-	0.224	-	-
HCM Control Delay (s)	7.7	-	12.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.9	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	101	7	2	13	20	103
Future Vol, veh/h	101	7	2	13	20	103
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	110	8	2	14	22	112

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	96	78	134	0	-	0
Stage 1	78	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	908	988	1463	-	-	-
Stage 1	950	-	-	-	-	-
Stage 2	1010	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	907	988	1463	-	-	-
Mov Cap-2 Maneuver	907	-	-	-	-	-
Stage 1	949	-	-	-	-	-
Stage 2	1010	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1463	-	912	-	-
HCM Lane V/C Ratio	0.001	-	0.129	-	-
HCM Control Delay (s)	7.5	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	5.5

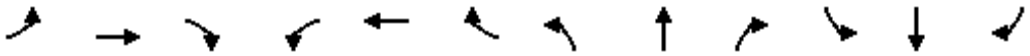
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	169	3	2	27	15	98
Future Vol, veh/h	169	3	2	27	15	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	184	3	2	29	16	107

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	103	70	123	0	-	0
Stage 1	70	-	-	-	-	-
Stage 2	33	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	900	998	1477	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	995	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	899	998	1477	-	-	-
Mov Cap-2 Maneuver	899	-	-	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	995	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0.5	0
HCM LOS	B		

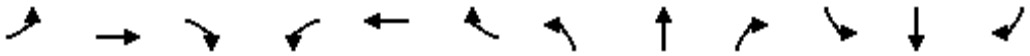
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1477	-	901	-	-
HCM Lane V/C Ratio	0.001	-	0.207	-	-
HCM Control Delay (s)	7.4	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.8	-	-

2031 Build Conditions		Eastbound			Westbound			Northbound			Southbound			INT.
		LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	
Alexandria Pike at Sunset Dr	AM	93.6 F	93.6 F	72.2 E	83.2 F	82.6 F	53.5 D	73.5 E	33.0 C	4.5 A	86.9 F	12.5 B		30.7 C
	PM	136.6 F	148.2 F	70.2 E	169.6 F	165.5 F	59.2 E	95.7 F	61.9 E	18.3 B	174.7 F	33.6 C		62.9 E
Alexandria Pike at Nunn Dr	AM	93.9 F	95.0 F	64.7 E	74.1 E	74.7 E		88.9 F	11.5 B		101.1 F	13.1 B	22.7 C	23.2 C
	PM	157.4 F	153.9 F	59.6 E	105.3 F	246.5 F		299.4 F	13.3 B		101.8 F	71.9 E	2.0 A	63.4 E
Alexandria Pike at Marshall Lane	AM	80.1 F	71.4 E	71.4 E	72.3 E	71.8 E		85.5 F	3.5 A		76.1 E	2.8 A		7.8 A
	PM	114.8 F	70.2 E	70.1 E	70.7 E	70.7 E		91.8 F	5.4 A		94.0 F	1.3 A		10.4 A
Alexandria Pike at Johns Hill Rd	AM	84.0 F		70.4 E	74.5 E		70.5 E	4.3 A	10.2 B	3.8 A	3.4 A	1.3 A	3.3 A	9.6 A
	PM	109.8 F		62.3 E	114.5 F		62.1 E	43.8 D	15.5 B	8.0 A	0.8 A	6.2 A	0.2 A	17.0 B
Wilson Road at Sunset Drive (North)	AM	No Movements			Free			7.6 A	Free		9.8 A			N/A
	PM							7.7 A			14.7 B			N/A
Wilson Road at Sunset Drive (South)	AM	10.3 B			No Movements			7.6 A	Free		Free			N/A
	PM	12.1 B						7.5 A						N/A
Wilson Road at Faren Drive	AM	7.5 A			6.7 A			No Movements			7.6 A			7.4 A
	PM	7.5 A			7.0 A						7.5 A			7.2 A
Nunn Dr at Site A Driveway	AM	Free			Free			No Movements			-		10.4 B	N/A
	PM										-		10.0 B	N/A
Nunn Dr at Site B Driveway	AM	Free			Free			-		9.2 A	No Movements			N/A
	PM							-		11.1 B				N/A
Nunn Dr at Clara Extension	AM	Free			7.7 A	Free		11.2 B			No Movements			N/A
	PM				9.4 A			17.7 C						N/A
Nunn Dr at Arena Driveway	AM	Free			Free			-		8.8 A	No Movements			N/A
	PM							-		10.4 B				N/A
Clara Dr at Marshall Lane	AM	No Movements			6.9 A			6.3 A			7.1 A			7.1 A
	PM				6.6 A			6.3 A			7.1 A			6.6 A
Marshall Lane at West Site B Drive	AM	Free			Free			No Movements			8.6 A			N/A
	PM										8.7 A			N/A
Marshall Lane at East Site B Drive	AM	7.1 A			6.7 A			- -			7.4 A			7.0 A
	PM	7.2 A			6.9 A			- -			7.5 A			7.1 A
Alexandria Pike at Site B Driveway	AM	-		14.2 B	No Movements			Free			Free			N/A
	PM	-		35.6 E										N/A



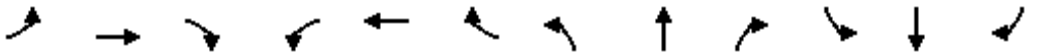
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	40	37	176	26	181	8	1823	324	148	1342	145
Future Volume (vph)	66	40	37	176	26	181	8	1823	324	148	1342	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1693	1534	1681	1715	1583	1805	3539	1583	1770	5020	
Flt Permitted	0.95	0.99	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1693	1534	1681	1715	1583	1805	3539	1583	1770	5020	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	43	40	191	28	197	9	1982	352	161	1459	158
RTOR Reduction (vph)	0	2	34	0	0	89	0	0	76	0	7	0
Lane Group Flow (vph)	59	58	2	109	110	108	9	1982	276	161	1610	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%	0%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	8.2	8.2	8.2	14.9	14.9	33.4	2.0	92.4	92.4	18.5	108.9	
Effective Green, g (s)	8.2	8.2	8.2	14.9	14.9	33.4	2.0	92.4	92.4	18.5	108.9	
Actuated g/C Ratio	0.05	0.05	0.05	0.09	0.09	0.21	0.01	0.58	0.58	0.12	0.68	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	87	86	78	156	159	394	22	2043	914	204	3416	
v/s Ratio Prot	c0.03	0.03		c0.06	0.06	0.03	0.00	c0.56		c0.09	0.32	
v/s Ratio Perm			0.00			0.04			0.17			
v/c Ratio	0.68	0.68	0.02	0.70	0.69	0.28	0.41	0.97	0.30	0.79	0.47	
Uniform Delay, d1	74.6	74.6	72.1	70.4	70.3	53.1	78.4	32.5	17.3	68.9	12.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.82	0.66	0.22	1.00	1.00	
Incremental Delay, d2	19.0	19.0	0.1	12.8	12.2	0.4	9.0	11.6	0.6	18.1	0.5	
Delay (s)	93.6	93.6	72.2	83.2	82.6	53.5	73.5	33.0	4.5	86.9	12.5	
Level of Service	F	F	E	F	F	D	E	C	A	F	B	
Approach Delay (s)		88.6			69.0			28.9			19.2	
Approach LOS		F			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	247	37	139	346	20	223	76	1803	313	173	2201	121
Future Volume (vph)	247	37	139	346	20	223	76	1803	313	173	2201	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Lane Util. Factor	0.95	0.91	0.95	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.91	
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1715	1650	1534	1681	1698	1583	1805	3539	1583	1770	5051	
Flt Permitted	0.95	0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1715	1650	1534	1681	1698	1583	1805	3539	1583	1770	5051	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	268	40	151	376	22	242	83	1960	340	188	2392	132
RTOR Reduction (vph)	0	2	123	0	0	84	0	0	77	0	3	0
Lane Group Flow (vph)	161	160	13	199	199	158	83	1960	263	188	2521	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	2%	0%	2%	2%	2%	2%	0%
Turn Type	Split	NA	Perm	Split	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	4	4		8	8	1	5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	16.5	16.5	16.5	18.5	18.5	35.0	10.5	92.5	92.5	16.5	98.5	
Effective Green, g (s)	16.5	16.5	16.5	18.5	18.5	35.0	10.5	92.5	92.5	16.5	98.5	
Actuated g/C Ratio	0.10	0.10	0.10	0.11	0.11	0.21	0.06	0.54	0.54	0.10	0.58	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	166	160	148	182	184	386	111	1925	861	171	2926	
v/s Ratio Prot	0.09	c0.10		c0.12	0.12	0.04	0.05	c0.55		c0.11	0.50	
v/s Ratio Perm			0.01			0.06			0.17			
v/c Ratio	0.97	1.00	0.09	1.09	1.08	0.41	0.75	1.02	0.31	1.10	0.86	
Uniform Delay, d1	76.5	76.8	69.9	75.8	75.8	58.5	78.4	38.8	21.2	76.8	30.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.06	0.84	1.00	1.00	
Incremental Delay, d2	60.1	71.5	0.3	93.9	89.7	0.7	15.5	20.9	0.6	97.9	3.6	
Delay (s)	136.6	148.2	70.2	169.6	165.5	59.2	95.7	61.9	18.3	174.7	33.6	
Level of Service	F	F	E	F	F	E	F	E	B	F	C	
Approach Delay (s)		121.0			126.6			56.8			43.4	
Approach LOS		F			F			E			D	

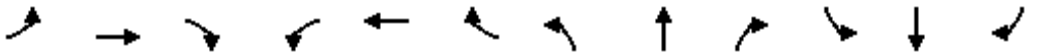
Intersection Summary			
HCM 2000 Control Delay	62.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	17	8	25	23	59	77	1863	58	51	1014	521
Future Volume (vph)	237	17	8	25	23	59	77	1863	58	51	1014	521
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1696	1583	1770	1662		1770	5062		1770	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1696	1583	1770	1662		1770	5062		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	258	18	9	27	25	64	84	2025	63	55	1102	566
RTOR Reduction (vph)	0	0	8	0	60	0	0	2	0	0	0	202
Lane Group Flow (vph)	137	139	1	27	29	0	84	2087	0	55	1102	364
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	16.2	16.2	16.2	8.8	8.8		12.9	100.0		9.0	96.1	96.1
Effective Green, g (s)	16.2	16.2	16.2	8.8	8.8		12.9	100.0		9.0	96.1	96.1
Actuated g/C Ratio	0.10	0.10	0.10	0.06	0.06		0.08	0.62		0.06	0.60	0.60
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	170	171	160	97	91		142	3163		99	2125	950
v/s Ratio Prot	0.08	c0.08		0.02	c0.02		c0.05	c0.41		0.03	0.31	
v/s Ratio Perm			0.00									0.23
v/c Ratio	0.81	0.81	0.01	0.28	0.31		0.59	0.66		0.56	0.52	0.38
Uniform Delay, d1	70.4	70.4	64.7	72.6	72.7		71.0	19.1		73.6	18.5	16.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.17	0.55		1.29	0.67	1.31
Incremental Delay, d2	23.5	24.6	0.0	1.6	2.0		5.7	1.0		5.9	0.8	1.0
Delay (s)	93.9	95.0	64.7	74.1	74.7		88.9	11.5		101.1	13.1	22.7
Level of Service	F	F	E	E	E		F	B		F	B	C
Approach Delay (s)		93.5			74.5			14.5			19.1	
Approach LOS		F			E			B			B	

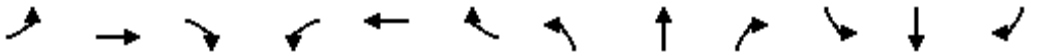
Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



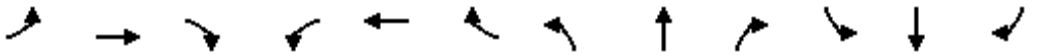
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	523	54	87	40	17	120	40	1604	77	81	2285	424
Future Volume (vph)	523	54	87	40	17	120	40	1604	77	81	2285	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1707	1583	1805	1650		1770	5055		1805	3539	1583
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1707	1583	1805	1650		1770	5055		1805	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	568	59	95	43	18	130	43	1743	84	88	2484	461
RTOR Reduction (vph)	0	0	79	0	80	0	0	3	0	0	0	82
Lane Group Flow (vph)	312	315	16	43	68	0	43	1824	0	88	2484	379
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	0%	0%	2%	2%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									6
Actuated Green, G (s)	28.5	28.5	28.5	6.1	6.1		3.5	96.7		12.7	105.9	105.9
Effective Green, g (s)	28.5	28.5	28.5	6.1	6.1		3.5	96.7		12.7	105.9	105.9
Actuated g/C Ratio	0.17	0.17	0.17	0.04	0.04		0.02	0.57		0.07	0.62	0.62
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	6.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	281	286	265	64	59		36	2875		134	2204	986
v/s Ratio Prot	c0.19	0.18		0.02	c0.04		0.02	0.36		c0.05	c0.70	
v/s Ratio Perm			0.01									0.24
v/c Ratio	1.11	1.10	0.06	0.67	1.15		1.19	0.63		0.66	1.13	0.38
Uniform Delay, d1	70.8	70.8	59.5	81.0	82.0		83.2	24.7		76.5	32.0	15.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.14	0.50		1.25	0.35	0.09
Incremental Delay, d2	86.6	83.1	0.1	24.3	164.6		204.9	1.0		5.9	60.7	0.6
Delay (s)	157.4	153.9	59.6	105.3	246.5		299.4	13.3		101.8	71.9	2.0
Level of Service	F	F	E	F	F		F	B		F	E	A
Approach Delay (s)		143.0			214.7			19.9			62.1	
Approach LOS		F			F			B			E	

Intersection Summary			
HCM 2000 Control Delay	63.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	1	21	7	1	54	30	1909	10	44	985	30
Future Volume (vph)	36	1	21	7	1	54	30	1909	10	44	985	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1805	1620		1770	5082		1805	5062	
Flt Permitted	0.72	1.00	1.00	0.76	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1337	1863	1583	1439	1620		1770	5082		1805	5062	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	1	23	8	1	59	33	2075	11	48	1071	33
RTOR Reduction (vph)	0	0	22	0	56	0	0	0	0	0	2	0
Lane Group Flow (vph)	39	1	1	8	4	0	33	2086	0	48	1102	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	0%	0%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	8.9	8.9	8.9	8.9	8.9		7.5	123.2		8.4	124.1	
Effective Green, g (s)	8.9	8.9	8.9	8.9	8.9		7.5	123.2		8.4	124.1	
Actuated g/C Ratio	0.06	0.06	0.06	0.06	0.06		0.05	0.77		0.05	0.78	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	74	103	88	80	90		82	3913		94	3926	
v/s Ratio Prot		0.00			0.00		0.02	c0.41		c0.03	0.22	
v/s Ratio Perm	c0.03		0.00	0.01								
v/c Ratio	0.53	0.01	0.01	0.10	0.05		0.40	0.53		0.51	0.28	
Uniform Delay, d1	73.5	71.4	71.4	71.7	71.5		74.1	7.2		73.8	5.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.12	0.43		0.98	0.51	
Incremental Delay, d2	6.6	0.0	0.1	0.5	0.2		2.4	0.4		4.1	0.2	
Delay (s)	80.1	71.4	71.5	72.3	71.8		85.5	3.5		76.1	2.8	
Level of Service	F	E	E	E	E		F	A		E	A	
Approach Delay (s)		76.8			71.8			4.7			5.8	
Approach LOS		E			E			A			A	

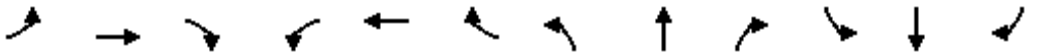
Intersection Summary			
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	5	21	9	1	109	56	1562	12	109	2224	71
Future Volume (vph)	62	5	21	9	1	109	56	1562	12	109	2224	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1586		1770	5079		1770	5062	
Flt Permitted	0.49	1.00	1.00	0.75	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	913	1863	1583	1405	1586		1770	5079		1770	5062	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	5	23	10	1	118	61	1698	13	118	2417	77
RTOR Reduction (vph)	0	0	21	0	107	0	0	0	0	0	2	0
Lane Group Flow (vph)	67	5	2	10	12	0	61	1711	0	118	2492	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)	15.8	15.8	15.8	15.8	15.8		10.8	118.1		16.6	123.9	
Effective Green, g (s)	15.8	15.8	15.8	15.8	15.8		10.8	118.1		16.6	123.9	
Actuated g/C Ratio	0.09	0.09	0.09	0.09	0.09		0.06	0.69		0.10	0.73	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	84	173	147	130	147		112	3528		172	3689	
v/s Ratio Prot		0.00			0.01		0.03	0.34		c0.07	c0.49	
v/s Ratio Perm	c0.07		0.00	0.01								
v/c Ratio	0.80	0.03	0.01	0.08	0.08		0.54	0.48		0.69	0.68	
Uniform Delay, d1	75.5	70.1	70.0	70.4	70.5		77.2	11.9		74.2	12.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.14	0.42		1.23	0.09	
Incremental Delay, d2	39.3	0.1	0.0	0.3	0.2		4.0	0.4		3.0	0.3	
Delay (s)	114.8	70.2	70.1	70.7	70.7		91.8	5.4		94.0	1.3	
Level of Service	F	E	E	E	E		F	A		F	A	
Approach Delay (s)		101.6			70.7			8.4			5.5	
Approach LOS		F			E			A			A	

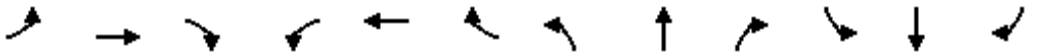
Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	7	7	24	5	31	15	1872	65	16	957	25
Future Volume (vph)	40	7	7	24	5	31	15	1872	65	16	957	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1787	1583		1824	1615	1770	3539	1615	1805	3539	1583
Flt Permitted		0.74	1.00		0.72	1.00	0.24	1.00	1.00	0.07	1.00	1.00
Satd. Flow (perm)		1374	1583		1377	1615	455	3539	1615	137	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	8	8	26	5	34	16	2035	71	17	1040	27
RTOR Reduction (vph)	0	0	8	0	0	32	0	0	14	0	0	5
Lane Group Flow (vph)	0	51	1	0	31	2	16	2035	57	17	1040	22
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	0%	0%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		10.0	10.0		10.0	10.0	126.1	126.1	126.1	128.0	128.0	128.0
Effective Green, g (s)		10.0	10.0		10.0	10.0	126.1	126.1	126.1	128.0	128.0	128.0
Actuated g/C Ratio		0.06	0.06		0.06	0.06	0.79	0.79	0.79	0.80	0.80	0.80
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		85	98		86	100	379	2789	1272	155	2831	1266
v/s Ratio Prot							0.00	c0.57		0.00	c0.29	
v/s Ratio Perm		c0.04	0.00		0.02	0.00	0.03		0.04	0.08		0.01
v/c Ratio		0.60	0.01		0.36	0.02	0.04	0.73	0.04	0.11	0.37	0.02
Uniform Delay, d1		73.1	70.3		71.9	70.4	4.3	8.5	3.7	15.1	4.5	3.2
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.21	0.21	1.00
Incremental Delay, d2		10.9	0.0		2.6	0.1	0.0	1.7	0.1	0.3	0.4	0.0
Delay (s)		84.0	70.4		74.5	70.5	4.3	10.2	3.8	3.4	1.3	3.3
Level of Service		F	E		E	E	A	B	A	A	A	A
Approach Delay (s)		82.1			72.4			9.9			1.4	
Approach LOS		F			E			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	27	46	99	18	18	45	1514	81	28	2097	45
Future Volume (vph)	97	27	46	99	18	18	45	1514	81	28	2097	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1793	1583		1787	1583	1770	3539	1583	1770	3539	1583
Flt Permitted		0.56	1.00		0.53	1.00	0.04	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)		1046	1583		988	1583	65	3539	1583	209	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	105	29	50	108	20	20	49	1646	88	30	2279	49
RTOR Reduction (vph)	0	0	43	0	0	17	0	0	19	0	0	14
Lane Group Flow (vph)	0	134	7	0	128	3	49	1646	69	30	2279	35
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)		24.9	24.9		24.9	24.9	119.4	119.4	119.4	120.2	120.2	120.2
Effective Green, g (s)		24.9	24.9		24.9	24.9	119.4	119.4	119.4	120.2	120.2	120.2
Actuated g/C Ratio		0.15	0.15		0.15	0.15	0.70	0.70	0.70	0.71	0.71	0.71
Clearance Time (s)		6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		153	231		144	231	99	2485	1111	204	2502	1119
v/s Ratio Prot							0.02	c0.47		0.01	c0.64	
v/s Ratio Perm		0.13	0.00		c0.13	0.00	0.33		0.04	0.10		0.02
v/c Ratio		0.88	0.03		0.89	0.01	0.49	0.66	0.06	0.15	0.91	0.03
Uniform Delay, d1		71.0	62.2		71.2	62.0	39.9	14.1	7.9	20.2	20.5	7.5
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	0.03	0.07	0.02
Incremental Delay, d2		38.8	0.1		43.3	0.0	3.9	1.4	0.1	0.2	4.8	0.0
Delay (s)		109.8	62.3		114.5	62.1	43.8	15.5	8.0	0.8	6.2	0.2
Level of Service		F	E		F	E	D	B	A	A	A	A
Approach Delay (s)		96.9			107.4			15.9			6.0	
Approach LOS		F			F			B			A	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	2	3	3	140	172	7
Future Vol, veh/h	2	3	3	140	172	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	3	3	152	187	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	349	191	195	0	-	0
Stage 1	191	-	-	-	-	-
Stage 2	158	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	652	856	1390	-	-	-
Stage 1	846	-	-	-	-	-
Stage 2	875	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	651	856	1390	-	-	-
Mov Cap-2 Maneuver	651	-	-	-	-	-
Stage 1	844	-	-	-	-	-
Stage 2	875	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	9.8	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1390	-	760	-	-
HCM Lane V/C Ratio	0.002	-	0.007	-	-
HCM Control Delay (s)	7.6	-	9.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	3

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	110	16	21	313	121	96
Future Vol, veh/h	110	16	21	313	121	96
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	120	17	23	340	132	104

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	570	184	236	0	-	0
Stage 1	184	-	-	-	-	-
Stage 2	386	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	486	864	1343	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	478	864	1343	-	-	-
Mov Cap-2 Maneuver	478	-	-	-	-	-
Stage 1	838	-	-	-	-	-
Stage 2	691	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	14.7	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1343	-	507	-	-
HCM Lane V/C Ratio	0.017	-	0.27	-	-
HCM Control Delay (s)	7.7	-	14.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.1	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	101	32	5	40	73	103
Future Vol, veh/h	101	32	5	40	73	103
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	110	35	5	43	79	112

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	188	135	191	0	-	0
Stage 1	135	-	-	-	-	-
Stage 2	53	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	806	919	1395	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	975	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	803	919	1395	-	-	-
Mov Cap-2 Maneuver	803	-	-	-	-	-
Stage 1	892	-	-	-	-	-
Stage 2	975	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1395	-	828	-	-
HCM Lane V/C Ratio	0.004	-	0.175	-	-
HCM Control Delay (s)	7.6	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	169	14	18	145	39	98
Future Vol, veh/h	169	14	18	145	39	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	184	15	20	158	42	107

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	294	96	149	0	-	0
Stage 1	96	-	-	-	-	-
Stage 2	198	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	701	966	1445	-	-	-
Stage 1	933	-	-	-	-	-
Stage 2	840	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	690	966	1445	-	-	-
Mov Cap-2 Maneuver	690	-	-	-	-	-
Stage 1	919	-	-	-	-	-
Stage 2	840	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1445	-	705	-	-
HCM Lane V/C Ratio	0.014	-	0.282	-	-
HCM Control Delay (s)	7.5	0	12.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.2	-	-

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	0	0	31	78	20
Future Vol, veh/h	15	0	0	31	78	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	16	0	0	34	85	22
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.5	6.7	7.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	80%
Vol Thru, %	0%	0%	0%
Vol Right, %	0%	100%	20%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	15	31	98
LT Vol	15	0	78
Through Vol	0	0	0
RT Vol	0	31	20
Lane Flow Rate	16	34	107
Geometry Grp	1	1	1
Degree of Util (X)	0.02	0.033	0.119
Departure Headway (Hd)	4.314	3.498	4.022
Convergence, Y/N	Yes	Yes	Yes
Cap	825	1014	893
Service Time	2.364	1.551	2.04
HCM Lane V/C Ratio	0.019	0.034	0.12
HCM Control Delay	7.5	6.7	7.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.1	0.4

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	0	0	133	35	18
Future Vol, veh/h	30	0	0	133	35	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	33	0	0	145	38	20
Number of Lanes	0	1	1	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	7.5	7	7.5
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	66%
Vol Thru, %	0%	0%	0%
Vol Right, %	0%	100%	34%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	30	133	53
LT Vol	30	0	35
Through Vol	0	0	0
RT Vol	0	133	18
Lane Flow Rate	33	145	58
Geometry Grp	1	1	1
Degree of Util (X)	0.039	0.138	0.066
Departure Headway (Hd)	4.311	3.425	4.134
Convergence, Y/N	Yes	Yes	Yes
Cap	828	1042	864
Service Time	2.349	1.463	2.17
HCM Lane V/C Ratio	0.04	0.139	0.067
HCM Control Delay	7.5	7	7.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.5	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	263	569	52	0	3
Future Vol, veh/h	0	263	569	52	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	0	286	618	57	0	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	338
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	-	0	664
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	664
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	664
HCM Lane V/C Ratio	-	-	-	0.005
HCM Control Delay (s)	-	-	-	10.4
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↱			↱
Traffic Vol, veh/h	0	664	458	23	0	15
Future Vol, veh/h	0	664	458	23	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	0	722	498	25	0	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	262
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	-	0	743
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	743
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	743
HCM Lane V/C Ratio	-	-	-	0.022
HCM Control Delay (s)	-	-	-	10
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	197	14	0	572	0	66
Future Vol, veh/h	197	14	0	572	0	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	214	15	0	622	0	72

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	115
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	922
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	922
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	922	-	-	-
HCM Lane V/C Ratio	0.078	-	-	-
HCM Control Delay (s)	9.2	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	600	23	0	473	0	64
Future Vol, veh/h	600	23	0	473	0	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	652	25	0	514	0	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	339
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	663
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	663
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	663	-	-	-
HCM Lane V/C Ratio	0.105	-	-	-
HCM Control Delay (s)	11.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	179	0	63	509	19	32
Future Vol, veh/h	179	0	63	509	19	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	195	0	68	553	21	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	195	0	608	98
Stage 1	-	-	-	-	195	-
Stage 2	-	-	-	-	413	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1390	-	432	945
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	642	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1390	-	411	945
Mov Cap-2 Maneuver	-	-	-	-	411	-
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	642	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	637	-	-	1390	-
HCM Lane V/C Ratio	0.087	-	-	0.049	-
HCM Control Delay (s)	11.2	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	597	0	111	362	17	26
Future Vol, veh/h	597	0	111	362	17	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	649	0	121	393	18	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	649	0	1088	325
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	439	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	947	-	213	677
Stage 1	-	-	-	-	487	-
Stage 2	-	-	-	-	623	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	947	-	186	677
Mov Cap-2 Maneuver	-	-	-	-	186	-
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	623	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	17.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	331	-	-	947	-
HCM Lane V/C Ratio	0.141	-	-	0.127	-
HCM Control Delay (s)	17.7	-	-	9.4	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.4	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	176	1	0	528	0	3
Future Vol, veh/h	176	1	0	528	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	191	1	0	574	0	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	96
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	948
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	948
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	948	-	-	-
HCM Lane V/C Ratio	0.003	-	-	-
HCM Control Delay (s)	8.8	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	585	5	0	379	0	12
Future Vol, veh/h	585	5	0	379	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	-	-	-	-	-	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	636	5	0	412	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	321
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	-	-	0	-	0	675
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	675
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	675	-	-	-
HCM Lane V/C Ratio	0.019	-	-	-
HCM Control Delay (s)	10.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	1	0	1	5	30
Future Vol, veh/h	2	1	0	1	5	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	1	0	1	5	33
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	6.9	6.3	7.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	67%	14%
Vol Thru, %	0%	0%	86%
Vol Right, %	100%	33%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	1	3	35
LT Vol	0	2	5
Through Vol	0	0	30
RT Vol	1	1	0
Lane Flow Rate	1	3	38
Geometry Grp	1	1	1
Degree of Util (X)	0.001	0.004	0.042
Departure Headway (Hd)	3.334	3.902	3.935
Convergence, Y/N	Yes	Yes	Yes
Cap	1077	919	915
Service Time	1.343	1.917	1.937
HCM Lane V/C Ratio	0.001	0.003	0.042
HCM Control Delay	6.3	6.9	7.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0	0.1

Intersection	
Intersection Delay, s/veh	6.6
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	6	0	6	3	0
Future Vol, veh/h	3	6	0	6	3	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	7	0	7	3	0
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	6.6	6.3	7.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	33%	100%
Vol Thru, %	0%	0%	0%
Vol Right, %	100%	67%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	6	9	3
LT Vol	0	3	3
Through Vol	0	0	0
RT Vol	6	6	0
Lane Flow Rate	7	10	3
Geometry Grp	1	1	1
Degree of Util (X)	0.006	0.01	0.004
Departure Headway (Hd)	3.32	3.584	4.123
Convergence, Y/N	Yes	Yes	Yes
Cap	1083	1004	873
Service Time	1.323	1.586	2.125
HCM Lane V/C Ratio	0.006	0.01	0.003
HCM Control Delay	6.3	6.6	7.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0	0	0

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	6	3	7	16	0
Future Vol, veh/h	0	6	3	7	16	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	7	3	8	17	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	11	0	-	0	14	7
Stage 1	-	-	-	-	7	-
Stage 2	-	-	-	-	7	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1621	-	-	-	1010	1081
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1021	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1621	-	-	-	1010	1081
Mov Cap-2 Maneuver	-	-	-	-	1010	-
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	1021	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1621	-	-	-	1010
HCM Lane V/C Ratio	-	-	-	-	0.017
HCM Control Delay (s)	0	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	9	9	11	16	0
Future Vol, veh/h	0	9	9	11	16	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	10	10	12	17	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	22	0	-	0	26	16
Stage 1	-	-	-	-	16	-
Stage 2	-	-	-	-	10	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1607	-	-	-	995	1069
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	1018	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1607	-	-	-	995	1069
Mov Cap-2 Maneuver	-	-	-	-	995	-
Stage 1	-	-	-	-	1012	-
Stage 2	-	-	-	-	1018	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1607	-	-	-	995
HCM Lane V/C Ratio	-	-	-	-	0.017
HCM Control Delay (s)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Intersection Delay, s/veh	7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	22	0	0	10	44	0	0	0	32	0	0
Future Vol, veh/h	0	22	0	0	10	44	0	0	0	32	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	24	0	0	11	48	0	0	0	35	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	6.7	0	7.4
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	100%
Vol Thru, %	100%	100%	19%	0%
Vol Right, %	0%	0%	81%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	22	54	32
LT Vol	0	0	0	32
Through Vol	0	22	10	0
RT Vol	0	0	44	0
Lane Flow Rate	0	24	59	35
Geometry Grp	1	1	1	1
Degree of Util (X)	0	0.027	0.057	0.041
Departure Headway (Hd)	4.069	4.005	3.49	4.242
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	894	1025	845
Service Time	2.099	2.029	1.514	2.263
HCM Lane V/C Ratio	0	0.027	0.058	0.041
HCM Control Delay	7.1	7.1	6.7	7.4
HCM Lane LOS	N	A	A	A
HCM 95th-tile Q	0	0.1	0.2	0.1

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	25	0	0	20	68	0	0	0	32	0	0
Future Vol, veh/h	0	25	0	0	20	68	0	0	0	32	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	27	0	0	22	74	0	0	0	35	0	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	6.9	0	7.5
HCM LOS	A	A	-	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	0%	0%	100%
Vol Thru, %	100%	100%	23%	0%
Vol Right, %	0%	0%	77%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	25	88	32
LT Vol	0	0	0	32
Through Vol	0	25	20	0
RT Vol	0	0	68	0
Lane Flow Rate	0	27	96	35
Geometry Grp	1	1	1	1
Degree of Util (X)	0	0.03	0.093	0.042
Departure Headway (Hd)	4.14	4.033	3.517	4.312
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	887	1017	830
Service Time	2.176	2.062	1.544	2.339
HCM Lane V/C Ratio	0	0.03	0.094	0.042
HCM Control Delay	7.2	7.2	6.9	7.5
HCM Lane LOS	N	A	A	A
HCM 95th-tile Q	0	0.1	0.3	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	16	0	1998	1025	22
Future Vol, veh/h	0	16	0	1998	1025	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	0	17	0	2172	1114	24

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	557	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.1	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	410	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	410	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	410	-	-
HCM Lane V/C Ratio	-	0.042	-	-
HCM Control Delay (s)	-	14.2	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

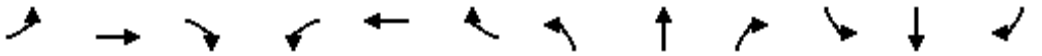
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	0	1721	2378	34
Future Vol, veh/h	0	15	0	1721	2378	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	125
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	2	2	2
Mvmt Flow	0	16	0	1871	2585	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1293	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.1	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	-	-
Pot Cap-1 Maneuver	0	134	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	134	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	35.6	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	134	-	-
HCM Lane V/C Ratio	-	0.122	-	-
HCM Control Delay (s)	-	35.6	-	-
HCM Lane LOS	-	E	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-

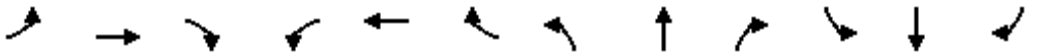
Nunn Drive, With Improvements		Eastbound			Westbound			Northbound			Southbound			INT.
		LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	LT	THRU	RT	
Alexandria Pike at Nunn Dr (2021 Build)	AM	89.0 F	90.5 F	64.9 E	74.1 E	74.6 E		87.0 F	11.3 B		98.7 F	13.6 B		21.9 C
	PM	110.1 F	107.7 F	58.1 E	103.5 F	128.1 F		116.3 F	14.1 B		101.8 F	9.0 A		28.2 C
Alexandria Pike at Nunn Dr (2031 No-Build)	AM	78.1 E	77.4 E	67.4 E	73.7 E	75.1 E		94.0 F	11.0 B		86.1 F	14.1 B		19.2 B
	PM	115.9 F	114.8 F	60.4 E	82.5 E	82.8 F		100.0 F	14.9 B		102.0 F	11.2 B		27.9 C
Alexandria Pike at Nunn Dr (2031 Build)	AM	93.9 F	95.0 F	64.7 E	74.2 E	74.7 E		89.0 F	11.5 B		100.7 F	13.9 B		22.2 C
	PM	110.7 F	108.6 F	56.3 E	81.9 E	98.0 F		102.1 F	17.9 B		100.3 F	45.0 D		46.5 D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	223	16	7	23	21	53	72	1673	52	46	914	476
Future Volume (vph)	223	16	7	23	21	53	72	1673	52	46	914	476
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	0.95	
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1696	1583	1770	1663		1770	5062		1770	4824	
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1696	1583	1770	1663		1770	5062		1770	4824	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	242	17	8	25	23	58	78	1818	57	50	993	517
RTOR Reduction (vph)	0	0	7	0	55	0	0	1	0	0	48	0
Lane Group Flow (vph)	128	131	1	25	26	0	78	1874	0	50	1462	0
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	15.9	15.9	15.9	8.6	8.6		12.4	100.8		8.7	97.1	
Effective Green, g (s)	15.9	15.9	15.9	8.6	8.6		12.4	100.8		8.7	97.1	
Actuated g/C Ratio	0.10	0.10	0.10	0.05	0.05		0.08	0.63		0.05	0.61	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	167	168	157	95	89		137	3189		96	2927	
v/s Ratio Prot	0.08	c0.08		0.01	c0.02		c0.04	c0.37		0.03	0.30	
v/s Ratio Perm			0.00									
v/c Ratio	0.77	0.78	0.01	0.26	0.29		0.57	0.59		0.52	0.50	
Uniform Delay, d1	70.2	70.3	64.9	72.7	72.8		71.2	17.4		73.6	17.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.15	0.61		1.28	0.73	
Incremental Delay, d2	18.7	20.1	0.0	1.5	1.8		4.9	0.7		4.7	0.6	
Delay (s)	89.0	90.5	64.9	74.1	74.6		87.0	11.3		98.7	13.6	
Level of Service	F	F	E	E	E		F	B		F	B	
Approach Delay (s)		89.0			74.5			14.3			16.3	
Approach LOS		F			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

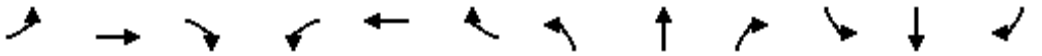
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	478	49	78	36	16	108	37	1441	69	73	2058	392
Future Volume (vph)	478	49	78	36	16	108	37	1441	69	73	2058	392
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.87		1.00	0.99		1.00	0.98	
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1700	1583	1770	1619		1770	5050		1770	4963	
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1700	1583	1770	1619		1770	5050		1770	4963	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	520	53	85	39	17	117	40	1566	75	79	2237	426
RTOR Reduction (vph)	0	0	70	0	92	0	0	3	0	0	16	0
Lane Group Flow (vph)	286	287	15	39	42	0	40	1638	0	79	2647	0
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	30.2	30.2	30.2	5.8	5.8		6.0	95.6		12.4	102.0	
Effective Green, g (s)	30.2	30.2	30.2	5.8	5.8		6.0	95.6		12.4	102.0	
Actuated g/C Ratio	0.18	0.18	0.18	0.03	0.03		0.04	0.56		0.07	0.60	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	298	302	281	60	55		62	2839		129	2977	
v/s Ratio Prot	c0.17	0.17		0.02	c0.03		0.02	0.32		c0.04	c0.53	
v/s Ratio Perm			0.01									
v/c Ratio	0.96	0.95	0.05	0.65	0.77		0.65	0.58		0.61	0.89	
Uniform Delay, d1	69.3	69.2	58.0	81.1	81.4		80.9	24.1		76.5	29.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.20	0.55		1.26	0.21	
Incremental Delay, d2	40.8	38.5	0.1	22.4	46.7		19.3	0.8		5.1	2.8	
Delay (s)	110.1	107.7	58.1	103.5	128.1		116.3	14.1		101.8	9.0	
Level of Service	F	F	E	F	F		F	B		F	A	
Approach Delay (s)		102.3			122.6			16.6			11.7	
Approach LOS		F			F			B			B	

Intersection Summary			
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

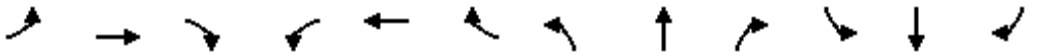
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	17	8	25	25	59	51	1831	58	51	963	432
Future Volume (vph)	136	17	8	25	25	59	51	1831	58	51	963	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	0.95	
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1703	1583	1770	1666		1770	5062		1770	4849	
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1703	1583	1770	1666		1770	5062		1770	4849	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	148	18	9	27	27	64	55	1990	63	55	1047	470
RTOR Reduction (vph)	0	0	8	0	57	0	0	1	0	0	38	0
Lane Group Flow (vph)	83	83	1	27	34	0	55	2052	0	55	1479	0
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	13.2	13.2	13.2	9.1	9.1		9.0	102.7		9.0	102.7	
Effective Green, g (s)	13.2	13.2	13.2	9.1	9.1		9.0	102.7		9.0	102.7	
Actuated g/C Ratio	0.08	0.08	0.08	0.06	0.06		0.06	0.64		0.06	0.64	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	138	140	130	100	94		99	3249		99	3112	
v/s Ratio Prot	c0.05	0.05		0.02	c0.02		c0.03	c0.41		0.03	0.30	
v/s Ratio Perm			0.00									
v/c Ratio	0.60	0.59	0.01	0.27	0.37		0.56	0.63		0.56	0.48	
Uniform Delay, d1	70.9	70.8	67.4	72.3	72.7		73.6	17.3		73.6	14.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.20	0.59		1.09	0.93	
Incremental Delay, d2	7.2	6.6	0.0	1.5	2.4		5.9	0.8		6.2	0.5	
Delay (s)	78.1	77.4	67.4	73.7	75.1		94.0	11.0		86.1	14.1	
Level of Service	E	E	E	E	E		F	B		F	B	
Approach Delay (s)		77.2			74.8			13.2			16.7	
Approach LOS		E			E			B			B	

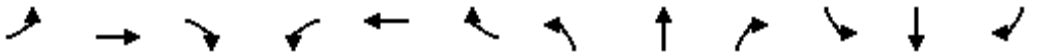
Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



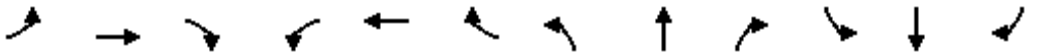
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	431	54	87	40	17	120	28	1572	77	81	2187	302
Future Volume (vph)	431	54	87	40	17	120	28	1572	77	81	2187	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.87		1.00	0.99		1.00	0.98	
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1703	1583	1805	1650		1770	5054		1805	4993	
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1703	1583	1805	1650		1770	5054		1805	4993	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	468	59	95	43	18	130	30	1709	84	88	2377	328
RTOR Reduction (vph)	0	0	80	0	109	0	0	3	0	0	10	0
Lane Group Flow (vph)	262	265	15	43	39	0	30	1790	0	88	2695	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	0%	0%	2%	2%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	27.5	27.5	27.5	8.5	8.5		5.9	94.4		13.6	102.1	
Effective Green, g (s)	27.5	27.5	27.5	8.5	8.5		5.9	94.4		13.6	102.1	
Actuated g/C Ratio	0.16	0.16	0.16	0.05	0.05		0.03	0.56		0.08	0.60	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	271	275	256	90	82		61	2806		144	2998	
v/s Ratio Prot	c0.16	0.16		c0.02	0.02		0.02	0.35		c0.05	c0.54	
v/s Ratio Perm			0.01									
v/c Ratio	0.97	0.96	0.06	0.48	0.47		0.49	0.64		0.61	0.90	
Uniform Delay, d1	70.8	70.8	60.3	78.6	78.6		80.6	26.0		75.6	29.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.17	0.53		1.29	0.27	
Incremental Delay, d2	45.1	44.0	0.1	4.0	4.3		5.6	1.0		4.6	3.1	
Delay (s)	115.9	114.8	60.4	82.5	82.8		100.0	14.9		102.0	11.2	
Level of Service	F	F	E	F	F		F	B		F	B	
Approach Delay (s)		106.9			82.8			16.3			14.0	
Approach LOS		F			F			B			B	

Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	237	17	8	25	23	59	77	1863	58	51	1014	521
Future Volume (vph)	237	17	8	25	23	59	77	1863	58	51	1014	521
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.89		1.00	1.00		1.00	0.95	
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1696	1583	1805	1695		1770	5065		1805	4826	
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1696	1583	1805	1695		1770	5065		1805	4826	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	258	18	9	27	25	64	84	2025	63	55	1102	566
RTOR Reduction (vph)	0	0	8	0	61	0	0	1	0	0	48	0
Lane Group Flow (vph)	137	139	1	27	28	0	84	2087	0	55	1620	0
Heavy Vehicles (%)	2%	2%	2%	0%	0%	0%	2%	2%	0%	0%	2%	2%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	16.2	16.2	16.2	8.7	8.7		12.9	100.1		9.0	96.2	
Effective Green, g (s)	16.2	16.2	16.2	8.7	8.7		12.9	100.1		9.0	96.2	
Actuated g/C Ratio	0.10	0.10	0.10	0.05	0.05		0.08	0.63		0.06	0.60	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	170	171	160	98	92		142	3168		101	2901	
v/s Ratio Prot	0.08	c0.08		0.01	c0.02		c0.05	c0.41		0.03	0.34	
v/s Ratio Perm			0.00									
v/c Ratio	0.81	0.81	0.01	0.28	0.31		0.59	0.66		0.54	0.56	
Uniform Delay, d1	70.4	70.4	64.7	72.6	72.8		71.0	19.1		73.5	19.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.17	0.55		1.30	0.69	
Incremental Delay, d2	23.5	24.6	0.0	1.5	1.9		5.7	1.0		5.3	0.7	
Delay (s)	93.9	95.0	64.7	74.2	74.7		89.0	11.5		100.7	13.9	
Level of Service	F	F	E	E	E		F	B		F	B	
Approach Delay (s)		93.5			74.6			14.5			16.6	
Approach LOS		F			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	523	54	87	40	17	120	40	1604	77	81	2285	424
Future Volume (vph)	523	54	87	40	17	120	40	1604	77	81	2285	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.87		1.00	0.99		1.00	0.98	
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1707	1583	1805	1650		1770	5055		1805	4966	
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1707	1583	1805	1650		1770	5055		1805	4966	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	568	59	95	43	18	130	43	1743	84	88	2484	461
RTOR Reduction (vph)	0	0	77	0	91	0	0	3	0	0	15	0
Lane Group Flow (vph)	312	315	18	43	57	0	43	1824	0	88	2930	0
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	2%	2%	0%	0%	2%	2%
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	32.5	32.5	32.5	8.8	8.8		7.3	89.5		13.2	95.4	
Effective Green, g (s)	32.5	32.5	32.5	8.8	8.8		7.3	89.5		13.2	95.4	
Actuated g/C Ratio	0.19	0.19	0.19	0.05	0.05		0.04	0.53		0.08	0.56	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5		6.5	6.5		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	321	326	302	93	85		76	2661		140	2786	
v/s Ratio Prot	c0.19	0.18		0.02	c0.03		0.02	0.36		c0.05	c0.59	
v/s Ratio Perm			0.01									
v/c Ratio	0.97	0.97	0.06	0.46	0.67		0.57	0.69		0.63	1.05	
Uniform Delay, d1	68.3	68.2	56.3	78.3	79.2		79.8	29.8		76.0	37.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.17	0.56		1.26	0.43	
Incremental Delay, d2	42.4	40.4	0.1	3.6	18.8		8.4	1.3		4.5	28.7	
Delay (s)	110.7	108.6	56.3	81.9	98.0		102.1	17.9		100.3	45.0	
Level of Service	F	F	E	F	F		F	B		F	D	
Approach Delay (s)		102.6			94.4			19.9			46.6	
Approach LOS		F			F			B			D	

Intersection Summary			
HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	26.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

SimTraffic—Estimated Queue Length

Intersection: 1: Alexandria Pike & Sunset Drive & I-275/I-471 Ramps

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	LTR	R	L	LT	R	L	T	T	R	L	T
Maximum Queue (ft)	117	189	29	365	316	273	324	568	554	499	455	492
Average Queue (ft)	92	172	10	244	206	139	164	408	408	64	296	472
95th Queue (ft)	124	207	33	360	320	225	358	644	642	210	528	485
Link Distance (ft)	104	104	104	500	500	500		541	541	541		458
Upstream Blk Time (%)	15	62						2	2		0	33
Queuing Penalty (veh)	16	64						13	16		0	0
Storage Bay Dist (ft)							300				430	
Storage Blk Time (%)								13			0	36
Queuing Penalty (veh)								10			0	63

Intersection: 1: Alexandria Pike & Sunset Drive & I-275/I-471 Ramps

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	515	492
Average Queue (ft)	479	467
95th Queue (ft)	501	514
Link Distance (ft)	458	458
Upstream Blk Time (%)	48	30
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: Alexandria Pike & Sunset Dr (North Intersection)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	LTR	R	L	LT	R	L	T	T	R	L	T
Maximum Queue (ft)	123	208	31	373	359	240	324	569	561	86	455	473
Average Queue (ft)	108	204	12	231	212	118	140	382	401	32	335	466
95th Queue (ft)	150	215	37	341	319	191	343	580	607	67	563	496
Link Distance (ft)	123	123	123	500	500	500		546	546	546		458
Upstream Blk Time (%)	1	84						1	1		0	32
Queuing Penalty (veh)	1	118						4	6		0	0
Storage Bay Dist (ft)							300				430	
Storage Blk Time (%)								10			13	25
Queuing Penalty (veh)								7			90	44

Intersection: 1: Alexandria Pike & Sunset Dr (North Intersection)

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	473	510
Average Queue (ft)	468	463
95th Queue (ft)	503	536
Link Distance (ft)	458	458
Upstream Blk Time (%)	38	25
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: Alexandria Pike & Sunset Dr (North Intersection)

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	LTR	R	L	LT	R	L	T	T	R	L	T
Maximum Queue (ft)	138	208	135	422	390	263	325	566	569	450	454	492
Average Queue (ft)	111	203	66	252	223	148	170	475	483	53	368	462
95th Queue (ft)	162	222	137	380	341	237	350	674	673	185	594	506
Link Distance (ft)	123	123	123	500	500	500		546	546	546		458
Upstream Blk Time (%)	21	79	2					2	3		10	34
Queuing Penalty (veh)	29	111	3					17	22		0	0
Storage Bay Dist (ft)							300				430	
Storage Blk Time (%)								17			25	25
Queuing Penalty (veh)								13			179	44

Intersection: 1: Alexandria Pike & Sunset Dr (North Intersection)

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	497	492
Average Queue (ft)	446	387
95th Queue (ft)	573	639
Link Distance (ft)	458	458
Upstream Blk Time (%)	27	26
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Alexandria Pike & Nunn Drive

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	TR	L	T	T	TR	L	T	T
Maximum Queue (ft)	570	611	95	125	277	174	473	488	494	224	568	552
Average Queue (ft)	234	272	33	34	122	35	413	419	366	101	477	471
95th Queue (ft)	421	463	69	71	262	119	525	529	590	192	663	702
Link Distance (ft)		1273	1273		262		441	441	441		541	541
Upstream Blk Time (%)					13		36	41	26		11	11
Queuing Penalty (veh)					0		205	230	143		88	88
Storage Bay Dist (ft)	600			100		150				200		
Storage Blk Time (%)		0			27	2	56			4	44	
Queuing Penalty (veh)		0			11	10	16			48	35	

Intersection: 2: Alexandria Pike & Nunn Drive

Movement	SB
Directions Served	R
Maximum Queue (ft)	136
Average Queue (ft)	40
95th Queue (ft)	91
Link Distance (ft)	541
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Alexandria Pike & Nunn Dr

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	TR	L	T	T	TR	L	T	T
Maximum Queue (ft)	347	371	103	125	277	157	249	231	230	225	554	562
Average Queue (ft)	342	343	33	56	269	119	185	140	70	158	200	199
95th Queue (ft)	349	354	86	136	286	177	318	306	211	240	545	556
Link Distance (ft)	276	276	276		262		158	158	158		546	546
Upstream Blk Time (%)	91	94			98	28	55	16	4		1	0
Queuing Penalty (veh)	201	208			0	0	311	94	25		6	3
Storage Bay Dist (ft)				100		150				200		
Storage Blk Time (%)				9	98	34	54			16	13	
Queuing Penalty (veh)				13	39	174	22			186	11	

Intersection: 2: Alexandria Pike & Nunn Dr

Movement	SB
Directions Served	R
Maximum Queue (ft)	100
Average Queue (ft)	17
95th Queue (ft)	63
Link Distance (ft)	546
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: Alexandria Pike & Nunn Dr

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	TR	L	T	T	TR	L	T	T
Maximum Queue (ft)	347	366	54	125	277	157	267	254	230	225	559	568
Average Queue (ft)	253	311	31	57	134	69	223	229	137	108	450	470
95th Queue (ft)	331	385	53	121	230	161	267	259	267	191	588	598
Link Distance (ft)	276	276	276		262		158	158	158		546	546
Upstream Blk Time (%)	6	26			2	0	45	53	15		1	1
Queuing Penalty (veh)	14	60			0	0	257	303	88		6	11
Storage Bay Dist (ft)				100		150				200		
Storage Blk Time (%)				0	36	0	47			2	41	
Queuing Penalty (veh)				1	14	1	19			15	33	

Intersection: 2: Alexandria Pike & Nunn Dr

Movement	SB
Directions Served	TR
Maximum Queue (ft)	583
Average Queue (ft)	444
95th Queue (ft)	605
Link Distance (ft)	546
Upstream Blk Time (%)	0
Queuing Penalty (veh)	4
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Supplemental Analysis—Fall Semester Conditions

THE KLEINGERS GROUP

CINCINNATI
COLUMBUS
DAYTON
LOUISVILLE

6305 Centre Park Drive
West Chester, OH 45069
phone 513.779.7851
fax 513.779.7852
www.kleingers.com

TO: Project File

FROM: Mark W. Nolt, PE, PTOE

DATE: June 14, 2018

RE: MOU – NKU Mixed Use Development – Supplemental Analysis

The traffic counts for this study were collected in February and March -- and therefore correlate to a Winter Semester class enrollment period. According to NKU representatives, enrollment for Fall semester is approximately 10% higher and represent a more typical condition. As a supplement to this study, the existing traffic volumes as counted were adjusted to reflect Fall Semester conditions. These conditions were analyzed for the PM Peak Hour, 2031 Build Conditions, to determine if the proposed site access plan would be adequate for these conditions.

As a starting point towards making this adjustment, an assessment was made to determine the amount of traffic (as counted) that is oriented to destinations to/from NKU. The assumed origins/destinations of traffic within the study area was estimated, based on a traffic study of University Circle (University Drive at Louie B Nunn Drive). The calculations used to develop NKU oriented traffic are provided in Worksheet A, next page.

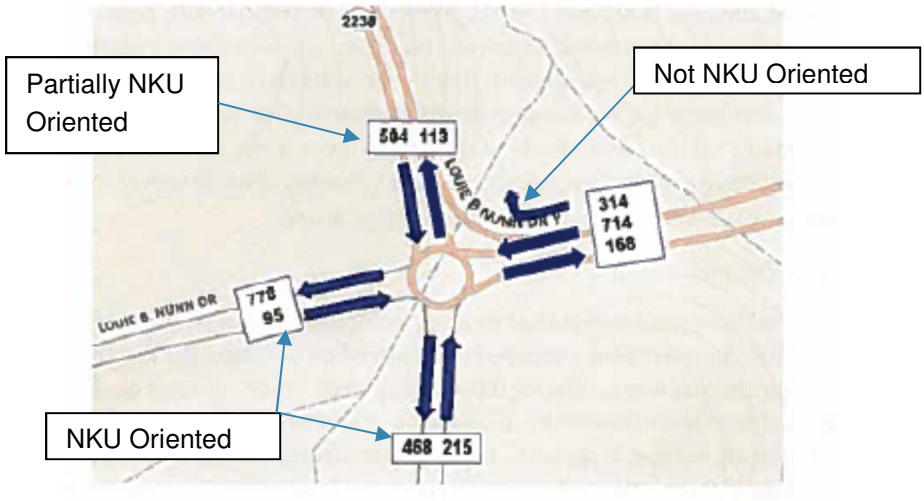
The traffic volumes oriented towards NKU were increased by 10%, to estimate total traffic. A Synchro model was developed to quantify Level of Service (LOS) and Delay for the Fall Semester condition. The results are shown in the Table below.

LOS Comparison – Winter VS Fall Semester

2031 PM - Build		Winter		Fall	
		LOS	Delay	LOS	Delay
Alexandria Pike at Sunset Dr	PM	E	62.9	E	64.2
Alexandria Pike at Nunn Dr	PM	D	46.5	D	46.9
Alexandria Pike at Marshall Lane	PM	B	10.4	B	10.4
Alexandria Pike at Johns Hill Rd	PM	B	17.0	B	18.6
Nunn Dr at Site A Driveway	PM	B	10.0	B	10.1
Nunn Dr at Site B Driveway	PM	B	11.1	B	11.3
Nunn Dr at Clara Extension	PM	C	17.7	C	18.9
Nunn Dr at Arena Driveway	PM	B	10.4	B	10.6
Alexandria Pike at Site B Driveway	PM	E	35.6	E	35.8

The results clearly show that the intersections within the study area would not be meaningfully impacted by the increased campus traffic associated with Fall Semester conditions.

Worksheet A – NKU Origins/Destinations



AM Peak Hour Traffic Tube Counts provided by Neel-Schaffer Traffic Study in February 2015

	Southbound						Westbound						Northbound						Eastbound						
Time Period	R	T	L	U	I	O	R	T	L	U	I	O	R	T	L	U	I	O	R	T	L	U	I	O	Total
One Hour Peak																									
8:00 AM - 9:00 AM	179	180	32	1	392	88	244	388	165	2	555	131	67	64	36	0	167	364	19	30	23	2	74	605	1188
Approach %					33%	7%					47%	11%					14%	31%					6%	51%	

WB NKU Traffic - AM
% of Westbound Traffic Turning Right = 244/799 = 30.5% - non-NKU traffic
WB 2018 AM peak hour traffic, as counted = 438
WB 2018 AM non-NKU traffic = 438 x 30.5% = 133 vehicles
WB 2018 AM traffic oriented to NKU = 438 - 133 = **305 vehicles**

EB NKU Traffic - AM
Southbound AM peak hour left-turn movement is 32 vehicles **-** non-NKU traffic.
Therefore, EB 2018 AM traffic oriented to NKU = (140 vehicles – 32 vehicles) = **108 vehicles**

WB NKU Traffic - PM
Southbound AM peak hour left-turn movement is 32 vehicles **-** non-NKU traffic.
Assume reciprocal movement for the PM Peak, so 32 vehicles westbound turning right.
Therefore, WB 2018 PM traffic oriented to NKU = (300-32) = **268 vehicles**

EB NKU Traffic - PM
Westbound AM peak hour right-turn movement is 133 vehicles **-** non-NKU traffic.
Assume reciprocal movement for the PM Peak, so 133 vehicles southbound turning left.
Therefore, EB 2018 PM traffic oriented to NKU = (495-133) = **362 vehicles**

The NKU oriented traffic volumes were assigned to roadway, based on an assumed distribution. (Note that the assumed distribution was developed based on the approximate distribution of existing travel patterns.)

The traffic volumes in those figures were increased by 10%, and added back to the non-NKU oriented traffic to estimate existing Fall Semester traffic volumes.

Site Improvement Concept

LOUIE B NUNN DR.

R4-7
(36"x48")

75'

50'

R3-H3ca
(48"x30")

ONLY

ONLY

ONLY

STOP

R1-1
(30"x30")

DO NOT
BLOCK
INTERSECTION

R10-7
(24"x30")

EX. DEPRESSION TO BE
MODIFIED FOR
DETENTION POND

R3-2
(24"x24")

R3-2
(24"x24")

R3-2
(24"x24")

50'

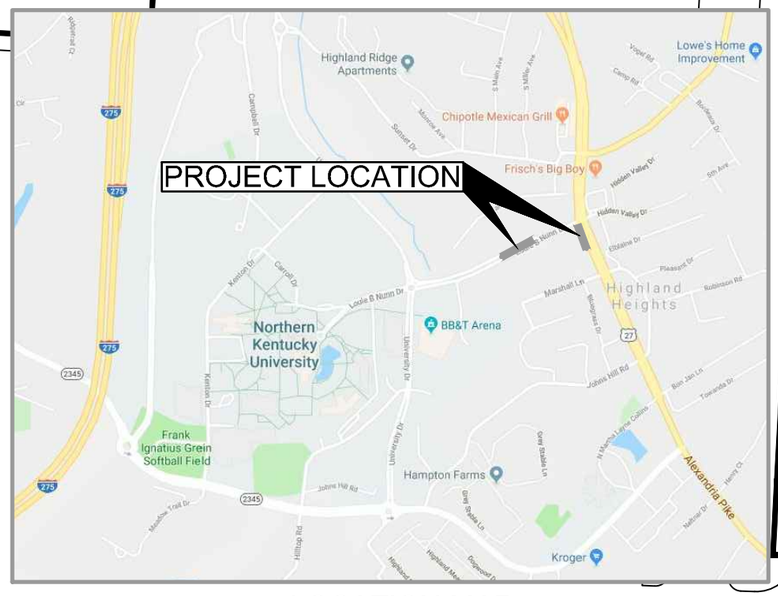
75'

U.S. 27

STOP

R1-1
(30"x30")

MARSHALL LANE



LOCATION MAP

THE KLEINGERS GROUP
CIVIL ENGINEERING
SURVEYING
LANDSCAPE ARCHITECTURE
www.kleingers.com
6305 Centre Park Dr.
West Chester, OH 45069
513.779.7851

HORIZONTAL SCALE IN FEET
0 30 60 120

CALCULATED GAU
CHECKED MWN

NKU MIXED USE DEVELOPMENT
EXHIBIT 1B