

TRAFFIC IMPACT STUDY

Forest Hills Commercial Development

Haughton, Louisiana

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LIST OF ATTACHMENTS

<u>Attachments</u>	<u>Description</u>
A	Proposed Site Plan
B	Traffic Data
C	Sight Distance Evaluation
D	Trip Generation Tables
E	Crash Data & Tier 1 Matrix
F	Intersection Capacity Analyses
G	Signal Warrant Analysis
H	Levels of Service Explanation

1.0 INTRODUCTION

1.1 Overview

A Traffic Impact Study (TIS) has been completed for the proposed Forest Hills Commercial development which is to be located on the southwest corner of the intersection of US 80 at Forest Boulevard, in Haughton, LA. The development will consist of approximately 93,800 Sq. Ft. of Office Park, a 3,000 Sq. Ft. Fast Food Restaurant, and a 32,800 Sq. Ft. Mini Warehouse. A site plan is provided in **Attachment A**. The development is proposed to be a single-phased build out.

The purpose of this study is to evaluate the impact during AM and PM peak hours of the proposed development at the following intersections:

- US 80 at Tall Timbers Boulevard
- US 80 at the Western Crossover (First crossover to the west of Forest Hills Boulevard)
- US 80 at Site Driveway #1 (proposed)
- US 80 at Forest Hills Boulevard
- US 80 at Liberty Drive
- US 80 at Wafer Road
- Forest Hills Boulevard at Site Driveway #2 (proposed northern driveway)
- Forest Hills Boulevard at Site Driveway #3 (proposed southern driveway)

The scope of this TIS was to project what impact(s) the proposed new site generated trips will have on the above study intersections. In addition, this TIS will recommend geometric and/or operational improvements (if needed) in order to mitigate any negative impacts of the proposed development to the intersections and roadways within the study area.

1.2 Study Objectives

This traffic study was accomplished through the completion of the following objectives:

- Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) evaluation was performed in accordance with the AASHTO Green Book along US 80 and at the proposed Site Driveway by LADOTD District 04 personnel;
- 7 -day counts were collected by Quality counts, LLC on US 80 and Forest Hills Blvd;
- Bidirectional 48-Hour and Intersection turning moving counts (TMC) were collected by Quality Counts, LLC for the study intersections;
- Estimation of the AM and PM peak hour site generated new trips;
- Distribution of new site trips through the existing roadway network for the AM and PM peak periods, based on existing traffic counts and engineering judgement;
- Assignment of the new AM and PM peak site generated trips to the study intersections;
- Performance of peak hour right and left turn lane warrants analyses, based on future post-development conditions at the site access driveways;
- Performance of peak hour capacity analyses at the study intersections;
- Review of the median opening of US 80 at Forest Hills Boulevard to determine if improvements are necessary to improve safety and mobility. This will include capacity

- analysis, signal warrants analysis, and crash history review of US 80 adjacent to the site, including the intersection;
- Determination of improvements that may be warranted, if any, to the proposed study area roadways/intersections, in order to mitigate any negative impacts that may result from the additional traffic from the proposed development.

The sources for the information used in this report include: The Institute of Transportation Engineers' *Trip Generation Manual*, 11th Edition; the 7th Edition of the *Highway Capacity Manual*; the American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets*, 7th Edition ("Green Book") and field reconnaissance and other information collected by Raley and Associates, Inc., Gresham Smith and Quality Counts, LLC.

2.0 EXISTING SITE CONDITIONS

2.1 Site Location & Access

The proposed development is to be located on the southwest corner of the intersection of US 80 at Forest Hills Boulevard in Haughton, LA. Three new proposed site driveways are proposed - one on US 80 and two on Forest Hills Boulevard. The proposed driveway on US 80 will be approximately 470' west of Forest Hills Boulevard and 80' east of Southern Methodist Church. The first proposed driveway on Forest Hills Boulevard is 275' south of US 80 and the second proposed driveway is 1,035' south of US 80. See **Figure 1** for the site location map and see **Attachment A** for the site plan.

2.2 Traffic Data Collection

Seven (7) day counts in front of the proposed development on eastbound and westbound US 80 as well as bidirectional counts on Forest Hills Boulevard were collected by Quality Counts, LLC from Monday, May 1, 2023 through Sunday, May 7, 2023. These counts were used to determine the peak periods in which the turning movement counts (TMCs) at all existing study intersections were to be collected. The raw counts and peak period determination chart are provided in **Attachment B**.

The peak periods determined were:

- 6:45 – 8:45 AM
- 4:15 – 6:15 PM

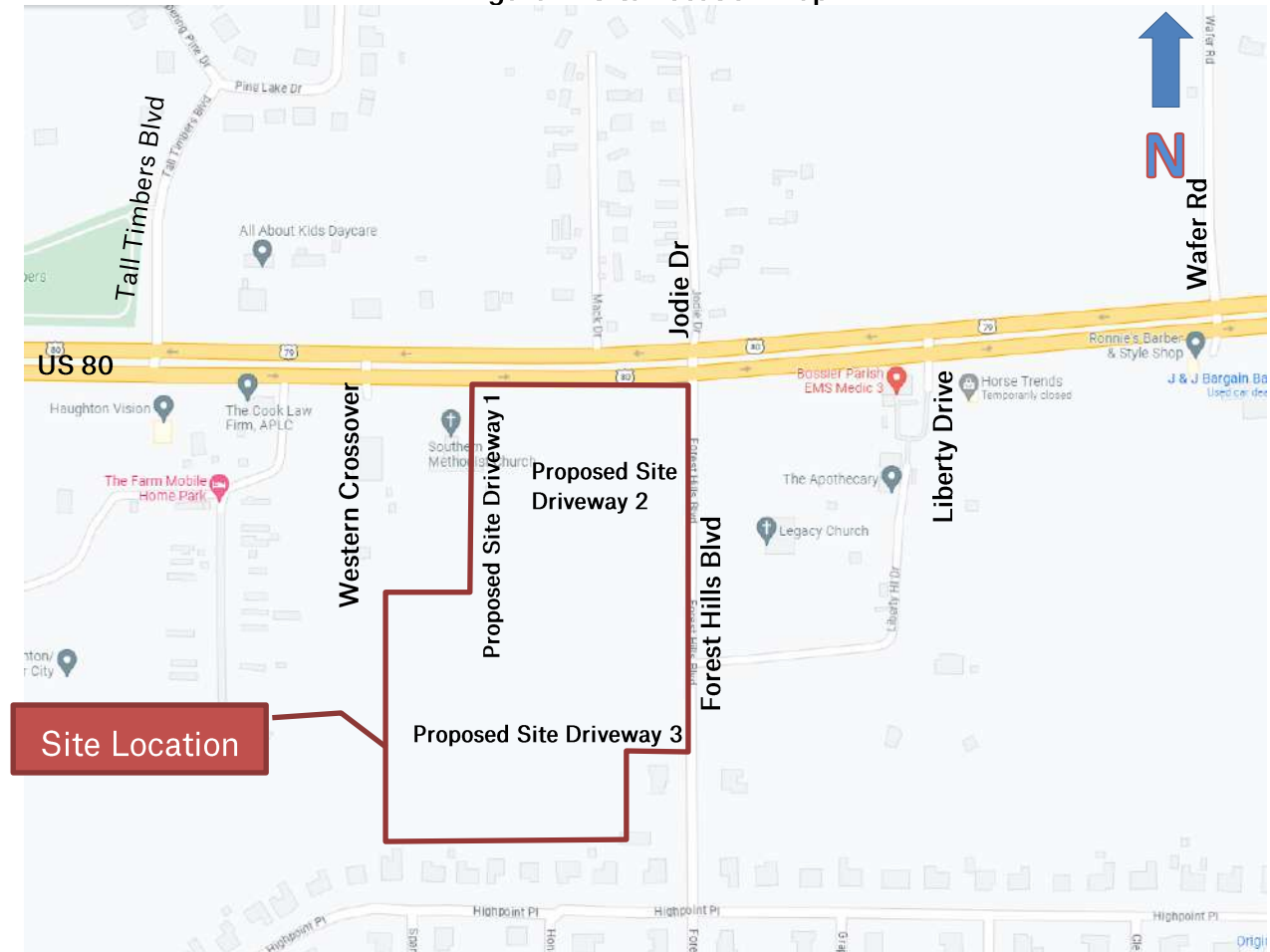
The peak periods TMCs were used to determine the analysis peak hour at the study intersections. The existing peak hour turning movement volume figures are provided in the **Attachment B**.

2.3 Study Area Roadways

US 80 is a rural, four lane, divided highway in the study area vicinity with a posted speed limit of 55 mph. The first driveway for the proposed development will be approximately 470' west of Forest Hills Boulevard and 80' east of Southern Methodist Church on the south side of US 80. Forest Hills Boulevard is a two lane, undivided highway with a posted speed limit of 25 mph. The second driveway for the proposed development on Forest Hills Boulevard is 275' south of US 80 and the

third driveway for the proposed development is 1,035' south of US 80. The second and third driveway are both on the west side of Forest Hills Boulevard.

Figure 1: Site Location Map



3.0 FUTURE TRAFFIC CONDITIONS

3.1 Site Traffic Generation

Traffic generated by the proposed development was determined using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. The generated trips include trips into and out of a project site. The trips are generated by relating the number of trips entering and exiting the site to the type of land use and size of the proposed project. The additional traffic generated was determined using various land uses identified.

The development will be constructed in one phase. The development will consist of approximately 93,800 Sq Ft of Office Park, 3,000 Sq Ft Fast Food Restaurant and a 32,800 Sq Ft Mini Warehouse. When generating the usable space of the office park and storage facility developments, it was assumed that 20% of the total acreage would be used for the development. The site plan shown in **Attachment A** shows 8 lots. Lots 1-4 will have interconnectivity using the proposed driveway along US 80 and the northern proposed driveway on Forest Hills Boulevard. Lots 5-8 will have connectivity and can only be accessed via the southern proposed driveway on Forest Hills Boulevard.

An adjustment was made for pass-by trips based on the percentages documented in the ITE Trip Generation Handbook, 11th Edition. A pass-by trip is generally defined as a trip attracted from the existing traffic passing the site in route to a primary destination (i.e. home or work). These trips are not new trips to the adjacent roadway but are assigned at the project driveway. Pass-by percentages were used in this study for the fast food land use and are based on the average percentages for the AM & PM peak hours.

A summary of the gross trip generation, net trip generation with the appropriate pass-by trip reductions for the trips generated by the development is contained in **Table 1**. ITE trip generation calculations are provided in **Attachment D**.

3.2 Site Traffic Distribution

The generated traffic volumes were distributed to and from the proposed development based on existing traffic patterns. The trips estimated from the trip generation are then assigned to the roadway network based on the anticipated travel patterns. The distribution and assignment of the proposed project trips for this analysis were based on the existing travel patterns in the vicinity of the site. The AM and PM peak distribution of the generated volumes for a Full Build is provided on the volume figures in **Attachment B**.

For the distribution of the new trips entering and exiting the site, existing traffic patterns and lot locations were used. Since lots 5-8 are only accessible from Site Driveway 3 along Forest Hills Boulevard, 100% of the new trips generated from those lots entered and exited from that driveway. New trips generated from lots 1-4 had the choice of entering and exiting from either Site Driveway 1 or Site Driveway 2 and were split based on existing traffic patterns. It was determined that 100% of the new trips generated from lots 1-4 traveling to the site from the westbound direction of US 80 would take a left at the intersection of US 80 and Forest Hills Boulevard to enter the site at Site

Driveway #2. For Site Driveway #1, 100% of the new trips generated from lots 1-4 traveling to the site from the eastbound direction of US 80 would enter the site via a right turn off of US 80 at that driveway. When exiting the site, all of the new trips generated from lots 1-4 wanting to travel westbound on US 80 were routed to use Site Driveway #2. For the remaining exiting trips generated by lots 1-4, a 70-30 split was used with 70% of the new trips exiting at Site Driveway #1 and 30% exiting at Site Driveway #2.

3.3 Future Traffic Volumes

By adding the generated traffic from the proposed development to the existing traffic volumes, existing plus generated turning volumes were estimated for each study intersection during the AM, and PM peak hours. These volumes are provided on the volume figures in **Attachment B**.

Table 1: Peak Hour Trip Generation Estimates

Lot Number	Land Use Code	Description	Expected Units	AM In	AM Out	PM In	PM Out
3	934	Fast Food with Drive-thru	3,000 Sq. Ft.	68	66	52	47
1	151	Mini Warehouse	32,820 Sq. Ft.	2	1	2	3
2 , 4	750	Office Park	26,100 Sq. Ft.	195	24	8	46
5 - 8	750	Office Park	67,700 Sq. Ft.	229	29	15	91
Total				494	120	77	187
3	934	Fast Food with Drive-thru	External Trips	68	66	52	47
			Pass-by Trips (50% AM, 55% PM)	34	33	29	26
			New External Trips (50% AM, 45% PM)	34	33	23	21
			Total Trips	68	66	52	47
1	151	Mini Warehouse	External Trips	2	1	2	3
			Total Trips	2	1	2	3
2 , 4	750	Office Park	External Trips	195	24	8	46
			Total Trips	195	24	8	46
5 - 8	750	Office Park	External Trips	229	29	15	91
			Total Trips	229	29	15	91
Total Pass-By Trips				34	33	29	26
Total Net New Trips				460	87	48	161
Total Trips				494	120	77	187

4.0 TRAFFIC ANALYSES

4.1 Sight Distance Evaluation

Based on the existing topography and the vertical curves along US 80, Intersection Sight Distance (ISD) and Stopping Sight Distance (SSD) evaluations were performed for the proposed driveway at the new site access. The 85th percentile speed on US 80 in the eastbound direction was measured to be 54 mph.

The SSD was evaluated based on the method described in the AASHTO Green Book in Chapter 3, Section 2. A minimum SSD of 495 feet is required for the 85th percentile speed limit of 55 mph on US 80.

For the ISD evaluation, the method applied is described in the AASHTO Green Book in Chapter 9, Section 5. The critical case was determined to be Case B2, the right turn from the minor road (Section 9.5.3.2.2). A minimum ISD of 530 feet is required for the 85th percentile speed limit of 55 mph on US 80.

Measurements were collected in the field at the intersection of US 80 at Proposed site driveway #1 and are shown in **Table 2**. Based on the field measurements, the SSD and ISD were determined to be sufficient at the proposed driveway. The available field measured SSD and ISD also meets the requirements for a 60 mph speed of 570' and 575', respectively. This information can be found in **Attachment C** in the appendix.

Table 2: Sight Distance Evaluation Summary

Intersection	Scenario	85 th Percentile Speed (mph)	Required Sight Distance (ft)	Measured Sight Distance (ft)
Proposed Driveway	Eastbound SSD	55	495	589
	ISD looking west – Case B1	55	530	630

4.2 Intersection Alternative Analysis for US 80 at Forest Hills Boulevard

For the purposes of this study, the intersection of US 80 at Forest Hills Boulevard was evaluated from a safety and capacity standpoint using the existing geometry and volumes as well as the safety data from LADOTD's crash database for three years (2019 – 2021) along a 0.7 mile stretch of US 80 within the project vicinity. A total of forty-three (43) crashes occurred within the study area as shown in the collision diagram in **Attachment E**. Specifically, at the intersection of US 80 at Forest Hills Boulevard, thirteen (13) crashes occurred over the three year period. These crashes included one rear end, three non-collisions, six right angles, and three left turns.

Three alternatives could correct the crash issue at this intersection include a traffic signal, a j-turn, and a roundabout. A Tier 1 matrix was created to compare the operations, safety, right of way (ROW), construction cost, and impacts to surrounding property/access and mobility. The matrix is shown in

Attachment E. To summarize the matrix, all three alternatives will improve operations and safety to varying degrees. The roundabout will be most expensive to construct, will require the acquisition of ROW, create impacts for residents during construction and may create safety issues as a multilane roundabout on a high speed rural route. For these reasons, a roundabout may not be feasible. The J-turn alternative is also not feasible due to the vertical curvature forcing the median openings far from the existing intersection and public opinion from the residents of the Forest Hills subdivision may not support this alternative. Additionally, the j-turn locations may need to be signalized which also may not be supported by the public.

The traffic signal alternative is the remaining option and is the recommended mitigation alternative for this intersection. Traffic signal warrants analysis was conducted, and the results are outlined in the next section. With the installation of a traffic signal, it is also recommended that advance traffic control signs (W3-3) be installed along US 80 with the installation of the proposed access for the development.

4.2.1 Traffic Signal Warrant Analysis

A traffic signal warrant analysis was conducted for the intersection of US 80 at Forest Hills Boulevard. The tube counts collected in this study were used for the total approach volume, and the hourly approach counts were distributed based on the peak hour turning volumes. Warrants 1A 100% and 7 were evaluated as directed by LADOTD policy. Based on the analyses performed, portions of warrants 1, 2, 3 and 7 were met, the details are provided below in **Table 3** and in **Attachment G**.

All crashes for Warrant 7 were pulled within 150' of the intersection using LADOTD Crash 1 database for the years 2019-2021. Only crash types susceptible to correction by a traffic control signal, such as right angle and left turn, were used for this analysis. After a review of crashes pulled, it was determined that there are more than 5 correctable crashes that have occurred within a 12 month period. An adequate trial of alternatives with satisfactory observance and enforcement with failure to reduce the crash frequency has not been performed. The crash diagram is in **Attachment G**.

Table 3: Traffic Signal Warrant Analysis Results

Warrant 1: Eight-Hour Vehicular Volume	✓
A. 100% Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	✗
B. 100% Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	✓
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	✗
Warrant 2: Four-Hour Vehicular Volume	✓
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)	✓
Warrant 3: Peak Hour	✓
A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	✗
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	✓
Warrant 7: Crash Experience	✗
A. Adequate trials of alternatives, observance and enforcement failed --and--	✗
B. Reported crashes susceptible to correction by signal (12-month period) --and--	✓
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied	✓

Given the correctable crashes and volume portions of Warrant 7 being met, consideration should be given to modifying the intersection from the existing condition to mitigate the crashes. With the build out of this development, the volume, and potentially the number of crashes, is anticipated to increase. Closing the median break and implementing U-turn locations to the east and west of the US 80 at Forest Hills intersection would reduce the crashes and delays. However, it is anticipated that it may not be supported by the residents within the Forest Hills subdivision. For the purposes of this study, it was assumed that a traffic signal would be installed at the intersection of US 80 at Forest Hills Boulevard for the future conditions.

Based on the Highway Safety Manual and the Crash Modification Factors Clearinghouse, it is anticipated that installation of a traffic signal at this location could reduce all crashes by 56% and angular crashes by 77% but it should also be noted that it could result in an increase of rear end type crashes at the intersection by 58%. As previously discussed, the intersection of US 80 at Forest Hills Boulevard experienced thirteen (13) crashes occurred over the three year period. These crashes included one rear end, three non-collisions, six right angles, and three left turns. The potential for increase in rear end crashes could be mitigated by the installation of advance traffic control signs (W3-3). Flashing beacons, either active or passive, could also be installed with this signage if desired.

4.3 Intersection Capacity Analyses

Unsignalized and signalized intersection capacity analyses were performed for the study area intersections during the AM and PM peaks. These capacity analyses are based on the Two Way Stop Control (TWSC) methods outlined in the *6th Edition Highway Capacity Manual* and were performed using the Synchro 11 Software. The capacity analyses results are described in terms of LOS and delay. The LOS ranges from “A” to “F”, with “A” representing the most desirable conditions and “F” representing the most undesirable conditions. For a summary of these results, see **Table 4** through **Table 11** while detailed capacity analysis results are provided in the *Synchro* reports in **Attachment F**. See **Attachment H** for a brief explanation of the LOS.

4.3.1 US 80 at Tall Timbers Boulevard

The intersection of US 80 at Tall Timbers Boulevard was analyzed as a four legged unsignalized intersection. The approaches along US 80 consist of two through lanes in each direction and an exclusive left turn lane only on the eastbound approach. The Tall Timbers Boulevard is stop – controlled and two way approach. Synchro analysis results are shown in **Table 4**.

Table 4: Intersection of US 80 at Tall Timbers Boulevard

Peak Hour	Scenario	Overall Intersection LOS / Delay	Eastbound LOS / Delay	Westbound LOS / Delay	Northbound LOS / Delay	Southbound LOS / Delay
AM Peak	Existing	A / 0.8	A / 0.5	A / 0.02	A / 9.9	C / 18.1
	Build	A / 0.8	A / 0.5	A / 0.02	B / 10.5	C / 20.8
PM Peak	Existing	A / 1.5	A / 1.7	A / 0.09	D / 28.6	C / 15.5
	Build	A / 1.5	A / 1.8	A / 0.09	D / 29.8	C / 16.2

Delay – seconds/vehicle

The analysis shows that with the additional trips from the proposed development, there is minimal impact in the build condition. Therefore, no specific mitigation is recommended for this location.

4.3.2 US 80 at Western Crossover

The intersection of US 80 at Western Crossover was analyzed as a three legged unsignalized intersection. The eastbound and westbound approaches along US 80 consists of two through lanes in each direction. The Western Crossover is a stop – controlled and two way approach. Synchro analysis results are shown in Table 5.

Table 5: Intersection of US 80 at Western Crossover

Peak Hour	Scenario	Overall Intersection LOS / Delay	Eastbound LOS / Delay	Westbound LOS / Delay	Northbound LOS / Delay
AM Peak	Existing	A / 0.2	A / 0.6	A / 0.0	A / 0.0
	Build	A / 0.2	A / 0.7	A / 0.0	A / 0.0
PM Peak	Existing	A / 1.1	A / 1.7	A / 0.0	A / 0.0
	Build	A / 1.2	A / 1.9	A / 0.0	A / 0.0

Delay – seconds/vehicle

The analysis shows that with the additional trips from the proposed development, there is minimal impact in the build condition. Therefore, no specific mitigation is recommended for this location.

4.3.3 US 80 at Site Driveway #1 (proposed)

The intersection of US 80 at Site Driveway #1 (proposed) was analyzed as a three legged unsignalized intersection. The eastbound and westbound approaches along US 80 consist of two through lanes in each direction. The Site Driveway #1 is a stop – controlled and only allows right – in/right – out traffic on the approach. An eastbound right turn lane is required at this intersection and the build condition was modeled with an eastbound right turn lane. The necessary turn lane design lengths is outlined in Section 4.4. Synchro analysis results are shown in Table 6.

Table 6: Intersection of US 80 at Site Driveway #1 (proposed)

Peak Hour	Scenario	Overall Intersection LOS / Delay	Eastbound LOS / Delay	Westbound LOS / Delay	Northbound LOS / Delay
AM Peak	Existing	N/A	N/A	N/A	N/A
	Build	A / 0.3	A / 0.0	A / 0.0	B / 10.5
PM Peak	Existing	N/A	N/A	N/A	N/A
	Build	A / 0.4	A / 0.0	A / 0.0	C / 15.1

Delay – seconds/vehicle

The analysis shows that with the construction of the proposed site driveway #1, the intersection operates at an acceptable LOS.

4.3.4 US 80 at Forest Hills Boulevard

The intersection of US 80 at Forest Hills Boulevard was analyzed as a four legged unsignalized intersection for the existing scenarios and a four legged signalized intersection for the build scenarios. The eastbound approach along US 80 consists of two through lanes and an exclusive right turn only lane while the westbound approach along US 80 consists of two through lanes and an exclusive left turn only lane. The northbound approach from Forest Hills Boulevard consists of a shared through/left lane and an exclusive right turn only lane. The southbound approach from Jodie Drive consists of a two way approach. For the purposes of this study, the build alternative was analyzed as a signalized intersection as outlined in the alternative analysis noted in Section 4.2. Synchro analysis results are shown in Table 7.

Table 7: Intersection of US 80 at Forest Hills Boulevard

Peak Hour	Scenario	Overall Intersection LOS / Delay	Eastbound LOS / Delay / Queue	Westbound LOS / Delay / Queue	Northbound LOS / Delay / Queue	Southbound LOS / Delay / Queue
AM Peak	Existing	D / 30.9	A / 0.05 / 0'	A / 0.6 / 20'	F / 181.0 / 280'	D / 27.2 / 0'
	Build	B / 16.3	B / 16.2 / 80'	B / 13.0 / 140'	C / 30.6 / 160'	B / 17.4 / 0'
PM Peak	Existing	D / 25.1	A / 0.02 / 0'	A / 1.1 / 20'	F / 283.2 / 220'	B / 10.2 / 0'
	Build	B / 13.4	B / 14.9 / 160'	A / 8.7 / 40'	C / 20.3 / 80'	B / 17.1 / 0'

Delay – seconds/vehicle; 95% Queue Length – feet (1 vehicle = 20'); Queue reported for longest approach movement

The analysis shows that with the installation of a traffic signal at this intersection, the overall intersection delay improves with a 12 second improvement in the AM peak and an 11 second improvement in the PM peak. The installation of a traffic signal will mitigate the operational and safety issues at this intersection. Sight distance to the back of queue at the intersection for the eastbound approach is an area of concern due to vertical curvature of US 80. Stopping sight distance to the stop bar was measured to be approximately 1000' in the field. With a maximum queue of 160',

there is sufficient stopping sight distance as the minimum for a 55 mph roadway is 495'. To further improve the sight distance conditions, advance traffic control signs (W3-3) could be installed in advance of the intersection for the westbound and eastbound approaches. Flashing beacons, either active or passive, could also be installed with this signage if desired.

4.3.5 US 80 at Liberty Drive

The intersection of US 80 at Liberty Drive was analyzed as a three legged unsignalized intersection. The approaches along US 80 consist of two through lanes in each direction. The Liberty Drive is a stop – controlled and two way approach. Synchro analysis results are shown in **Table 8**.

Table 8: Intersection of US 80 at Liberty Drive

Peak Hour	Scenario	Overall Intersection LOS / Delay	Eastbound LOS / Delay	Westbound LOS / Delay	Northbound LOS / Delay
AM Peak	Existing	A / 0.3	A / 0.3	A / 0.1	B / 13.6
	Build	A / 0.3	A / 0.6	A / 0.1	B / 14.7
PM Peak	Existing	A / 0.2	A / 0.1	A / 0.1	B / 14.8
	Build	A / 0.2	A / 0.1	A / 0.1	C / 15.7

Delay – seconds/vehicle

The analysis shows that with the additional trips from the proposed development, there is minimal impact in the build condition. Therefore, no specific mitigation is recommended for this location.

4.3.6 US 80 at Wafer Road

The intersection of US 80 at Wafer Road was analyzed as a three legged unsignalized intersection. The approaches along US 80 consist of two through lanes in each direction and an exclusive left turn lane only on the eastbound approach. The Wafer Road is a stop – controlled and two way approach. Synchro analysis results are shown in **Table 9**.

Table 9: Intersection of US 80 at Wafer Road

Peak Hour	Scenario	Overall Intersection LOS / Delay	Eastbound LOS / Delay	Westbound LOS / Delay	Northbound LOS / Delay	Southbound LOS / Delay
AM Peak	Existing	A / 1.6	A / 0.37	A / 0.21	A / 0.0	C / 15.77
	Build	A / 2.1	A / 0.5	A / 0.2	A / 0.0	C / 21.2
PM Peak	Existing	A / 1.5	A / 1.0	A / 0.15	B / 12.1	B / 14.5
	Build	A / 1.5	A / 1.0	A / 0.2	B / 12.5	C / 15.42

Delay – seconds/vehicle

The analysis shows that with the additional trips from the proposed development, there is minimal impact in the build condition. Therefore, no specific mitigation is recommended for this location.

4.3.7 Forest Hills Boulevard at Site Driveway #2 (proposed northern driveway)

The intersection of Forest Hills Boulevard at Site Driveway #2 (proposed northern driveway) was analyzed as a three legged unsignalized intersection. The approaches along Forest Hills Boulevard consists of a single through lane in each direction. The Site Driveway #2 is a stop – controlled and two way approach. Synchro analysis results are shown in Table 10.

Table 10: Intersection of Forest Hills Boulevard at Site Driveway #2 (proposed northern driveway)

Peak Hour	Scenario	Overall Intersection LOS / Delay	Eastbound LOS / Delay	Northbound LOS / Delay	Southbound LOS / Delay
AM Peak	Existing	N/A	N/A	N/A	N/A
	Build	A / 1.3	C / 16.9	A / 0.9	A / 0.0
PM Peak	Existing	N/A	N/A	N/A	N/A
	Build	A / 0.9	B / 12.6	A / 0.1	A / 0.0

Delay – seconds/vehicle

The analysis shows that with the construction of the proposed site driveway #2, the intersection operates at an acceptable LOS.

4.3.8 Forest Hills Boulevard at Site Driveway #3 (proposed southern driveway)

The intersection of Forest Hills Boulevard at Site Driveway #3 (proposed southern driveway) was analyzed as a three legged unsignalized intersection. The approaches along Forest Hills Boulevard consists of a single through lane in each direction. The Site Driveway #3 is a stop – controlled and two way approach. Synchro analysis results are shown in Table 11.

Table 11: Intersection of Forest Hills Boulevard at Site Driveway #3 (proposed southern driveway)

Peak Hour	Scenario	Overall Intersection LOS / Delay	Eastbound LOS / Delay	Northbound LOS / Delay	Southbound LOS / Delay
AM Peak	Existing	N/A	N/A	N/A	N/A
	Build	A / 1.1	B / 14.0	A / 0.9	A / 0.0
PM Peak	Existing	N/A	N/A	N/A	N/A
	Build	A / 2.2	B / 12.7	A / 0.1	A / 0.0

Delay – seconds/vehicle

The analysis shows that with the construction of the proposed site driveway #3, the intersection operates at an acceptable LOS.

4.4 Turn Lane Analyses

For the new proposed site driveway, an eastbound right turn lane is required with Site Driveway #1 along US 80 based on conversations with LADOTD District 04. According to LADOTD's Typical Turn Lane Design, with a 55-mph posted speed limit, the left and right turn lane on US-80 should consist of the following:

- Eastbound right turn lane – 505' of deceleration. Storage is not required due to right turn movement being free-flowing.

At the existing intersection of US 80 at Forest Hills Boulevard, modifications to the existing geometry are recommended based on LADOTD's Typical Turn Lane Design and the queue reported from the Synchro analysis performed. The modifications consist of the following:

- Westbound left turn lane – Modify the existing storage lane to accommodate 140' of storage (7 vehicles) and 505' of deceleration distance for a total length of 645'.
- Eastbound left turn lane – Install a turn lane with 100' of minimum storage and 505' of deceleration distance for a total length of 605'.
- Eastbound right turn lane – Modify the existing storage lane to accommodate 20' of storage (1 vehicle) and 505' of deceleration distance for a total length of 525'.

5.0 CONCLUSIONS

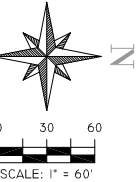
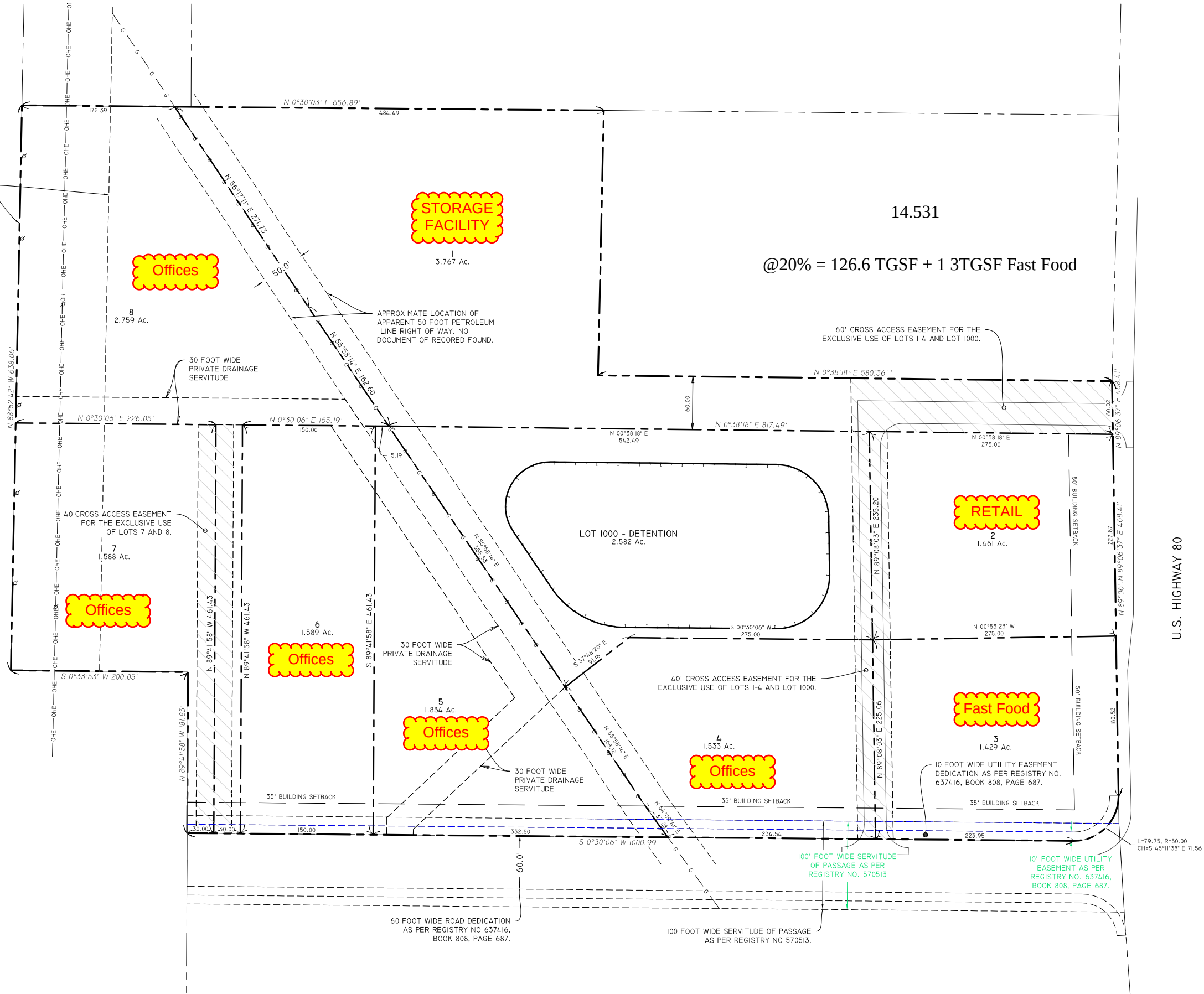
With the construction of the proposed development, the development will be accessed by a single right-in/right-out driveway along US 80 and two full access driveways along Forest Hills Boulevard. Upon construction, the proposed site driveway #1 along US 80 will be required to have an eastbound right turn lane as required by LADOTD District 04. In conclusion, the proposed development will have minimal impacts on US 80 and adjacent intersections in the vicinity of the project area with the exception of the Forest Hills Boulevard at US 80 intersection. Improvements at this intersection are needed to mitigate the negative impacts the additional traffic will have on operations and safety. As discussed in Section 4.2, a traffic signal is the preferred alternative to be installed to address these negative impacts. Consideration could be given to the installation of advance traffic control signs (W3-3) along US 80 with the installation of the proposed access for the development. Flashing beacons, either active or passive, could also be installed with this signage if desired. A new turn lane is recommended at the proposed access on US 80 and turn lane modifications are recommended at the intersection of US 80 at Forest Hills Boulevard.

It should be noted that future developments connecting to this development or expansion of this development may require additional traffic impact studies or consideration for infrastructure improvements.

ATTACHMENT A

Proposed Site Plan

100' SWEPKO EASEMENT AS SHOWN
ON FOREST HILLS SUBDIVISION PLATS.
NO DOCUMENT OF RECORD FOUND.



REVISIONS	BY
Preliminary Site Plan	
Forest Hills Commercial Property	
Bossier Parish, Louisiana	
RA	
RALEY AND ASSOCIATES, INC.	
Civil & Structural Engineering, Surveying, Planning & Consulting	
4913 Shed Road	
Bossier City, LA 71111	
Phone 318.752-9023	
Fax 318.752-9025	
www.raleyandassociates.com	
PRELIMINARY	
THIS DOCUMENT IS FOR THE PURPOSE OF REVIEW ONLY AND IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE SALES OR FOR THE BASIS FOR THE ISSUANCE OF A PERMIT. DOCUMENT PREPARED UNDER THE DIRECT SUPERVISION OF FRANK J. RALEY, REG. NO. 22831.	
DATE: 03/28/23	
DATE:	01/30/2023
SCALE:	1" = 60'
DRAWN:	JLM
CHECKED:	TRE
JOB:	23030
SHEET:	1
OF - SHEET	

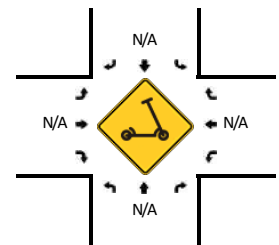
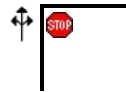
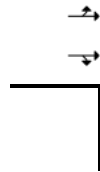
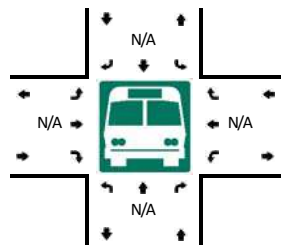
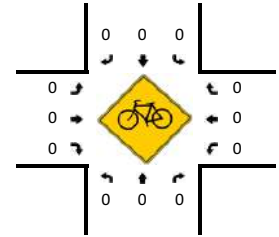
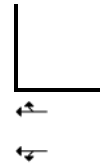
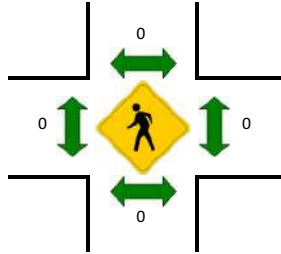
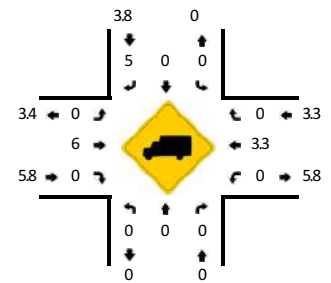
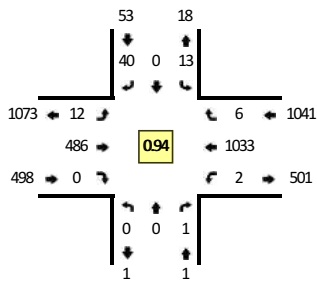
PRELIMINARY SITE AND DRAINAGE B.DWG

ATTACHMENT B

Traffic Data

LOCATION: Tall Timbers Blvd -- US 80**CITY/STATE:** Eastwood, LA**QC JOB #:** 16151101**DATE:** Wed, May 3 2023

Peak-Hour: 7:15 AM -- 8:15 AM
 Peak 15-Min: 7:45 AM -- 8:00 AM

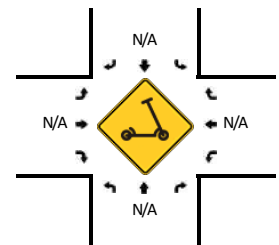
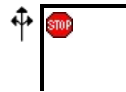
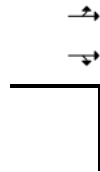
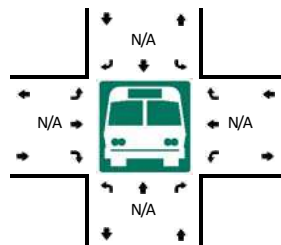
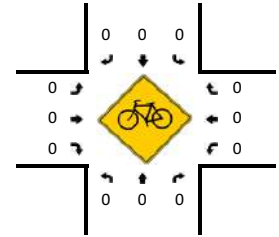
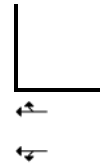
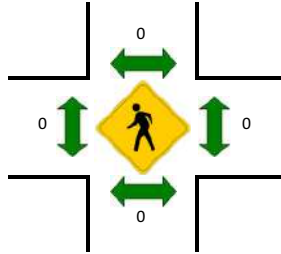
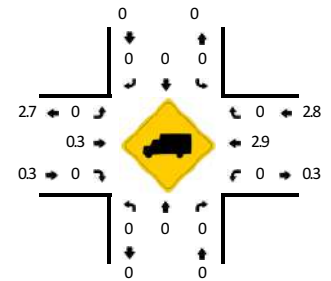
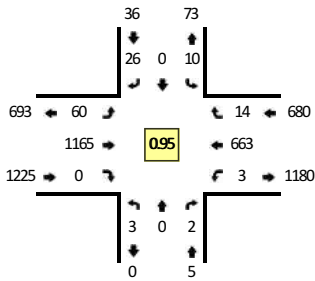


15-Min Count Period Beginning At	Tall Timbers Blvd (Northbound)				Tall Timbers Blvd (Southbound)				US 80 (Eastbound)				US 80 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:45 AM	0	0	0	0	5	0	6	0	1	141	0	0	0	167	2	1	323	
7:00 AM	0	0	0	0	5	0	10	0	2	121	0	0	0	218	2	1	359	
7:15 AM	0	0	0	0	2	0	10	0	3	140	0	0	0	240	1	0	396	
7:30 AM	0	0	0	0	3	0	14	0	1	123	0	0	0	252	1	0	394	1472
7:45 AM	0	0	1	0	4	0	9	0	4	120	0	0	0	284	1	1	424	1573
8:00 AM	0	0	0	0	4	0	7	0	4	103	0	0	1	257	3	0	379	1593
8:15 AM	0	0	0	0	1	0	5	0	1	78	2	0	1	168	3	1	260	1457
8:30 AM	1	0	0	0	0	0	5	0	4	80	1	0	0	138	1	0	230	1293
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	4	0	16	0	36	0	16	480	0	0	0	1136	4	4	1696	
Heavy Trucks	0	0	0	0	0	0	0	0	0	12	0	0	0	44	0	0	56	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: Tall Timbers Blvd -- US 80**CITY/STATE:** Eastwood, LA**QC JOB #:** 16151102**DATE:** Tue, May 2 2023

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:15 PM -- 5:30 PM



15-Min Count Period Beginning At	Tall Timbers Blvd (Northbound)				Tall Timbers Blvd (Southbound)				US 80 (Eastbound)				US 80 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:15 PM	0	0	1	0	2	0	5	0	5	281	1	0	0	157	4	1	457	
4:30 PM	1	0	0	0	2	0	3	0	7	250	1	1	0	191	3	0	459	
4:45 PM	1	0	1	0	2	0	5	0	11	267	0	0	0	174	1	1	463	
5:00 PM	3	0	1	0	4	0	1	0	14	298	0	0	0	172	2	2	497	1876
5:15 PM	0	0	1	0	2	0	6	0	13	321	0	0	0	168	3	0	514	1933
5:30 PM	0	0	0	0	4	0	8	0	11	286	0	0	0	152	4	0	465	1939
5:45 PM	0	0	0	0	0	0	11	0	21	260	0	1	0	171	5	1	470	1946
6:00 PM	0	0	0	0	1	0	10	0	13	217	0	0	0	148	0	1	390	1839
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	4	0	8	0	24	0	52	1284	0	0	0	672	12	0	2056	
Heavy Trucks	0	0	0	0	0	0	0	0	0	4	0	0	0	32	0	0	36	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

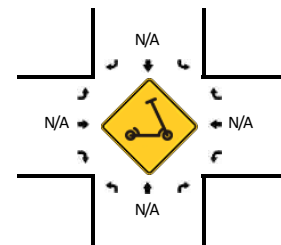
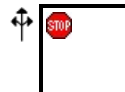
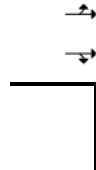
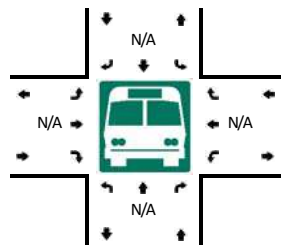
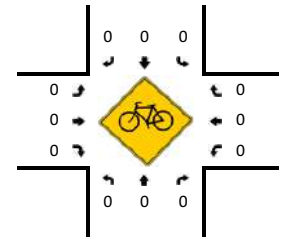
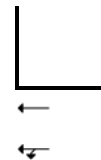
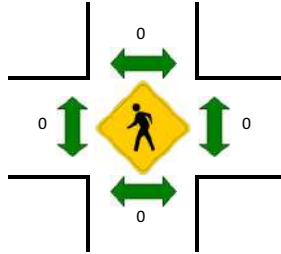
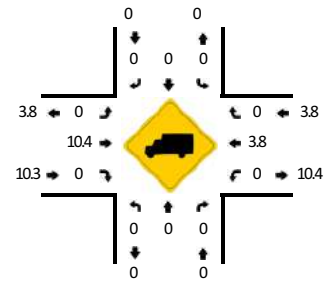
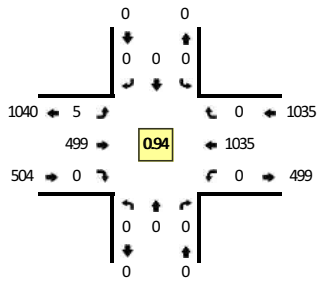
Comments:

Report generated on 5/22/2023 11:03 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Western Crossover -- US 80**CITY/STATE:** Eastwood, LA**QC JOB #:** 16151103**DATE:** Wed, May 3 2023

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

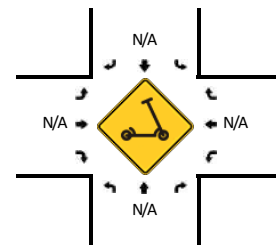


15-Min Count Period Beginning At	Western Crossover (Northbound)				Western Crossover (Southbound)				US 80 (Eastbound)				US 80 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:45 AM	0	0	0	0	0	0	0	0	0	145	0	1	0	175	0	0	321	
7:00 AM	0	0	0	0	0	0	0	0	0	125	0	1	0	221	0	0	347	
7:15 AM	0	0	0	0	0	0	0	0	0	144	0	2	0	238	0	0	384	
7:30 AM	0	0	0	0	0	0	0	0	0	124	0	1	0	250	0	0	375	1427
7:45 AM	0	0	0	0	0	0	0	0	0	125	0	2	0	284	0	0	411	1517
8:00 AM	0	0	0	0	0	0	0	0	0	106	0	0	0	263	0	0	369	1539
8:15 AM	0	0	0	0	0	0	0	0	0	76	0	0	0	174	0	0	250	1405
8:30 AM	0	0	0	0	0	0	0	0	0	77	0	0	0	141	0	0	218	1248
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	0	0	0	0	0	500	0	8	0	1136	0	0	1644	
Heavy Trucks	0	0	0	0	0	0	0	0	0	36	0		0	48	0		84	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

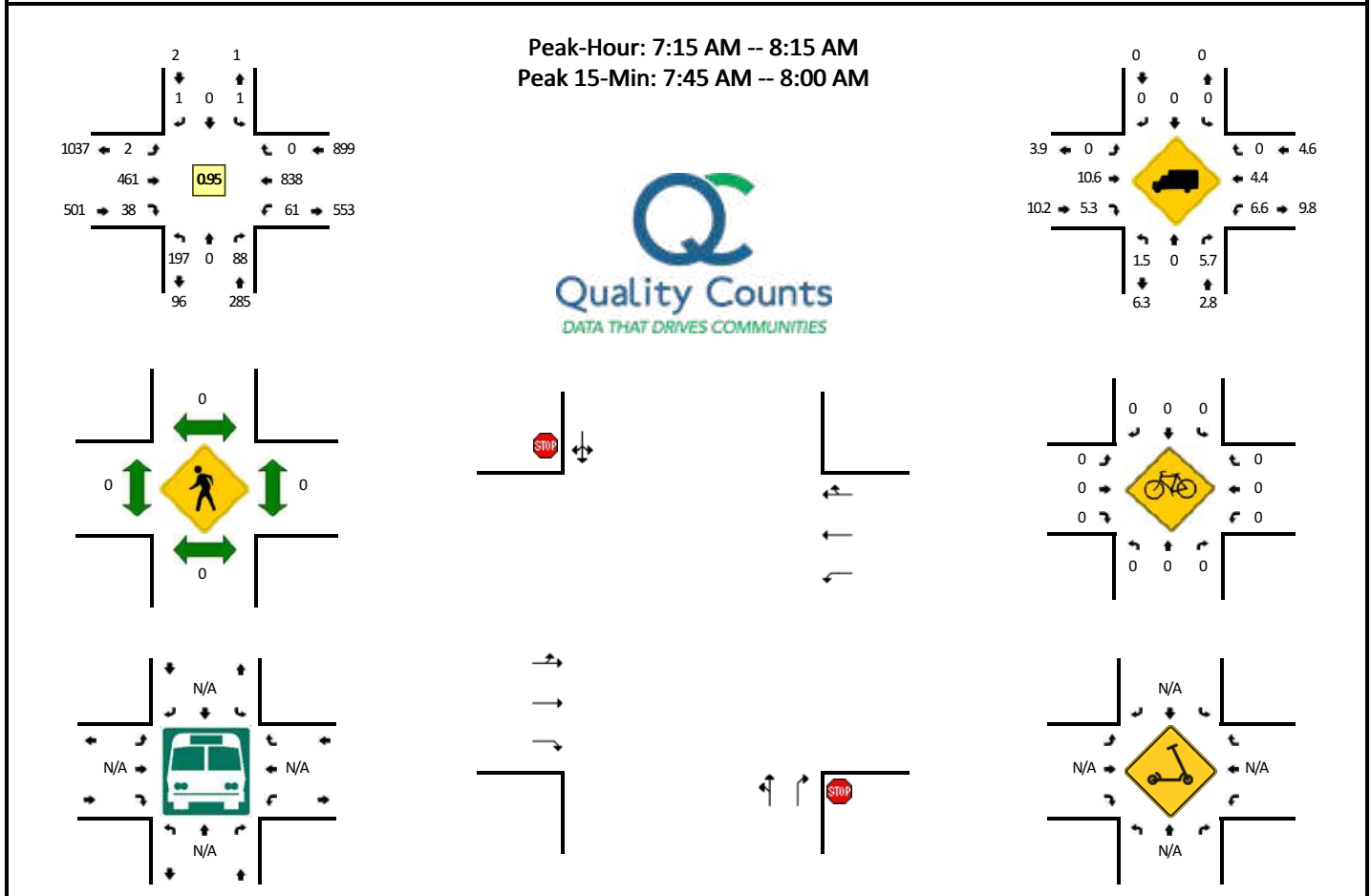
Comments: Directional in's and out's U-turns on US 80

QC JOB #: 16151104

DATE: Tue, May 2 2023



Comments: Directional in's and out's U-turns on US 80

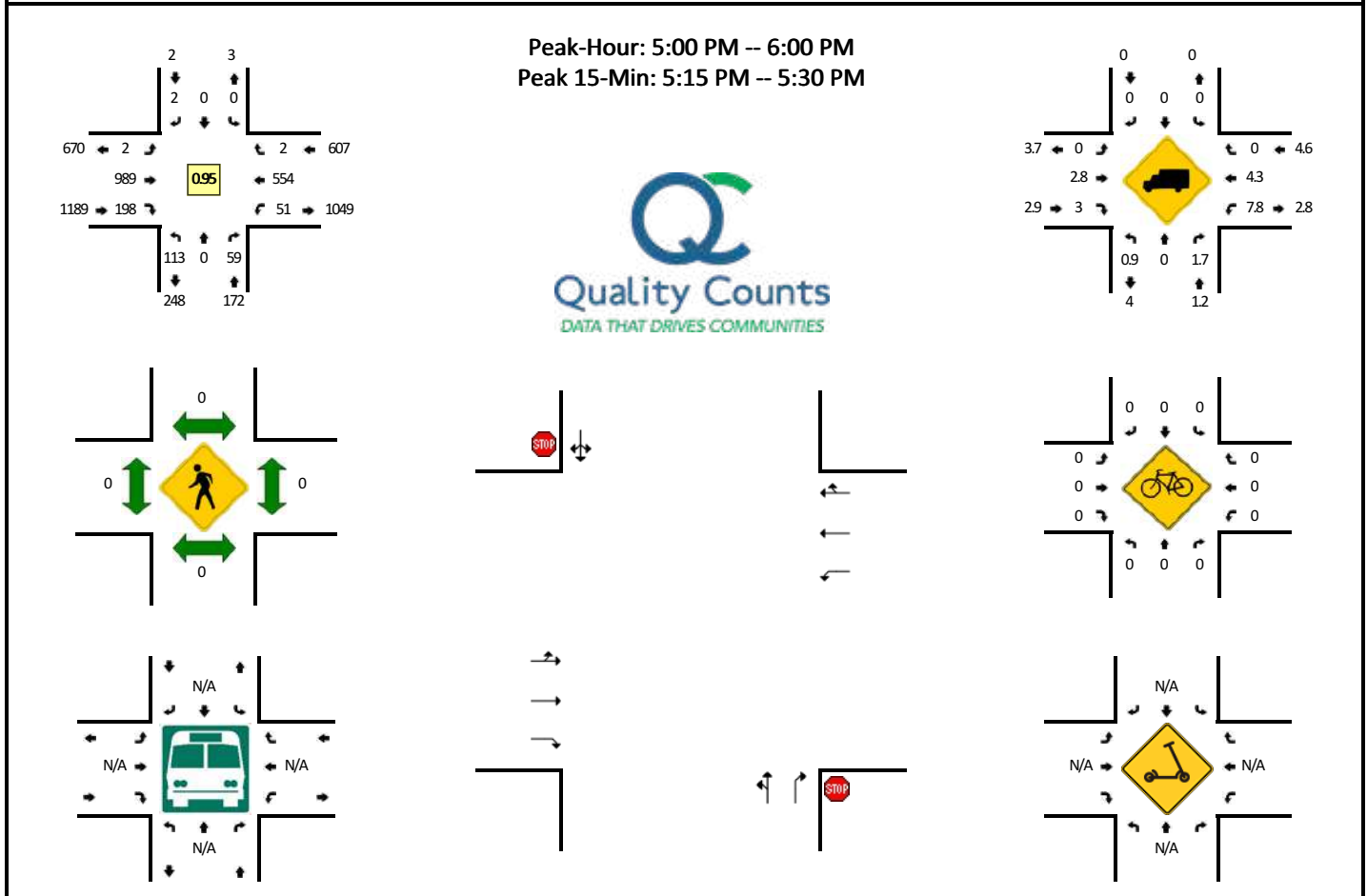
LOCATION: Forest Hills Blvd -- US 80**CITY/STATE:** Eastwood, LA**QC JOB #:** 16151105**DATE:** Wed, May 3 2023

15-Min Count Period Beginning At	Forest Hills Blvd (Northbound)				Forest Hills Blvd (Southbound)				US 80 (Eastbound)				US 80 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:45 AM	40	0	51	0	0	0	0	0	0	142	11	0	4	136	0	0	384	
7:00 AM	57	0	56	0	0	0	0	0	0	124	1	0	5	163	0	0	406	
7:15 AM	52	0	17	0	0	0	1	0	0	137	8	0	10	185	0	0	410	
7:30 AM	65	0	29	0	0	0	0	0	0	121	6	0	14	187	0	0	422	1622
7:45 AM	44	0	26	0	1	0	0	0	0	111	9	0	15	236	0	1	443	1681
8:00 AM	36	0	16	0	0	0	0	0	1	92	15	1	19	230	0	2	412	1687
8:15 AM	19	0	8	0	0	0	1	0	0	61	12	0	5	150	0	0	256	1533
8:30 AM	26	0	6	0	0	0	0	0	0	75	7	0	9	111	0	1	235	1346
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	176	0	104	0	4	0	0	0	0	444	36	0	60	944	0	4	1772	
Heavy Trucks	8	0	4	0	0	0	0	0	0	28	8	0	4	40	0	0	92	
Buses																		
Pedestrians	0	0			0	0			0				0				0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

Report generated on 5/22/2023 11:03 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Forest Hills Blvd -- US 80**QC JOB #:** 16151106**CITY/STATE:** Eastwood, LA**DATE:** Tue, May 2 2023

15-Min Count Period Beginning At	Forest Hills Blvd (Northbound)				Forest Hills Blvd (Southbound)				US 80 (Eastbound)				US 80 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:15 PM	13	0	9	0	0	0	0	0	0	244	44	2	14	142	1	0	469	
4:30 PM	20	0	9	0	1	0	0	0	0	198	47	1	21	170	1	1	469	
4:45 PM	16	0	11	0	0	0	0	0	0	222	46	1	9	159	0	0	464	
5:00 PM	25	0	18	0	0	0	1	0	0	246	53	0	11	146	1	0	501	1903
5:15 PM	29	0	14	0	0	0	0	0	1	271	51	0	14	135	0	1	516	1950
5:30 PM	31	0	13	0	0	0	0	0	0	245	52	1	17	127	0	0	486	1967
5:45 PM	28	0	14	0	0	0	1	0	0	227	42	0	8	146	1	0	467	1970
6:00 PM	17	0	2	0	0	0	0	0	1	183	34	0	13	131	0	0	381	1850
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	116	0	56	0	0	0	0	0	4	1084	204	0	56	540	0	4	2064	
Heavy Trucks	0	0	0	0	0	0	0	0	0	28	8	0	12	40	0	0	88	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters																		

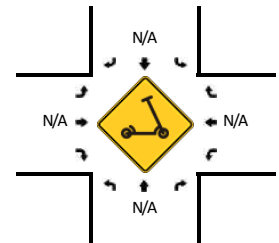
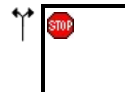
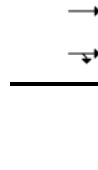
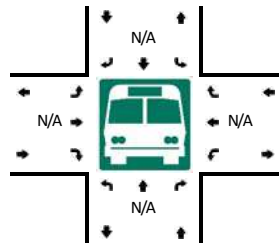
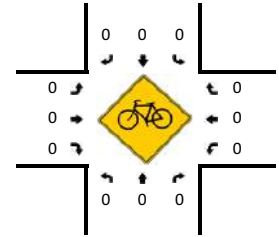
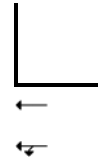
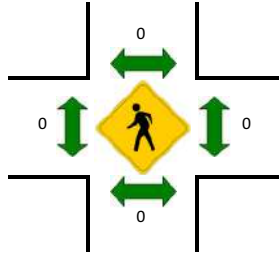
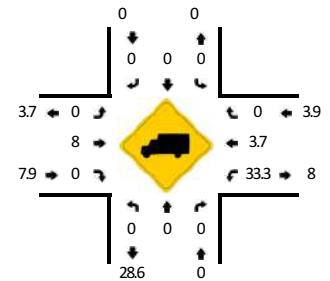
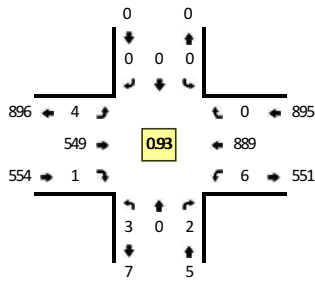
Comments:

Report generated on 5/22/2023 11:03 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

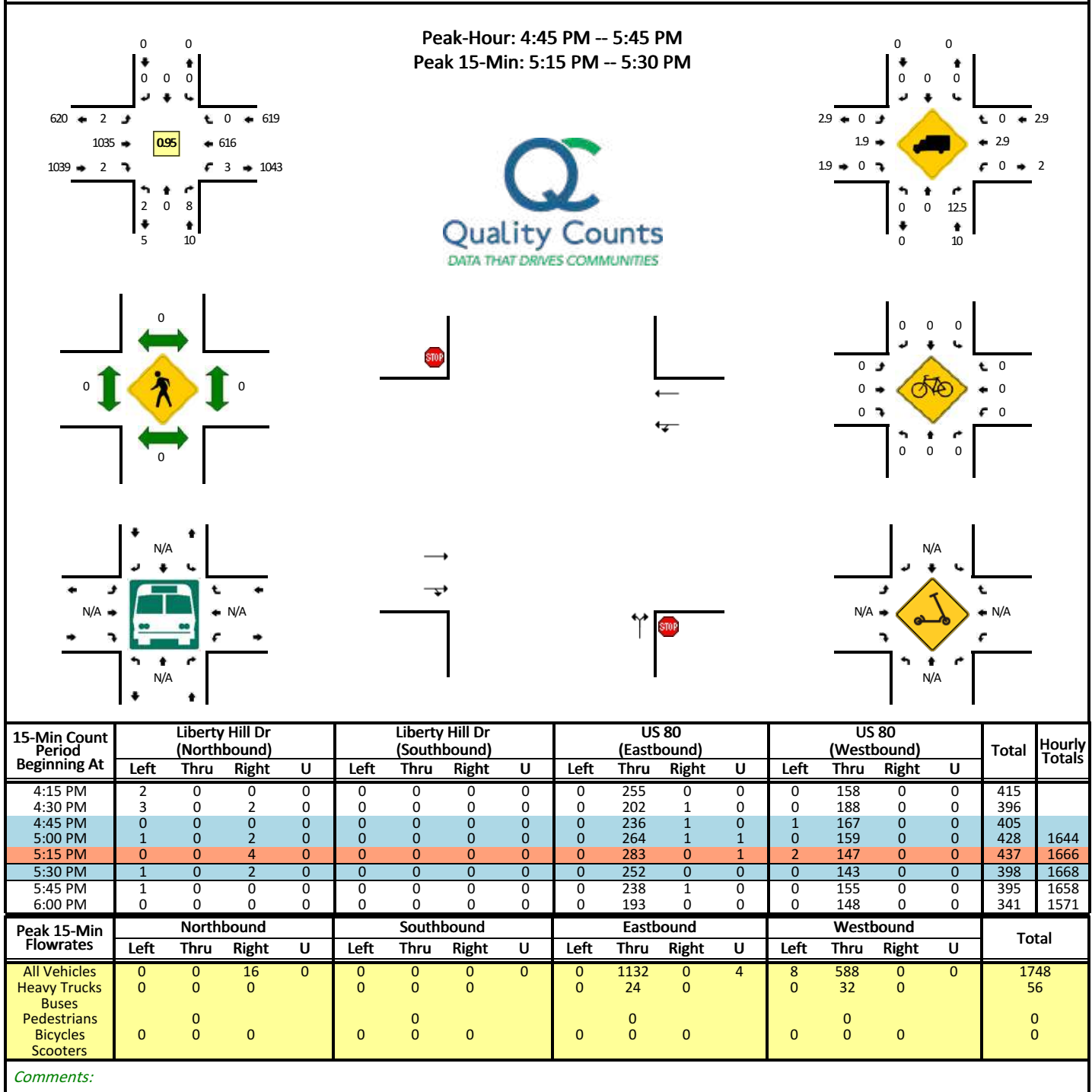
LOCATION: Liberty Hill Dr -- US 80**CITY/STATE:** Eastwood, LA**QC JOB #:** 16151110**DATE:** Wed, May 3 2023

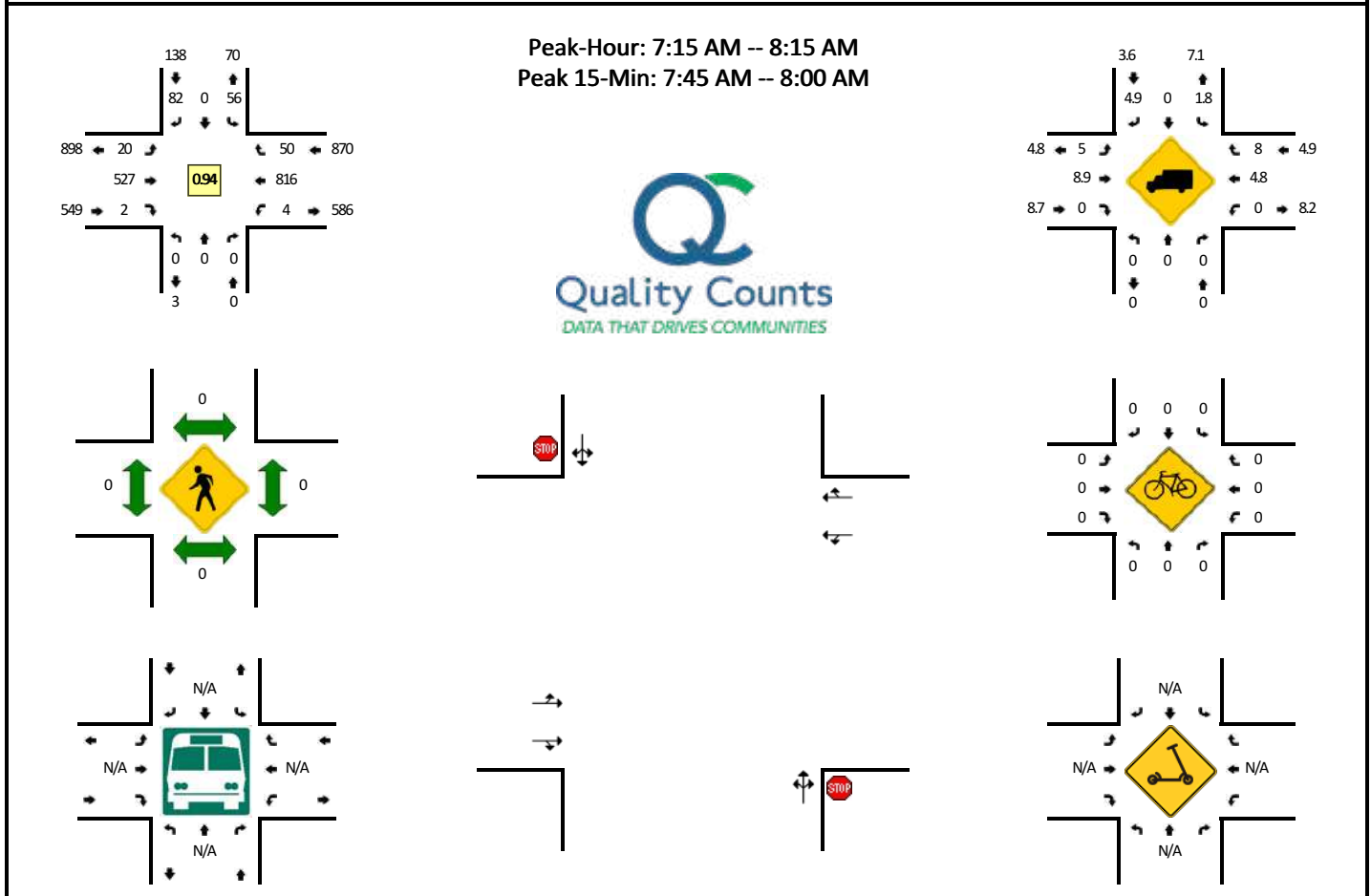
Peak-Hour: 7:15 AM -- 8:15 AM
 Peak 15-Min: 7:45 AM -- 8:00 AM



15-Min Count Period Beginning At	Liberty Hill Dr (Northbound)				Liberty Hill Dr (Southbound)				US 80 (Eastbound)				US 80 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:45 AM	0	0	2	0	0	0	0	0	0	189	0	0	0	140	0	0	331	
7:00 AM	0	0	0	0	0	0	0	0	0	178	1	1	0	168	0	0	348	
7:15 AM	1	0	0	0	0	0	0	0	0	154	0	0	2	198	0	0	355	
7:30 AM	0	0	1	0	0	0	0	0	0	147	0	4	2	190	0	0	344	1378
7:45 AM	1	0	0	0	0	0	0	0	0	136	1	0	0	251	0	0	389	1436
8:00 AM	1	0	1	0	0	0	0	0	0	112	0	0	2	250	0	0	366	1454
8:15 AM	1	0	0	0	0	0	0	0	0	69	1	0	0	155	0	0	226	1325
8:30 AM	0	0	1	0	0	0	0	0	0	80	2	0	0	119	0	0	202	1183
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	0	0	0	0	0	0	0	0	544	4	0	0	1004	0	0	1556	
Heavy Trucks	0	0	0	0	0	0	0	0	0	24	0	0	0	28	0	0	52	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

LOCATION: Liberty Hill Dr -- US 80**CITY/STATE:** Eastwood, LA**QC JOB #:** 16151111**DATE:** Tue, May 2 2023

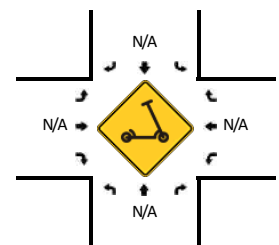
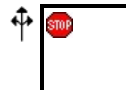
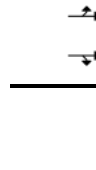
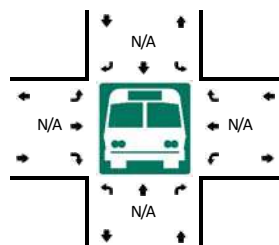
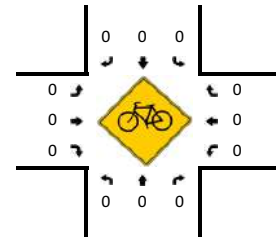
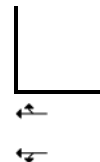
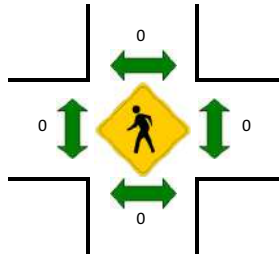
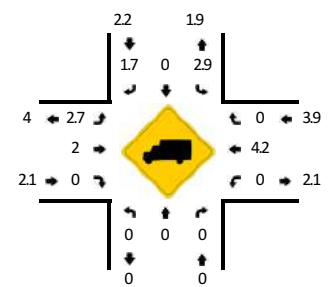
LOCATION: Wafer Rd -- US 80**CITY/STATE:** Eastwood, LA**QC JOB #:** 16151112**DATE:** Wed, May 3 2023

15-Min Count Period Beginning At	Wafer Rd (Northbound)				Wafer Rd (Southbound)				US 80 (Eastbound)				US 80 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:45 AM	0	0	0	0	27	0	27	0	4	186	0	0	1	113	1	0	359	
7:00 AM	0	0	0	0	32	0	23	0	7	174	0	0	1	143	6	0	386	
7:15 AM	0	0	0	0	9	0	31	0	0	148	1	0	1	169	9	0	368	
7:30 AM	0	0	0	0	14	0	17	0	7	143	0	0	0	179	14	0	374	1487
7:45 AM	0	0	0	0	17	0	19	0	10	125	0	0	0	232	11	2	416	1544
8:00 AM	0	0	0	0	16	0	15	0	3	111	1	0	0	236	16	1	399	1557
8:15 AM	0	0	0	0	7	0	13	0	3	66	0	1	0	140	8	0	238	1427
8:30 AM	1	0	0	0	3	0	11	0	4	76	1	1	0	109	2	0	208	1261
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	68	0	76	0	40	500	0	0	0	928	44	8	1664	
Heavy Trucks	0	0	0	0	0	0	0	0	0	32	0	0	0	40	0	0	72	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scoters																		

Comments:

QC JOB #: 16151113

DATE: Tue, May 2 2023



Comments:

Type of report: Tube Count - Volume Data

LOCATION: US 80 WB east of Forrest Hills Blvd SPECIFIC LOCATION: CITY/STATE: Eastwood, LA										QC JOB #: 16151107 DIRECTION: WB DATE: May 1 2023 - May 7 2023
Start Time	Mon 1 May 23	Tue 2 May 23	Wed 3 May 23	Thu 4 May 23	Fri 5 May 23	Average Weekday Hourly Traffic	Sat 6 May 23	Sun 7 May 23	Average Week Hourly Traffic	Average Week Profile
12:00 AM	14	19	24	19	15	18	39	47	25	
01:00 AM	16	13	10	13	23	15	27	22	18	
02:00 AM	12	18	7	15	13	13	9	20	13	
03:00 AM	20	18	22	20	16	19	19	16	19	
04:00 AM	62	67	59	65	62	63	43	24	55	
05:00 AM	183	191	182	206	188	190	110	64	161	
06:00 AM	503	540	496	506	468	503	204	98	402	
07:00 AM	739	772	801	765	747	765	311	163	614	
08:00 AM	632	659	639	639	661	646	444	345	574	
09:00 AM	474	484	444	463	515	476	545	363	470	
10:00 AM	415	458	444	522	489	466	560	439	475	
11:00 AM	451	455	495	495	512	482	515	397	474	
12:00 PM	478	445	429	500	553	481	613	592	516	
01:00 PM	438	444	450	452	508	458	583	523	485	
02:00 PM	532	574	611	596	602	583	488	403	544	
03:00 PM	649	681	650	701	790	694	493	367	619	
04:00 PM	633	671	646	632	654	647	453	376	581	
05:00 PM	532	581	595	580	610	580	465	340	529	
06:00 PM	372	392	417	387	503	414	385	307	395	
07:00 PM	327	286	367	428	365	355	353	244	339	
08:00 PM	214	192	242	239	243	226	254	229	230	
09:00 PM	137	137	149	168	197	158	180	137	158	
10:00 PM	77	76	61	64	113	78	120	77	84	
11:00 PM	26	39	38	31	65	40	84	28	44	
Day Total	7936	8212	8278	8506	8912	8370	7297	5621	7824	
% Weekday Average	94.8%	98.1%	98.9%	101.6%	106.5%					
% Week Average	101.4%	105%	105.8%	108.7%	113.9%	107%	93.3%	71.8%		
AM Peak Volume	7:00 AM 739	7:00 AM 772	7:00 AM 801	7:00 AM 765	7:00 AM 747	7:00 AM 765	10:00 AM 560	10:00 AM 439	7:00 AM 614	
PM Peak Volume	3:00 PM 649	3:00 PM 681	3:00 PM 650	3:00 PM 701	3:00 PM 790	3:00 PM 694	12:00 PM 613	12:00 PM 592	3:00 PM 619	
Comments:										

Report generated on 5/10/2023 9:23 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Volume Data

LOCATION: US 80 EB west of Forrest Hills Blvd SPECIFIC LOCATION: CITY/STATE: Eastwood, LA										QC JOB #: 16151108 DIRECTION: EB DATE: May 1 2023 - May 7 2023
Start Time	Mon 1 May 23	Tue 2 May 23	Wed 3 May 23	Thu 4 May 23	Fri 5 May 23	Average Weekday Hourly Traffic	Sat 6 May 23	Sun 7 May 23	Average Week Hourly Traffic	Average Week Profile
12:00 AM	32	42	38	42	47	40	83	97	54	
01:00 AM	18	19	24	20	24	21	53	72	33	
02:00 AM	18	24	17	25	21	21	41	36	26	
03:00 AM	9	19	15	13	15	14	31	21	18	
04:00 AM	20	28	24	30	18	24	21	18	23	
05:00 AM	73	72	68	77	70	72	61	27	64	
06:00 AM	264	248	283	256	234	257	108	64	208	
07:00 AM	514	504	526	548	524	523	228	91	419	
08:00 AM	368	349	349	350	380	359	314	189	328	
09:00 AM	363	392	365	367	388	375	404	290	367	
10:00 AM	475	417	446	442	437	443	479	342	434	
11:00 AM	525	535	521	523	530	527	582	412	518	
12:00 PM	623	597	588	672	692	634	750	645	652	
01:00 PM	611	596	604	594	705	622	720	640	639	
02:00 PM	690	696	658	713	798	711	650	609	688	
03:00 PM	773	839	825	818	905	832	738	601	786	
04:00 PM	990	982	964	981	999	983	693	552	880	
05:00 PM	1115	1149	1132	1179	1066	1128	604	516	966	
06:00 PM	715	723	777	707	802	745	598	498	689	
07:00 PM	559	573	632	630	622	603	532	420	567	
08:00 PM	420	463	508	528	538	491	486	348	470	
09:00 PM	286	291	311	348	413	330	389	238	325	
10:00 PM	129	126	116	145	234	150	302	144	171	
11:00 PM	67	86	84	85	170	98	176	74	106	
Day Total	9657	9770	9875	10093	10632	10003	9043	6944	9431	
% Weekday Average	96.5%	97.7%	98.7%	100.9%	106.3%					
% Week Average	102.4%	103.6%	104.7%	107%	112.7%	106.1%	95.9%	73.6%		
AM Peak Volume	11:00 AM 525	11:00 AM 535	7:00 AM 526	7:00 AM 548	11:00 AM 530	11:00 AM 527	11:00 AM 582	11:00 AM 412	11:00 AM 518	
PM Peak Volume	5:00 PM 1115	5:00 PM 1149	5:00 PM 1132	5:00 PM 1179	5:00 PM 1066	5:00 PM 1128	12:00 PM 750	12:00 PM 645	5:00 PM 966	
Comments:										

Report generated on 5/10/2023 9:23 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

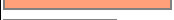
Type of report: Tube Count - Volume Data

LOCATION: Forest Hills Blvd south of US 80 SPECIFIC LOCATION: CITY/STATE: Eastwood, LA										QC JOB #: 16151109 DIRECTION: NB DATE: May 1 2023 - May 7 2023
Start Time	Mon 1 May 23	Tue 2 May 23	Wed 3 May 23	Thu 4 May 23	Fri 5 May 23	Average Weekday Hourly Traffic	Sat 6 May 23	Sun 7 May 23	Average Week Hourly Traffic	Average Week Profile
12:00 AM	4	7	2	5	6	5	12	12	7	
01:00 AM	4	2	1	3	2	2	4	8	3	
02:00 AM	2	1	2	1	1	1	2	3	2	
03:00 AM	5	8	7	3	8	6	8	7	7	
04:00 AM	20	23	24	20	20	21	7	8	17	
05:00 AM	59	53	53	53	54	54	24	15	44	
06:00 AM	195	217	203	217	198	206	50	25	158	
07:00 AM	321	332	337	331	318	328	110	50	257	
08:00 AM	151	141	141	133	155	144	198	124	149	
09:00 AM	93	109	81	90	100	95	222	133	118	
10:00 AM	88	102	101	100	100	98	204	146	120	
11:00 AM	104	94	87	104	125	103	161	95	110	
12:00 PM	95	87	106	101	93	96	193	125	114	
01:00 PM	106	101	100	112	116	107	140	128	115	
02:00 PM	108	108	121	110	107	111	142	98	113	
03:00 PM	128	142	130	132	179	142	155	111	140	
04:00 PM	139	121	109	161	158	138	132	119	134	
05:00 PM	159	149	169	188	180	169	143	105	156	
06:00 PM	91	116	97	115	137	111	131	87	111	
07:00 PM	82	79	84	90	90	85	75	71	82	
08:00 PM	48	69	56	55	72	60	67	59	61	
09:00 PM	36	39	38	45	62	44	57	32	44	
10:00 PM	15	18	7	18	47	21	39	23	24	
11:00 PM	8	6	5	4	13	7	31	9	11	
Day Total	2061	2124	2061	2191	2341	2154	2307	1593	2097	
% Weekday Average	95.7%	98.6%	95.7%	101.7%	108.7%					
% Week Average	98.3%	101.3%	98.3%	104.5%	111.6%	102.7%	110%	76%		
AM Peak Volume	7:00 AM 321	7:00 AM 332	7:00 AM 337	7:00 AM 331	7:00 AM 318	7:00 AM 328	9:00 AM 222	10:00 AM 146	7:00 AM 257	
PM Peak Volume	5:00 PM 159	5:00 PM 149	5:00 PM 169	5:00 PM 188	5:00 PM 180	5:00 PM 169	12:00 PM 193	1:00 PM 128	5:00 PM 156	
Comments:										

Report generated on 5/10/2023 9:23 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Volume Data

LOCATION: Forest Hills Blvd south of US 80 SPECIFIC LOCATION: CITY/STATE: Eastwood, LA										QC JOB #: 16151109 DIRECTION: SB DATE: May 1 2023 - May 7 2023
Start Time	Mon 1 May 23	Tue 2 May 23	Wed 3 May 23	Thu 4 May 23	Fri 5 May 23	Average Weekday Hourly Traffic	Sat 6 May 23	Sun 7 May 23	Average Week Hourly Traffic	Average Week Profile
12:00 AM	8	14	7	6	14	10	26	27	15	
01:00 AM	2	5	3	3	2	3	17	10	6	
02:00 AM	0	2	4	3	2	2	3	11	4	
03:00 AM	1	3	1	2	1	2	3	3	2	
04:00 AM	4	6	1	2	4	3	2	1	3	
05:00 AM	4	3	5	6	8	5	14	6	7	
06:00 AM	28	28	28	26	30	28	69	7	31	
07:00 AM	77	60	68	72	79	71	112	16	69	
08:00 AM	75	85	82	72	84	80	122	40	80	
09:00 AM	68	80	61	70	68	69	117	68	76	
10:00 AM	67	68	60	98	79	74	127	67	81	
11:00 AM	94	76	91	90	97	90	153	94	99	
12:00 PM	97	120	99	128	127	114	183	172	132	
01:00 PM	131	123	113	111	132	122	192	167	138	
02:00 PM	158	164	170	186	201	176	150	148	168	
03:00 PM	220	211	189	220	221	212	150	132	192	
04:00 PM	249	235	221	237	239	236	180	129	213	
05:00 PM	282	245	247	245	273	258	133	115	220	
06:00 PM	137	172	162	145	183	160	145	100	149	
07:00 PM	177	170	197	188	154	177	143	120	164	
08:00 PM	103	140	133	146	138	132	113	98	124	
09:00 PM	60	76	79	125	102	88	90	51	83	
10:00 PM	34	26	27	29	60	35	56	32	38	
11:00 PM	7	20	18	10	26	16	40	16	20	
Day Total	2083	2132	2066	2220	2324	2163	2340	1630	2114	
% Weekday Average	96.3%	98.6%	95.5%	102.6%	107.4%					
% Week Average	98.5%	100.9%	97.7%	105%	109.9%	102.3%	110.7%	77.1%		
AM Peak Volume	11:00 AM 94	8:00 AM 85	11:00 AM 91	10:00 AM 98	11:00 AM 97	11:00 AM 90	11:00 AM 153	11:00 AM 94	11:00 AM 99	
PM Peak Volume	5:00 PM 282	5:00 PM 245	5:00 PM 247	5:00 PM 245	5:00 PM 273	5:00 PM 258	1:00 PM 192	12:00 PM 172	5:00 PM 220	
Comments:										

Report generated on 5/10/2023 9:23 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

Type of report: Tube Count - Volume Data

LOCATION: Forest Hills Blvd south of US 80 SPECIFIC LOCATION: CITY/STATE: Eastwood, LA										QC JOB #: 16151109 DIRECTION: NB, SB DATE: May 1 2023 - May 7 2023
Start Time	Mon 1 May 23	Tue 2 May 23	Wed 3 May 23	Thu 4 May 23	Fri 5 May 23	Average Weekday Hourly Traffic	Sat 6 May 23	Sun 7 May 23	Average Week Hourly Traffic	Average Week Profile
12:00 AM	12	21	9	11	20	15	38	39	21	
01:00 AM	6	7	4	6	4	5	21	18	9	
02:00 AM	2	3	6	4	3	4	5	14	5	
03:00 AM	6	11	8	5	9	8	11	10	9	
04:00 AM	24	29	25	22	24	25	9	9	20	
05:00 AM	63	56	58	59	62	60	38	21	51	
06:00 AM	223	245	231	243	228	234	119	32	189	
07:00 AM	398	392	405	403	397	399	222	66	326	
08:00 AM	226	226	223	205	239	224	320	164	229	
09:00 AM	161	189	142	160	168	164	339	201	194	
10:00 AM	155	170	161	198	179	173	331	213	201	
11:00 AM	198	170	178	194	222	192	314	189	209	
12:00 PM	192	207	205	229	220	211	376	297	247	
01:00 PM	237	224	213	223	248	229	332	295	253	
02:00 PM	266	272	291	296	308	287	292	246	282	
03:00 PM	348	353	319	352	400	354	305	243	331	
04:00 PM	388	356	330	398	397	374	312	248	347	
05:00 PM	441	394	416	433	453	427	276	220	376	
06:00 PM	228	288	259	260	320	271	276	187	260	
07:00 PM	259	249	281	278	244	262	218	191	246	
08:00 PM	151	209	189	201	210	192	180	157	185	
09:00 PM	96	115	117	170	164	132	147	83	127	
10:00 PM	49	44	34	47	107	56	95	55	62	
11:00 PM	15	26	23	14	39	23	71	25	30	
Day Total	4144	4256	4127	4411	4665	4321	4647	3223	4209	
% Weekday Average	95.9%	98.5%	95.5%	102.1%	108%					
% Week Average	98.5%	101.1%	98.1%	104.8%	110.8%	102.7%	110.4%	76.6%		
AM Peak Volume	7:00 AM 398	7:00 AM 392	7:00 AM 405	7:00 AM 403	7:00 AM 397	7:00 AM 399	9:00 AM 339	10:00 AM 213	7:00 AM 326	
PM Peak Volume	5:00 PM 441	5:00 PM 394	5:00 PM 416	5:00 PM 433	5:00 PM 453	5:00 PM 427	12:00 PM 376	12:00 PM 297	5:00 PM 376	
Comments:										

Report generated on 5/10/2023 9:23 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>)

FIGURE 1: EXISTING COUNTS

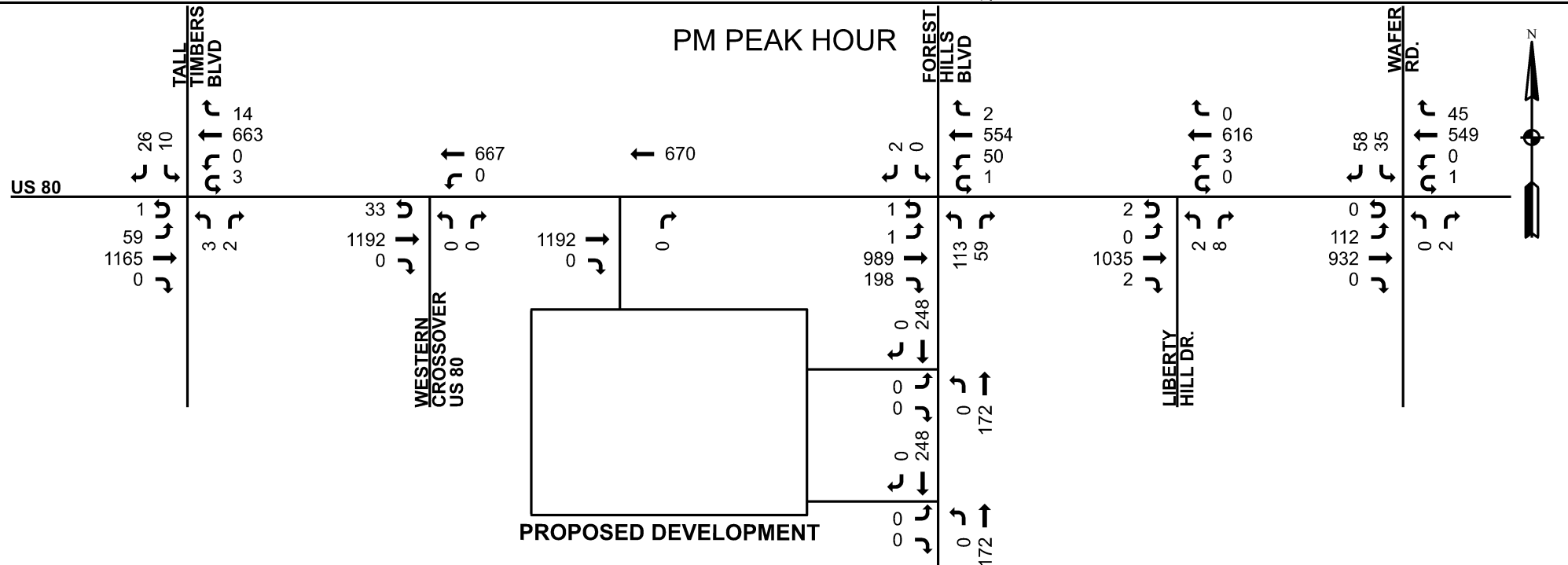
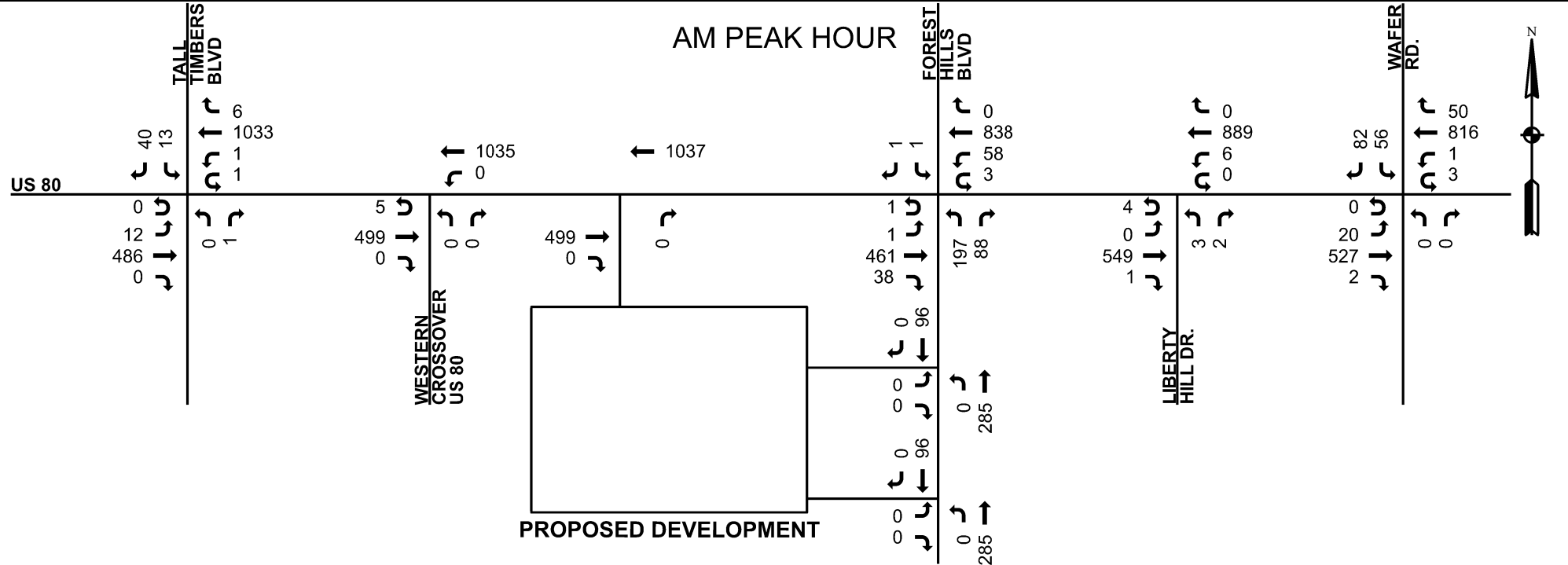


FIGURE 2: TRIP DISTRIBUTION

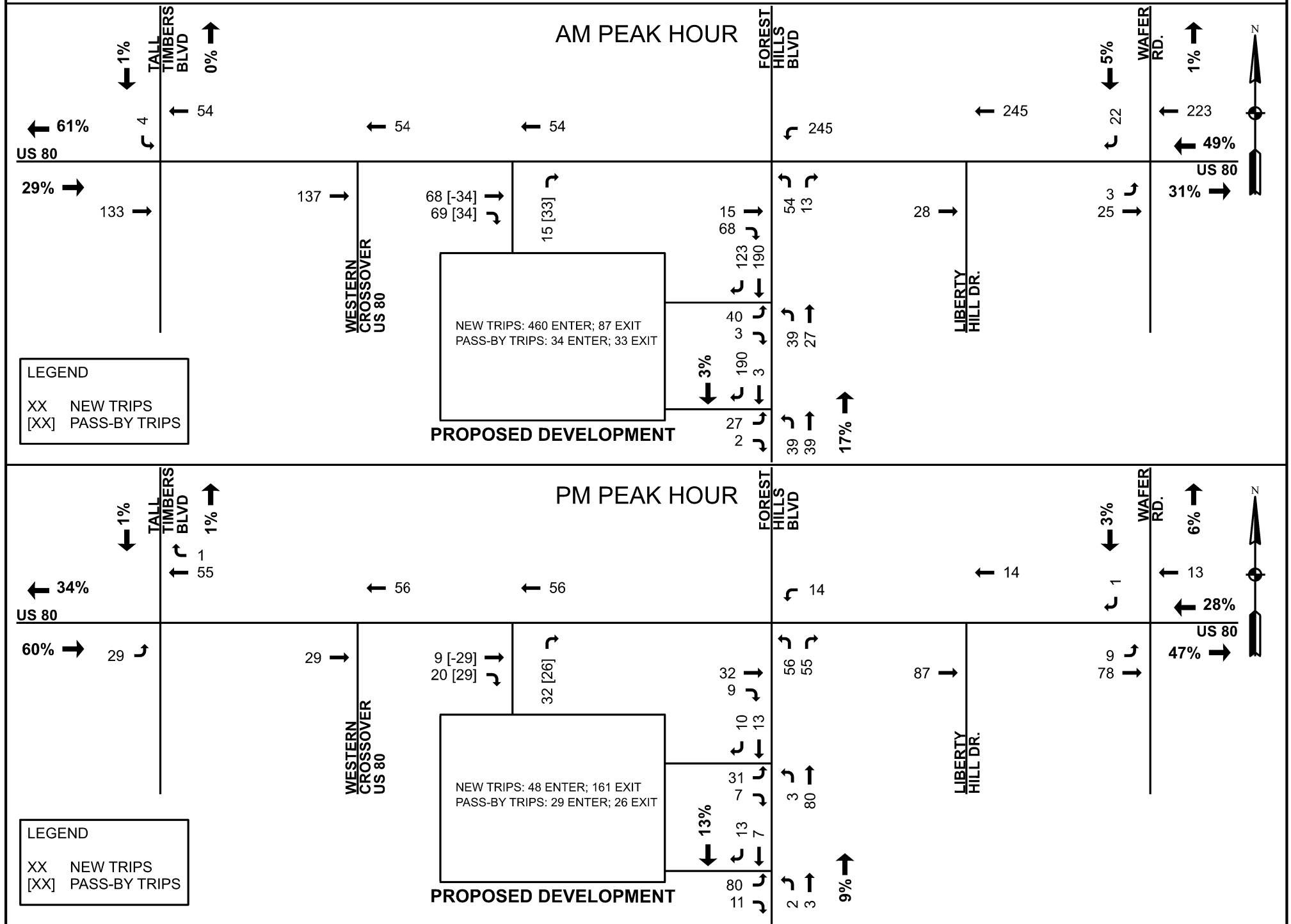
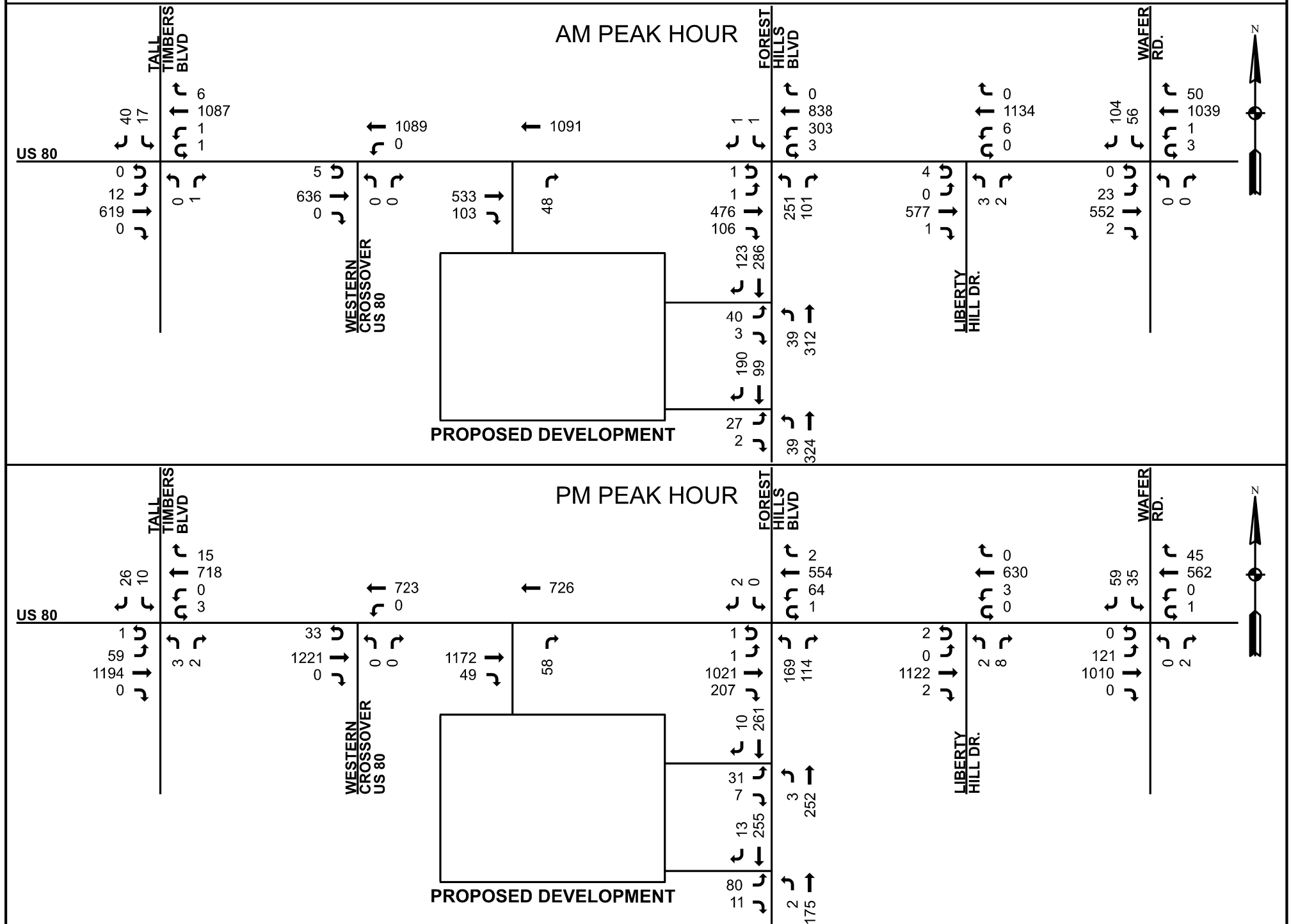


FIGURE 3: FUTURE VOLUMES



ATTACHMENT C

Sight Distance Evaluation



ATTACHMENT D

Trip Generation Tables

Trip Generation Manual, 11th Edition

AM PEAK
<u>DATA STATISTICS</u>
Land Use:
Office Park (750)
Click for Description and Data Plots
Independent Variable: 26.1
1000 Sq. Ft. GFA
Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
23
Avg. 1000 Sq. Ft. GFA:
498
Average Rate:
1.33
Range of Rates:
0.60 - 4.74
Standard Deviation:
0.51
Fitted Curve Equation:
$T = 0.94(X) + 194.06$
R2:
0.86
Directional Distribution:
89% entering, 11% exiting
Calculated Trip Ends:
Average Rate: 35 (Total), 31 (Entry), 4 (Exit)
<i>Fitted Curve: 219 (Total), 195 (Entry), 24 (Exit)</i>

PM PEAK
<u>DATA STATISTICS</u>
Land Use:
Office Park (750)
Click for Description and Data Plots
Independent Variable: 26.1
1000 Sq. Ft. GFA
Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
20
Avg. 1000 Sq. Ft. GFA:
563
Average Rate:
1.3
Range of Rates:
0.64 - 3.03
Standard Deviation:
0.32
Fitted Curve Equation:
$T = 1.26(X) + 20.98$
R2:
0.97
Directional Distribution:
14% entering, 86% exiting
Calculated Trip Ends:
Average Rate: 34 (Total), 5 (Entry), 29 (Exit)
<i>Fitted Curve: 54 (Total), 8 (Entry), 46 (Exit)</i>

Trip Generation Manual, 11th Edition

AM PEAK
<u>DATA STATISTICS</u>
Land Use:
Office Park (750)
Click for Description and Data Plots
Independent Variable: 67.7
1000 Sq. Ft. GFA
Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
23
Avg. 1000 Sq. Ft. GFA:
498
Average Rate:
1.33
Range of Rates:
0.60 - 4.74
Standard Deviation:
0.51
Fitted Curve Equation:
$T = 0.94(X) + 194.06$
R2:
0.86
Directional Distribution:
89% entering, 11% exiting
Calculated Trip Ends:
Average Rate: 90 (Total), 80 (Entry), 10 (Exit)
<i>Fitted Curve: 258 (Total), 229 (Entry), 29 (Exit)</i>

PM PEAK
<u>DATA STATISTICS</u>
Land Use:
Office Park (750)
Click for Description and Data Plots
Independent Variable: 67.7
1000 Sq. Ft. GFA
Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
20
Avg. 1000 Sq. Ft. GFA:
563
Average Rate:
1.3
Range of Rates:
0.64 - 3.03
Standard Deviation:
0.32
Fitted Curve Equation:
$T = 1.26(X) + 20.98$
R2:
0.97
Directional Distribution:
14% entering, 86% exiting
Calculated Trip Ends:
Average Rate: 88 (Total), 12 (Entry), 76 (Exit)
<i>Fitted Curve: 106 (Total), 15 (Entry), 91 (Exit)</i>

Trip Generation Manual, 11th Edition

<u>AM PEAK</u>
<u>DATA STATISTICS</u>
Land Use:
Fast-Food Restaurant with Drive-Through Window (934)
Click for Description and Data Plots
Independent Variable: 3
1000 Sq. Ft. GFA
Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
96
Avg. 1000 Sq. Ft. GFA:
4
Average Rate:
44.61
Range of Rates:
1.05 - 164.25
Standard Deviation:
27.14
Fitted Curve Equation:
Not Given
R2:

Directional Distribution:
51% entering, 49% exiting
Calculated Trip Ends:
Average Rate: 134 (Total), 68 (Entry), 66 (Exit)

<u>PM PEAK</u>
<u>DATA STATISTICS</u>
Land Use:
Fast-Food Restaurant with Drive-Through Window (934)
Click for Description and Data Plots
Independent Variable: 3
1000 Sq. Ft. GFA
Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
190
Avg. 1000 Sq. Ft. GFA:
3
Average Rate:
33.03
Range of Rates:
8.77 - 117.22
Standard Deviation:
17.59
Fitted Curve Equation:
Not Given
R2:

Directional Distribution:
52% entering, 48% exiting
Calculated Trip Ends:
Average Rate: 99 (Total), 52 (Entry), 47 (Exit)

Trip Generation Manual, 11th Edition

AM PEAK
<u>DATA STATISTICS</u>
Land Use:
Mini-Warehouse (151)
Click for Description and Data Plots
Independent Variable: 32.82
1000 Sq. Ft. GFA
Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
13
Avg. 1000 Sq. Ft. GFA:
70
Average Rate:
0.09
Range of Rates:
0.04 - 0.17
Standard Deviation:
0.05
Fitted Curve Equation:
Not Given
R2:

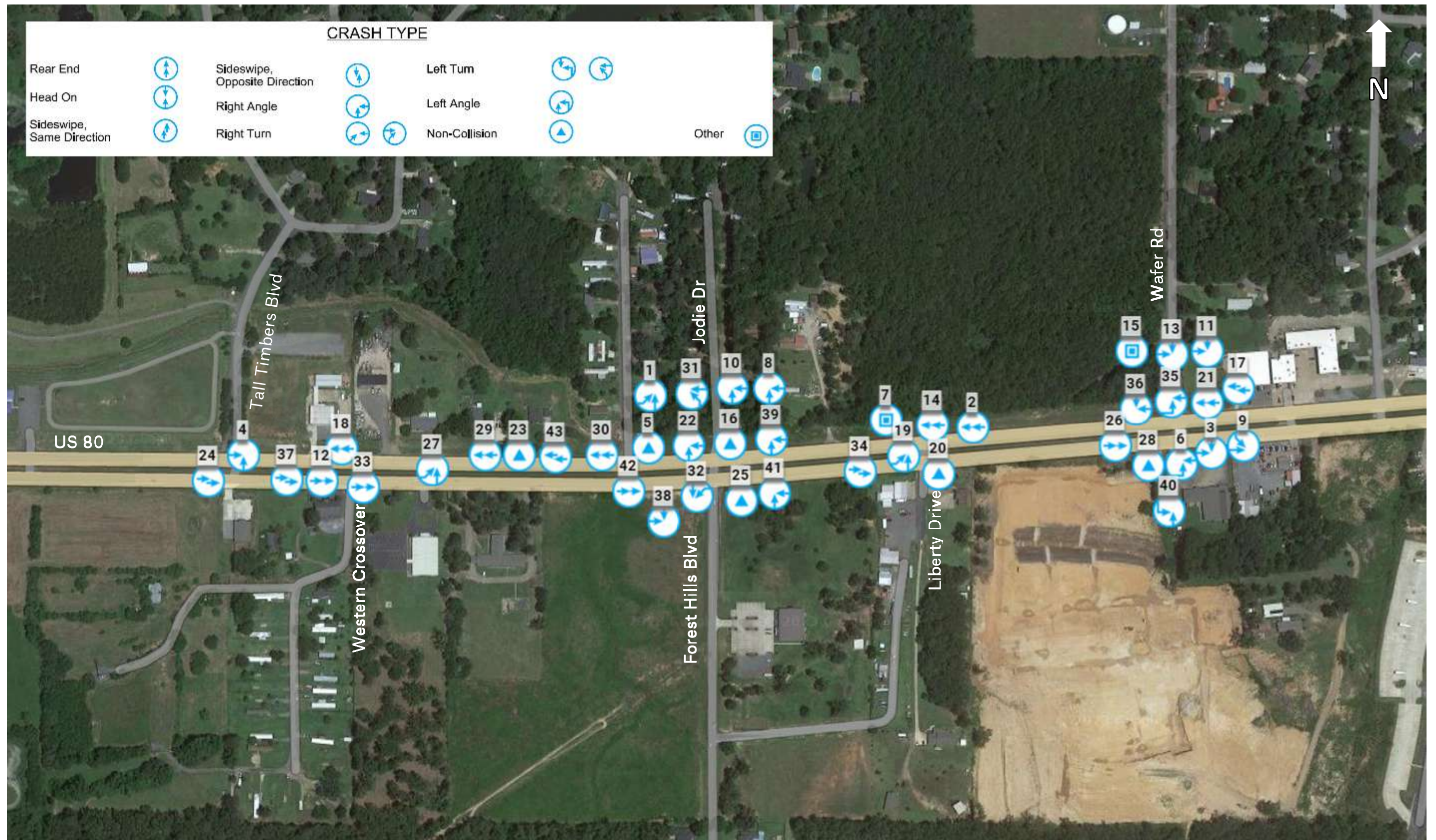
Directional Distribution:
59% entering, 41% exiting
Calculated Trip Ends:
Average Rate: 3 (Total), 2 (Entry), 1 (Exit)

PM PEAK
<u>DATA STATISTICS</u>
Land Use:
Mini-Warehouse (151)
Click for Description and Data Plots
Independent Variable: 32.82
1000 Sq. Ft. GFA
Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
18
Avg. 1000 Sq. Ft. GFA:
59
Average Rate:
0.15
Range of Rates:
0.02 - 0.64
Standard Deviation:
0.14
Fitted Curve Equation:
Not Given
R2:

Directional Distribution:
47% entering, 53% exiting
Calculated Trip Ends:
Average Rate: 5 (Total), 2 (Entry), 3 (Exit)

ATTACHMENT E

Crash Data & Tier 1 Matrix



This correspondence and the information contained herein is prepared solely for the purpose of identifying, evaluating and planning safety improvements on public roads which may be implemented utilizing federal aid funds; and is therefore exempt from discovery or admission into evidence pursuant to 23 U.S.C. 407.

TIER 1 ALTERNATIVES MATRIX US 80 AT FOREST HILLS

	OPERATIONS	SAFETY	RIGHT OF WAY (ROW)	COSTS	IMPACTS TO SURROUNDING PROPERTY/ACCESS AND MOBILITY	NOTES
No Build	HIGH	HIGH	LOW	LOW	LOW	Delays on the NB approach are high. Currently experiencing a crash issue.
Convert to Traffic Signal Control	LOW	LOW	LOW	MEDIUM	LOW	Will improve operations and safety and will be the least expensive to construct. Warrant 7 crashes and volume components are met based on existing conditions. No known measures have been taken to correct crash issue.
Convert to J-Turn	LOW	LOW	LOW	HIGH	MEDIUM	Will improve operations and safety but will be more expensive to construct and increase travel times for for the people living in Forest Hills subdivision traveling to the City. May be some impacts of constructions. Would likely require public outreach.
Convert to Roundabout	LOW	MEDIUM	HIGH	HIGH	MEDIUM	Will improve operations and safety but will be most expensive to construct. Based on existing volumes on US 80, this would require a multi lane roundabout. Major impacts from construction. Would likely require public outreach.

ATTACHMENT F

Intersection Capacity Analyses

1.1 Existing AM

1: US 80 & Tall Timbers Blvd

09/12/2023

Intersection													
Int Delay, s/veh	0.8												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	12	486	0	1	1	1033	6	0	0	1	13	0	40
Future Vol, veh/h	12	486	0	1	1	1033	6	0	0	1	13	0	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	270	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	528	0	1	1	1123	7	0	0	1	14	0	43
Major/Minor	Major1			Major2			Minor1			Minor2			
Conflicting Flow All	1129	0	0	528	528	0	0	1120	1688	264	1421	1685	565
Stage 1	-	-	-	-	-	-	-	554	554	-	1130	1130	-
Stage 2	-	-	-	-	-	-	-	566	1134	-	290	554	-
Critical Hdwy	4.14	-	-	6.44	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.52	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	614	-	-	664	1035	-	-	161	93	734	97	93	468
Stage 1	-	-	-	-	-	-	-	484	512	-	217	277	-
Stage 2	-	-	-	-	-	-	-	476	276	-	693	512	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	614	-	-	808	808	-	-	143	90	734	94	91	468
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	267	193	-	175	199	-
Stage 1	-	-	-	-	-	-	-	474	501	-	212	276	-
Stage 2	-	-	-	-	-	-	-	431	275	-	678	501	-
Approach	EB			WB			NB			SB			
HCM Control Delay, s/v	0.48			0.02			9.91			18.09			
HCM LOS							A			C			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)	734	614	-	-	808	-	-	332					
HCM Lane V/C Ratio	0.001	0.021	-	-	0.001	-	-	0.173					
HCM Control Delay (s/veh)	9.9	11	0.2	-	9.5	-	-	18.1					
HCM Lane LOS	A	B	A	-	A	-	-	C					
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.6					

1.1 Existing AM

2: Western Crossover US 80 & US 80

09/12/2023

Intersection							
Int Delay, s/veh	0.2						
Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations		↔↔			↔↔	↔↔	
Traffic Vol, veh/h	5	499	0	0	1035	0	0
Future Vol, veh/h	5	499	0	0	1035	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	1	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	5	542	0	0	1125	0	0
Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	1125	0	0	542	-	1116	271
Stage 1	-	-	-	-	-	553	-
Stage 2	-	-	-	-	-	563	-
Critical Hdwy	6.44	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	276	-	-	0	-	202	727
Stage 1	-	-	-	0	-	540	-
Stage 2	-	-	-	0	-	534	-
Platoon blocked, %		-	-		-		
Mov Cap-1 Maneuver	276	-	-	-	-	197	727
Mov Cap-2 Maneuver	-	-	-	-	-	331	-
Stage 1	-	-	-	-	-	527	-
Stage 2	-	-	-	-	-	534	-
Approach	EB		WB		NB		
HCM Control Delay, s/v	0.59		0		0		
HCM LOS	A						
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT			
Capacity (veh/h)	-	-	-	-			
HCM Lane V/C Ratio	-	-	-	-			
HCM Control Delay (s/veh)	0	0.4	-	-			
HCM Lane LOS	A	A	-	-			
HCM 95th %tile Q(veh)	-	-	-	-			

1.1 Existing AM
3: Driveway 1 & US 80

09/12/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↱			↑↑		↱
Traffic Vol, veh/h	499	0	0	1037	0	0
Future Vol, veh/h	499	0	0	1037	0	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	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	542	0	0	1127	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	542	-	-	271
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	727
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	727
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s/v	0		0		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s/veh)	0	-	-	-		
HCM Lane LOS	A	-	-	-		
HCM 95th %tile Q(veh)	-	-	-	-		

1.1 Existing AM

4: Forest Hills Blvd/Jolie Dr & US 80

09/12/2023

Intersection

Int Delay, s/veh 30.9

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑↑	↑		↓	↑↑			↑	↑		↑↓	
Traffic Vol, veh/h	1	1	461	38	3	58	838	0	197	0	88	1	0	1
Future Vol, veh/h	1	1	461	38	3	58	838	0	197	0	88	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	235	-	300	-	-	-	-	410	-	-	-
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	501	41	3	63	911	0	214	0	96	1	0	1

Major/Minor	Major1			Major2			Minor1			Minor2				
Conflicting Flow All	911	911	0	0	501	542	0	0	1093	1549	251	1298	1590	455
Stage 1	-	-	-	-	-	-	-	-	505	505	-	1043	1043	-
Stage 2	-	-	-	-	-	-	-	-	588	1043	-	255	547	-
Critical Hdwy	6.44	4.14	-	-	6.44	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.52	2.22	-	-	2.52	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	379	744	-	-	691	1023	-	-	~ 169	113	749	119	107	552
Stage 1	-	-	-	-	-	-	-	-	517	538	-	245	304	-
Stage 2	-	-	-	-	-	-	-	-	462	304	-	727	516	-
Platoon blocked, %			-	-			-	-						
Mov Cap-1 Maneuver	501	501	-	-	990	990	-	-	~ 156	105	749	96	99	552
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	~ 156	105	-	96	99	-
Stage 1	-	-	-	-	-	-	-	-	515	536	-	244	284	-
Stage 2	-	-	-	-	-	-	-	-	430	284	-	631	513	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v 0.05		0.6	180.99	27.23
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	156	749	501	-	-	990	-	-	164
HCM Lane V/C Ratio	1.371	0.128	0.002	-	-	0.067	-	-	0.013
HCM Control Delay (s/veh)	257.1	10.5	12.2	-	-	8.9	-	-	27.2
HCM Lane LOS	F	B	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	13.3	0.4	0	-	-	0.2	-	-	0

Notes

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

1.1 Existing AM
5: Liberty Hill Dr & US 80

09/12/2023

Intersection							
Int Delay, s/veh	0.3						
Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations		↔↔			↔↔	↔	
Traffic Vol, veh/h	4	549	1	6	889	3	2
Future Vol, veh/h	4	549	1	6	889	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	1	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	4	597	1	7	966	3	2
Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	966	0	0	598	0	1102	299
Stage 1	-	-	-	-	-	606	-
Stage 2	-	-	-	-	-	496	-
Critical Hdwy	6.44	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	349	-	-	975	-	206	697
Stage 1	-	-	-	-	-	507	-
Stage 2	-	-	-	-	-	577	-
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	349	-	-	975	-	201	697
Mov Cap-2 Maneuver	-	-	-	-	-	334	-
Stage 1	-	-	-	-	-	500	-
Stage 2	-	-	-	-	-	572	-
Approach	EB		WB		NB		
HCM Control Delay, s/v	0.34		0.14		13.65		
HCM LOS					B		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT		
Capacity (veh/h)	422	-	-	975	-		
HCM Lane V/C Ratio	0.013	-	-	0.007	-		
HCM Control Delay (s/veh)	13.7	0.2	-	8.7	0.1		
HCM Lane LOS	B	A	-	A	A		
HCM 95th %tile Q(veh)	0	-	-	0	-		

1.1 Existing AM
6: US 80 & Wafer Rd

09/13/2023

Intersection													
Int Delay, s/veh	1.6												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	20	527	2	3	1	816	50	0	0	0	56	0	82
Future Vol, veh/h	20	527	2	3	1	816	50	0	0	0	56	0	82
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	Stop
Storage Length	580	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	573	2	3	1	887	54	0	0	0	61	0	89
Major/Minor	Major1			Major2			Minor1			Minor2			
Conflicting Flow All	941	0	0	575	575	0	0	1070	1567	288	1253	1541	471
Stage 1	-	-	-	-	-	-	-	617	617	-	923	923	-
Stage 2	-	-	-	-	-	-	-	452	950	-	330	618	-
Critical Hdwy	4.14	-	-	6.44	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.52	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	724	-	-	620	994	-	-	176	110	709	129	114	539
Stage 1	-	-	-	-	-	-	-	444	479	-	290	347	-
Stage 2	-	-	-	-	-	-	-	557	337	-	657	479	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	724	-	-	685	685	-	-	141	106	709	124	110	539
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	141	106	-	223	228	-
Stage 1	-	-	-	-	-	-	-	430	465	-	282	344	-
Stage 2	-	-	-	-	-	-	-	461	334	-	637	464	-
Approach	EB			WB			NB			SB			
HCM Control Delay, s/v	0.37			0.21			0			15.77			
HCM LOS							A			C			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)	-	724	-	-	685	-	-	483					
HCM Lane V/C Ratio	-	0.03	-	-	0.002	-	-	0.31					
HCM Control Delay (s/veh)	0	10.1	-	-	10.3	0.2	-	15.8					
HCM Lane LOS	A	B	-	-	B	A	-	C					
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	1.3					

1.1 Existing AM
7: Forest Hills Blvd & Driveway 2

09/12/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	285	96	0
Future Vol, veh/h	0	0	0	285	96	0
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, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	310	104	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	414	104	104	0	-	0
Stage 1	104	-	-	-	-	-
Stage 2	310	-	-	-	-	-
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	595	950	1487	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	595	950	1487	-	-	-
Mov Cap-2 Maneuver	595	-	-	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1487	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s/veh)	0	-	0	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	

1.1 Existing AM
8: Forest Hills Blvd & Driveway 3

09/12/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	285	96	0
Future Vol, veh/h	0	0	0	285	96	0
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, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	310	104	0

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	414	104	104	0	-	0
Stage 1	104	-	-	-	-	-
Stage 2	310	-	-	-	-	-
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	595	950	1487	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	595	950	1487	-	-	-
Mov Cap-2 Maneuver	595	-	-	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	744	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS	A		

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

1.3 Existing PM

1: US 80 & Tall Timbers Blvd

09/12/2023

Intersection															
Int Delay, s/veh	1.5														
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔	↔				↔			↔			↔		
Traffic Vol, veh/h	1	59	1165	0	3	0	663	14	3	0	2	10	0	26	
Future Vol, veh/h	1	59	1165	0	3	0	663	14	3	0	2	10	0	26	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None	
Storage Length	-	270	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	1	-	-	1	-	
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	1	64	1266	0	3	0	721	15	3	0	2	11	0	28	
Major/Minor	Major1			Major2			Minor1			Minor2					
Conflicting Flow All	736	736	0	0	1266	1266	-	0	1764	2139	633	1498	2132	368	
Stage 1	-	-	-	-	-	-	-	-	1397	1397	-	735	735	-	
Stage 2	-	-	-	-	-	-	-	-	367	742	-	764	1397	-	
Critical Hdwy	6.44	4.14	-	-	6.44	-	-	-	7.54	6.54	6.94	7.54	6.54	6.94	
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-	
Follow-up Hdwy	2.52	2.22	-	-	2.52	-	-	-	3.52	4.02	3.32	3.52	4.02	3.32	
Pot Cap-1 Maneuver	490	865	-	-	224	0	-	-	53	48	422	84	49	629	
Stage 1	-	-	-	-	-	0	-	-	148	206	-	377	424	-	
Stage 2	-	-	-	-	-	0	-	-	625	420	-	363	206	-	
Platoon blocked, %			-	-			-	-							
Mov Cap-1 Maneuver	853	853	-	-	223	-	-	-	46	44	422	76	44	629	
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	112	130	-	189	135	-	
Stage 1	-	-	-	-	-	-	-	-	137	190	-	349	416	-	
Stage 2	-	-	-	-	-	-	-	-	586	413	-	333	190	-	
Approach	EB			WB			NB			SB					
HCM Control Delay, s/v	1.73			0.09			28.55			15.48					
HCM LOS							D			C					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1								
Capacity (veh/h)	158	853	-	-	-	-	383								
HCM Lane V/C Ratio	0.034	0.076	-	-	-	-	0.102								
HCM Control Delay (s/veh)	28.6	9.6	1.3	-	-	-	15.5								
HCM Lane LOS	D	A	A	-	-	-	C								
HCM 95th %tile Q(veh)	0.1	0.2	-	-	-	-	0.3								

1.3 Existing PM

2: Western Crossover US 80 & US 80

09/12/2023

Intersection							
Int Delay, s/veh	1.1						
Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	33	1192	0	0	667	0	0
Future Vol, veh/h	33	1192	0	0	667	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	1	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	36	1296	0	0	725	0	0
Major/Minor	Major1	Major2		Minor1			
Conflicting Flow All	725	0	0	1296	-	1730	648
Stage 1	-	-	-	-	-	1367	-
Stage 2	-	-	-	-	-	363	-
Critical Hdwy	6.44	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	498	-	-	0	-	79	413
Stage 1	-	-	-	0	-	202	-
Stage 2	-	-	-	0	-	675	-
Platoon blocked, %		-	-		-		
Mov Cap-1 Maneuver	498	-	-	-	-	70	413
Mov Cap-2 Maneuver	-	-	-	-	-	148	-
Stage 1	-	-	-	-	-	179	-
Stage 2	-	-	-	-	-	675	-
Approach	EB	WB		NB			
HCM Control Delay, s/v	1.67	0		0			
HCM LOS				A			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT			
Capacity (veh/h)	-	-	-	-			
HCM Lane V/C Ratio	-	-	-	-			
HCM Control Delay (s/veh)	0	1.4	-	-			
HCM Lane LOS	A	A	-	-			
HCM 95th %tile Q(veh)	-	-	-	-			

1.3 Existing PM
3: Driveway 1 & US 80

09/12/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↑
Traffic Vol, veh/h	1192	0	0	670	0	0
Future Vol, veh/h	1192	0	0	670	0	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	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1296	0	0	728	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1296
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	-	-	0
Stage 1	-	-	0
Stage 2	-	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

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

1.3 Existing PM

4: Forest Hills Blvd/Jolie Dr & US 80

09/12/2023

Intersection														
Int Delay, s/veh	25.1													
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↑↑	↑		↓	↑↑			↑	↑		↑↓	
Traffic Vol, veh/h	1	1	989	198	1	50	554	2	113	0	59	0	0	2
Future Vol, veh/h	1	1	989	198	1	50	554	2	113	0	59	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	235	-	300	-	-	-	-	410	-	-	-
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	1075	215	1	54	602	2	123	0	64	0	0	2

Major/Minor	Major1		Major2		Minor1		Minor2	
Conflicting Flow All	604	604	0	0	1075	1290	0	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	4.14	-	-	6.44	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	2.22	-	-	2.52	2.22	-	-
Pot Cap-1 Maneuver	594	969	-	-	297	533	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	736	736	-	-	523	523	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v 0.02		1.07	283.29	10.2
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	76	488	736	-	-	523	-	-	694
HCM Lane V/C Ratio	1.619	0.131	0.001	-	-	0.106	-	-	0.003
HCM Control Delay (s/veh)	\$ 424.2	13.5	9.9	-	-	12.7	-	-	10.2
HCM Lane LOS	F	B	A	-	-	B	-	-	B
HCM 95th %tile Q(veh)	10.3	0.5	0	-	-	0.4	-	-	0

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

1.3 Existing PM
5: Liberty Hill Dr & US 80

09/12/2023

Intersection							
Int Delay, s/veh	0.2						
Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations		↔↗			↔↗	↗	
Traffic Vol, veh/h	2	1035	2	3	616	2	8
Future Vol, veh/h	2	1035	2	3	616	2	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	1	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	2	1125	2	3	670	2	9

Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	670	0	0	1127	0	1472	564
Stage 1	-	-	-	-	-	1130	-
Stage 2	-	-	-	-	-	341	-
Critical Hdwy	6.44	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	540	-	-	615	-	118	469
Stage 1	-	-	-	-	-	270	-
Stage 2	-	-	-	-	-	691	-
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	540	-	-	615	-	116	469
Mov Cap-2 Maneuver	-	-	-	-	-	216	-
Stage 1	-	-	-	-	-	268	-
Stage 2	-	-	-	-	-	687	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0.09	0.12	14.76
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	380	-	-	615	-
HCM Lane V/C Ratio	0.029	-	-	0.005	-
HCM Control Delay (s/veh)	14.8	0.1	-	10.9	0.1
HCM Lane LOS	B	A	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

1.3 Existing PM
6: US 80 & Wafer Rd

09/13/2023

Intersection													
Int Delay, s/veh	1.5												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	112	932	0	1	0	549	45	0	0	2	35	0	58
Future Vol, veh/h	112	932	0	1	0	549	45	0	0	2	35	0	58
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	Stop
Storage Length	580	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	122	1013	0	1	0	597	49	0	0	2	38	0	63

Major/Minor	Major1		Major2		Minor1		Minor2	
Conflicting Flow All	646	0	0	1013	1013	0	0	1557
Stage 1	-	-	-	-	-	-	-	1257
Stage 2	-	-	-	-	-	-	-	301
Critical Hdwy	4.14	-	-	6.44	4.14	-	-	7.54
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54
Follow-up Hdwy	2.22	-	-	2.52	2.22	-	-	3.52
Pot Cap-1 Maneuver	936	-	-	326	680	-	-	76
Stage 1	-	-	-	-	-	-	-	181
Stage 2	-	-	-	-	-	-	-	684
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	936	-	-	324	324	-	-	60
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	60
Stage 1	-	-	-	-	-	-	-	158
Stage 2	-	-	-	-	-	-	-	617

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	1.01	0.15	12.07	14.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	511	936	-	-	324	-	-	480
HCM Lane V/C Ratio	0.004	0.13	-	-	-	-	-	0.211
HCM Control Delay (s/veh)	12.1	9.4	-	-	16.1	0.1	-	14.5
HCM Lane LOS	B	A	-	-	C	A	-	B
HCM 95th %tile Q(veh)	0	0.4	-	-	0	-	-	0.8

1.3 Existing PM
7: Forest Hills Blvd & Driveway 2

09/12/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	172	248	0
Future Vol, veh/h	0	0	0	172	248	0
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, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	187	270	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	457	270	270	0	-	0
Stage 1	270	-	-	-	-	-
Stage 2	187	-	-	-	-	-
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	562	769	1294	-	-	-
Stage 1	776	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	562	769	1294	-	-	-
Mov Cap-2 Maneuver	562	-	-	-	-	-
Stage 1	776	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1294	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s/veh)	0	-	0	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	

1.3 Existing PM
8: Forest Hills Blvd & Driveway 3

09/12/2023

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	172	248	0
Future Vol, veh/h	0	0	0	172	248	0
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, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	187	270	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	457	270	270	0	-	0
Stage 1	270	-	-	-	-	-
Stage 2	187	-	-	-	-	-
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	562	769	1294	-	-	-
Stage 1	776	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	562	769	1294	-	-	-
Mov Cap-2 Maneuver	562	-	-	-	-	-
Stage 1	776	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1294	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s/veh)	0	-	0	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	

1.7 Build AM Signalized Worst Case - Protected Only

1: US 80 & Tall Timbers Blvd

09/12/2023

Intersection													
Int Delay, s/veh	0.8												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	12	619	0	1	1	1087	6	0	0	1	17	0	40
Future Vol, veh/h	12	619	0	1	1	1087	6	0	0	1	17	0	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	270	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	673	0	1	1	1182	7	0	0	1	18	0	43
Major/Minor	Major1			Major2			Minor1			Minor2			
Conflicting Flow All	1188	0	0	673	673	0	0	1294	1891	336	1552	1888	594
Stage 1	-	-	-	-	-	-	-	699	699	-	1189	1189	-
Stage 2	-	-	-	-	-	-	-	595	1192	-	363	699	-
Critical Hdwy	4.14	-	-	6.44	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.52	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	583	-	-	538	914	-	-	120	69	659	77	70	448
Stage 1	-	-	-	-	-	-	-	397	440	-	199	260	-
Stage 2	-	-	-	-	-	-	-	458	259	-	629	440	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	583	-	-	676	676	-	-	105	67	659	75	68	448
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	227	170	-	158	176	-
Stage 1	-	-	-	-	-	-	-	388	430	-	195	258	-
Stage 2	-	-	-	-	-	-	-	411	257	-	614	430	-
Approach	EB			WB			NB			SB			
HCM Control Delay, s/v	0.45			0.02			10.47			20.79			
HCM LOS							B			C			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)	659	583	-	-	676	-	-	289					
HCM Lane V/C Ratio	0.002	0.022	-	-	0.002	-	-	0.214					
HCM Control Delay (s/veh)	10.5	11.3	0.2	-	10.3	-	-	20.8					
HCM Lane LOS	B	B	A	-	B	-	-	C					
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.8					

1.7 Build AM Signalized Worst Case - Protected Only
2: Western Crossover US 80 & US 80

09/12/2023

Intersection							
Int Delay, s/veh	0.2						
Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations		↔↔			↔↔	↔↔	
Traffic Vol, veh/h	5	636	0	0	1089	0	0
Future Vol, veh/h	5	636	0	0	1089	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	1	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	5	691	0	0	1184	0	0
Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	1184	0	0	691	-	1294	346
Stage 1	-	-	-	-	-	702	-
Stage 2	-	-	-	-	-	592	-
Critical Hdwy	6.44	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	253	-	-	0	-	154	650
Stage 1	-	-	-	0	-	453	-
Stage 2	-	-	-	0	-	516	-
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	253	-	-	-	-	150	650
Mov Cap-2 Maneuver	-	-	-	-	-	284	-
Stage 1	-	-	-	-	-	440	-
Stage 2	-	-	-	-	-	516	-
Approach	EB		WB		NB		
HCM Control Delay, s/v	0.66		0		0		
HCM LOS					A		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT			
Capacity (veh/h)	-	-	-	-			
HCM Lane V/C Ratio	-	-	-	-			
HCM Control Delay (s/veh)	0	0.5	-	-			
HCM Lane LOS	A	A	-	-			
HCM 95th %tile Q(veh)	-	-	-	-			

1.7 Build AM Signalized Worst Case - Protected Only
3: Driveway 1 & US 80

09/12/2023

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗		↑↑		↗
Traffic Vol, veh/h	533	103	0	1091	0	48
Future Vol, veh/h	533	103	0	1091	0	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	-	-	-	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	579	112	0	1186	0	52
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	691	-	-	290
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	707
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	707
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s/v	0		0		10.5	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	707	-	-	-		
HCM Lane V/C Ratio	0.074	-	-	-		
HCM Control Delay (s/veh)	10.5	-	-	-		
HCM Lane LOS	B	-	-	-		
HCM 95th %tile Q(veh)	0.2	-	-	-		

1.7 Build AM Signalized Worst Case - Protected Only

4: Forest Hills Blvd/Jolie Dr & US 80

09/12/2023

												
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	1	1	476	106	3	303	838	0	251	0	101	1
Future Volume (veh/h)	1	1	476	106	3	303	838	0	251	0	101	1
Initial Q (Qb), veh		0	0	0		0	0	0	0	0	0	0
Lane Width Adj.		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)		1.00		1.00		1.00		1.00	1.00		1.00	1.00
Parking Bus, Adj		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No				No		
Adj Sat Flow, veh/h/ln		1870	1870	1870		1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		1	517	30		329	911	0	273	0	12	1
Peak Hour Factor		0.92	0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2		2	2	2	2	2	2	2
Cap, veh/h		5	1010	451		397	1793	0	358	0	330	102
Arrive On Green		0.00	0.28	0.28		0.22	0.50	0.00	0.21	0.00	0.21	0.21
Sat Flow, veh/h		1781	3554	1585		1781	3647	0	1063	0	1585	0
Grp Volume(v), veh/h		1	517	30		329	911	0	273	0	12	2
Grp Sat Flow(s),veh/h/ln		1781	1777	1585		1781	1777	0	1063	0	1585	305
Q Serve(g_s), s		0.0	6.4	0.7		9.3	9.0	0.0	0.0	0.0	0.3	0.0
Cycle Q Clear(g_c), s		0.0	6.4	0.7		9.3	9.0	0.0	11.0	0.0	0.3	11.0
Prop In Lane		1.00		1.00		1.00		0.00	1.00		1.00	0.50
Lane Grp Cap(c), veh/h		5	1010	451		397	1793	0	358	0	330	166
V/C Ratio(X)		0.20	0.51	0.07		0.83	0.51	0.00	0.76	0.00	0.04	0.01
Avail Cap(c_a), veh/h		338	1010	451		641	1793	0	358	0	330	166
HCM Platoon Ratio		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00		1.00	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh		26.3	15.8	13.8		19.5	8.7	0.0	21.9	0.0	16.7	17.3
Incr Delay (d2), s/veh		19.2	0.4	0.1		4.8	0.2	0.0	9.3	0.0	0.0	0.0
Initial Q Delay(d3), s/veh		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln		0.1	3.6	0.4		6.3	3.7	0.0	7.4	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh		45.5	16.3	13.8		24.4	8.9	0.0	31.2	0.0	16.7	17.4
LnGrp LOS		D	B	B		C	A		C		B	B
Approach Vol, veh/h			548				1240			285		
Approach Delay, s/veh			16.2				13.0			30.6		
Approach LOS			B				B			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.8	20.0		16.0	5.1	31.6		16.0				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	19.0	15.0		11.0	10.0	24.0		11.0				
Max Q Clear Time (g_c+l1), s	11.3	8.4		13.0	2.0	11.0		13.0				
Green Ext Time (p_c), s	0.6	1.6		0.0	0.0	4.5		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			16.3									
HCM 7th LOS			B									
Notes												
User approved ignoring U-Turning movement.												

1.7 Build AM Signalized Worst Case - Protected Only

4: Forest Hills Blvd/Jolie Dr & US 80

09/12/2023



Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	0	1
Future Volume (veh/h)	0	1
Initial Q (Qb), veh	0	0
Lane Width Adj.	1.00	1.00
Ped-Bike Adj(A_pbT)		1.00
Parking Bus, Adj	1.00	1.00
Work Zone On Approach	No	
Adj Sat Flow, veh/h/ln	1870	1870
Adj Flow Rate, veh/h	0	1
Peak Hour Factor	0.92	0.92
Percent Heavy Veh, %	2	2
Cap, veh/h	32	32
Arrive On Green	0.00	0.21
Sat Flow, veh/h	153	153
Grp Volume(v), veh/h	0	0
Grp Sat Flow(s), veh/h/ln	0	0
Q Serve(g_s), s	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0
Prop In Lane		0.50
Lane Grp Cap(c), veh/h	0	0
V/C Ratio(X)	0.00	0.00
Avail Cap(c_a), veh/h	0	0
HCM Platoon Ratio	1.00	1.00
Upstream Filter(I)	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0
Unsig. Movement Delay, s/veh		
LnGrp Delay(d), s/veh	0.0	0.0
LnGrp LOS		
Approach Vol, veh/h	2	
Approach Delay, s/veh	17.4	
Approach LOS	B	
Timer - Assigned Phs		

1.7 Build AM Signalized Worst Case - Protected Only
5: Liberty Hill Dr & US 80

09/12/2023

Intersection							
Int Delay, s/veh	0.3						
Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations		↔↔			↔↔	↔	
Traffic Vol, veh/h	4	577	1	6	1134	3	2
Future Vol, veh/h	4	577	1	6	1134	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	1	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	4	627	1	7	1233	3	2

Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	1233	0	0	628	0	1266	314
Stage 1	-	-	-	-	-	636	-
Stage 2	-	-	-	-	-	629	-
Critical Hdwy	6.44	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	235	-	-	950	-	161	682
Stage 1	-	-	-	-	-	489	-
Stage 2	-	-	-	-	-	493	-
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	235	-	-	950	-	156	682
Mov Cap-2 Maneuver	-	-	-	-	-	291	-
Stage 1	-	-	-	-	-	478	-
Stage 2	-	-	-	-	-	488	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0.59	0.14	14.68
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	377	-	-	950	-
HCM Lane V/C Ratio	0.014	-	-	0.007	-
HCM Control Delay (s/veh)	14.7	0.5	-	8.8	0.1
HCM Lane LOS	B	A	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

1.7 Build AM Signalized Worst Case - Protected Only
6: US 80 & Wafer Rd

09/13/2023

Intersection													
Int Delay, s/veh	2.1												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	23	552	2	3	1	1039	50	0	0	0	56	0	104
Future Vol, veh/h	23	552	2	3	1	1039	50	0	0	0	56	0	104
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	Stop
Storage Length	580	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	600	2	3	1	1129	54	0	0	0	61	0	113

Major/Minor	Major1		Major2		Minor1		Minor2	
Conflicting Flow All	1184	0	0	602	602	0	0	1224
Stage 1	-	-	-	-	-	-	-	651
Stage 2	-	-	-	-	-	-	-	573
Critical Hdwy	4.14	-	-	6.44	4.14	-	-	7.54
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54
Follow-up Hdwy	2.22	-	-	2.52	2.22	-	-	3.52
Pot Cap-1 Maneuver	586	-	-	596	971	-	-	135
Stage 1	-	-	-	-	-	-	-	424
Stage 2	-	-	-	-	-	-	-	471
Platoon blocked, %	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	586	-	-	660	660	-	-	96
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	96
Stage 1	-	-	-	-	-	-	-	406
Stage 2	-	-	-	-	-	-	-	349

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.46	0.23	0	21.2
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	586	-	-	660	-	-	393
HCM Lane V/C Ratio	-	0.043	-	-	0.002	-	-	0.442
HCM Control Delay (s/veh)	0	11.4	-	-	10.5	0.2	-	21.2
HCM Lane LOS	A	B	-	-	B	A	-	C
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	2.2

1.7 Build AM Signalized Worst Case - Protected Only
7: Forest Hills Blvd & Driveway 2

09/12/2023

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	3	39	312	286	123
Future Vol, veh/h	40	3	39	312	286	123
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, %	2	2	2	2	2	2
Mvmt Flow	43	3	42	339	311	134
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	802	378	445	0	-	0
Stage 1	378	-	-	-	-	-
Stage 2	424	-	-	-	-	-
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	353	669	1116	-	-	-
Stage 1	693	-	-	-	-	-
Stage 2	660	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	337	669	1116	-	-	-
Mov Cap-2 Maneuver	337	-	-	-	-	-
Stage 1	661	-	-	-	-	-
Stage 2	660	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v16.91		0.93		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1116	-	349	-	-	
HCM Lane V/C Ratio	0.038	-	0.134	-	-	
HCM Control Delay (s/veh)	8.4	0	16.9	-	-	
HCM Lane LOS	A	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-	

1.7 Build AM Signalized Worst Case - Protected Only
8: Forest Hills Blvd & Driveway 3

09/12/2023

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	2	39	324	99	190
Future Vol, veh/h	27	2	39	324	99	190
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, %	2	2	2	2	2	2
Mvmt Flow	29	2	42	352	108	207
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	648	211	314	0	-	0
Stage 1	211	-	-	-	-	-
Stage 2	437	-	-	-	-	-
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	435	829	1246	-	-	-
Stage 1	824	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	417	829	1246	-	-	-
Mov Cap-2 Maneuver	417	-	-	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	14	0.86		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1246	-	431	-	-	
HCM Lane V/C Ratio	0.034	-	0.073	-	-	
HCM Control Delay (s/veh)	8	0	14	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-	

2.0 Build PM Signalized Worst Case
1: US 80 & Tall Timbers Blvd

09/12/2023

Intersection															
Int Delay, s/veh	1.5														
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔	↔				↕			↕			↕		
Traffic Vol, veh/h	1	59	1194	0	3	0	718	15	3	0	2	10	0	26	
Future Vol, veh/h	1	59	1194	0	3	0	718	15	3	0	2	10	0	26	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None	
Storage Length	-	270	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	1	-	-	1	-	
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92	
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Mvmt Flow	1	64	1298	0	3	0	780	16	3	0	2	11	0	28	
Major/Minor	Major1			Major2			Minor1			Minor2					
Conflicting Flow All	797	797	0	0	1298	1298	-	0	1825	2232	649	1574	2223	398	
Stage 1	-	-	-	-	-	-	-	-	1428	1428	-	795	795	-	
Stage 2	-	-	-	-	-	-	-	-	397	803	-	779	1428	-	
Critical Hdwy	6.44	4.14	-	-	6.44	-	-	-	7.54	6.54	6.94	7.54	6.54	6.94	
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-	
Follow-up Hdwy	2.52	2.22	-	-	2.52	-	-	-	3.52	4.02	3.32	3.52	4.02	3.32	
Pot Cap-1 Maneuver	448	821	-	-	213	0	-	-	48	42	412	74	43	601	
Stage 1	-	-	-	-	-	0	-	-	142	199	-	347	397	-	
Stage 2	-	-	-	-	-	0	-	-	600	394	-	355	199	-	
Platoon blocked, %			-	-			-	-							
Mov Cap-1 Maneuver	809	809	-	-	212	-	-	-	41	38	412	66	39	601	
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	106	122	-	176	127	-	
Stage 1	-	-	-	-	-	-	-	-	130	183	-	319	390	-	
Stage 2	-	-	-	-	-	-	-	-	561	386	-	324	183	-	
Approach	EB			WB			NB			SB					
HCM Control Delay, s/v	1.84			0.09			29.84			16.21					
HCM LOS							D			C					
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBT	WBR	SBLn1								
Capacity (veh/h)	150	809	-	-	-	-	360								
HCM Lane V/C Ratio	0.036	0.081	-	-	-	-	0.109								
HCM Control Delay (s/veh)	29.8	9.8	1.4	-	-	-	16.2								
HCM Lane LOS	D	A	A	-	-	-	C								
HCM 95th %tile Q(veh)	0.1	0.3	-	-	-	-	0.4								

2.0 Build PM Signalized Worst Case
2: Western Crossover US 80 & US 80

09/12/2023

Intersection							
Int Delay, s/veh	1.2						
Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations		↔↔			↔↔	↔↔	
Traffic Vol, veh/h	33	1221	0	0	723	0	0
Future Vol, veh/h	33	1221	0	0	723	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	1	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	36	1327	0	0	786	0	0
Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	786	0	0	1327	-	1792	664
Stage 1	-	-	-	-	-	1399	-
Stage 2	-	-	-	-	-	393	-
Critical Hdwy	6.44	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	455	-	-	0	-	72	403
Stage 1	-	-	-	0	-	194	-
Stage 2	-	-	-	0	-	651	-
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	455	-	-	-	-	63	403
Mov Cap-2 Maneuver	-	-	-	-	-	139	-
Stage 1	-	-	-	-	-	170	-
Stage 2	-	-	-	-	-	651	-
Approach	EB		WB		NB		
HCM Control Delay, s/v	1.92		0		0		
HCM LOS					A		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT			
Capacity (veh/h)	-	-	-	-			
HCM Lane V/C Ratio	-	-	-	-			
HCM Control Delay (s/veh)	0	1.6	-	-			
HCM Lane LOS	A	A	-	-			
HCM 95th %tile Q(veh)	-	-	-	-			

2.0 Build PM Signalized Worst Case

3: Driveway 1 & US 80

09/12/2023

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Vol, veh/h	1172	49	0	726	0	58
Future Vol, veh/h	1172	49	0	726	0	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	250	-	-	-	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	1274	53	0	789	0	63
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1327	-	-	637
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	420
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	420
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s/v	0		0		15.08	
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	420	-	-	-		
HCM Lane V/C Ratio	0.15	-	-	-		
HCM Control Delay (s/veh)	15.1	-	-	-		
HCM Lane LOS	C	-	-	-		
HCM 95th %tile Q(veh)	0.5	-	-	-		

2.0 Build PM Signalized Worst Case
4: Forest Hills Blvd/Jolie Dr & US 80

09/12/2023

												
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL
Lane Configurations												
Traffic Volume (veh/h)	1	1	1021	207	1	64	554	2	169	0	114	0
Future Volume (veh/h)	1	1	1021	207	1	64	554	2	169	0	114	0
Initial Q (Qb), veh		0	0	0		0	0	0	0	0	0	0
Lane Width Adj.		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)		1.00		1.00		1.00		1.00	1.00		1.00	1.00
Parking Bus, Adj		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No				No				No		
Adj Sat Flow, veh/h/ln		1870	1870	1870		1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		1	1110	97		70	602	2	184	0	13	0
Peak Hour Factor		0.92	0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %		2	2	2		2	2	2	2	2	2	2
Cap, veh/h		5	1426	636		219	1895	6	398	0	291	0
Arrive On Green		0.00	0.40	0.40		0.12	0.52	0.52	0.18	0.00	0.18	0.00
Sat Flow, veh/h		1781	3554	1585		1781	3633	12	1407	0	1585	0
Grp Volume(v), veh/h		1	1110	97		70	294	310	184	0	13	0
Grp Sat Flow(s), veh/h/ln		1781	1777	1585		1781	1777	1868	1407	0	1585	0
Q Serve(g_s), s		0.0	14.0	2.0		1.8	4.9	4.9	6.3	0.0	0.3	0.0
Cycle Q Clear(g_c), s		0.0	14.0	2.0		1.8	4.9	4.9	6.3	0.0	0.3	0.0
Prop In Lane		1.00		1.00		1.00		0.01	1.00		1.00	0.00
Lane Grp Cap(c), veh/h		5	1426	636		219	927	974	398	0	291	0
V/C Ratio(X)		0.20	0.78	0.15		0.32	0.32	0.32	0.46	0.00	0.04	0.00
Avail Cap(c_a), veh/h		347	1731	772		347	927	974	415	0	309	0
HCM Platoon Ratio		1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		25.5	13.4	9.8		20.5	7.0	7.0	19.7	0.0	17.3	0.0
Incr Delay (d2), s/veh		19.2	1.9	0.1		0.8	0.2	0.2	0.8	0.0	0.1	0.0
Initial Q Delay(d3), s/veh		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln		0.1	7.3	0.9		1.2	1.9	2.0	3.5	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh		44.7	15.3	9.9		21.4	7.2	7.2	20.6	0.0	17.3	0.0
LnGrp LOS		D	B	A		C	A	A	C		B	
Approach Vol, veh/h			1208				674			197		
Approach Delay, s/veh			14.9				8.7			20.3		
Approach LOS			B				A			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.3	25.6		14.4	5.1	31.8		14.4				
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0				
Max Green Setting (Gmax), s	10.0	25.0		10.0	10.0	25.0		10.0				
Max Q Clear Time (g_c+I1), s	3.8	16.0		2.1	2.0	6.9		8.3				
Green Ext Time (p_c), s	0.1	4.6		0.0	0.0	2.8		0.2				
Intersection Summary												
HCM 7th Control Delay, s/veh			13.4									
HCM 7th LOS			B									
Notes												
User approved ignoring U-Turning movement.												

2.0 Build PM Signalized Worst Case
4: Forest Hills Blvd/Jolie Dr & US 80

09/12/2023



Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	0	2
Future Volume (veh/h)	0	2
Initial Q (Qb), veh	0	0
Lane Width Adj.	1.00	1.00
Ped-Bike Adj(A_pbT)		1.00
Parking Bus, Adj	1.00	1.00
Work Zone On Approach	No	
Adj Sat Flow, veh/h/ln	1870	1870
Adj Flow Rate, veh/h	0	2
Peak Hour Factor	0.92	0.92
Percent Heavy Veh, %	2	2
Cap, veh/h	0	291
Arrive On Green	0.00	0.18
Sat Flow, veh/h	0	1585
Grp Volume(v), veh/h	0	2
Grp Sat Flow(s), veh/h/ln	0	1585
Q Serve(g_s), s	0.0	0.1
Cycle Q Clear(g_c), s	0.0	0.1
Prop In Lane		1.00
Lane Grp Cap(c), veh/h	0	291
V/C Ratio(X)	0.00	0.01
Avail Cap(c_a), veh/h	0	309
HCM Platoon Ratio	1.00	1.00
Upstream Filter(I)	0.00	1.00
Uniform Delay (d), s/veh	0.0	17.1
Incr Delay (d2), s/veh	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0
Unsig. Movement Delay, s/veh		
LnGrp Delay(d), s/veh	0.0	17.1
LnGrp LOS		B
Approach Vol, veh/h	2	
Approach Delay, s/veh	17.1	
Approach LOS	B	
Timer - Assigned Phs		

2.0 Build PM Signalized Worst Case
5: Liberty Hill Dr & US 80

09/12/2023

Intersection							
Int Delay, s/veh	0.2						
Movement	EBU	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations		↔↔			↔↔	↔	
Traffic Vol, veh/h	2	1122	2	3	630	2	8
Future Vol, veh/h	2	1122	2	3	630	2	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	1	-
Grade, %	-	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	2	1220	2	3	685	2	9

Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	685	0	0	1222	0	1574	611
Stage 1	-	-	-	-	-	1225	-
Stage 2	-	-	-	-	-	349	-
Critical Hdwy	6.44	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	2.52	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	528	-	-	566	-	101	437
Stage 1	-	-	-	-	-	241	-
Stage 2	-	-	-	-	-	685	-
Platoon blocked, %	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	528	-	-	566	-	99	437
Mov Cap-2 Maneuver	-	-	-	-	-	193	-
Stage 1	-	-	-	-	-	239	-
Stage 2	-	-	-	-	-	680	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0.09	0.13	15.65
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	349	-	-	566	-
HCM Lane V/C Ratio	0.031	-	-	0.006	-
HCM Control Delay (s/veh)	15.6	0.1	-	11.4	0.1
HCM Lane LOS	C	A	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2.0 Build PM Signalized Worst Case
6: US 80 & Wafer Rd

09/13/2023

Intersection													
Int Delay, s/veh	1.5												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	121	1010	0	1	0	562	45	0	0	2	35	0	59
Future Vol, veh/h	121	1010	0	1	0	562	45	0	0	2	35	0	59
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	Stop
Storage Length	580	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	1	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	132	1098	0	1	0	611	49	0	0	2	38	0	64
Major/Minor	Major1		Major2		Minor1		Minor2						
Conflicting Flow All	660	0	0	1098	1098	0	0	1668	2023	549	1449	1998	330
Stage 1	-	-	-	-	-	-	-	1361	1361	-	637	637	-
Stage 2	-	-	-	-	-	-	-	308	662	-	812	1361	-
Critical Hdwy	4.14	-	-	6.44	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.52	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	924	-	-	287	632	-	-	63	57	480	92	59	666
Stage 1	-	-	-	-	-	-	-	156	215	-	432	469	-
Stage 2	-	-	-	-	-	-	-	677	457	-	339	215	-
Platoon blocked, %		-	-			-	-						
Mov Cap-1 Maneuver	924	-	-	286	286	-	-	49	49	480	78	51	666
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	49	49	-	183	138	-
Stage 1	-	-	-	-	-	-	-	134	184	-	370	467	-
Stage 2	-	-	-	-	-	-	-	609	455	-	289	184	-
Approach	EB		WB		NB		SB						
HCM Control Delay, s/v	1.02		0.18		12.54		15.42						
HCM LOS					B		C						
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1					
Capacity (veh/h)	480	924	-	-	286	-	-	447					
HCM Lane V/C Ratio	0.005	0.142	-	-	-	-	-	0.229					
HCM Control Delay (s/veh)	12.5	9.5	-	-	17.6	0.2	-	15.4					
HCM Lane LOS	B	A	-	-	C	A	-	C					
HCM 95th %tile Q(veh)	0	0.5	-	-	0	-	-	0.9					

2.0 Build PM Signalized Worst Case
7: Forest Hills Blvd & Driveway 2

09/12/2023

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	7	3	252	261	10
Future Vol, veh/h	31	7	3	252	261	10
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, %	2	2	2	2	2	2
Mvmt Flow	34	8	3	274	284	11

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	570	289	295	0	-	0
Stage 1	289	-	-	-	-	-
Stage 2	280	-	-	-	-	-
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	483	750	1267	-	-	-
Stage 1	760	-	-	-	-	-
Stage 2	767	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	482	750	1267	-	-	-
Mov Cap-2 Maneuver	482	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	767	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v12.59		0.09	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1267	-	516	-	-
HCM Lane V/C Ratio	0.003	-	0.08	-	-
HCM Control Delay (s/veh)	7.8	0	12.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

2.0 Build PM Signalized Worst Case
8: Forest Hills Blvd & Driveway 3

09/12/2023

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	11	2	175	255	13
Future Vol, veh/h	80	11	2	175	255	13
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, %	2	2	2	2	2	2
Mvmt Flow	87	12	2	190	277	14

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	479	284	291	0	-	0
Stage 1	284	-	-	-	-	-
Stage 2	195	-	-	-	-	-
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	546	755	1270	-	-	-
Stage 1	764	-	-	-	-	-
Stage 2	838	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	544	755	1270	-	-	-
Mov Cap-2 Maneuver	544	-	-	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	838	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v12.74		0.09	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1270	-	563	-	-
HCM Lane V/C Ratio	0.002	-	0.176	-	-
HCM Control Delay (s/veh)	7.8	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

ATTACHMENT G

Signal Warrant Analysis

HCS Warrants Report

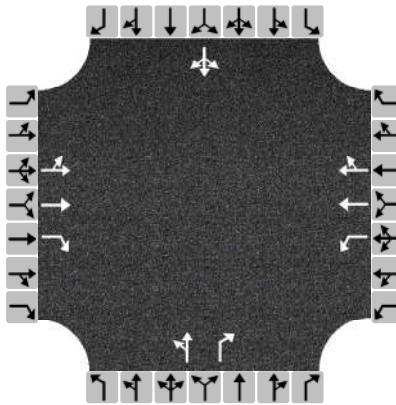
Project Information

Analyst	KM	Date	07/06/2023
Agency	Gresham Smith	Analysis Year	2023
Jurisdiction	US 80 @ Forest Hills Blvd	Time Period Analyzed	6:45 AM - 6:45 PM
Project Description	Forest Hills Commercial Development		

General

Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	6	Coordinated Signal System	No
Median Type	Divided	Crashes (crashes/year)	5
Major Street Speed (mi/h)	40	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	0		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Number of Lanes, N	0	2	1	1	2	0	0	1	1	0	1	0
Lane Usage		LT	R	L	TR			LT	R		LTR	
Vehicle Volumes Averages (veh/h)	2	562	88	45	515	1	91	0	46	0	0	0
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

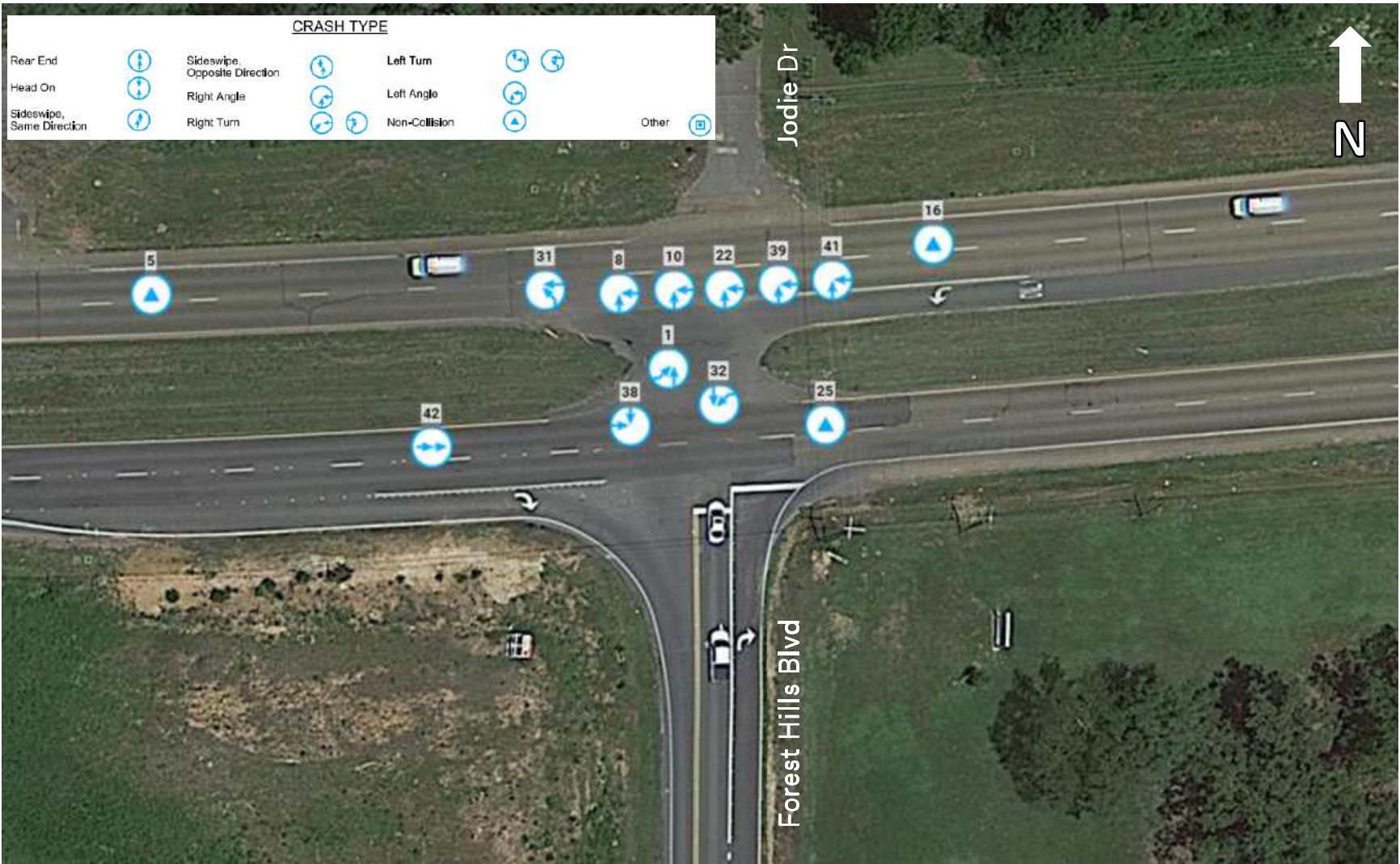
School Crossing and Roadway Network

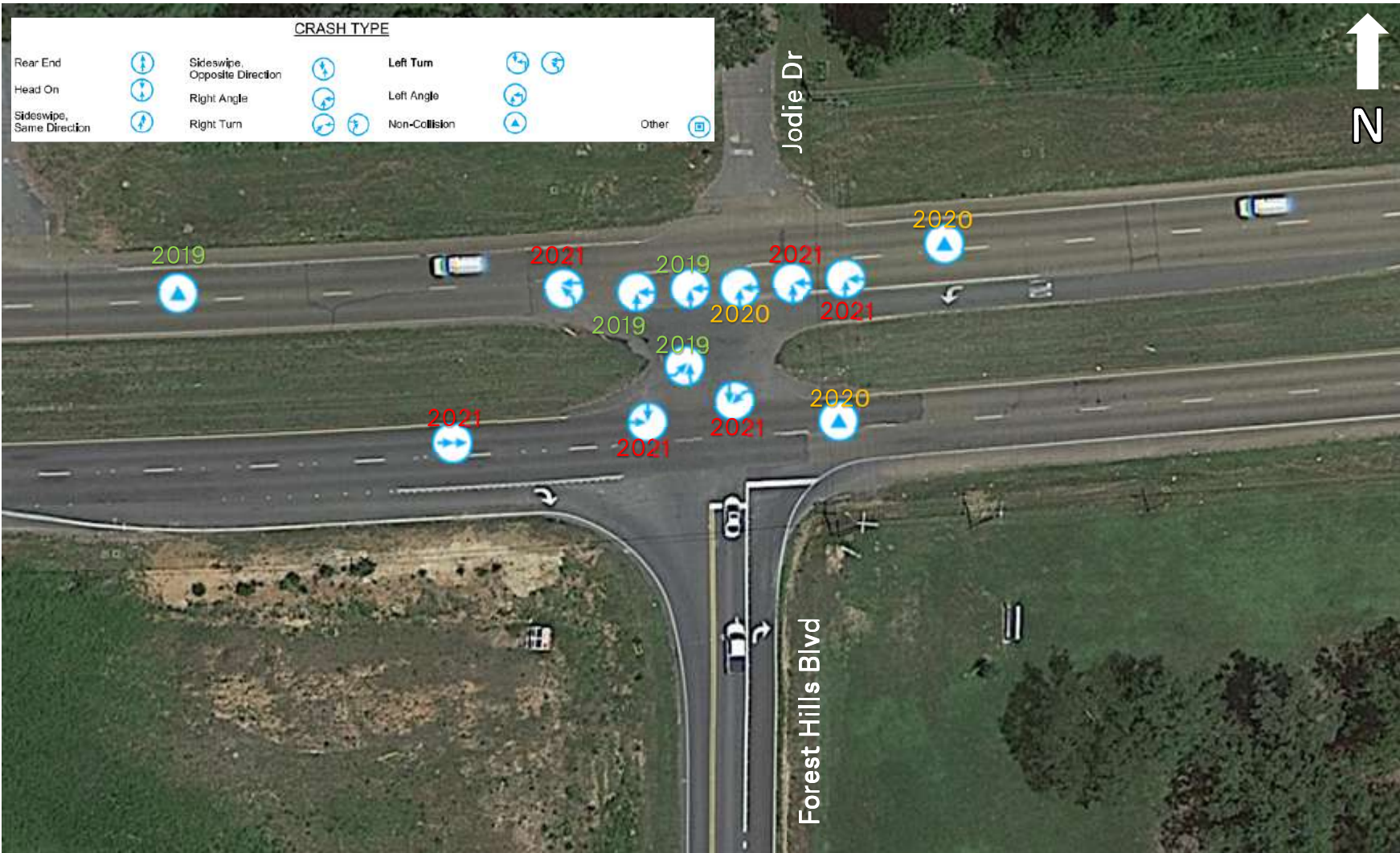
Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	60	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	4
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)	-	Tractor-Trailer Trucks (%)	10

Volume Summary														
Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (80%)	4A (70%)	4B (56%)
06 - 07	1254	367	1622	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
07 - 08	1163	181	1346	0	0	No	Yes	Yes	Yes	Yes	No	No	No	No
08 - 09	815	89	904	0	0	No	No	No	Yes	No	No	No	No	No
09 - 10	867	97	964	0	0	No	No	No	Yes	No	No	No	No	No
10 - 11	967	87	1054	0	0	No	No	No	Yes	No	No	No	No	No
11 - 12	1044	104	1148	0	0	No	No	Yes	Yes	No	No	No	No	No
12 - 13	1062	96	1158	0	0	No	No	No	Yes	No	No	No	No	No
13 - 14	1146	107	1253	0	0	No	No	Yes	Yes	No	No	No	No	No
14 - 15	1485	148	1633	0	0	No	No	Yes	Yes	Yes	No	No	No	No
15 - 16	1595	107	1703	0	0	No	No	Yes	Yes	No	No	No	No	No
16 - 17	1809	157	1967	0	0	No	No	Yes	Yes	Yes	No	Yes	No	No
17 - 18	1371	115	1487	0	0	No	No	Yes	Yes	No	No	No	No	No
Total	14578	1655	16239	0	0	1	2	8	12	4	0	2	0	0
Warrants														
Warrant 1: Eight-Hour Vehicular Volume													✓	
A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--														
B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--													✓	
80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)														
Warrant 2: Four-Hour Vehicular Volume													✓	
Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)													✓	
Warrant 3: Peak Hour													✓	
A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--														
B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)													✓	
Warrant 4: Pedestrian Volume														
A. Four Hour Volumes --or--														
B. One-Hour Volumes														
Warrant 5: School Crossing														
Gaps Same Period --and--													✓	
Student Volumes														
Nearest Traffic Control Signal (optional)														
Warrant 6: Coordinated Signal System														
Degree of Platooning (Predominant direction or both directions)														
Warrant 7: Crash Experience														
A. Adequate trials of alternatives, observance and enforcement failed --and--														
B. Reported crashes susceptible to correction by signal (12-month period) --and--													✓	
C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied													✓	
Warrant 8: Roadway Network														
A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--														
B. Weekend Volume (Five hours total)														
Warrant 9: Grade Crossing														
A. Grade Crossing within 140 ft --and--														
B. Peak-Hour Vehicular Volumes														





ATTACHMENT H

Levels of Service Explanation

From the 7th Edition Highway Capacity Manual, the Levels of Service are determined by control delay (in seconds per vehicle). The exhibit below illustrates how the amount of delay being experienced coincides with each Level of Service (LOS).

Unsignalized Intersections

<u>Level of Service</u>	<u>Control Delay (sec/veh)</u>
A.....	0 - 10
B.....	> 10 – 15
C.....	> 15 – 25
D.....	> 25 – 35
E.....	> 35 – 50
F.....	> 50

Signalized Intersections

<u>Level of Service</u>	<u>Control Delay (sec/veh)</u>
A.....	0 - 10
B.....	> 10 – 20
C.....	> 20 – 35
D.....	> 35 – 55
E.....	> 55 – 80
F.....	> 80