"Innovative Engineering Solutions"

Traffic Impact Analysis

Estates Dr Traffic Study
Woodway, TX

Prepared for:

City of Woodway
922 Estates Dr
Waco, TX 76712

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I. INTRODUCTION

1. STUDY PURPOSE AND OBJECTIVE

The city of Woodway is wanting to study Estates Dr to compare the operation of the existing 4-lane roadway to a proposed 3-lane roadway with one lane in each direction and a continuous two-way left turn lane (CTWLTL). The 3-lane section would also include a shared use (pedestrians and bikes) lane within the existing pavement width. The study area is along Estates Dr from Midway Dr to Bosque Blvd. There are no sidewalks for pedestrians from Midway Dr to Fairway Dr so pedestrians and bicyclists along the route must use the roadway. Vehicles are very close to pedestrians and bicyclists creating an uncomfortable condition. It also causes vehicles in the outside lane to encroach on the inside lane to create more separation between vehicles and pedestrians, but it can also be an issue if there are vehicles in the inside lane at the same time.

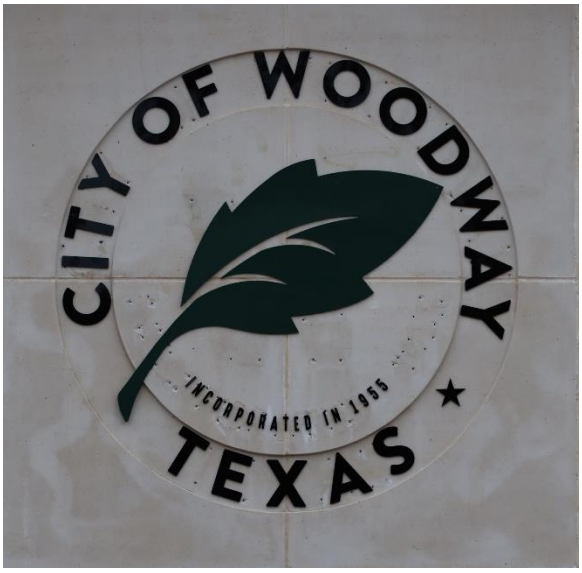


Figure 1. Project Identification

The purpose of this study is to determine the Level-of-Service (LOS) and the measures of effectiveness (MOE's) for the existing 4-lane roadway. The LOS and MOE's will also be determined for the proposed 3-lane roadway using the same traffic count data, speed data, traffic control, intersecting street configuration and other characteristics. The study uses turning movement traffic data collected during AM and PM peak hours at:

- Estates Dr at Midway Dr;
- Estates Dr at Oakdale Dr;
- Estates Dr at Gladedale Dr;
- Estates Dr at Lark Dr;
- Estates Dr at Whipporwill Dr;
- Estates Dr at Fairway Rd;
- Estates Dr at Bosque Blvd.

This does not include all intersections within the study area. These intersections were chosen by the city of Woodway to be the intersections with the higher volumes of traffic and could possibly experience the greater changes in the LOS due to the proposed changes. Traffic data for the Estates Dr at Bosque Blvd intersection was collected for a 12-hour (7:00 am till 7:00 pm) for use in a traffic signal warrant analysis that is also a part of this study.

This report documents the difference in the LOS and the delay, seconds/vehicle, for both the existing 4-lane configuration and the proposed 3-lane configuration for both the AM and PM peak periods. The scope of this study includes the following:

- Collecting AM and PM peak hour turning movement counts at key intersections;
- Collect pedestrian and bicycle data at the same intersections during the same time periods;

- Inventory the study roadway features i.e., number of travel lanes, lane widths, shoulder widths, speed limit, functional classification, and existing traffic control;
- Review of crash data along at the intersections studied and;
- Model the studied intersections using Synchro to determine the LOS for each scenario;
- Perform a traffic signal warrant analysis for the Estates Dr at Bosque Blvd intersection.

There are advantages and disadvantages for each of the 2 roadways configurations. The 4-lane section has the most through capacity, but motorists in the left lane are hindered at intersections and driveways by motorists attempting to make a left-turn, but are having to wait for an adequate gap in traffic from oncoming vehicles. In a similar fashion, motorists traveling in the right-lane are having to stop and wait for numerous reasons, including vehicles attempting to turn right at intersections and driveways and pedestrians crossing the intersecting roadway. **Figure 2** below shows a diagrammatic detail of the existing roadway conditions between Midway Dr and Bosque Blvd.

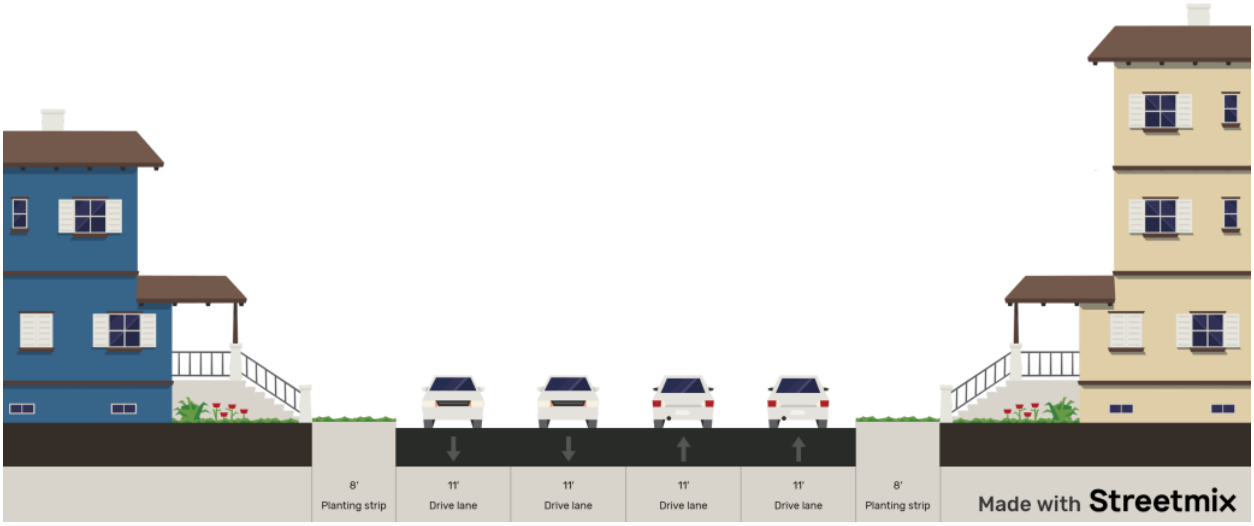


Figure 2. Diagram of Estates Dr Existing Four-Lane Condition

The proposed 3-lane section has less through capacity, but it does also provide a solution to many of the issues noted in the 4-lane section. By providing a separate CTWLTL, motorists have a lane to enter and wait for a gap in traffic while attempting a left turn maneuver. This will also separate the stopped vehicles from the through vehicles reducing the likelihood of rear-end crashes and allow for a continuous movement for the through vehicles. **Figure 3** below shows a diagrammatic detail of the proposed 3-lane roadway condition between Midway Dr and Fairway Dr. The existing condition between Bosque Blvd and Fairway Dr will remain the same since there are existing sidewalks on the west side of the roadway.

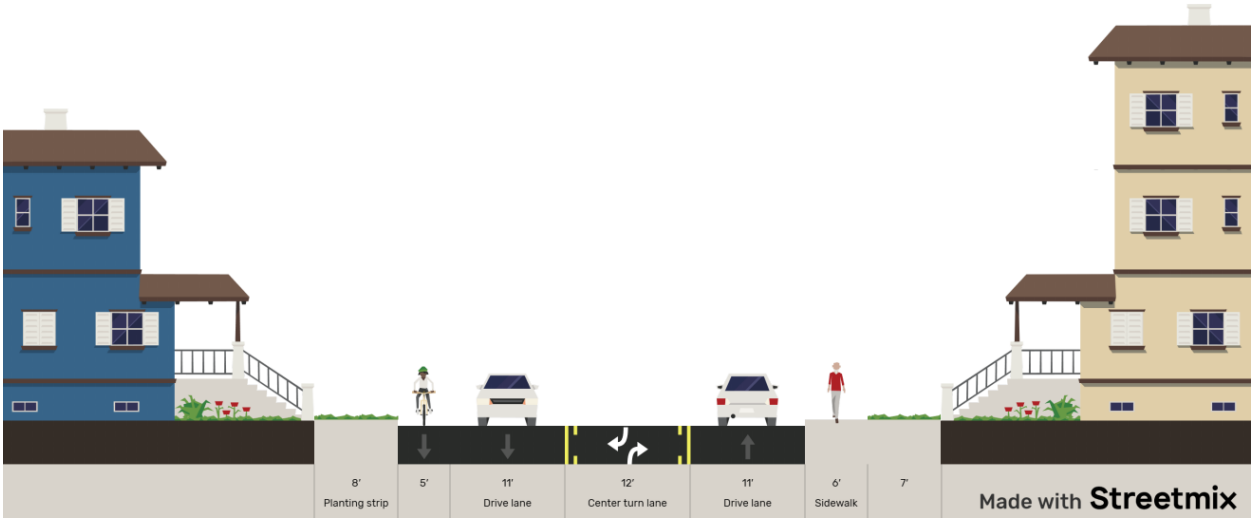


Figure 3. Diagram of Estates Dr Proposed Three-Lane Condition

2. DATA SOURCES AND STUDY METHODOLOGY

The traffic evaluation used turning movement data collected Monday, November 28, 2022 through Wednesday, November 30, 2022. The weather was very good for collecting traffic data during this time period. Each day was partly cloudy and no rain. The high temperatures were in the upper 70's with the low temperatures in the mid to upper 60's. The weather did should not have had an impact on vehicular, pedestrian, or bicycle traffic. The turning movement data used for this study is included in the appendix.

The LOS Analysis was accomplished using Synchro 11 software. Synchro Studio 11 provides the best in traffic analysis, optimization, and simulation applications. It combines the modeling capabilities of Synchro and the microsimulation and animation capabilities of Sim Traffic to create the ultimate tool kit for viewing traffic flow resulting from data collected along a corridor or throughout a network. Synchro 11 is a macroscopic analysis and optimization software application. It uses the methodologies of the *Highway Capacity Manual 6th Edition* to calculate the LOS and other MOE's for signalized and unsignalized intersections, as well as, roundabouts. Synchro also implements the intersection Capacity Utilization method for determining intersection capacity and LOS.

II. TRAFFIC DATA

1. DATA COLLECTION ON THE ROADWAY SYSTEM

The traffic data collected for this study is included in the Appendix of this report as **Exhibit 6**. The data includes vehicle turning movement data, as well as, pedestrian and bicycle crossing data. The traffic data was collected on Monday, November 28, 2022 through Wednesday, November 30, 2022.

2. EXISTING ROADWAY CONDITIONS

A site investigation was performed to understand the existing conditions of the roadway network within the analysis area as well as the surrounding area. Intersection geometries, traffic behavior, and unique characteristics were noted during the investigation. The following describes the existing roadway system within the study area based upon the data obtained in the field.

- Estates Dr is a four (4) lane, two-way asphalt roadway approximately 44 ft wide in the area of the study from Midway Dr to Bosque Blvd. There are no shoulders and the roadway has an urban section with curb and gutter. From Midway Dr to Fairway Dr there are no sidewalks. The posted speed limit is 30 mph in the area of the study and it is functionally classified as a Minor Arterial according to the TxDOT Statewide Planning Map. The roadway runs south to north from US 84 (Woodway Dr) to Lake Waco. At US 84 the roadway becomes FM 1695 (Hewitt Dr).

Figure 4. Estates Dr Looking South Towards US 84 (Woodway Dr).

- Estates Dr is a four (4)-lane roadway with a 10 ft continuous two-way left-turn lane From US 84 (Woodway Dr) to Midway Dr. There are two (2)-11 ft asphalt travel lanes in each direction. The posted speed limit is 30 mph in the area with a 20-mph school zone. The roadway has curb and gutter and there are no sidewalks although there are pedestrian crosswalks at the Midway Dr intersection due to the Woodway Elementary School along Estates Dr in this area.

Figure 5. Estates Dr Looking North Towards Midway Dr.

III. DATA ANALYSIS

1. TRAFFIC SIMULATION STUDIES

The comparison analysis between the existing 4-lane section and the proposed 3-lane section was accomplished using Synchro 11 software. Synchro Studio 11 provides the best in traffic analysis, optimization, and simulation applications. By using traffic information collected along the corridor, traffic simulations can very closely resemble actual traffic. The data collected and used in the simulations include:

- AM & PM Peak hour vehicle turning movement counts at all signalized intersections;
- Distance between intersections;
- Travel speeds;
- Lane widths;
- Pedestrians within the intersections;
- Bicyclist within the intersections.

The roadway segment between Fairway Dr and Bosque Blvd remained the same in both the 4-lane and 3-lane scenarios except the southbound Estates Dr lane becomes a right-turn only lane at Fairway Blvd. Likewise, the northbound Estates Dr lane becomes a right-turn only lane at Midway Dr.

Vehicle arrival within the corridor is random rather than systematic. The Synchro software is designed for this characteristic which means the MOE's can vary slightly from one simulation run to another using the same input data; therefore, multiple simulations were run using the same data. There is a total of four (4) detailed reports as a part of this study. There is an AM and PM peak hour report for both the 4-lane and the 3-lane configurations. These reports provide all the input information for each scenario and they show all the MOE's for each approach at each intersection as well as an overall LOS for each intersection. The detailed simulation reports can be found in **Exhibit 5** of the Appendix.

The comparison reports allow for a quick assessment of how well one scenario operates vs other scenarios. By keeping everything constant in the scenarios other than the lane configurations in this case, one can determine if there is a difference in the operational efficiency in one scenario verses the other.

LOS represents the capacity or volume of traffic that a roadway can accommodate. Roadway capacity is defined as the volume of traffic that a roadway can accommodate based on the road's width, traffic control, parking conditions, percentage of trucks, number of bus stops, and several other factors.

The LOS is a measure used to relate to the quality of traffic service. LOS is used to analyze highways by categorizing traffic flow and assigning quality levels of traffic based on performance measure such as speed, density, etc. These levels range from a LOS A (free flowing) to a LOS F (a congested, forced flow condition). For signalized intersections and all-way stopped controlled intersections, the LOS is based on the average delay of all motorists using the intersection. A description of each operational state for signalized intersections, as defined by the *Highway Capacity Manual 6th Edition*, is presented in **Table 1**.

The LOS is calculated differently for an all-way stop or signal-controlled intersection than it is for a two-way stop-controlled (TWSC) intersection. For an all-way stop or signal-controlled intersection, LOS is expressed in terms of the weighted average control delay of the overall intersection. For a two-way stop-controlled intersection, LOS is defined in terms of the average control delay for the minor-movement (or shared movement) with the highest delay. This approach is used because major-street through vehicles experience zero delays. A weighted average of all movements results in a very low overall average delay, but the intersection could still be experiencing large queues of vehicles on the stopped approaches.

The average delays on the minor movements of an intersection may not be representative of how well or poorly an intersection operates. On the other hand, calculated delay for a TWSC interaction could mask deficiencies of other minor movements. There may be a large delay indicating there are few gaps in traffic along the major roadway, but the average delay may be for a very small number of vehicles. The end result may be a LOS F at the intersection, but the number of vehicles in the queue and/or the queue length need to be considered as well. In some cases, a LOS F at a two-way stop-controlled intersection may be acceptable when the traffic volume on the side street is extremely low.

The study intersections were evaluated based on the methodologies outlined in the latest *Highway Capacity Manual, 6th Edition*, published by the Transportation Research Board. The operating conditions at an intersection are graded by the LOS experienced by drivers. LOS describes the quality of traffic operating conditions and is rated from "A" to "F". LOS A represents the most desirable condition with the free-flow movement of traffic with minimal delays. LOS F generally indicates severely congested conditions with excessive delays to motorists. Intermediate grades of B, C, D, and E reflect incremental increases in the average delay per stopped vehicle. **Table 1** shows the limit of delay associated with each LOS for unsignalized intersections.

Level-of-Service (LOS)	Average Control Delay (seconds / vehicle)
	Unsignalized
A	≤ 10.0 sec.
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Table 1. Level-of-Service Criteria

The LOS rating deemed acceptable varies by community, facility type, and traffic control device. For example; an unsignalized intersections, LOS E is often accepted for low to moderate traffic volumes where the installation of a traffic signal is not warranted by the conditions at the intersection or the location has been deemed undesirable for signalization for other reasons.

IV. TRAFFIC ANALYSIS

1. INTERSECTION CAPACITY ANALYSIS

The studied intersections were evaluated using Synchro which is based on the latest version of the *Highway Capacity Manual*. Calculations for the LOS for AM and PM peak conditions are were analyzed for the following intersections:

- Estates Dr at Midway Dr;
- Estates Dr at Oakdale Dr;
- Estates Dr at Gladedale Dr;
- Estates Dr at Lark Dr;
- Estates Dr at Whipporwill Dr;
- Estates Dr at Fairway Rd;
- Estates Dr at Bosque Blvd.

The results are summarized in **Table 2**. **Exhibit 5** of the Appendix shows the detailed Synchro intersection operational results, including LOS, Delay (sec/veh), Volume to Capacity Ratio, and 95% Queue Lengths for each approach of each intersection for the weekday AM and PM peak hours respectively for both the 3-land and 4-lane conditions.

2. ANALYSIS SCENARIOS

These scenarios allowed for the comparison of the before and after impacts of the proposed development in the area and include:

- Four (4)-Lane Existing Conditions (AM And PM Peak);
- Three (3)-Lane Existing Conditions (AM And PM Peak).

The roadway network analysis reports for both the existing 4-lane configuration and the proposed 3-lane configuration for both the AM and PM peak period scenario analyses can be found in **Exhibit 5** of the Appendix.

3. SCENARIO TRAFFIC OPERATIONS RESULTS

Table 2 shows the LOS and delay associated with each studied intersection for each scenario. As you can see when comparing both AM scenarios against one another and when comparing both PM scenarios against one another, there is very little difference in delay at each of the intersections. Note, the LOS is calculated differently for an all-way stop or signal-controlled intersection than it is for a two-way stop-controlled (TWSC) intersection. For an all-way stop or signal-controlled intersection, LOS is expressed in terms of the weighted average control delay of the overall intersection or by approach. For a two-way stop-controlled intersection, LOS is defined in terms of the average control delay for each minor-street movement (or shared movement), as well as, major-street left-turns. This approach is used because major-street through vehicles experience zero delays. A weighted average of all movements results in a very low overall average delay, but the intersection could still be experiencing large queues of vehicles on the stopped approaches.

The average calculated delay could mask deficiencies of minor movements. On the other hand, large average delays on the minor movements do not tell the entire story. There may be a large delay indicating there are few gaps in traffic along the major roadway, but the average delay may be for a very small number of vehicles. The end result may be a LOS F at the intersection, but the number of vehicles in the queue and/or the queue length need to be considered as well. In some cases, a LOS F at a two-way stop-controlled intersection may be acceptable.

Intersection	AM LOS Comparison		PM LOS Comparison	
	4-Lanes	3-Lanes	4-Lanes	3-Lanes
Estates Dr at Midway Dr	B (15.8)	C (21.2)	D (30.7)	D (22.0)
	[1.0 EB]	[1.4 EB]	[0.6 EB]	[0.4 EB]
Estates Dr at Oakdale Dr	C (16.2)	C (15.0)	B (14.8)	C (16.0)
	[1.0 WB]	[0.8 WB]	[0.5 WB]	[0.6 WB]
Estates Dr at Gladedale Dr	B (12.9)	B (12.7)	B (13.1)	B (13.6)
	[0.2 WB]	[0.2 WB]	[0.1 WB]	[0.1 WB]
Estates Dr at Lark Dr	B (12.9)	B (13.7)	B (14.3)	B (12.2)
	[0.2 WB]	[0.2 WB]	[0.1 WB]	[0.0 WB]
Estates Dr at Whipporwill Dr	B (12.1)	B (12.0)	B (12.4)	B (12.9)
	[0.1 NB]	[0.1 NB]	[0.1 WB]	[0.2 WB]
Estates Dr at Fairway Rd	B (12.7)	B (13.9)	C (16.2)	C (15.2)
	[1.1 EB]	[1.2 EB]	[0.7 EB]	[0.7 EB]
Estates Dr at Bosque Blvd	B (10.3)	B (10.3)	B (11.6)	B (11.6)
	[1.3 NB]	[1.3 NB]	[1.8 WB]	[1.8 WB]

Table Legend: X LOS, (Delay in sec/veh)
[95th %tile queue in # of vehicles]

Table 2. Peak Hour Intersection Capacity Analysis Results, Delay & Level Of Service

The existing traffic operations analyses uses actual traffic data collected at each identified intersection. Data for this study was collected for a two (2) hour AM and PM peak period on Monday, November 28, 2022 through Wednesday, November 30, 2022. The high 15-minute turning movement count data for each intersection for each peak period was used in the analysis. The 15-minute counts were multiplied by 4 to produce the hourly counts. This method calculates the traffic count with a peak hour factor included; therefore, the peak hour factor will be 1.0 for each scenario.

The main intersection of concern is the Estates Dr at Midway Dr intersection. It currently operates at a LOS B during the AM peak and a LOS D during the PM peak period. When comparing the existing 4-lane condition to the proposed 3-lane condition the delay increases during the AM peak period, but

decreases during the PM peak period. The PM peak period has the higher delays but the 95th percentile queue length for the eastbound movement is less than it is during the AM peak period. With the delay being greater and the 95th percentile queue length being smaller, it means there is more delay being experienced by fewer vehicles.

The LOS, delay, and queue lengths are for the AM and PM peak periods are identical at the Estates Dr at Bosque Blvd intersection. This is due to there being no proposed changes at this intersection.

For the AM peak comparison, the delay, and queue lengths vary slightly at the remaining intersections. The delay increases slightly at the Lark Dr and the Fairway Rd intersections. At the Oakdale Dr, Gladedale Dr, and Whipporwill Dr intersections the delay and queue lengths decrease slightly.

4. ROADWAY ANALYSIS

Roadway capacity is defined as the volume of traffic that a roadway can accommodate based on the road's width, traffic control, parking condition, and several other factors. Capacity values for undivided roadways by area type and functional class are presented below in **Table 3**. These values were obtained from the North Central Texas Council of Governments (NCTCOG), which has developed planning level analysis values that are useful in determining directional hourly capacities under different roadway and area conditions.

Area Type	Functional Class						
	Freeway	Principal Arterial	Minor Arterial	Collector	Freeway Ramp	Frontage Road	HOV
CBD	N/A	650	650	425	1250	650	N/A
Outer Business District	N/A	725	725	450	1375	725	N/A
Urban Residential	N/A	775	750	475	1425	750	N/A
Suburban Residential	N/A	875	825	525	1600	825	N/A
Rural	N/A	925	875	550	1725	875	N/A

*** Service volumes at Level of Service E**
if Volume/Service Volume Ratio is <= 0.45, then LOS = A or B
if Volume/Service Volume Ratio is > 0.45 and <= 0.65, then LOS = C
if Volume/Service Volume Ratio is > 0.65 and <= 0.80, then LOS = D
if Volume/Service Volume Ratio is > 0.80 and <= 1.00, then LOS = E
if Volume/Service Volume Ratio is > 1.00, then LOS = F

Table 3. Roadway Capacity Analysis and Level of Service Guidelines
Hourly Service Volume Per Lane (Undivided Roads)

For the purposes of this analysis, it was assumed that all of the roadways within the study area fall within the "Suburban Residential" area type. Based on the functional classifications of the studied roadway in the TxDOT Statewide Planning Map, Estates Dr is classified as a "Minor Arterial". Therefore, the planning capacity level is assumed to be 825 vehicles per hour per lane. **Table 4** presents the link capacity analysis results for the study area roadway sections.

As shown in **Table 4**, Estates Dr operates at acceptable LOS's (LOS C or better) with one (1) or two (2) lanes per direction. The LOS of the roadway is reduced by one (1) LOS level under each condition when reducing the number of lanes. It is predicted to continue to operate at an acceptable LOS into the future since there is very little area in Woodway to expand along the corridor.

Estates Dr 4-Lane Analyses					
Analysis Period	Direction	Capacity (vehicles/hour)	Volume* 4-Lane	V/C Existing	LOS Existing
AM	NB	1650	332	0.20	A
	SB		364	0.22	A
PM	NB		424	0.26	B
	SB		347	0.21	A
Estates Dr 3-Lane Analyses					
Analysis Period	Direction	Capacity (vehicles/hour)	Volume* Existing	V/C Existing	LOS Existing
AM	NB	825	332	0.40	B
	SB		364	0.44	B
PM	NB		424	0.51	C
	SB		347	0.42	B

***Vehicles/hour**

Table 4. Roadway Link Analyses

5. PEDESTRIAN AND BICYCLE TRAFFIC VOLUMES

As a part of the corridor study, pedestrians and bicycle data was collected at each of the studied intersections. The data indicates that currently there is not a great deal of pedestrian or bicycle traffic at any of the intersections. The exception to this is the Estates Dr at Midway Dr intersection when children are arriving or leaving the adjacent elementary school. **Table 5** below shows the number of pedestrians and bicyclist crossing the Estates Dr or the side street during each hour studied.

Intersection	7:00 AM		8:00 AM		3:00 PM		5:00 PM	
	Peds	Bikes	Peds	Bikes	Peds	Bikes	Peds	Bikes
Estates Dr at Midway Dr	24	-	5	-	-	-	-	-
	-	1	1	-	-	-	-	1
Estates Dr at Oakdale Dr	-	-	-	-	-	-	-	1
	-	-	-	1	-	-	-	-
Estates Dr at Gladedale Dr	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
Estates Dr at Lark Dr	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
Estates Dr at Whipporwill Dr	1	-	-	-	-	-	-	2
	-	-	-	-	-	-	-	-
Estates Dr at Fairway Rd	-	-	-	-	-	-	-	1
	1	-	-	-	-	-	-	-
Estates Dr at Bosque Blvd	-	-	2	-	-	-	-	-
	3	-	5	-	-	-	1	-

Table 5. Pedestrian and Bicyclist Using the Roadway

6. CRASH DATA REVIEW

Crash data for McLennan County was acquired through the TxDOT CRIS Share System. The crashes were queried for each of the studied intersections from January 1, 2016, through December 12, 2022. The crash records indicate that there was a combined total of 27 crashes on Estates Dr during this time period. Six (6) of the crashes occurred outside the study area between Midway Dr and US 84 (Woodway Dr).

In reviewing crashes for all intersections in the study for the 6+ year period, there has been no fatal or incapacitating injury crashes. There were three (3) non-incapacitating injury crashes, four (4) possible injury crashes, and 16 non-injury crashes. There have also been four (4) crashes where the severity was not recorded (unknown). Of the 27 crashes, 23 occurred on dry pavement while only four (4) occurred on wet pavement. Eighteen (18) crashes happened during daylight hours and nine (9) crashes occurred during dark conditions. Eighteen (18) crashes occurred on the roadway, six (6) occurred off the roadway, and in three (3) of the crashes, it was not reported whether or not the crash occurred on or off the roadway.

There was a total of three crashes involving vehicles going the same direction with the first vehicle stopped or turning-left and being struck from behind by a second vehicle. Two (2) of these crashes occurred at US 84 (Woodway Dr) and the other occurring at Gladedale Dr. These are the types of crashes that can be reduced by having a left-turn lane.

There were also two (2) crashes with motorists attempting to turn right that were struck from behind at Bosque Blvd. The modifications considered by the city will not have an impact on this type of crash. **Table 5** below shows the total number of crashes along with some of the crash attributes. In **Exhibit 4** of the Appendix there are detail crash queries for each intersection.

INTERSECTION(S)	TOTAL	SURFACE CONDITION		LIGHT CONDITION		ROADWAY RELATED			CRASH SEVERITY			
	CRASHES	DRY	WET	DAYLIGHT	DARK	NOT REPORTED	ON RDWY	OFF RDWY	UNKNWN	NON-INCAP	POSS INJ	NON-INJ
Estates Dr	27	23	4	18	9	3	18	6	4	3	4	16

Table 6. Tabular Crash Data for Studied Intersections

V. TRAFFIC SIGNAL WARRANT ANALYSIS - ESTATES DR AT BOSQUE BLVD

1. BACKGROUND

The Manual on Uniform Traffic Control Devices (MUTCD) is the guiding document for the selection, design, installation, operation, and maintenance of all types of traffic control devices, including traffic signals. The purpose of the MUTCD is to provide uniformity in traffic control devices across the United States. As such, the Federal Highway Administration (FHWA) is responsible for the national MUTCD. The current national MUTCD is the 2009 Edition with Revision Numbers 1 and 2 incorporated in May 2012. The MUTCD has been adopted as a national standard pursuant to the authority of Title 23 of the U.S. Code. This code has the full force and effect of the law. Various Federal Aid Highway Acts authorize the FHWA to require traffic control devices on Federal-aid highways to conform to the MUTCD standards. Some states have the option of adopting the national MUTCD or developing a state MUTCD in substantial compliance with the national MUTCD.

In Texas, the Texas MUTCD (TMUTCD) establishes minimum criteria for the use of traffic control devices. The 2011 TMUTCD Version 2 is the current version of the state MUTCD. The 2011 TMUTCD is the document that establishes the legal requirements and guiding principles for traffic control devices used on all public roads in Texas. Texas, along with most other states, has also established statutes requiring traffic control devices placed and maintained by state and local governmental agencies to conform to the national MUTCD or their adopted state version of the MUTCD.

The MUTCD is one of the key documents in the traffic engineering field. It is also a complex document. An understanding of the role of the MUTCD is an essential element of using the document to make decisions about traffic control devices. Even though the MUTCD provides guidelines and warrants for

traffic signals and other traffic control devices, the application of these guidelines and warrants should be exercised by a competent traffic engineer only after a thorough study of the critical factors has been completed.

The intersection of two or more roadways provides one of the more significant traffic control challenges for the responsible jurisdiction. Traffic on these intersecting roadways must share the same pavement area, requiring that access to this pavement area be alternately assigned to the conflicting traffic movements. This traffic can include cars, trucks, motorcycles, bicycles, pedestrians, mass transit, and emergency vehicles. Vehicular movements can include both through and turning movements. Geometric constraints can further complicate intersection traffic control. Various control methods can be used, including no control, yield control, stop control, and signal control, listed in order from the least to the most restrictive. There are multiple levels of complexity for some of these methods.

Traffic signals are one of the most restrictive forms of traffic control that can be used at an intersection. In order to ensure that the use of traffic signals is limited to favorable situations, practitioners have developed a series of traffic signal warrants to define the minimum traffic conditions that should be present before a traffic signal is installed.

When properly used, traffic control signals are valuable devices for the control of vehicular and pedestrian traffic. They assign the right-of-way to the various traffic movements and thereby profoundly influence traffic flow. Since vehicular delay and the frequency of some types of crashes are sometimes greater under traffic signal control than under STOP sign control, consideration should be given to providing alternatives to traffic control signals even if one or more of the signal warrants has been satisfied.

Traffic signals should not be installed unless one or more of the nine warrants are satisfied. Because these are minimum requirements, satisfaction of a warrant is not necessarily justification or a mandate for a traffic signal. An engineering study must validate that the installation of a traffic control signal will improve the overall safety and/or operation of the intersection. Delay, congestion, crash history, confusion, or other evidence of the need for right-of-way assignment must be shown. Alternatives to traffic control signals should be considered.

The public often views traffic signals as a cure-all for traffic problems at intersections. As a result, traffic signals have often been installed at intersections where less restrictive traffic control would have been more appropriate and effective. Traffic signal warrants have been developed to establish minimum criteria for evaluating the need for a traffic signal at a specific intersection. These warrants do not define the need for a traffic signal, but merely indicate where further study of a traffic signal installation is justified. When properly justified and installed, traffic signals can have many positive benefits. However, traffic signals also have negative impacts, particularly if the signal is improperly justified or installed or poorly operated.

When the installation of a traffic signal is properly justified, and the design, operation, and maintenance are in accordance with current principles, the signal can have many positive benefits on the efficiency and safety of vehicular and pedestrian traffic at the intersection. The advantages to a properly justified and installed traffic signal may include one or more of the following:

- It can provide for the orderly movement of traffic.
- It can increase the traffic-handling capacity of the intersection if proper physical layouts and control measures are used and the signal operational parameters are reviewed and updated on a regular basis to maximize the ability of the traffic control signal to satisfy current traffic demands.
- It can reduce the frequency of certain types of crashes, especially right-angle collisions.
- By coordinating the signal with adjacent signals, it can provide for continuous or nearly continuous movement of traffic at a definite speed along a given route under favorable conditions.
- It can be used to interrupt heavy traffic on the major street to permit vehicular and pedestrian traffic on the minor street to cross.

Even when properly justified and installed, a traffic signal can have a detrimental impact on certain aspects of traffic flow at an intersection. If a signal is properly justified and installed, the resulting advantages offset associated disadvantages; however, disadvantages may result if a traffic signal is not properly justified, or if the traffic signal is ill-designed, ineffectively placed, improperly operated, or poorly maintained. The disadvantages that may be associated with an improperly justified, installed, operated, or maintained traffic signal include may include one or more of the following:

- It can increase delay for all traffic movements;
- It can lead to an increase in traffic violations at the intersection;
- It can increase the frequency of traffic crashes at the intersection (primarily rear-end crashes);
- It can cause road users to increase the use of alternative routes to avoid the signal. Often, these alternative routes travel through neighborhoods or other less adequate roads.

Traffic crashes are included in both the advantages and disadvantages of traffic signals. This is because a properly installed traffic signal often results in an increase in certain types of crashes, most notably rear-end collisions; however, crashes that typically result from signal installation are typically less severe than the crashes that would occur if the signal was not installed.

Once installed, traffic signal operation should be periodically reviewed to determine whether the physical characteristics of the signal and the intersection, the type of control, and the signal timing meet the current needs of the traffic at the intersection.

2. GOALS AND OBJECTIVES

The goal of this effort is to determine methods of making the intersections safe without causing undue delay to either the freeway frontage roads or the intersecting roadway. The objectives are to:

- Review hourly traffic volume data collected by GRAM Traffic NTX, Inc in April 2022 to determine the AM and PM peak hours and to identify the eight highest traffic volume hours;
- Determine if the traffic signal warrants are met, by collecting hourly traffic and pedestrian volumes and analyzing the data in accordance with the TMUTCD Chapter 4C;
- Provide recommendations for improvements to the intersection based on the findings and data collected.

3. STUDY APPROACH

In accordance with the TMUTCD, the investigation of the need for a traffic control signal shall include an analysis of the applicable factors contained in the traffic signal warrants and other factors related to existing operation and safety at the study location.

The traffic signal warrants contained in Chapter 4C of the TMUTCD establishes the minimum criteria for the further evaluation of a traffic signal installation. The current TMUTCD contains nine (9) traffic signal warrants. All warrants need not be studied if the engineer determines they are not applicable. The warrants address a variety of intersection conditions such as vehicular volume, pedestrian volume, crashes, progression, and delay. The TMUTCD warrants have evolved into their present state over a period of many years and represent the experiences of many traffic signal installations. The investigation of the need for a traffic control signal shall include an analysis of the applicable factors contained in the following traffic signal warrants and other factors related to existing operation and safety at the study location.

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak Hour
- Warrant 4, Pedestrian Volume
- Warrant 5, School Crossing
- Warrant 6, Coordinated Signal System
- Warrant 7, Crash Experience
- Warrant 8, Roadway Network
- Warrant 9, Intersection near a Grade Crossing

3.1 Data Collection

Hourly traffic counts were taken for 12-hours on Thursday, November 17, 2022 for each approach at the intersection for use in this analysis. Speed data was not collected. The 85th percentile speed is a factor in determining if an intersection is required to meet 100% or 70% of Warrant 1 and the Urban or Rural graphs of Warrant 2 and 3. The criteria changes depending on whether or not the 85th percentile speed exceeds 40 miles per hour (mph). The posted speed limit on Estates Dr and Bosque Blvd is 30 mph. It is assumed that the 85th percentile speed is in the range of 30 mph. Since the 85th percentile speed of Estates Dr and Bosque Blvd does not exceed 40 mph, 100% of the traffic in Warrant 1 has to be met. Additionally, the urban criteria graphs will be used in our analysis of Warrants 2 and 3.

The existing turning movement volume summary and the existing hourly approach volume summary can be found in **Exhibit 2** of the Appendix. The raw traffic data collected is located in **Exhibit 6** of the Appendix.

3.2 Traffic Signal Warrant Analysis

The TMUTCD defines justifying sets of conditions which at least one should be fully satisfied before signalization is considered as an option for traffic control. Traffic volumes, the number of traffic lanes, the prevailing traffic speeds, traffic crash experience, and measured delay for minor street traffic are the factors included in the evaluation of these warrants.

The two major volume-based warrants are the most rigorous tests of the appropriateness of a signal and are examined in detail below. The detailed signal warrant analysis worksheets, including the warrant curves described below, are included as **Exhibit 3** of the Appendix.

Pedestrian counts were also collected at each intersection as a part of this study. The pedestrian volume signal warrant, Warrant 4: Pedestrian Volumes, is intended where the traffic volumes on a major street are so heavy that pedestrians experience excessive delays in crossing the major street. The Pedestrian Volumes signal warrant should not be applied at locations where the distance to the nearest traffic control signal or STOP sign controlling the street that pedestrians desire to cross is less than 300 ft unless the proposed traffic control signal will not restrict the progressive movement of traffic.

4. TRAFFIC SIGNAL WARRANT ANALYSIS CONCLUSIONS

At the Estates Dr at Bosque Blvd intersection, the analysis was performed with the Estates Dr being a two-lane approach and Bosque Blvd being a two-lane approach. The results of the warrant analysis indicates that the Estates Dr at Bosque Blvd intersection does not meet the minimum warrants based on the vehicular counts collected on Thursday, November 17, 2022. Of the nine (9) traffic signal warrants, each intersection meets 4 warrants. The results of the traffic signal warrant analysis is located in **Appendix B**. Below is a summary of findings:

Warrant 1 – Eight-Hour Vehicular Volume

This warrant is intended for application where a large volume of intersecting traffic is the principal reason for consideration of signal installation. This warrant applies to operating conditions where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or hazard in entering a major street. Minimum volumes are given for each of any eight (8) hours of an average day.

The Minimum Vehicular Volume, Condition A, is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal. If the statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, then 70 percent of the traffic volumes requirements may be used instead of 100 percent.

- 100% of Condition A is not met for Estates Dr at Bosque Blvd.

The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street. If the statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, then 70 percent of the traffic volumes requirements may be used instead of 100 percent.

- 100% of Condition B is not met for Estates Dr at Bosque Blvd.

Condition C is the combination of Conditions A and B. It is intended for application at locations where Condition A is not satisfied and Condition B is not satisfied and should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the

traffic problems. The need for a traffic control signal shall be considered if an engineering study finds that both the following conditions exist for each of any eight (8) hours of an average day:

A. The vehicles per hour meet 80 percent of Condition A on the major-street and the higher-volume minor-street approaches; and

B. The vehicles per hour meet 80 percent of Condition B on the major-street and the higher-volume minor-street approaches.

These major-street and minor-street volumes shall be for the same eight (8) hours for each condition; however, the eight (8) hours satisfied in Condition A shall not be required to be the same eight (8) hours satisfied in Condition B. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.

- Condition C is not met for Estates Dr at Bosque Blvd.

For Condition D, if the statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, then 56 percent of the traffic volumes requirements may be used instead of 80 percent.

- Condition D is not applicable for Estates Dr at Bosque Blvd.

Warrant 2 – Four-Hour Vehicular Volume

The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) all fall above the applicable curve. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.

If the statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, then the applicable curve using the rural vehicle graph may be applied.

- Warrant 2 is not met for Estates Dr at Bosque Blvd.

Warrant 3 – Peak Hour Warrant

The Peak Hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.

The signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.

The need for a traffic control signal shall be considered if an engineering study finds that the criteria in either of the following two categories are met:

A. If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:

    1. The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceeds: 4 vehicle-hours for a one-lane approach; or 5 vehicle-hours for a two-lane approach, and
    2. The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and
    3. The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

B. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume, minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve.

If the statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, then the applicable curve using the rural vehicle graph may be applied.

- Warrant 3 is not met for Estates Dr at Bosque Blvd.

Warrant 4 – Pedestrian Volume

The Pedestrian Volume signal warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street. The need for a traffic control signal at an intersection or midblock crossing shall be considered if an engineering study finds that one of the following criteria is met:

A. For each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) all fall above the curve; or
B. For 1 hour (any four consecutive 15-minute periods) of an average day, the plotted point representing the vehicles per hour on a major street (total of both approaches) and the corresponding pedestrians per hour crossing the major street (total of all crossings) falls above the curve.

The Pedestrian Volume signal warrant shall not be applied at locations where the distance to the nearest traffic control signal or STOP sign controlling the street that pedestrians desire to cross is less than 300 ft, unless the proposed traffic control signal will not restrict the progressive movement of traffic.

If this warrant is met and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads conforming to requirements set forth in Chapter 4E of the TMUTCD.

If this warrant is met and a traffic control signal is justified by an engineering study, then:

A. If it is installed at an intersection or major driveway location, the traffic control signal should also control the minor-street or driveway traffic, should be traffic-actuated, and should include pedestrian detection.
B. If it is installed at a non-intersection crossing, the traffic control signal should be installed at least 100 ft from side streets or driveways that are controlled by STOP or YIELD signs and should be pedestrian-actuated. If the traffic control signal is installed at a non-intersection crossing, at least one of the signal faces should be over the traveled way for each approach, parking and other sight obstructions should be prohibited for at least 100 ft in advance of and at least 20 ft beyond the crosswalk or site accommodations should be made through curb extensions or other techniques to provide adequate sight distance, and the installation should include suitable standard signs and pavement markings.
C. Furthermore, if it is installed within a signal system, the traffic control signal should be coordinated.

The criterion for the pedestrian volume crossing the major roadway may be reduced, as much as, 50 percent if the 15^{th} -percentile crossing speed of pedestrians is less than 3.5 ft per second.

A traffic control signal may not be needed at the study location if adjacent coordinated traffic control signals consistently provide gaps of adequate length for pedestrians to cross the street.

- The pedestrian volumes do not satisfy Warrant 4 for Estates Dr at Bosque Blvd.

Warrant 5 – School Crossing

The School Crossing signal warrant is intended for application where school children cross the major street is the principal reason to consider installing a traffic control signal. For the purposes of this warrant, the word “school children” includes through high school students.

The need for a traffic control signal shall be considered when an engineering study of the frequency and adequacy of gaps in the vehicular traffic stream as related to the number and size of groups of school children at an established school crossing across the major street shows that the number of adequate gaps in the traffic stream during the period when the children are using the crossing is less than the number of minutes in the same period and there are a minimum of 20 students during the highest crossing hour.

Before a decision is made to install a traffic control signal, consideration shall be given to the implementation of other remedial measures, such as warning signs and flashers, school speed zones, school crossing guards, or a grade-separated crossing.

The School Crossing signal warrant shall not be applied at locations where the distance to the nearest traffic control signal along the major street is less than 300 ft., unless the proposed traffic control signal will not restrict the progressive movement of traffic.

If this warrant is met and a traffic control signal is justified by an engineering study, then:

A. If at an intersection, the traffic control signal should be traffic-actuated and should include pedestrian detectors.

B. If at a non-intersection crossing, the traffic control signal should be pedestrian-actuated, parking and other sight obstructions should be prohibited for at least 100 ft. in advance of and at least 20 ft beyond the crosswalk, and the installation should include suitable standard signs and pavement markings.
C. Furthermore, if installed within a signal system, the traffic control signal should be coordinated.

- Warrant 5 is not applicable for Estates Dr at Bosque Blvd.

Warrant 6 – Coordinated Signal System

Progressive movement in a coordinated signal system sometimes necessitates installing traffic control signals at intersections where they would not otherwise be needed in order to maintain proper platooning of vehicles.

The need for a traffic control signal shall be considered if an engineering study finds that one of the following criteria is met:

A. On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.
B. On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.

The Coordinated Signal System signal warrant should not be applied where the resultant spacing of traffic control signals would be less than 1,000 ft.

- Warrant 6 is not applicable for Estates Dr at Bosque Blvd.

Warrant 7 – Crash Experience

The Crash Experience signal warrant conditions are intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal.

The need for a traffic control signal shall be considered if an engineering study finds that all of the following criteria are met:

A. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; and
B. Five or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage apparently exceeding the applicable requirements for a reportable crash; and
C. For each of any eight (8) hours of an average day, the vehicles per hour given in both of the 80 percent columns of Warrant 1, Condition A, or the vehicles per hour in both of the 80 percent columns of Warrant 1, Condition B exists on the major-street and the higher-volume minor-street approach, respectively, to the intersection, or the volume of pedestrian traffic is not less than 80 percent of the requirements specified in the Pedestrian Volume warrant. These major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.

If the statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, then 56 percent of the traffic volumes requirements may be used instead of 80 percent.

- The number of crashes does not satisfy Warrant 4 for Estates Dr at Bosque Blvd. There were three (3) crashes in 2018 at this intersection. There has not been a reported crash since then.

Warrant 8 – Roadway Network

Installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway network. The need for a traffic control signal shall be considered if an engineering study finds that the common intersection of two or more major routes meets one or both of the following criteria:

- The intersection has a total existing, or immediately projected, entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday and has 5-year projected traffic volumes, based on an engineering study, that meet one or more of Warrants 1, 2, and 3 during an average weekday; or

- The intersection has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of any 5 hours of a non-normal business day (Saturday or Sunday).

A major route as used in this signal warrant shall have one or more of the following characteristics:

A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow; or
B. It includes rural or suburban highways outside, entering, or traversing a city; or
C. It appears as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study; or
D. It connects areas of principal traffic generation; or
E. It has surface street freeway or expressway ramp terminals.

- Warrant 8 is not met for Estates Dr at Bosque Blvd.

Warrant 9 – Intersection Near a Grade Crossing

The Intersection Near a Grade Crossing signal warrant is intended for use at a location where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic control signal.

This signal warrant should be applied only after adequate consideration has been given to other alternatives or after a trial of an alternative has failed to alleviate the safety concerns associated with the grade crossing. Among the alternatives that should be considered or tried are:

A. Providing additional pavement that would enable vehicles to clear the track or that would provide space for an evasive maneuver, or

B. Reassigning the stop controls at the intersection to make the approach across the track a non-stopping approach.

The need for a traffic control signal shall be considered if an engineering study finds that both of the following criteria are met:

A. A grade crossing exists on an approach controlled by a STOP or YIELD sign and the center of the track nearest to the intersection is within 140 ft of the stop line or yield line on the approach; and
B. During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the minor-street approach that crosses the track (one direction only, approaching the intersection) falls above the applicable Grade Crossing Curve for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance.

The following considerations apply when plotting the traffic volume data on applicable Grade Crossing Graph:

A. The Grade Crossing Graph (One Approach Lane at the Track Crossing) should be used if there is only one lane approaching the intersection at the track crossing location and the Grade Crossing Graph (Two or More Approach Lanes at the Track Crossing) should be used if there are two or more lanes approaching the intersection at the track crossing location.
B. After determining the actual distance D, the curve for the distance D that is nearest to the actual distance D should be used. For example, if the actual distance D is 95 ft, the plotted point should be compared to the curve for D = 90 ft.
C. If the rail traffic arrival times are unknown, the highest traffic volume hour of the day should be used.

The minor-street approach volume may be multiplied by up to three (3) adjustment factors as provided in the following paragraphs. Because the curves are based on an average of four occurrences of rail traffic per day, the vehicles per hour on the minor-street approach may be multiplied by the adjustment factor shown in the TMUTCD, Table 4C-2 for the appropriate number of occurrences of rail traffic per day.

Because the curves are based on typical vehicle occupancy, if at least 2% of the vehicles crossing the track are buses carrying at least 20 people, the vehicles per hour on the minor-street approach may be multiplied by the adjustment factor shown in the TMUTCD, Table 4C-3 for the appropriate percentage of high-occupancy buses.

Because the curves are based on tractor-trailer trucks comprising 10% of the vehicles crossing the track, the vehicles per hour on the minor-street approach may be multiplied by the adjustment factor shown in the TMUTCD, Table 4C-4 for the appropriate distance and percentage of tractor-trailer trucks.

If this warrant is met and a traffic control signal at the intersection is justified by an engineering study, then:

A. The traffic control signal shall have actuation on the minor street;
B. Preemption control shall be provided in accordance with Sections 4D.27, 8C.09, and 8C.10; and
C. The grade crossing shall have flashing-light signals This warrant is not applicable at any of the study intersections.

- This warrant is not applicable since there is no railroad crossing near the study intersection.

VI. CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis of the site plan and proposed characteristics of the proposed Maxdale housing development, the following conclusions and recommendations can be made:

1. CONCLUSION

- The city of Woodway is wanting to study Estates Dr to compare the operation of the existing 4-lane roadway to a proposed 3-lane roadway with one lane in each direction and a continuous two-way left turn lane (CTWLTL).
- Based on the Synchro models produced for this study, there is little difference in the Measures of Effectiveness between the existing 4-lane and the proposed 3-lane roadway sections.
- There are inherent safety advantages to separating stopped/slowed turning vehicles from vehicles going straight that are traveling at or near the posted speed limit, in this case either 30 mph.
- There is a combined total of 27 crashes on Estates Dr during the 6+ year period studied between Midway Dr and US 84 (Woodway Dr). There were three (3) non-incapacitating injury crashes, four (4) possible injury crashes, and 16 non-injury crashes. There have also been four (4) crashes where the severity was not recorded (unknown).
- A traffic signal is not warranted at the Estates Dr and Bosque Blvd intersection. The intersection was studied twice. Once with Estates Dr being the major roadway and one with Bosque Blvd being the major roadway.

2. RECOMMENDATIONS

- Install sidewalks and on Estates Dr in front of the elementary school. This should include ADA ramps at Estates Dr and Midway Dr. This section of roadway does not meet the American Disabilities Act Guidelines since there is ample evidence of pedestrians crossing the roadway at this intersection.

Figure 6. Pedestrian Crossing at Midway Dr with Curb Barrier and No Sidewalk

3. CONSIDERATIONS

- In the northbound direction there will need to be some consideration on how to reduce from two (2) northbound lanes to one (1) lane and how to make the lanes line up properly if the city decides to move forward with the revising the existing 4-lane roadway to a proposed 3-lane roadway. One option is to force the current outside to turn right at Midway Dr. The other option is to reduce the existing two (2) northbound lanes in front of the elementary school to one (1) lane before Midway Dr.

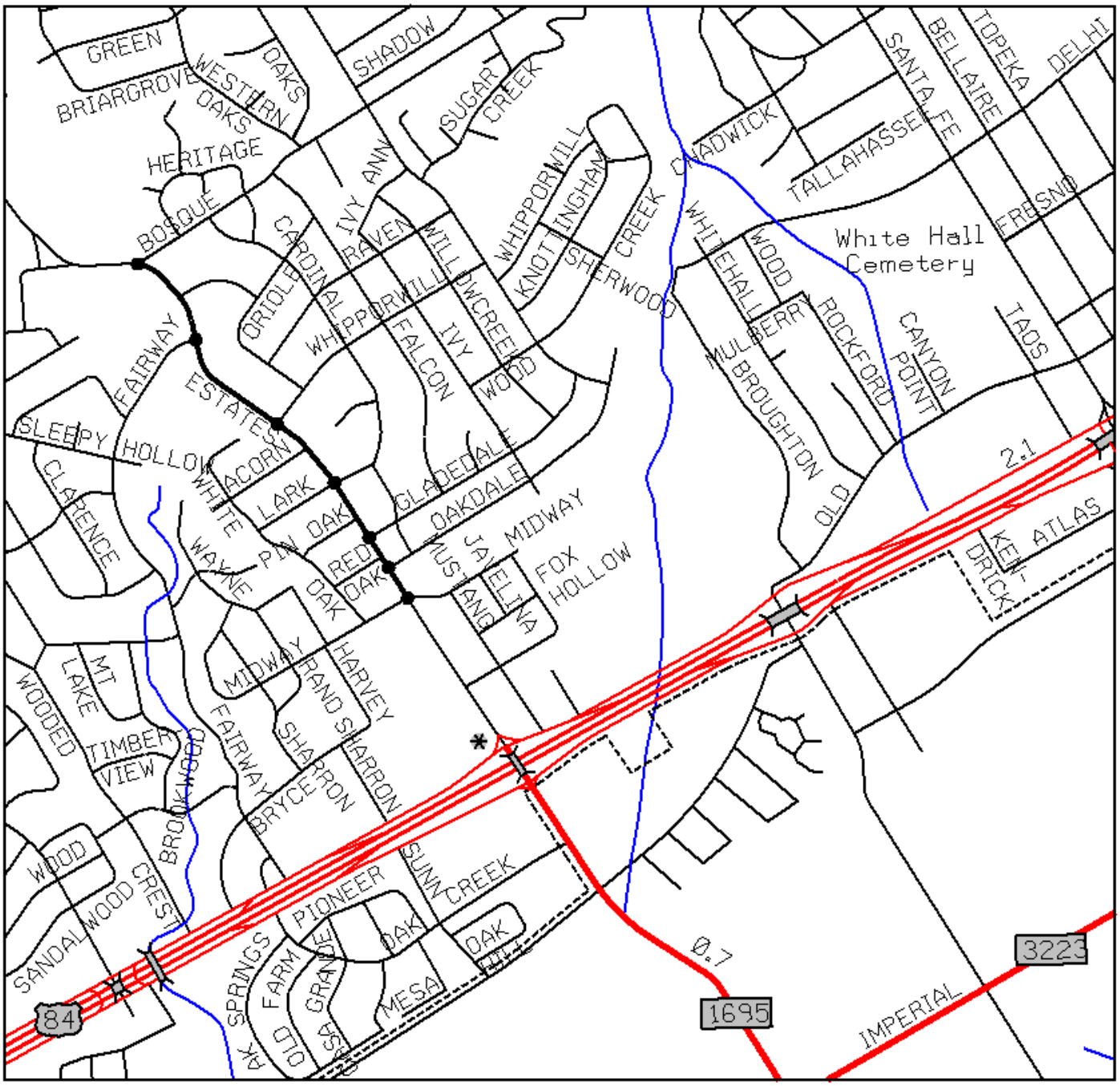
There will likely be a need for a dotted line through the intersection to assist motorist to get properly aligned. The southbound direction approaching Fairway Rd will require the same considerations.

Appendix

Exhibit 1

Site Location Map

EXHIBIT 1 – LOCATION MAP



● Intersections Studied

Exhibit 2

Turning Movement Volume and Existing Hourly Approach Volume Summaries For Estates Dr at Bosque Blvd

Figure 1 - Estates Dr at Bosque Blvd Location Map

Table 1 – Existing Turning Movement Volume Summary - Estates Dr at Bosque Blvd

Hour Begin	Bosque Blvd								Estates Dr							
	Eastbound Volume				Westbound Volume				Northbound Volume				Southbound Volume			
	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn
12:00 AM	0	65	103	0	177	26	1	0	48	0	223	0	0	0	0	0
1:00 AM	0	50	60	0	134	38	1	0	46	0	148	0	2	0	0	0
2:00 AM	0	37	39	0	137	26	0	0	32	1	122	0	0	1	0	0
3:00 AM	0	47	41	0	162	23	1	1	48	2	154	0	2	0	0	0
4:00 AM	0	61	53	0	164	55	2	5	53	1	216	0	2	0	0	0
5:00 AM	0	53	52	0	173	50	0	0	59	0	205	0	1	1	0	0
6:00 AM	0	40	53	0	220	39	0	1	55	1	173	0	0	0	0	0
7:00 AM	0	45	42	0	198	36	0	2	64	0	163	0	0	0	0	0
8:00 AM	1	37	55	0	173	45	0	0	62	1	190	0	1	1	0	0
9:00 AM	0	81	50	0	238	76	0	0	94	0	227	0	0	0	0	0
10:00 AM	0	69	70	0	304	61	0	0	85	0	280	0	0	0	0	0
11:00 AM	0	43	55	0	154	38	0	0	56	0	162	0	0	0	0	0
Totals:	**1**	**628**	**673**	**0**	**2,234**	**513**	**5**	**9**	**702**	**6**	**2,263**	**0**	**8**	**3**	**0**	**0**

Table 2 - Estates Dr at Bosque Blvd – Existing Peak Hour Turning Movement Volumes

Hour Begin	Bosque Blvd			Estates Dr		
	Eastbound Volume	Westbound Volume	Total (EB + WB)	Northbound Volume	Southbound Volume	Total (NB + EB)
12:00 AM	168	204	204	271	0	271
1:00 AM	110	173	173	194	2	196
2:00 AM	76	163	163	155	1	156
3:00 AM	88	187	187	204	2	206
4:00 AM	114	226	226	270	2	272
5:00 AM	105	223	223	264	2	266
6:00 AM	93	260	260	229	0	229
7:00 AM	87	236	236	227	0	227
8:00 AM	93	218	218	253	2	255
9:00 AM	131	314	314	321	0	321
10:00 AM	139	365	365	365	0	365
11:00 AM	98	192	192	218	0	218
Totals:	**1,302**	**2,761**	**2,761**	**2,971**	**11**	**2,982**

Exhibit 3

Traffic Signal Warrant Summary

- Traffic Signal Warrant Analysis Results - Estates Dr at Bosque Blvd

Traffic Survey — Count Analysis

Texas Department of Transportation

Form Revised 2/27/2012

2011 TMUTCD Warrants

County: McLennan District: Waco

City: Woodway Population: 100,000 Survey Date: 11-17-2022

		Name	Control	Section	85% Speed
Major		Bosque Blvd			30 MPH
Minor		Estates Dr			

Eight Highest Hours: Include the same 8 hours for the Major and Minor St. volumes.

Time Ends	Major St. - Both App.		Minor St. - Hi. Vol. App.	
	Veh. Total	Ped. Total	Veh. Total	Ped. Total
6:00 PM	504	1	365	
5:00 PM	445	11	321	
8:00 AM	372	3	271	
12 NOON	335	6	270	
1:00 PM	328	5	264	
2:00 PM	352	3	229	
4:00 PM	311		253	
3:00 PM	321	4	227	

Comments:

Warrant 1. Eight Hour Vehicular Volume

☐ Yes ☑ No Meets 70%[c] (and major-street speed exceeds 40 mph or population less than 10,000) *or* 100%[a] (regardless of speed) of Condition A.

– or –

☐ Yes ☑ No Meets 70%[c] (and major-street speed exceeds 40 mph or population less than 10,000) *or* 100%[a] (regardless of speed) of Condition B.

– or –

☐ Yes ☑ No Meets 80%[b] of Conditions A and B.

– or –

☐ Yes ☑ No Meets 56%[d] of Conditions A and B (and major-street speed exceeds 40 mph or population less than 10,000).

Condition A - Minimum Vehicle Volume

Number of Lanes		Vehicles per hour on Major St (Total of Both Approaches)					Vehicles per hour on higher-volume Minor St approach (One Direction Only)				
Major	Minor	Required				Existing	Required				Existing
Street	Street	100%[a]	80%[b]	70%[c]	56%[d]	51.8%	100%[a]	80%[b]	70%[c]	56%[d]	113.5%
1	1	500	400	350	280		150	120	105	84	
2 or more	1	600	480	420	336		150	120	105	84	
2 or more	2 or more	600	480	420	336	311	200	160	140	112	227
1	2 or more	500	400	350	280		200	160	140	112	

Condition B - Interruption of Continuous Traffic

Number of Lanes		Vehicles per hour on Major St (Total of Both Approaches)					Vehicles per hour on higher-volume Minor St approach (One Direction Only)				
Major	Minor	Required				Existing	Required				Existing
Street	Street	100%[a]	80%[b]	70%[c]	56%[d]	34.6%	100%[a]	80%[b]	70%[c]	56%[d]	227.0%
1	1	750	600	525	420		75	60	53	42	
2 or more	1	900	720	630	504		75	60	53	42	
2 or more	2 or more	900	720	630	504	311	100	80	70	56	227
1	2 or more	750	600	525	420		100	80	70	56	

[a]Basic minimum hourly volume.

[b]Used for combination of Conditions A and B after adequate trial of other remedial measures.

[c]May be used when the major-street speed exceeds 40 mph or in a community with a population of less than 10,000.

[d]May be used for combination of Conditions A and B after adequat trial of other remedial measures when major street exceeds 40 mph or in an isolated community with a population of less than 10,000.

Warrant 2. Four Hour Volumes

☐ Yes ☑ No	Meets each of 4 Highest Hours (Warrant 2 — see Figure 1).

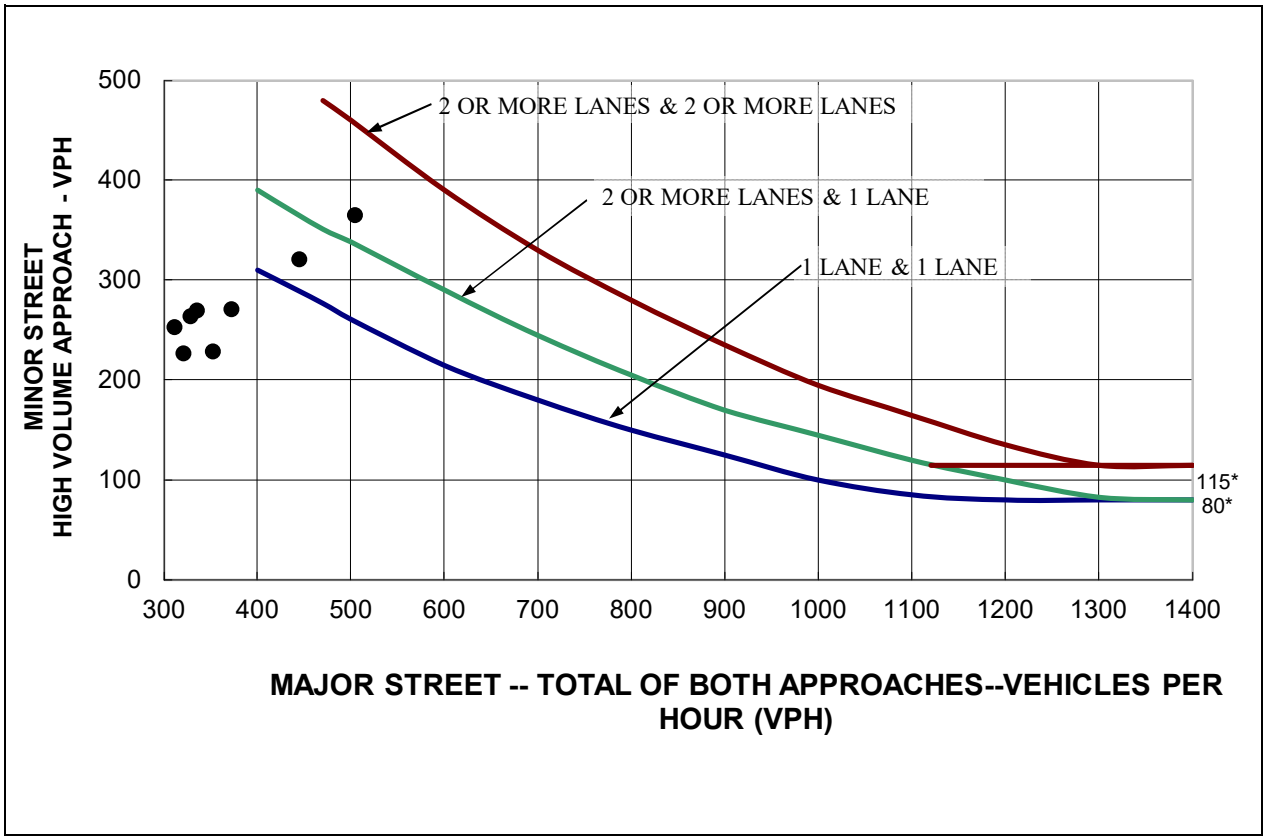
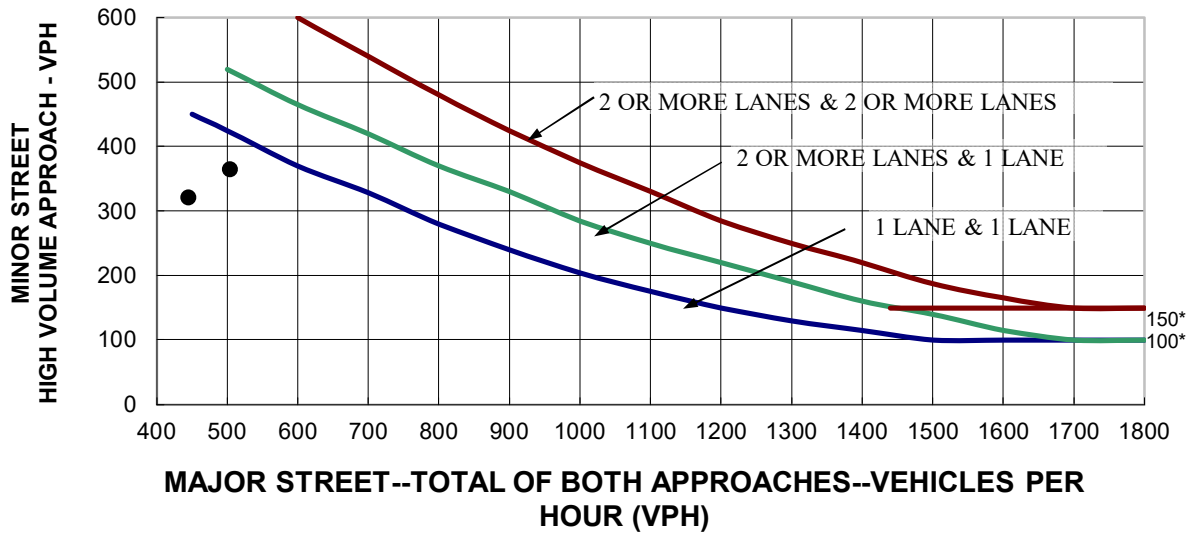


Figure 1. Four-hour volume warrant. (Warrant 2.)

Warrant 3. Peak Hour

☐ Yes ☐ No	Are all of the following conditions true for any four consecutive 15 minute periods? 1. The total stopped time delay experienced by the traffic on one minor street approach (one direction only) controlled by a stop sign equals or exceeds 4 vehicle-hours for a one-lane approach and 5 vehicle-hours for a two-lane approach, *and* 2. The volume of the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, *and* 3. The total entering volume serviced during the hour equals or exceeds 650 vph for intersections with three approaches or 800 vph for intersections with four (or more) approaches.
	– or –
☐ Yes ☑ No	Meets one High Hour (Warrant 3 — see Figure 2).



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

Figure 2. Peak hour volume warrant. (Warrant 3.)

Warrant 4. Four Hour Pedestrian Volumes

☐ Yes ☑ No	Meets Pedestrian Peak Hour (Warrant 4 — see Figure 3).

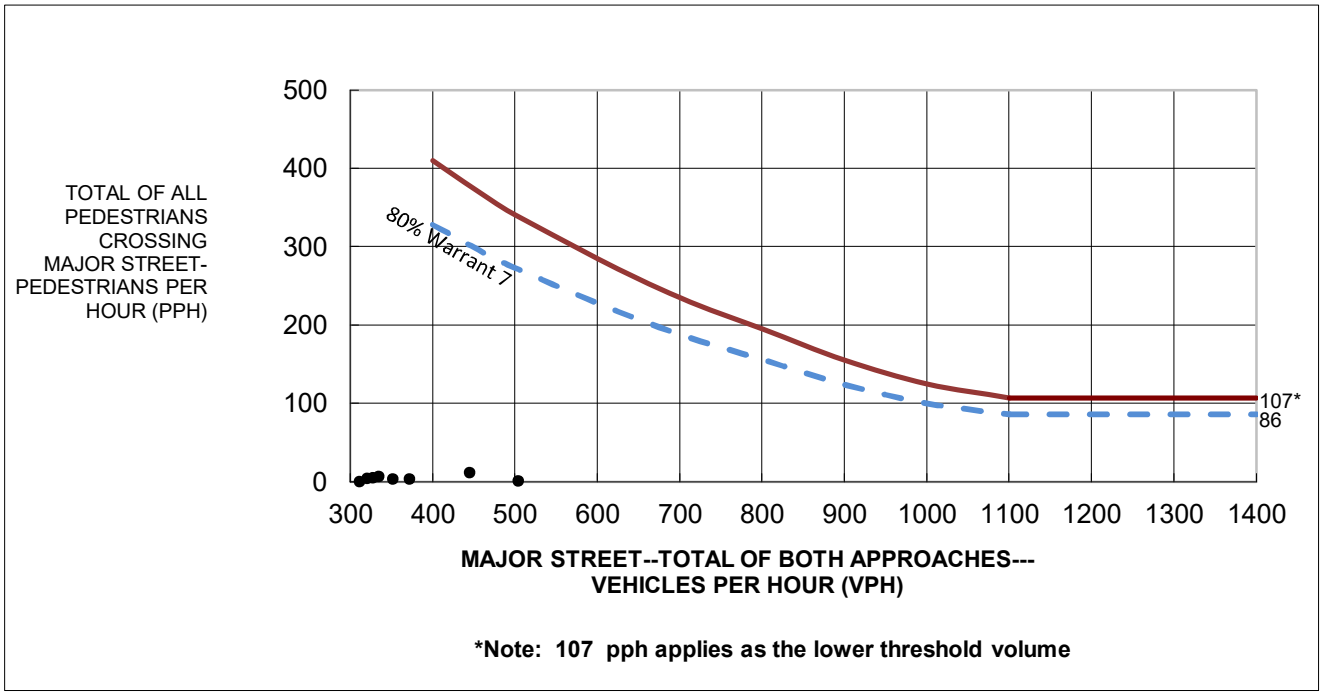


Figure 3. Four-hour pedestrian warrant. (Warrant 4.)

Warrant 4. Peak Hour Pedestrian Volumes

☐ Yes ☑ No	Meets each of 4 Highest Hours (Warrant 4 — see Figure 3).

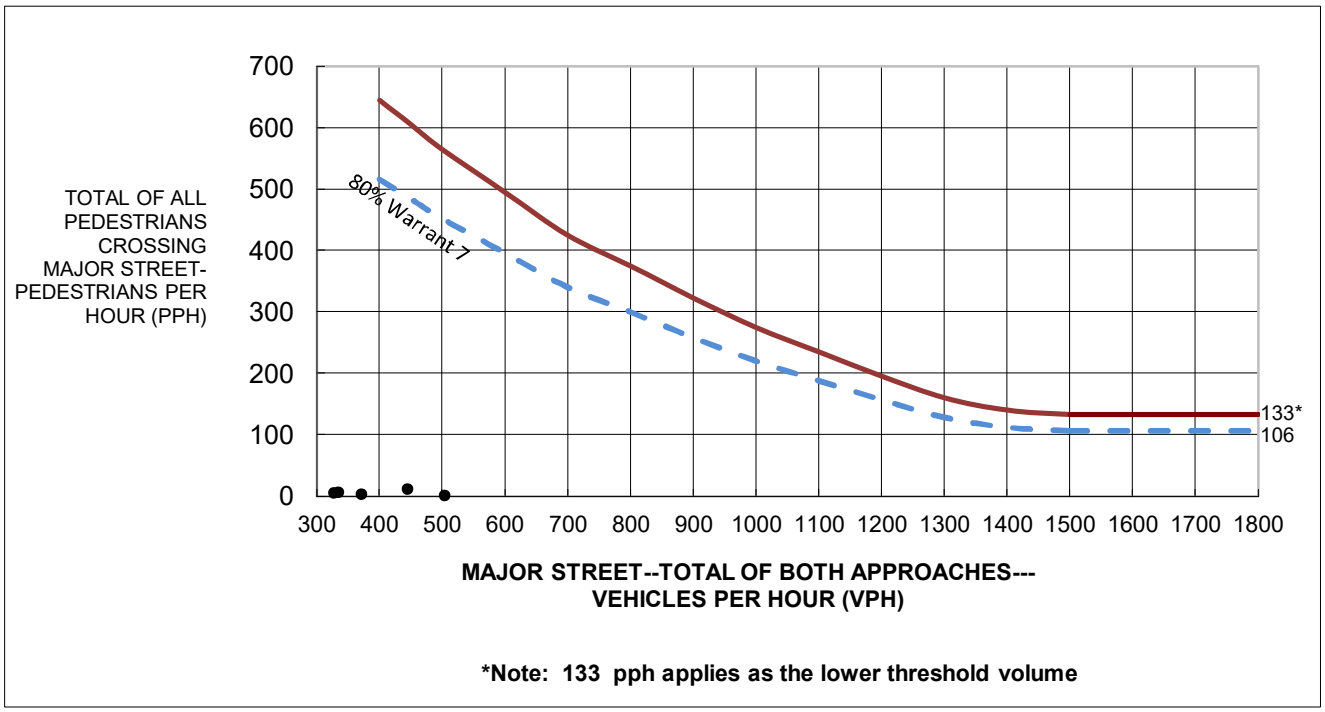


Figure 4. Peak hour pedestrian warrant. (Warrant 4.)

Warrant 5. School Crossing

☐ Yes	☐ No	Is the number of adequate gaps in traffic stream during the period when the children are using the crossing less than the number of minutes in the same period?
N/A		***– and –***
☐ Yes	☐ No	Is there a minimum of 20 students during the highest crossing hour?
		– and –
☐ Yes	☐ No	Is the nearest signal located more than 300 feet away? (This warrant may be applied, if the proposed signal is less than 300 feet and does not restrict the progressive movement of traffic.)

Warrant 6. Coordinated Signal System

☐ Yes	☐ No	On a one-way street or a street with traffic predominantly in one direction, are the adjacent signals far enough apart that the necessary degree of vehicle platooning does not occur?
N/A		***– or –***
☐ Yes	☐ No	On a two-way street, are the adjacent signals far enough appart that the necessary degree of vehicle platooning does not occur and would the proposed and adjacent traffic control signal provide a progressive operation?

Warrant 7. Crash Experience

☐ Yes	☑ No	Is one of the following conditions met?: ♦ 80% of Condition A or Condition B in Warrant 1 ♦ 56% of Condition A or B in Warrant 1 (major-street speed exceeding 40 mph or population less than 10,000) ♦ 80 % or more of Warrant 4 met?
		– and –
☐ Yes	☑ No	Have there been 5 or more reportable crashes susceptible to correction by a traffic signal within a 12 month period?

Warrant 8. Roadway Network

☐ Yes	☐ No	Is the total existing, or immediately projected, entering volume on all approaches greater than 1000 vehicles for each of any 5 hours of a Saturday and/or Sunday.
		– or –
☑ Yes	☐ No	Is the total existing, or immediately projected, entering volume greater than 1000 vehicles for the peak hour of a typical weekday, and do the 5 year projected traffic volumes meet one or more of Warrants 1, 2, and 3 during an average weekday?

Check applicable characteristics of each route:

Major Street	Minor Street	
☐	☐	It is part of street or highway system that serves as the principal roadway network for through traffic flow.
☐	☐	It includes rural or suburban highways outside, entering, or traversing a city.
☑	☑	It appears as a major route on an official plan such as a major street plan in an urban area traffic and transportation study.

Remarks:

Warrant 9. Intersection Near a Grade Crossing (Two or More Approach Lanes at the Track Crossing)

☐ Yes ☑ No	Meets one High Hour (Warrant 9 — see Figure 5).

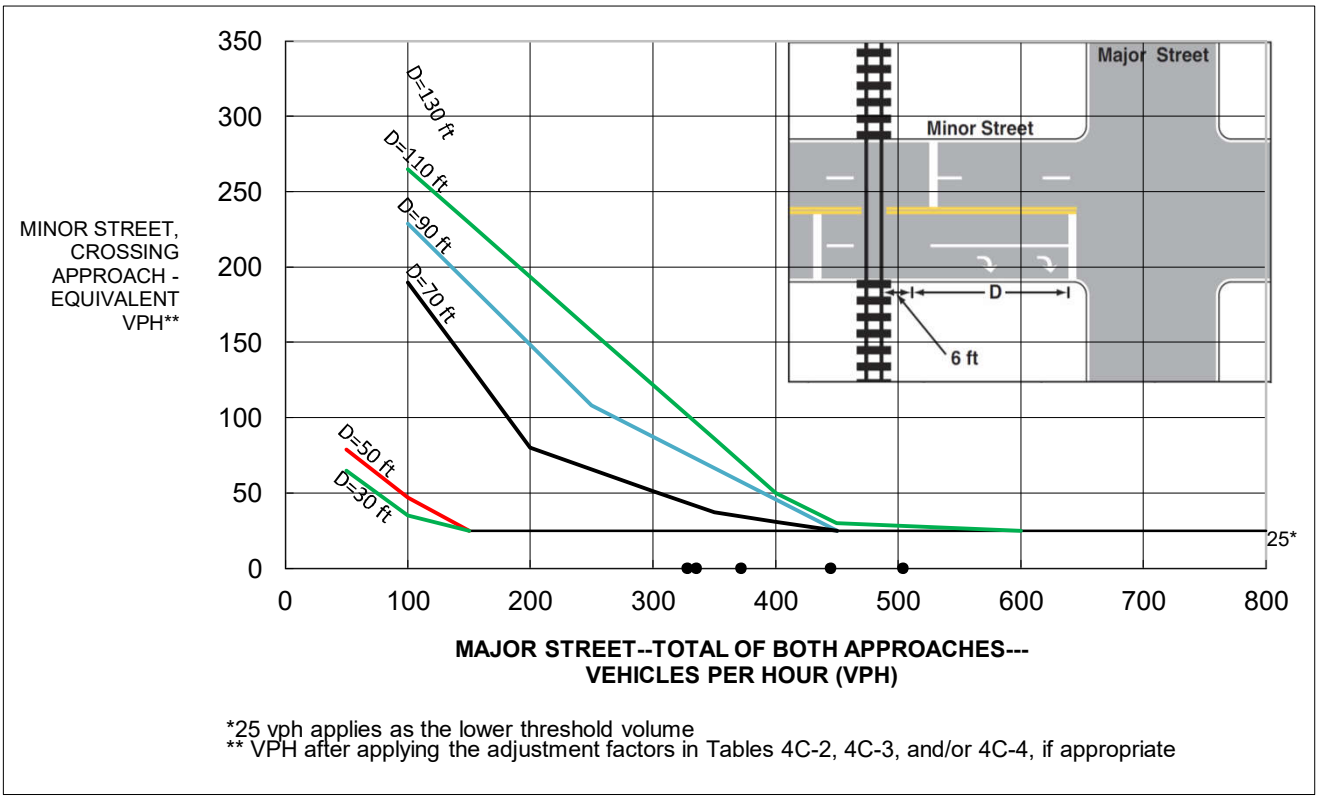


Figure 5. Railroad Grade Crossing (Two or More Approach Lanes at the Track Crossing). (Warrant 9.)

Woodway, McLennan Co.

MAJOR APPROACH
Bosque Blvd
2 LANE(S)
PER APPROACH

MINOR APPROACH
Estates Dr
2 LANE(S)
PER APPROACH

DATE: 11-17-2022
85th % SPEED: 30 MPH
POPULATION: 9,383

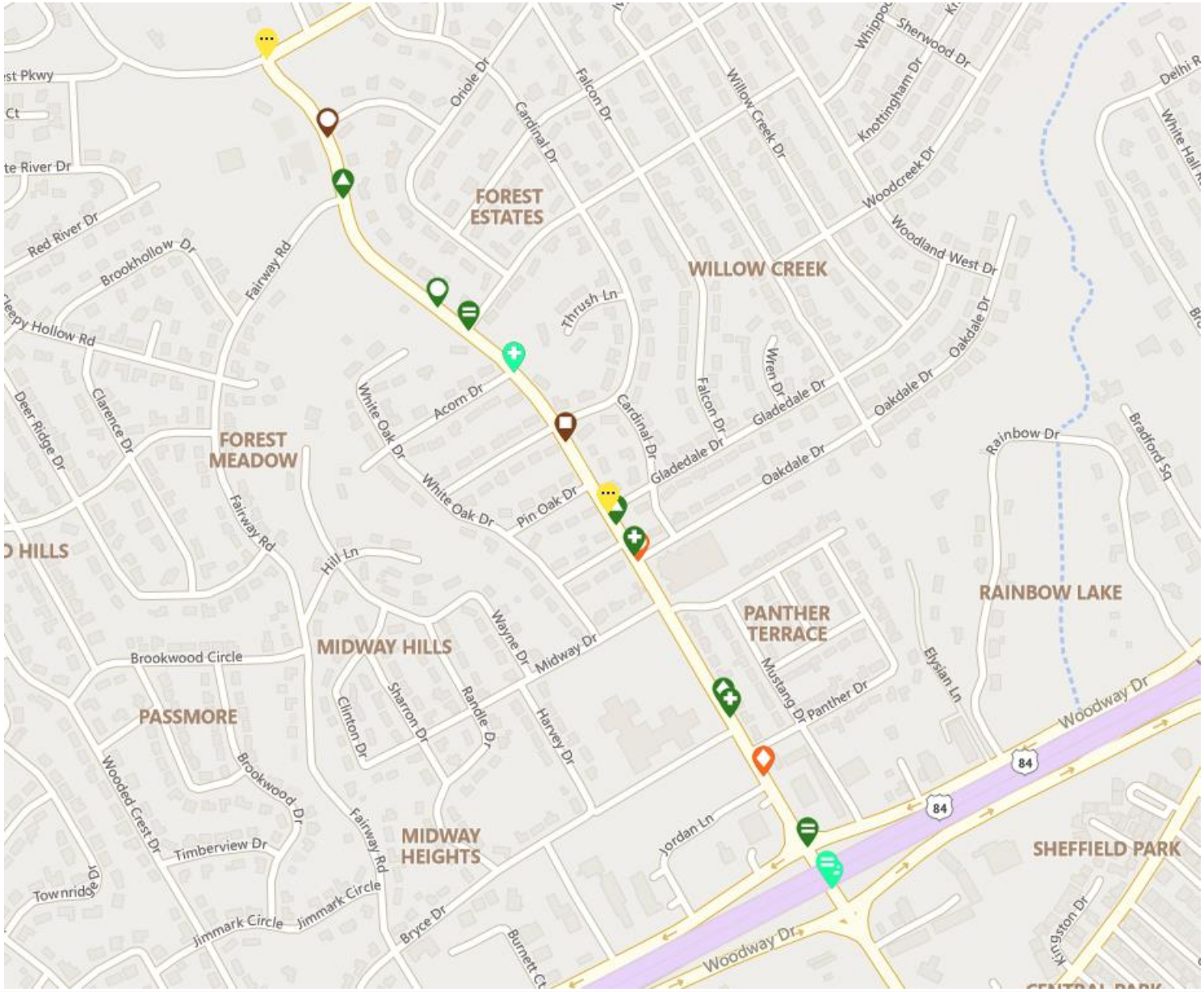
	Eastbound		Westbound		Northbound		Southbound		SUM MAJOR	HIGH MINOR	MAJOR APPR & HIGH MINOR	PED TOTAL XING MAJOR	LOW MINOR	RANK
	VEH	PEDS	VEH	PEDS	VEH	PEDS	VEH	PEDS						
7:00 AM														
	168		204	3	271			3	372	271	643	3		3
8:00 AM														
	110	2	173	5	194		2	5	283	194	477	5	2	11
9:00 AM														
	76	2	163	1	155		1	1	239	155	394	1	1	12
10:00 AM														
	88		187	1	204		2	1	275	204	479	1	2	10
11:00 AM														
	114		221	5	270	1	2	5	335	270	605	6	2	4
12 NOON														
	105		223	4	264	1	2	4	328	264	592	5	2	5
1:00 PM														
	93		259	3	229			3	352	229	581	3		6
2:00 PM														
	87		234	4	227			4	321	227	548	4		8
3:00 PM														
	93		218		253		2		311	253	564		2	7
4:00 PM														
	131		314	11	321			11	445	321	766	11		2
5:00 PM														
	139		365	1	365			1	504	365	869	1		1
6:00 PM														
	98		192		218				290	218	508			9
7:00 PM														
8:00 PM														
9:00 PM														
10:00 PM														
11:00 PM														
12 MID														
1:00 AM														
2:00 AM														
3:00 AM														
4:00 AM														
5:00 AM														
6:00 AM														
7:00 AM														

		Hours Met	Hours Req'd		
Warrant 1a			8	Not Satisfied	
Warrant 1b			8	Not Satisfied	
Warrant 1c			8	Not Satisfied	
Warrant 1d		1	8	Not Satisfied	
Warrant 2*			4	Not Satisfied	*See Urban Veh Graph
Warrant 3*			1	Not Satisfied	*See Urban Veh Graph
Warrant 4*	4 Hours		4	Not Satisfied	*See Urban Ped Graph
Warrant 4*	Peak Hour		1	Not Satisfied	*See Urban Ped Graph
Warrant 7		1	8	Not Satisfied	
Warrant 9			1	Not Satisfied	See Multiple Lane RR Graph

Exhibit 4

Crash Data

Crash Map
Estates Dr, 2016 - 2022



- 2016 and Possible Injury
- 2016 and Unknown
- 2017 and Possible Injury
- 2017 and Suspected Minor Injury
- 2017 and Not Injured
- 2018 and Not Injured
- 2019 and Not Injured
- 2020 and Not Injured
- 2020 and Possible Injury
- 2021 and Not Injured
- 2021 and Suspected Minor Injury
- 2022 and Not Injured
- 2022 and Suspected Minor Injury
- 2022 and Unknown

Crash Report

From 2016 to 2022

ESTATES DR at BOSQUE BLVD

ACC #	DATE	RDWY 1	STR #	RDWY 2	MANNER OF COLLISION	INTERSECTION RELATED	TRAFFIC CONTROL	SURFACE CONDITION	WEATHER CONDITION	LIGHT CONDITION	ROADWAY RELATED	ROADWAY ALIGNMENT	CRASH SEVERITY
15216084	5/19/2016	ESTATES DR		N/A	ONE MOTOR VEHICLE - GOING STRAIGHT	NON INTERSECTION	NONE	WET	CLOUDY	DARK, NOT LIGHTED		OTHER	
15148943	6/3/2016	ESTATES DR	599	GLADEDALE DR	SD - BOTH GOING STRAIGHT-REAR END	INTERSECTION RELATED	NONE	DRY	CLEAR	DAYLIGHT	ON ROADWAY	STR, LEVEL	POSSIBLE INJ
15351458	8/23/2016	ESTATES DR	673	N/A	ONE MOTOR VEHICLE - GOING STRAIGHT	NON INTERSECTION	CENTER STRIPE	DRY	CLEAR	DAYLIGHT	OFF ROADWAY	STR, LEVEL	
15790501	5/15/2017	ESTATES DR		N/A	OD - BOTH LEFT TURNS	DRIVEWAY ACCESS	SIGNAL LIGHT	DRY	CLEAR	DAYLIGHT	ON ROADWAY	STR, LEVEL	POSSIBLE INJ
15821863	5/20/2017	ESTATES DR	599	GLADEDALE DR	ANGLE - ONE STRAIGHT-ONE LEFT TURN	INTERSECTION	STOP SIGN	DRY	CLEAR	DAYLIGHT	ON ROADWAY	STR, LEVEL	NON-INCAP
15879149	7/13/2017	ESTATES DR		WOODWAY DR	SD - ONE STRAIGHT-ONE STOPPED	INTERSECTION RELATED	MARKED LANES	DRY	CLOUDY	DAYLIGHT	ON ROADWAY	STR, LEVEL	POSSIBLE INJ
15902652	7/25/2017	ESTATES DR	801	WHIPPOORWILL DR	ANGLE - BOTH GOING STRAIGHT	INTERSECTION	STOP SIGN	DRY	CLEAR	DAYLIGHT	ON ROADWAY	CURVE, GRADE	NON-INJ
15971681	9/10/2017	ESTATES DR		WOODWAY DR	SD - BOTH LEFT TURN	INTERSECTION	SIGNAL LIGHT	DRY	CLEAR	DAYLIGHT	ON ROADWAY	STR, LEVEL	NON-INJ
16249027	2/13/2018	ESTATES DR	1099	BOSQUE BLVD	SD - ONE STRAIGHT-ONE RIGHT TURN	INTERSECTION	STOP SIGN	WET	RAIN	DAYLIGHT	ON ROADWAY	STR, GRADE	NON-INJ
16256085	2/19/2018	ESTATES DR	1099	BOSQUE BLVD	OD - ONE STRAIGHT-ONE LEFT TURN	INTERSECTION	STOP SIGN	DRY	CLOUDY	DAYLIGHT	ON ROADWAY	STR, LEVEL	NON-INJ
16318783	3/23/2018	ESTATES DR	1099	BOSQUE BLVD	ONE MOTOR VEHICLE - TURNING RIGHT	INTERSECTION RELATED	STOP SIGN	DRY	CLEAR	DAYLIGHT	OFF ROADWAY	CURVE, LEVEL	NON-INJ
16467526	6/13/2018	ESTATES DR		N/A	ONE MOTOR VEHICLE - GOING STRAIGHT	NON INTERSECTION	NONE	DRY	CLEAR	DAYLIGHT	ON ROADWAY	STR, LEVEL	
17428314	11/27/2019	ESTATES DR	901	W FAIRWAY DR	ANGLE - ONE STRAIGHT-ONE LEFT TURN	INTERSECTION	STOP SIGN	DRY	CLEAR	DAYLIGHT	ON ROADWAY	STR, HILLCREST	NON-INJ
17442706	12/5/2019	ESTATES DR	500	N/A	OD - ONE STRAIGHT-ONE BACKING	NON INTERSECTION	MARKED LANES	DRY	CLEAR	DAWN	ON ROADWAY	STR, HILLCREST	NON-INJ
17569221	2/13/2020	ESTATES DR		N/A	ONE MOTOR VEHICLE - BACKING	NON INTERSECTION	NONE	DRY	CLEAR	DAYLIGHT		STR, LEVEL	NON-INJ
17676476	5/3/2020	ESTATES DR	1800	UNKNOWN	ANGLE - BOTH GOING STRAIGHT	INTERSECTION	STOP SIGN	DRY	CLEAR	DAYLIGHT	ON ROADWAY	STR, LEVEL	NON-INJ
17695387	5/13/2020	ESTATES DR	1615	N/A	ANGLE - BOTH GOING STRAIGHT	NON INTERSECTION	MARKED LANES	DRY	CLEAR	DARK, NOT LIGHTED	ON ROADWAY	CURVE, LEVEL	NON-INJ
17695390	5/14/2020	ESTATES DR	235	N/A	ANGLE - ONE STRAIGHT-ONE LEFT TURN	DRIVEWAY ACCESS	MARKED LANES	DRY	CLEAR	DARK, LIGHTED	ON ROADWAY	STR, LEVEL	NON-INJ
17765502	7/10/2020	ESTATES DR	800	N/A	ANGLE - BOTH GOING STRAIGHT	DRIVEWAY ACCESS	CENTER STRIPE	DRY	CLEAR	DUSK	ON ROADWAY	STR, GRADE	POSSIBLE INJ
17846603	9/4/2020	ESTATES DR	403	N/A	SD - BOTH GOING STRAIGHT-SIDESWIPE	NON INTERSECTION	MARKED LANES	DRY	CLEAR	DAYLIGHT	ON ROADWAY	STR, LEVEL	NON-INJ
17886818	9/30/2020	ESTATES DR		N/A	ONE MOTOR VEHICLE - GOING STRAIGHT	NON INTERSECTION	MARKED LANES	DRY	CLEAR	DAYLIGHT		CURVE, GRADE	NON-INJ
18104800	2/11/2021	ESTATES DR	2000	N/A	ONE MOTOR VEHICLE - GOING STRAIGHT	NON INTERSECTION	NONE	WET	SLEET/HAIL	DARK, NOT LIGHTED	OFF ROADWAY	STR, GRADE	NON-INJ
18202284	4/14/2021	ESTATES DR	218	N/A	ANGLE - ONE STRAIGHT-ONE BACKING	DRIVEWAY ACCESS	CENTER STRIPE	DRY	CLEAR	DAYLIGHT	ON ROADWAY	STR, LEVEL	NON-INJ
18239698	5/5/2021	ESTATES DR	143	N/A	ONE MOTOR VEHICLE - GOING STRAIGHT	NON INTERSECTION	NONE	DRY	CLEAR	DARK, LIGHTED	OFF ROADWAY	STR, LEVEL	NON-INCAP
18731136	2/3/2022	ESTATES DR	809	N/A	ONE MOTOR VEHICLE - GOING STRAIGHT	NON INTERSECTION	CENTER STRIPE	ICE	CLOUDY	DARK, LIGHTED	OFF ROADWAY	STR, GRADE	NON-INJ
18780553	3/1/2022	ESTATES DR	401	UNKNOWN	ANGLE - BOTH GOING STRAIGHT	INTERSECTION	STOP SIGN	DRY	CLEAR	DAYLIGHT	ON ROADWAY	STR, LEVEL	NON-INCAP
18850899	4/12/2022	ESTATES DR	973	N/A	ONE MOTOR VEHICLE - OTHER	NON INTERSECTION	NONE	DRY	CLEAR	UNKNOWN	OFF ROADWAY	STR, LEVEL	

DRY	WET	DAYLIGHT	DARK	CLR/CLOUDY	RAIN	FOG	ON RDWY	OFF RDWY	FATAL	SUSPECT SERIOUS	NON-INCAP	POSS INJ	NON-INJ
23	4	18	9	25	1	0	18	6	0	0	3	4	16

Exhibit 5

Synchro Traffic Analysis Reports

- AM Four-Lane Condition
- PM Four-Lane Condition
- AM Three-Lane Condition
- PM Three-Lane Condition

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	44	136	236	24	0	64	0	316	0	0	0
Future Vol, veh/h	0	44	136	236	24	0	64	0	316	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	44	136	236	24	0	64	0	316	0	0	0
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	3	3
HCM Control Delay	10	10.8	10.2	0
HCM LOS	A	B	B	-

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	33%	0%	0%	0%	0%	100%	94%	0%	0%
Vol Thru, %	0%	0%	100%	100%	10%	0%	6%	100%	100%
Vol Right, %	67%	100%	0%	0%	90%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	194	186	0	29	151	118	126	16	0
LT Vol	64	0	0	0	0	118	118	0	0
Through Vol	0	0	0	29	15	0	8	16	0
RT Vol	130	186	0	0	136	0	0	0	0
Lane Flow Rate	194	186	0	29	151	118	126	16	0
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.299	0.267	0	0.051	0.235	0.214	0.227	0.019	0
Departure Headway (Hd)	5.553	5.156	6.254	6.254	5.613	6.522	6.489	4.296	6.69
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	648	697	0	573	640	551	554	833	0
Service Time	3.284	2.886	3.989	3.989	3.347	4.252	4.219	2.025	4.437
HCM Lane V/C Ratio	0.299	0.267	0	0.051	0.236	0.214	0.227	0.019	0
HCM Control Delay	10.6	9.8	9	9.3	10.1	11	11.1	7.1	9.4
HCM Lane LOS	B	A	N	A	B	B	B	A	N
HCM 95th-tile Q	1.3	1.1	0	0.2	0.9	0.8	0.9	0.1	0

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	92	80	12	296	268	60
Future Vol, veh/h	92	80	12	296	268	60
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	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	92	80	12	296	268	60

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	470	164	328	0	-	0
Stage 1	298	-	-	-	-	-
Stage 2	172	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	527	858	1243	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	847	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	521	858	1243	-	-	-
Mov Cap-2 Maneuver	521	-	-	-	-	-
Stage 1	724	-	-	-	-	-
Stage 2	847	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1243	-	637	-	-
HCM Lane V/C Ratio	0.01	-	0.27	-	-
HCM Control Delay (s)	7.9	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.1	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	3	324	8	0	364
Future Vol, veh/h	20	3	324	8	0	364
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	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	20	3	324	8	0	364

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	510	166	0	0	332	0
Stage 1	328	-	-	-	-	-
Stage 2	182	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	498	856	-	-	1239	-
Stage 1	708	-	-	-	-	-
Stage 2	837	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	498	856	-	-	1239	-
Mov Cap-2 Maneuver	498	-	-	-	-	-
Stage 1	708	-	-	-	-	-
Stage 2	837	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	527	1239	-
HCM Lane V/C Ratio	-	-	0.044	-	-
HCM Control Delay (s)	-	-	12.1	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	3	3	16	2	8	3	280	12	3	388	3
Future Vol, veh/h	4	3	3	16	2	8	3	280	12	3	388	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	3	3	16	2	8	3	280	12	3	388	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	543	694	196	494	689	146	391	0	0	292	0	0
Stage 1	396	396	-	292	292	-	-	-	-	-	-	-
Stage 2	147	298	-	202	397	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	427	369	819	463	371	881	1179	-	-	1281	-	-
Stage 1	606	607	-	697	675	-	-	-	-	-	-	-
Stage 2	847	671	-	787	607	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	419	367	819	457	369	881	1179	-	-	1281	-	-
Mov Cap-2 Maneuver	419	367	-	457	369	-	-	-	-	-	-	-
Stage 1	604	605	-	695	673	-	-	-	-	-	-	-
Stage 2	834	669	-	778	605	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.9	12.2	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1179	-	-	468	525	1281	-	-
HCM Lane V/C Ratio	0.003	-	-	0.021	0.05	0.002	-	-
HCM Control Delay (s)	8.1	0	-	12.9	12.2	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	4	332	12	4	436
Future Vol, veh/h	28	4	332	12	4	436
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	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	28	4	332	12	4	436

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	564	172	0	0	344	0
Stage 1	338	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	460	848	-	-	1226	-
Stage 1	700	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	458	848	-	-	1226	-
Mov Cap-2 Maneuver	458	-	-	-	-	-
Stage 1	700	-	-	-	-	-
Stage 2	793	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	486	1226	-
HCM Lane V/C Ratio	-	-	0.066	0.003	-
HCM Control Delay (s)	-	-	12.9	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	92	12	312	68	40	412
Future Vol, veh/h	92	12	312	68	40	412
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	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	92	12	312	68	40	412

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	632	190	0	0	380	0
Stage 1	346	-	-	-	-	-
Stage 2	286	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	417	826	-	-	1190	-
Stage 1	694	-	-	-	-	-
Stage 2	743	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	399	826	-	-	1190	-
Mov Cap-2 Maneuver	399	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	710	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.2	0	0.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	424	1190	-
HCM Lane V/C Ratio	-	-	0.245	0.034	-
HCM Control Delay (s)	-	-	16.2	8.1	0.1
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1	0.1	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	4	112	16	4	12	20	340	4	4	528	16
Future Vol, veh/h	24	4	112	16	4	12	20	340	4	4	528	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	24	4	112	16	4	12	20	340	4	4	528	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	766	948	282	666	954	182	554	0	0	354	0	0
Stage 1	554	554	-	392	392	-	-	-	-	-	-	-
Stage 2	212	394	-	274	562	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	296	263	721	349	261	836	1026	-	-	1216	-	-
Stage 1	489	517	-	610	610	-	-	-	-	-	-	-
Stage 2	776	609	-	714	513	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	279	250	714	282	248	828	1016	-	-	1204	-	-
Mov Cap-2 Maneuver	279	250	-	282	248	-	-	-	-	-	-	-
Stage 1	473	509	-	590	589	-	-	-	-	-	-	-
Stage 2	741	588	-	594	505	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14	15.8	0.6	0.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1016	-	-	541	366	1204	-	-
HCM Lane V/C Ratio	0.02	-	-	0.259	0.087	0.003	-	-
HCM Control Delay (s)	8.6	0.1	-	14	15.8	8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1	0.3	0	-	-

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	44	136	236	24	0	64	0	316	0	0	0
Future Vol, veh/h	0	44	136	236	24	0	64	0	316	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	44	136	236	24	0	64	0	316	0	0	0
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	3	3
HCM Control Delay	10	10.8	10.2	0
HCM LOS	A	B	B	-

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	33%	0%	0%	0%	0%	100%	94%	0%	0%
Vol Thru, %	0%	0%	100%	100%	10%	0%	6%	100%	100%
Vol Right, %	67%	100%	0%	0%	90%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	194	186	0	29	151	118	126	16	0
LT Vol	64	0	0	0	0	118	118	0	0
Through Vol	0	0	0	29	15	0	8	16	0
RT Vol	130	186	0	0	136	0	0	0	0
Lane Flow Rate	194	186	0	29	151	118	126	16	0
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.299	0.267	0	0.051	0.235	0.214	0.227	0.019	0
Departure Headway (Hd)	5.553	5.156	6.254	6.254	5.613	6.522	6.489	4.296	6.69
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	648	697	0	573	640	551	554	833	0
Service Time	3.284	2.886	3.989	3.989	3.347	4.252	4.219	2.025	4.437
HCM Lane V/C Ratio	0.299	0.267	0	0.051	0.236	0.214	0.227	0.019	0
HCM Control Delay	10.6	9.8	9	9.3	10.1	11	11.1	7.1	9.4
HCM Lane LOS	B	A	N	A	B	B	B	A	N
HCM 95th-tile Q	1.3	1.1	0	0.2	0.9	0.8	0.9	0.1	0

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	92	80	12	296	268	60
Future Vol, veh/h	92	80	12	296	268	60
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	-	150	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	92	80	12	296	268	60

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	588	268	328	0	-	0
Stage 1	268	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	475	776	1243	-	-	-
Stage 1	782	-	-	-	-	-
Stage 2	741	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	470	776	1243	-	-	-
Mov Cap-2 Maneuver	470	-	-	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	741	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1243	-	576	-	-
HCM Lane V/C Ratio	0.01	-	0.299	-	-
HCM Control Delay (s)	7.9	-	13.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	1.2	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	3	324	8	0	364
Future Vol, veh/h	20	3	324	8	0	364
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	20	3	324	8	0	364

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	692	328	0	0	332	0
Stage 1	328	-	-	-	-	-
Stage 2	364	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	413	718	-	-	1239	-
Stage 1	734	-	-	-	-	-
Stage 2	707	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	413	718	-	-	1239	-
Mov Cap-2 Maneuver	517	-	-	-	-	-
Stage 1	734	-	-	-	-	-
Stage 2	707	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	537	1239	-
HCM Lane V/C Ratio	-	-	0.043	-	-
HCM Control Delay (s)	-	-	12	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	3	16	0	8	3	280	12	3	388	3
Future Vol, veh/h	4	0	3	16	0	8	3	280	12	3	388	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	4	0	3	16	0	8	3	280	12	3	388	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	692	694	390	689	689	286	391	0	0	292	0	0
Stage 1	396	396	-	292	292	-	-	-	-	-	-	-
Stage 2	296	298	-	397	397	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	361	369	663	363	371	758	1179	-	-	1281	-	-
Stage 1	633	607	-	720	675	-	-	-	-	-	-	-
Stage 2	717	671	-	633	607	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	356	367	663	360	369	758	1179	-	-	1281	-	-
Mov Cap-2 Maneuver	356	367	-	360	369	-	-	-	-	-	-	-
Stage 1	631	606	-	718	673	-	-	-	-	-	-	-
Stage 2	708	669	-	629	606	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.2	13.7	0.1	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1179	-	-	444	436	1281	-	-
HCM Lane V/C Ratio	0.003	-	-	0.016	0.055	0.002	-	-
HCM Control Delay (s)	8.1	-	-	13.2	13.7	7.8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	4	332	12	4	436
Future Vol, veh/h	28	4	332	12	4	436
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	28	4	332	12	4	436

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	782	338	0	0	344	0
Stage 1	338	-	-	-	-	-
Stage 2	444	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	366	709	-	-	1226	-
Stage 1	727	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	365	709	-	-	1226	-
Mov Cap-2 Maneuver	478	-	-	-	-	-
Stage 1	727	-	-	-	-	-
Stage 2	649	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	498	1226	-
HCM Lane V/C Ratio	-	-	0.064	0.003	-
HCM Control Delay (s)	-	-	12.7	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	92	12	312	68	40	412
Future Vol, veh/h	92	12	312	68	40	412
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	92	12	312	68	40	412

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	838	346	0	0	380	0
Stage 1	346	-	-	-	-	-
Stage 2	492	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	339	702	-	-	1190	-
Stage 1	721	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	327	702	-	-	1190	-
Mov Cap-2 Maneuver	445	-	-	-	-	-
Stage 1	721	-	-	-	-	-
Stage 2	598	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	465	1190	-
HCM Lane V/C Ratio	-	-	0.224	0.034	-
HCM Control Delay (s)	-	-	15	8.1	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	4	112	16	4	12	20	340	4	4	528	16
Future Vol, veh/h	24	4	112	16	4	12	20	340	4	4	528	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	0	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	24	4	112	16	4	12	20	340	4	4	528	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	944	948	546	992	952	350	554	0	0	354	0	0
Stage 1	554	554	-	390	390	-	-	-	-	-	-	-
Stage 2	390	394	-	602	562	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	244	263	541	227	261	698	1026	-	-	1216	-	-
Stage 1	520	517	-	638	611	-	-	-	-	-	-	-
Stage 2	638	609	-	490	513	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	231	252	536	173	250	691	1016	-	-	1204	-	-
Mov Cap-2 Maneuver	231	252	-	173	250	-	-	-	-	-	-	-
Stage 1	505	510	-	619	593	-	-	-	-	-	-	-
Stage 2	610	591	-	383	506	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.5	21.2	0.5	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1016	-	-	426	254	1204	-	-
HCM Lane V/C Ratio	0.02	-	-	0.329	0.126	0.003	-	-
HCM Control Delay (s)	8.6	-	-	17.5	21.2	8	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.4	0.4	0	-	-

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	52	64	376	84	0	72	0	344	0	0	0
Future Vol, veh/h	0	52	64	376	84	0	72	0	344	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	52	64	376	84	0	72	0	344	0	0	0
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	3	3
HCM Control Delay	10.1	12.3	11.3	0
HCM LOS	B	B	B	-

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	34%	0%	0%	0%	0%	100%	87%	0%	0%
Vol Thru, %	0%	0%	100%	100%	21%	0%	13%	100%	100%
Vol Right, %	66%	100%	0%	0%	79%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	213	203	0	35	81	188	216	56	0
LT Vol	72	0	0	0	0	188	188	0	0
Through Vol	0	0	0	35	17	0	28	56	0
RT Vol	141	203	0	0	64	0	0	0	0
Lane Flow Rate	213	203	0	35	81	188	216	56	0
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.351	0.311	0	0.066	0.142	0.343	0.39	0.067	0
Departure Headway (Hd)	5.923	5.517	6.834	6.834	6.272	6.563	6.497	4.336	7.186
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	607	652	0	523	570	549	555	824	0
Service Time	3.665	3.258	4.585	4.585	4.024	4.299	4.233	2.071	4.951
HCM Lane V/C Ratio	0.351	0.311	0	0.067	0.142	0.342	0.389	0.068	0
HCM Control Delay	11.9	10.7	9.6	10.1	10.1	12.7	13.3	7.4	10
HCM Lane LOS	B	B	N	B	B	B	B	A	N
HCM 95th-tile Q	1.6	1.3	0	0.2	0.5	1.5	1.8	0.2	0

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	24	40	300	416	92
Future Vol, veh/h	56	24	40	300	416	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	56	24	40	300	416	92

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	692	254	508	0	-	0
Stage 1	462	-	-	-	-	-
Stage 2	230	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	382	752	1067	-	-	-
Stage 1	607	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	365	752	1067	-	-	-
Mov Cap-2 Maneuver	365	-	-	-	-	-
Stage 1	580	-	-	-	-	-
Stage 2	792	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.2	1.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1067	-	432	-	-
HCM Lane V/C Ratio	0.037	-	0.185	-	-
HCM Control Delay (s)	8.5	0.2	15.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	4	392	32	3	344
Future Vol, veh/h	20	4	392	32	3	344
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	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	20	4	392	32	3	344

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	586	212	0	0	424	0
Stage 1	408	-	-	-	-	-
Stage 2	178	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	446	800	-	-	1146	-
Stage 1	646	-	-	-	-	-
Stage 2	841	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	445	800	-	-	1146	-
Mov Cap-2 Maneuver	445	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	838	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	481	1146	-
HCM Lane V/C Ratio	-	-	0.05	0.003	-
HCM Control Delay (s)	-	-	12.9	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	2	4	0	4	4	404	8	2	416	4
Future Vol, veh/h	2	0	2	4	0	4	4	404	8	2	416	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	0	2	4	0	4	4	404	8	2	416	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	632	842	210	628	840	206	420	0	0	412	0	0
Stage 1	422	422	-	416	416	-	-	-	-	-	-	-
Stage 2	210	420	-	212	424	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	369	303	802	371	304	807	1150	-	-	1158	-	-
Stage 1	585	592	-	590	595	-	-	-	-	-	-	-
Stage 2	778	593	-	776	590	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	365	301	802	368	302	807	1150	-	-	1158	-	-
Mov Cap-2 Maneuver	365	301	-	368	302	-	-	-	-	-	-	-
Stage 1	582	591	-	587	592	-	-	-	-	-	-	-
Stage 2	770	590	-	773	589	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.2	12.2	0.1	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1150	-	-	502	505	1158	-	-
HCM Lane V/C Ratio	0.003	-	-	0.008	0.016	0.002	-	-
HCM Control Delay (s)	8.1	0	-	12.2	12.2	8.1	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	3	412	20	4	448
Future Vol, veh/h	16	3	412	20	4	448
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	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	16	3	412	20	4	448

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	654	216	0	0	432	0
Stage 1	422	-	-	-	-	-
Stage 2	232	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	404	795	-	-	1138	-
Stage 1	635	-	-	-	-	-
Stage 2	791	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	402	795	-	-	1138	-
Mov Cap-2 Maneuver	402	-	-	-	-	-
Stage 1	635	-	-	-	-	-
Stage 2	787	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	436	1138	-
HCM Lane V/C Ratio	-	-	0.044	0.004	-
HCM Control Delay (s)	-	-	13.6	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	56	8	432	72	4	480
Future Vol, veh/h	56	8	432	72	4	480
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	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	56	8	432	72	4	480

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	716	252	0	0	504	0
Stage 1	468	-	-	-	-	-
Stage 2	248	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	369	754	-	-	1071	-
Stage 1	602	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	367	754	-	-	1071	-
Mov Cap-2 Maneuver	367	-	-	-	-	-
Stage 1	602	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	392	1071	-
HCM Lane V/C Ratio	-	-	0.163	0.004	-
HCM Control Delay (s)	-	-	16	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕			↕	
Traffic Vol, veh/h	12	0	44	28	0	3	32	508	4	8	512	16
Future Vol, veh/h	12	0	44	28	0	3	32	508	4	8	512	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	12	0	44	28	0	3	32	508	4	8	512	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	864	1132	274	856	1138	266	538	0	0	522	0	0
Stage 1	546	546	-	584	584	-	-	-	-	-	-	-
Stage 2	318	586	-	272	554	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	251	205	730	255	203	738	1040	-	-	1055	-	-
Stage 1	495	521	-	470	501	-	-	-	-	-	-	-
Stage 2	673	500	-	716	517	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	237	190	723	227	188	731	1030	-	-	1045	-	-
Mov Cap-2 Maneuver	237	190	-	227	188	-	-	-	-	-	-	-
Stage 1	469	510	-	446	474	-	-	-	-	-	-	-
Stage 2	641	474	-	665	506	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.1	22	0.7	0.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1030	-	-	502	243	1045	-	-
HCM Lane V/C Ratio	0.031	-	-	0.112	0.128	0.008	-	-
HCM Control Delay (s)	8.6	0.2	-	13.1	22	8.5	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.4	0	-	-

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	52	64	376	84	0	72	0	344	0	0	0
Future Vol, veh/h	0	52	64	376	84	0	72	0	344	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	52	64	376	84	0	72	0	344	0	0	0
Number of Lanes	1	2	0	1	2	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	3	3
HCM Control Delay	10.1	12.3	11.3	0
HCM LOS	B	B	B	-

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	34%	0%	0%	0%	0%	100%	87%	0%	0%
Vol Thru, %	0%	0%	100%	100%	21%	0%	13%	100%	100%
Vol Right, %	66%	100%	0%	0%	79%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	213	203	0	35	81	188	216	56	0
LT Vol	72	0	0	0	0	188	188	0	0
Through Vol	0	0	0	35	17	0	28	56	0
RT Vol	141	203	0	0	64	0	0	0	0
Lane Flow Rate	213	203	0	35	81	188	216	56	0
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.351	0.311	0	0.066	0.142	0.343	0.39	0.067	0
Departure Headway (Hd)	5.923	5.517	6.834	6.834	6.272	6.563	6.497	4.336	7.186
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	607	652	0	523	570	549	555	824	0
Service Time	3.665	3.258	4.585	4.585	4.024	4.299	4.233	2.071	4.951
HCM Lane V/C Ratio	0.351	0.311	0	0.067	0.142	0.342	0.389	0.068	0
HCM Control Delay	11.9	10.7	9.6	10.1	10.1	12.7	13.3	7.4	10
HCM Lane LOS	B	B	N	B	B	B	B	A	N
HCM 95th-tile Q	1.6	1.3	0	0.2	0.5	1.5	1.8	0.2	0

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	24	40	300	416	92
Future Vol, veh/h	56	24	40	300	416	92
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	56	24	40	300	416	92

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	796	416	508	0	-	0
Stage 1	416	-	-	-	-	-
Stage 2	380	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	359	641	1067	-	-	-
Stage 1	670	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	346	641	1067	-	-	-
Mov Cap-2 Maneuver	346	-	-	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	696	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.2	1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1067	-	401	-	-
HCM Lane V/C Ratio	0.037	-	0.2	-	-
HCM Control Delay (s)	8.5	-	16.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	4	392	32	3	344
Future Vol, veh/h	20	4	392	32	3	344
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	20	4	392	32	3	344

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	758	408	0	0	424	0
Stage 1	408	-	-	-	-	-
Stage 2	350	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	378	648	-	-	1146	-
Stage 1	676	-	-	-	-	-
Stage 2	718	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	377	648	-	-	1146	-
Mov Cap-2 Maneuver	489	-	-	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	716	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	510	1146	-
HCM Lane V/C Ratio	-	-	0.047	0.003	-
HCM Control Delay (s)	-	-	12.4	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	2	4	0	4	4	404	8	2	416	4
Future Vol, veh/h	2	0	2	4	0	4	4	404	8	2	416	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	0	2	4	0	4	4	404	8	2	416	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	840	842	418	839	840	408	420	0	0	412	0	0
Stage 1	422	422	-	416	416	-	-	-	-	-	-	-
Stage 2	418	420	-	423	424	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	287	303	639	288	304	648	1150	-	-	1158	-	-
Stage 1	613	592	-	618	595	-	-	-	-	-	-	-
Stage 2	616	593	-	613	590	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	284	301	639	286	302	648	1150	-	-	1158	-	-
Mov Cap-2 Maneuver	284	301	-	286	302	-	-	-	-	-	-	-
Stage 1	611	591	-	616	593	-	-	-	-	-	-	-
Stage 2	610	591	-	610	589	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.3	14.3	0.1	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1150	-	-	393	397	1158	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	0.02	0.002	-	-
HCM Control Delay (s)	8.1	-	-	14.3	14.3	8.1	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	3	412	20	4	448
Future Vol, veh/h	16	3	412	20	4	448
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	16	3	412	20	4	448

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	878	422	0	0	432	0
Stage 1	422	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	321	636	-	-	1138	-
Stage 1	666	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	320	636	-	-	1138	-
Mov Cap-2 Maneuver	444	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	640	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	466	1138	-
HCM Lane V/C Ratio	-	-	0.041	0.004	-
HCM Control Delay (s)	-	-	13.1	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	56	8	432	72	4	480
Future Vol, veh/h	56	8	432	72	4	480
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	-	-	-	150	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	56	8	432	72	4	480

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	956	468	0	0	504	0
Stage 1	468	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	289	599	-	-	1071	-
Stage 1	634	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	288	599	-	-	1071	-
Mov Cap-2 Maneuver	417	-	-	-	-	-
Stage 1	634	-	-	-	-	-
Stage 2	619	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.8	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	433	1071	-
HCM Lane V/C Ratio	-	-	0.148	0.004	-
HCM Control Delay (s)	-	-	14.8	8.4	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	0	44	28	0	3	32	508	4	8	512	16
Future Vol, veh/h	12	0	44	28	0	3	32	508	4	8	512	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	0	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	12	0	44	28	0	3	32	508	4	8	512	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1122	1132	530	1140	1136	518	538	0	0	522	0	0
Stage 1	546	546	-	582	582	-	-	-	-	-	-	-
Stage 2	576	586	-	558	554	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	185	205	553	180	204	562	1040	-	-	1055	-	-
Stage 1	526	521	-	502	502	-	-	-	-	-	-	-
Stage 2	506	500	-	518	517	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	177	193	548	159	192	557	1030	-	-	1045	-	-
Mov Cap-2 Maneuver	177	193	-	159	192	-	-	-	-	-	-	-
Stage 1	505	512	-	482	481	-	-	-	-	-	-	-
Stage 2	488	480	-	473	508	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.2	30.7	0.5	0.1
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1030	-	-	378	171	1045	-	-
HCM Lane V/C Ratio	0.031	-	-	0.148	0.181	0.008	-	-
HCM Control Delay (s)	8.6	-	-	16.2	30.7	8.5	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.6	0	-	-

Exhibit 6

Traffic Count Data

- Estates Dr at Midway Dr
- Estates Dr at Oakdale Dr
- Estates Dr at Gladedale Dr
- Estates Dr at Lark Dr
- Estates Dr at Whipporwill Dr
- Estates Dr at Fairway Rd
- Estates Dr at Bosque Blvd

Larry Colclasure - Private Account
15007 Sendero Lane

Woodway, Texas, United States 76712
2549811329

Count Name: Estates Dr at Midway Dr AM
Site Code:
Start Date: 11/29/2022

Turning Movement Data

Start Time	Estates Dr Northbound						Estates Dr Southbound						Midway Dr Eastbound						Midway Dr Westbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	4	36	2	0	2	42	0	71	0	0	0	71	6	3	28	0	0	37	4	0	1	0	0	5	155
7:15 AM	17	53	3	0	13	73	1	101	7	0	0	109	6	0	46	0	0	52	4	0	1	0	0	5	239
7:30 AM	5	85	1	0	9	91	1	132	4	0	0	137	6	1	28	0	0	35	4	1	3	0	0	8	271
7:45 AM	4	66	4	0	0	74	1	91	0	0	0	92	4	0	9	0	0	13	9	0	1	0	0	10	189
Hourly Total	30	240	10	0	24	280	3	395	11	0	0	409	22	4	111	0	0	137	21	1	6	0	0	28	854
8:00 AM	4	55	2	0	2	61	1	85	1	0	0	87	1	0	15	0	0	16	5	0	0	0	0	5	169
8:15 AM	7	73	1	0	2	81	0	64	3	0	0	67	2	0	5	0	0	7	1	0	2	0	0	3	158
8:30 AM	1	51	1	0	0	53	1	62	2	0	0	65	2	1	4	0	1	7	2	0	0	0	0	2	127
8:45 AM	3	50	2	0	1	55	0	55	0	0	0	55	2	0	6	0	0	8	5	0	1	0	0	6	124
Hourly Total	15	229	6	0	5	250	2	266	6	0	0	274	7	1	30	0	1	38	13	0	3	0	0	16	578
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	45	469	16	0	29	530	5	661	17	0	0	683	29	5	141	0	1	175	34	1	9	0	0	44	1432
Approach %	8.5	88.5	3.0	0.0	-	-	0.7	96.8	2.5	0.0	-	-	16.6	2.9	80.6	0.0	-	-	77.3	2.3	20.5	0.0	-	-	-
Total %	3.1	32.8	1.1	0.0	-	37.0	0.3	46.2	1.2	0.0	-	47.7	2.0	0.3	9.8	0.0	-	12.2	2.4	0.1	0.6	0.0	-	3.1	-
All Vehicles (no classification)	45	469	16	0	-	530	5	661	17	0	-	683	29	5	140	0	-	174	34	1	9	0	-	44	1431
% All Vehicles (no classification)	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	99.3	-	-	99.4	100.0	100.0	100.0	-	-	100.0	99.9
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.7	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.1
Pedestrians	-	-	-	-	29	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Larry Colclasure - Private Account
15007 Sendero Lane

Woodway, Texas, United States 76712
2549811329

Count Name: Estates Dr at Midway Dr PM
Site Code:
Start Date: 11/29/2022

Turning Movement Data

Start Time	Estates Dr Northbound						Estates Dr Southbound						Midway Dr Eastbound						Midway Dr Westbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
3:00 PM	13	58	2	1	52	74	4	64	5	0	0	73	4	0	26	0	0	30	1	1	1	0	4	3	180
3:15 PM	7	87	4	0	0	98	0	68	1	0	0	69	5	0	20	0	0	25	6	0	5	0	0	11	203
3:30 PM	4	81	2	0	0	87	0	77	3	0	0	80	3	0	10	0	0	13	2	1	1	0	0	4	184
3:45 PM	9	85	1	0	0	95	1	94	3	0	0	98	2	0	7	0	0	9	3	0	0	0	0	3	205
Hourly Total	33	311	9	1	52	354	5	303	12	0	0	320	14	0	63	0	0	77	12	2	7	0	4	21	772
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:00 PM	8	127	1	0	0	136	2	128	4	0	0	134	3	0	11	0	0	14	7	0	1	0	0	8	292
5:15 PM	4	131	5	0	0	140	0	100	1	0	0	101	8	0	14	0	0	22	13	1	1	0	0	15	278
5:30 PM	11	106	4	0	0	121	1	97	2	0	0	100	3	0	7	0	0	10	8	0	3	0	0	11	242
5:45 PM	7	102	9	0	2	118	1	86	1	0	0	88	1	1	8	0	0	10	3	0	1	0	0	4	220
Hourly Total	30	466	19	0	2	515	4	411	8	0	0	423	15	1	40	0	0	56	31	1	6	0	0	38	1032
Grand Total	63	777	28	1	54	869	9	714	20	0	0	743	29	1	103	0	0	133	43	3	13	0	4	59	1804
Approach %	7.2	89.4	3.2	0.1	-	-	1.2	96.1	2.7	0.0	-	-	21.8	0.8	77.4	0.0	-	-	72.9	5.1	22.0	0.0	-	-	-
Total %	3.5	43.1	1.6	0.1	-	48.2	0.5	39.6	1.1	0.0	-	41.2	1.6	0.1	5.7	0.0	-	7.4	2.4	0.2	0.7	0.0	-	3.3	-
All Vehicles (no classification)	63	777	28	1	-	869	9	714	20	0	-	743	29	0	103	0	-	132	43	3	12	0	-	58	1802
% All Vehicles (no classification)	100.0	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	0.0	100.0	-	-	99.2	100.0	100.0	92.3	-	-	98.3	99.9
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	1	0	-	1	2
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	100.0	0.0	-	-	0.8	0.0	0.0	7.7	-	-	1.7	0.1
Pedestrians	-	-	-	-	54	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Larry Colclasure - Private Account
15007 Sendero Lane

Woodway, Texas, United States 76712
2549811329

Count Name: Estates Dr at Oakdale Dr AM
Site Code:
Start Date: 11/29/2022

Turning Movement Data

Start Time	Estates Dr Northbound					Estates Dr Southbound					Oakdale Dr Westbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	36	8	0	0	44	4	64	0	0	68	10	0	0	0	10	122
7:15 AM	52	8	0	0	60	2	96	0	0	98	17	2	0	0	19	177
7:30 AM	78	17	0	0	95	10	103	0	0	113	23	3	0	0	26	234
7:45 AM	63	10	0	0	73	2	79	0	0	81	15	4	0	0	19	173
Hourly Total	229	43	0	0	272	18	342	0	0	360	65	9	0	0	74	706
8:00 AM	48	9	0	0	57	0	72	0	0	72	16	1	0	0	17	146
8:15 AM	60	13	0	0	73	0	52	0	0	52	11	0	0	0	11	136
8:30 AM	47	7	0	0	54	0	56	0	0	56	10	1	0	0	11	121
8:45 AM	50	4	0	0	54	0	46	0	0	46	8	0	0	0	8	108
Hourly Total	205	33	0	0	238	0	226	0	0	226	45	2	0	0	47	511
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	434	76	0	0	510	18	568	0	0	586	110	11	0	0	121	1217
Approach %	85.1	14.9	0.0	-	-	3.1	96.9	0.0	-	-	90.9	9.1	0.0	-	-	-
Total %	35.7	6.2	0.0	-	41.9	1.5	46.7	0.0	-	48.2	9.0	0.9	0.0	-	9.9	-
All Vehicles (no classification)	434	76	0	-	510	18	568	0	-	586	110	10	0	-	120	1216
% All Vehicles (no classification)	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	90.9	-	-	99.2	99.9
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	9.1	-	-	0.8	0.1
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Larry Colclasure - Private Account
15007 Sendero Lane

Woodway, Texas, United States 76712
2549811329

Count Name: Estates Dr at Oakdale Dr PM
Site Code:
Start Date: 11/29/2022

Turning Movement Data

Start Time	Estates Dr Northbound					Estates Dr Southbound					Oakdale Dr Westbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
3:00 PM	56	13	0	0	69	6	66	0	0	72	2	1	0	0	3	144
3:15 PM	86	13	0	0	99	1	59	0	0	60	10	2	0	0	12	171
3:30 PM	70	12	0	0	82	0	77	0	0	77	6	2	0	0	8	167
3:45 PM	72	13	0	0	85	1	89	0	0	90	10	0	0	0	10	185
Hourly Total	284	51	0	0	335	8	291	0	0	299	28	5	0	0	33	667
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:00 PM	109	18	0	0	127	1	120	0	0	121	14	2	0	0	16	264
5:15 PM	120	27	0	0	147	3	85	0	0	88	17	0	0	0	17	252
5:30 PM	90	16	0	0	106	0	92	0	0	92	16	1	0	0	17	215
5:45 PM	82	22	0	0	104	1	73	0	0	74	11	0	0	0	11	189
Hourly Total	401	83	0	0	484	5	370	0	0	375	58	3	0	0	61	920
Grand Total	685	134	0	0	819	13	661	0	0	674	86	8	0	0	94	1587
Approach %	83.6	16.4	0.0	-	-	1.9	98.1	0.0	-	-	91.5	8.5	0.0	-	-	-
Total %	43.2	8.4	0.0	-	51.6	0.8	41.7	0.0	-	42.5	5.4	0.5	0.0	-	5.9	-
All Vehicles (no classification)	684	134	0	-	818	13	661	0	-	674	86	8	0	-	94	1586
% All Vehicles (no classification)	99.9	100.0	-	-	99.9	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	99.9
Bicycles on Road	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.1	0.0	-	-	0.1	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.1
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Larry Colclasure - Private Account
15007 Sendero Lane

Woodway, Texas, United States 76712
2549811329

Count Name: Estates Dr at Gladedale Dr AM
Site Code:
Start Date: 11/29/2022

Turning Movement Data

Start Time	Estates Dr Northbound					Estates Dr Southbound					Gladedale Dr Westbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	37	2	0	0	39	0	48	0	0	48	5	0	0	0	5	92
7:15 AM	43	4	0	0	47	2	77	0	0	79	10	0	0	0	10	136
7:30 AM	83	3	0	0	86	1	109	0	0	110	7	1	0	0	8	204
7:45 AM	61	3	0	0	64	0	69	0	0	69	7	0	0	0	7	140
Hourly Total	224	12	0	0	236	3	303	0	0	306	29	1	0	0	30	572
8:00 AM	47	2	0	0	49	1	59	0	0	60	9	0	0	0	9	118
8:15 AM	54	9	0	0	63	0	58	0	0	58	4	0	0	0	4	125
8:30 AM	45	1	0	0	46	0	47	0	0	47	6	0	0	0	6	99
8:45 AM	46	3	0	0	49	0	41	0	0	41	7	0	0	0	7	97
Hourly Total	192	15	0	0	207	1	205	0	0	206	26	0	0	0	26	439
Grand Total	416	27	0	0	443	4	508	0	0	512	55	1	0	0	56	1011
Approach %	93.9	6.1	0.0	-	-	0.8	99.2	0.0	-	-	98.2	1.8	0.0	-	-	-
Total %	41.1	2.7	0.0	-	43.8	0.4	50.2	0.0	-	50.6	5.4	0.1	0.0	-	5.5	-
All Vehicles (no classification)	416	27	0	-	443	4	508	0	-	512	55	1	0	-	56	1011
% All Vehicles (no classification)	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Larry Colclasure - Private Account
15007 Sendero Lane

Woodway, Texas, United States 76712
2549811329

Count Name: Estates Dr at Gladedale Dr PM
Site Code:
Start Date: 11/29/2022

Turning Movement Data

Start Time	Estates Dr Northbound					Estates Dr Southbound					Gladedale Dr Westbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
3:00 PM	47	2	0	0	49	2	80	0	0	82	4	2	0	0	6	137
3:15 PM	82	7	0	0	89	1	55	0	0	56	3	1	0	0	4	149
3:30 PM	67	4	0	0	71	1	68	0	0	69	5	0	0	0	5	145
3:45 PM	70	4	0	0	74	0	80	0	0	80	5	0	0	0	5	159
Hourly Total	266	17	0	0	283	4	283	0	0	287	17	3	0	0	20	590
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:00 PM	103	5	0	0	108	1	112	0	0	113	4	0	0	0	4	225
5:15 PM	110	5	0	0	115	0	86	0	0	86	4	0	0	0	4	205
5:30 PM	93	4	0	0	97	0	83	0	0	83	7	1	0	0	8	188
5:45 PM	83	7	0	0	90	0	80	0	0	80	4	1	0	0	5	175
Hourly Total	389	21	0	0	410	1	361	0	0	362	19	2	0	0	21	793
Grand Total	655	38	0	0	693	5	644	0	0	649	36	5	0	0	41	1383
Approach %	94.5	5.5	0.0	-	-	0.8	99.2	0.0	-	-	87.8	12.2	0.0	-	-	-
Total %	47.4	2.7	0.0	-	50.1	0.4	46.6	0.0	-	46.9	2.6	0.4	0.0	-	3.0	-
All Vehicles (no classification)	654	38	0	-	692	5	644	0	-	649	36	5	0	-	41	1382
% All Vehicles (no classification)	99.8	100.0	-	-	99.9	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	99.9
Bicycles on Road	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.2	0.0	-	-	0.1	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.1
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Larry Colclasure - Private Account
15007 Sendero Lane

Woodway, Texas, United States 76712
2549811329

Count Name: Estates Dr at Lark Dr AM
Site Code:
Start Date: 11/28/2022

Turning Movement Data

Start Time	Estates Dr Northbound						Estates Dr Southbound						Lark Dr Eastbound						Lark Dr Westbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	32	0	0	0	32	0	48	0	0	0	48	0	0	1	0	0	1	1	0	0	0	0	1	82
7:15 AM	0	54	1	0	0	55	0	80	0	0	0	80	0	1	1	0	0	2	4	0	1	0	0	5	142
7:30 AM	0	70	3	0	0	73	0	97	0	0	1	97	1	0	0	0	0	1	4	0	2	0	0	6	177
7:45 AM	0	72	4	0	0	76	0	62	0	0	0	62	0	0	0	0	0	0	4	0	1	0	0	5	143
Hourly Total	0	228	8	0	0	236	0	287	0	0	1	287	1	1	2	0	0	4	13	0	4	0	0	17	544
8:00 AM	0	51	1	0	0	52	0	55	0	0	0	55	0	0	1	0	0	1	6	0	0	0	0	6	114
8:15 AM	0	43	1	0	0	44	0	45	0	0	0	45	1	0	0	0	0	1	2	0	0	0	0	2	92
8:30 AM	1	46	0	0	0	47	0	39	0	0	0	39	0	0	2	0	0	2	3	0	0	0	0	3	91
8:45 AM	0	43	0	0	0	43	0	49	0	0	0	49	0	0	0	0	0	0	0	0	0	0	0	0	92
Hourly Total	1	183	2	0	0	186	0	188	0	0	0	188	1	0	3	0	0	4	11	0	0	0	0	11	389
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	411	10	0	0	422	0	475	0	0	1	475	2	1	5	0	0	8	24	0	4	0	0	28	933
Approach %	0.2	97.4	2.4	0.0	-	-	0.0	100.0	0.0	0.0	-	-	25.0	12.5	62.5	0.0	-	-	85.7	0.0	14.3	0.0	-	-	-
Total %	0.1	44.1	1.1	0.0	-	45.2	0.0	50.9	0.0	0.0	-	50.9	0.2	0.1	0.5	0.0	-	0.9	2.6	0.0	0.4	0.0	-	3.0	-
All Vehicles (no classification)	1	411	10	0	-	422	0	475	0	0	-	475	2	1	5	0	-	8	24	0	4	0	-	28	933
% All Vehicles (no classification)	100.0	100.0	100.0	-	-	100.0	-	100.0	-	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	-	100.0	-	-	100.0	100.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	-	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Larry Colclasure - Private Account
15007 Sendero Lane

Woodway, Texas, United States 76712
2549811329

Count Name: Estates Dr at Lark Dr AM
Site Code:
Start Date: 11/28/2022

Turning Movement Data

Start Time	Estates Dr Northbound						Estates Dr Southbound						Lark Dr Eastbound						Lark Dr Westbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	32	0	0	0	32	0	48	0	0	0	48	0	0	1	0	0	1	1	0	0	0	0	1	82
7:15 AM	0	54	1	0	0	55	0	80	0	0	0	80	0	1	1	0	0	2	4	0	1	0	0	5	142
7:30 AM	0	70	3	0	0	73	0	97	0	0	1	97	1	0	0	0	0	1	4	0	2	0	0	6	177
7:45 AM	0	72	4	0	0	76	0	62	0	0	0	62	0	0	0	0	0	0	4	0	1	0	0	5	143
Hourly Total	0	228	8	0	0	236	0	287	0	0	1	287	1	1	2	0	0	4	13	0	4	0	0	17	544
8:00 AM	0	51	1	0	0	52	0	55	0	0	0	55	0	0	1	0	0	1	6	0	0	0	0	6	114
8:15 AM	0	43	1	0	0	44	0	45	0	0	0	45	1	0	0	0	0	1	2	0	0	0	0	2	92
8:30 AM	1	46	0	0	0	47	0	39	0	0	0	39	0	0	2	0	0	2	3	0	0	0	0	3	91
8:45 AM	0	43	0	0	0	43	0	49	0	0	0	49	0	0	0	0	0	0	0	0	0	0	0	0	92
Hourly Total	1	183	2	0	0	186	0	188	0	0	0	188	1	0	3	0	0	4	11	0	0	0	0	11	389
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	411	10	0	0	422	0	475	0	0	1	475	2	1	5	0	0	8	24	0	4	0	0	28	933
Approach %	0.2	97.4	2.4	0.0	-	-	0.0	100.0	0.0	0.0	-	-	25.0	12.5	62.5	0.0	-	-	85.7	0.0	14.3	0.0	-	-	-
Total %	0.1	44.1	1.1	0.0	-	45.2	0.0	50.9	0.0	0.0	-	50.9	0.2	0.1	0.5	0.0	-	0.9	2.6	0.0	0.4	0.0	-	3.0	-
All Vehicles (no classification)	1	411	10	0	-	422	0	475	0	0	-	475	2	1	5	0	-	8	24	0	4	0	-	28	933
% All Vehicles (no classification)	100.0	100.0	100.0	-	-	100.0	-	100.0	-	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	-	100.0	-	-	100.0	100.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	-	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Larry Colclasure - Private Account
15007 Sendero Lane

Woodway, Texas, United States 76712
2549811329

Count Name: Estates Dr at Whipporwill Dr AM
Site Code:
Start Date: 11/29/2022

Turning Movement Data

Start Time	Whipporwill Dr Northbound					Whipporwill Dr Southbound					Estates Dr Westbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	35	1	0	0	36	0	40	0	0	40	5	0	0	1	5	81
7:15 AM	41	0	0	0	41	0	64	0	0	64	7	1	0	0	8	113
7:30 AM	81	2	0	0	83	0	91	0	0	91	5	0	0	0	5	179
7:45 AM	59	3	0	0	62	0	62	0	0	62	5	1	0	0	6	130
Hourly Total	216	6	0	0	222	0	257	0	0	257	22	2	0	1	24	503
8:00 AM	48	4	0	0	52	2	53	0	0	55	7	1	0	0	8	115
8:15 AM	47	3	0	0	50	0	42	0	0	42	6	0	0	0	6	98
8:30 AM	42	5	0	0	47	0	46	0	0	46	0	0	0	0	0	93
8:45 AM	40	4	0	0	44	0	36	0	0	36	3	0	0	0	3	83
Hourly Total	177	16	0	0	193	2	177	0	0	179	16	1	0	0	17	389
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	393	22	0	0	415	2	434	0	0	436	38	3	0	1	41	892
Approach %	94.7	5.3	0.0	-	-	0.5	99.5	0.0	-	-	92.7	7.3	0.0	-	-	-
Total %	44.1	2.5	0.0	-	46.5	0.2	48.7	0.0	-	48.9	4.3	0.3	0.0	-	4.6	-
All Vehicles (no classification)	393	22	0	-	415	2	434	0	-	436	38	3	0	-	41	892
% All Vehicles (no classification)	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Larry Colclasure - Private Account
15007 Sendero Lane

Woodway, Texas, United States 76712
2549811329

Count Name: Estates Dr at Whipporwill Dr PM
Site Code:
Start Date: 11/29/2022

Turning Movement Data

Start Time	Estates Dr Northbound					Estates Dr Southbound					Whipporwill Dr Westbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
3:00 PM	46	1	0	0	47	0	68	0	0	68	4	2	0	0	6	121
3:15 PM	79	5	0	0	84	0	47	0	0	47	1	0	0	0	1	132
3:30 PM	60	1	1	0	62	0	62	1	0	63	6	1	0	0	7	132
3:45 PM	67	1	0	0	68	1	70	0	0	71	3	0	0	0	3	142
Hourly Total	252	8	1	0	261	1	247	1	0	249	14	3	0	0	17	527
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:00 PM	77	5	0	0	82	1	104	0	0	105	2	2	0	0	4	191
5:15 PM	99	8	0	0	107	0	86	0	0	86	5	1	0	0	6	199
5:30 PM	82	1	0	0	83	1	76	0	0	77	1	3	0	0	4	164
5:45 PM	72	8	0	0	80	0	74	0	0	74	5	0	0	0	5	159
Hourly Total	330	22	0	0	352	2	340	0	0	342	13	6	0	0	19	713
Grand Total	582	30	1	0	613	3	587	1	0	591	27	9	0	0	36	1240
Approach %	94.9	4.9	0.2	-	-	0.5	99.3	0.2	-	-	75.0	25.0	0.0	-	-	-
Total %	46.9	2.4	0.1	-	49.4	0.2	47.3	0.1	-	47.7	2.2	0.7	0.0	-	2.9	-
All Vehicles (no classification)	581	30	1	-	612	3	586	1	-	590	27	9	0	-	36	1238
% All Vehicles (no classification)	99.8	100.0	100.0	-	99.8	100.0	99.8	100.0	-	99.8	100.0	100.0	-	-	100.0	99.8
Bicycles on Road	1	0	0	-	1	0	1	0	-	1	0	0	0	-	0	2
% Bicycles on Road	0.2	0.0	0.0	-	0.2	0.0	0.2	0.0	-	0.2	0.0	0.0	-	-	0.0	0.2
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Larry Colclasure - Private Account
15007 Sendero Lane

Woodway, Texas, United States 76712
2549811329

Count Name: Estates Dr at Fairway Rd AM
Site Code:
Start Date: 11/29/2022

Turning Movement Data

Start Time	Estates Dr Northbound					Estates Dr Southbound					Fairway Rd Eastbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	3	35	0	0	38	37	7	0	0	44	13	11	0	1	24	106
7:15 AM	3	46	0	0	49	55	6	0	0	61	19	15	0	0	34	144
7:30 AM	3	74	0	0	77	67	15	0	0	82	23	20	0	0	43	202
7:45 AM	4	56	0	0	60	61	17	0	0	78	20	3	0	0	23	161
Hourly Total	13	211	0	0	224	220	45	0	0	265	75	49	0	1	124	613
8:00 AM	4	41	0	0	45	48	12	0	0	60	12	6	0	0	18	123
8:15 AM	4	47	0	0	51	37	8	0	0	45	15	5	0	0	20	116
8:30 AM	5	34	0	0	39	37	3	0	0	40	12	5	0	0	17	96
8:45 AM	5	37	0	0	42	31	3	0	0	34	11	2	0	0	13	89
Hourly Total	18	159	0	0	177	153	26	0	0	179	50	18	0	0	68	424
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	31	370	0	0	401	373	71	0	0	444	125	67	0	1	192	1037
Approach %	7.7	92.3	0.0	-	-	84.0	16.0	0.0	-	-	65.1	34.9	0.0	-	-	-
Total %	3.0	35.7	0.0	-	38.7	36.0	6.8	0.0	-	42.8	12.1	6.5	0.0	-	18.5	-
All Vehicles (no classification)	31	370	0	-	401	373	71	0	-	444	125	67	0	-	192	1037
% All Vehicles (no classification)	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	100.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Larry Colclasure - Private Account
15007 Sendero Lane

Woodway, Texas, United States 76712
2549811329

Count Name: Estates Dr at Fairway Rd PM
Site Code:
Start Date: 11/29/2022

Turning Movement Data

Start Time	Estates Dr Northbound					Estates Dr Southbound					Fairway Rd Eastbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
3:00 PM	8	41	0	0	49	46	12	0	0	58	13	4	0	0	17	124
3:15 PM	6	67	0	0	73	44	10	0	0	54	17	4	0	0	21	148
3:30 PM	4	58	0	0	62	58	15	0	0	73	13	4	0	0	17	152
3:45 PM	7	55	0	0	62	73	14	0	0	87	10	1	0	0	11	160
Hourly Total	25	221	0	0	246	221	51	0	0	272	53	13	0	0	66	584
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5:00 PM	10	75	0	0	85	104	23	0	0	127	14	6	0	0	20	232
5:15 PM	8	93	0	0	101	77	20	0	0	97	10	9	0	0	19	217
5:30 PM	5	71	0	0	76	70	14	0	0	84	11	4	0	1	15	175
5:45 PM	8	60	0	0	68	65	24	0	0	89	6	3	0	0	9	166
Hourly Total	31	299	0	0	330	316	81	0	0	397	41	22	0	1	63	790
Grand Total	56	520	0	0	576	537	132	0	0	669	94	35	0	1	129	1374
Approach %	9.7	90.3	0.0	-	-	80.3	19.7	0.0	-	-	72.9	27.1	0.0	-	-	-
Total %	4.1	37.8	0.0	-	41.9	39.1	9.6	0.0	-	48.7	6.8	2.5	0.0	-	9.4	-
All Vehicles (no classification)	56	519	0	-	575	537	132	0	-	669	94	35	0	-	129	1373
% All Vehicles (no classification)	100.0	99.8	-	-	99.8	100.0	100.0	-	-	100.0	100.0	100.0	-	-	100.0	99.9
Bicycles on Road	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.2	-	-	0.2	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.1
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Larry Colclasure - Private Account
15007 Sendero Lane

Woodway, Texas, United States 76712
2549811329

Count Name: Estates Dr at Bosque Blvd
Site Code:
Start Date: 11/17/2022

Turning Movement Data

Start Time	Northbound St. Northbound						Southbound St. Southbound						Eastbound St. Eastbound						Westbound St. Westbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	10	0	37	0	0	47	0	0	0	0	0	0	0	12	22	0	0	34	24	11	0	0	0	35	116
7:15 AM	10	0	49	0	0	59	0	0	0	0	0	0	0	19	23	0	0	42	46	3	0	0	0	49	150
7:30 AM	16	0	79	0	0	95	0	0	0	0	0	0	0	11	34	0	0	45	59	6	0	0	0	65	205
7:45 AM	12	0	58	0	0	70	0	0	0	0	0	0	0	23	24	0	3	47	48	6	1	0	0	55	172
Hourly Total	48	0	223	0	0	271	0	0	0	0	0	0	0	65	103	0	3	168	177	26	1	0	0	204	643
8:00 AM	14	0	47	0	0	61	1	0	0	0	0	1	0	16	14	0	1	30	41	10	0	0	0	51	143
8:15 AM	15	0	35	0	0	50	0	0	0	0	0	0	0	12	12	0	2	24	28	9	0	0	0	37	111
8:30 AM	6	0	37	0	0	43	1	0	0	0	2	1	0	10	18	0	2	28	31	11	1	0	0	43	115
8:45 AM	11	0	29	0	0	40	0	0	0	0	0	0	0	12	16	0	0	28	34	8	0	0	0	42	110
Hourly Total	46	0	148	0	0	194	2	0	0	0	2	2	0	50	60	0	5	110	134	38	1	0	0	173	479
9:00 AM	7	0	27	0	0	34	0	0	0	0	0	0	0	8	9	0	0	17	37	9	0	0	0	46	97
9:15 AM	8	0	32	0	0	40	0	0	0	0	1	0	0	15	16	0	1	31	40	5	0	0	0	45	116
9:30 AM	6	0	35	0	0	41	0	0	0	0	1	0	0	8	6	0	0	14	20	5	0	0	0	25	80
9:45 AM	11	1	28	0	0	40	0	1	0	0	0	1	0	6	8	0	0	14	40	7	0	0	0	47	102
Hourly Total	32	1	122	0	0	155	0	1	0	0	2	1	0	37	39	0	1	76	137	26	0	0	0	163	395
10:00 AM	9	0	55	0	0	64	1	0	0	0	0	1	0	4	11	0	1	15	31	4	1	0	0	36	116
10:15 AM	19	1	26	0	0	46	0	0	0	0	0	0	0	8	12	0	0	20	38	7	0	0	0	45	111
10:30 AM	12	0	33	0	0	45	1	0	0	0	0	1	0	21	6	0	0	27	35	9	0	0	0	44	117
10:45 AM	8	1	40	0	0	49	0	0	0	0	0	0	0	14	12	0	0	26	58	4	0	1	0	63	138
Hourly Total	48	2	154	0	0	204	2	0	0	0	0	2	0	47	41	0	1	88	162	24	1	1	0	188	482
11:00 AM	12	0	53	0	0	65	0	0	0	0	0	0	0	16	12	0	1	28	38	17	0	2	0	57	150
11:15 AM	13	0	66	0	0	79	2	0	0	0	0	2	0	17	10	0	0	27	45	18	2	1	0	66	174
11:30 AM	14	0	56	0	1	70	0	0	0	0	0	0	0	11	11	0	3	22	47	12	0	2	0	61	153
11:45 AM	14	1	41	0	0	56	0	0	0	0	0	0	0	17	20	0	1	37	34	8	0	0	0	42	135
Hourly Total	53	1	216	0	1	270	2	0	0	0	0	2	0	61	53	0	5	114	164	55	2	5	0	226	612
12:00 PM	19	0	53	0	1	72	1	0	0	0	0	1	0	12	7	0	1	19	50	11	0	0	0	61	153
12:15 PM	12	0	54	0	0	66	0	0	0	0	0	0	0	10	16	0	0	26	38	15	0	0	0	53	145
12:30 PM	14	0	51	0	0	65	0	0	0	0	0	0	0	10	15	0	2	25	41	9	0	0	0	50	140
12:45 PM	14	0	47	0	0	61	0	1	0	0	0	1	0	21	14	0	1	35	44	15	0	0	0	59	156
Hourly Total	59	0	205	0	1	264	1	1	0	0	0	2	0	53	52	0	4	105	173	50	0	0	0	223	594
1:00 PM	19	0	39	0	0	58	0	0	0	0	0	0	0	10	16	0	2	26	54	12	0	0	0	66	150
1:15 PM	13	0	37	0	0	50	0	0	0	0	0	0	0	6	14	0	1	20	59	6	0	0	0	65	135
1:30 PM	13	1	40	0	0	54	0	0	0	0	0	0	0	12	12	0	0	24	49	12	0	1	0	62	140
1:45 PM	10	0	57	0	0	67	0	0	0	0	0	0	0	12	11	0	0	23	58	9	0	0	0	67	157
Hourly Total	55	1	173	0	0	229	0	0	0	0	0	0	0	40	53	0	3	93	220	39	0	1	0	260	582
2:00 PM	18	0	42	0	0	60	0	0	0	0	0	0	0	10	10	0	0	20	47	11	0	2	0	60	140
2:15 PM	19	0	33	0	0	52	0	0	0	0	0	0	0	13	9	0	1	22	47	8	0	0	0	55	129
2:30 PM	13	0	44	0	0	57	0	0	0	0	0	0	0	8	11	0	3	19	56	7	0	0	0	63	139

2:45 PM	14	0	44	0	0	58	0	0	0	0	0	0	0	14	12	0	0	26	48	10	0	0	0	58	142
Hourly Total	64	0	163	0	0	227	0	0	0	0	0	0	0	45	42	0	4	87	198	36	0	2	0	236	550
3:00 PM	10	0	42	0	0	52	0	0	0	0	0	0	0	13	13	0	0	26	39	12	0	0	0	51	129
3:15 PM	19	0	60	0	0	79	0	0	0	0	0	0	1	12	15	0	0	28	39	6	0	0	0	45	152
3:30 PM	17	1	45	0	0	63	0	0	0	0	0	0	0	1	13	0	0	14	52	11	0	0	0	63	140
3:45 PM	16	0	43	0	0	59	1	1	0	0	0	2	0	11	14	0	0	25	43	16	0	0	0	59	145
Hourly Total	62	1	190	0	0	253	1	1	0	0	0	2	1	37	55	0	0	93	173	45	0	0	0	218	566
4:00 PM	26	0	52	0	0	78	0	0	0	0	0	0	0	26	12	0	1	38	54	8	0	0	0	62	178
4:15 PM	32	0	57	0	0	89	0	0	0	0	0	0	0	18	12	0	0	30	66	13	0	0	0	79	198
4:30 PM	22	0	55	0	0	77	0	0	0	0	0	0	0	14	14	0	2	28	60	36	0	0	0	96	201
4:45 PM	14	0	63	0	0	77	0	0	0	0	0	0	0	23	12	0	8	35	58	19	0	0	0	77	189
Hourly Total	94	0	227	0	0	321	0	0	0	0	0	0	0	81	50	0	11	131	238	76	0	0	0	314	766
5:00 PM	18	0	86	0	0	104	0	0	0	0	0	0	0	13	16	0	1	29	94	21	0	0	0	115	248
5:15 PM	23	0	73	0	0	96	0	0	0	0	0	0	0	24	18	0	0	42	87	20	0	0	0	107	245
5:30 PM	22	0	67	0	0	89	0	0	0	0	0	0	0	16	15	0	0	31	63	11	0	0	0	74	194
5:45 PM	22	0	54	0	0	76	0	0	0	0	0	0	0	16	21	0	0	37	60	9	0	0	0	69	182
Hourly Total	85	0	280	0	0	365	0	0	0	0	0	0	0	69	70	0	1	139	304	61	0	0	0	365	869
6:00 PM	16	0	46	0	0	62	0	0	0	0	0	0	0	15	21	0	0	36	48	14	0	0	0	62	160
6:15 PM	10	0	42	0	0	52	0	0	0	0	0	0	0	12	19	0	0	31	44	6	0	0	0	50	133
6:30 PM	12	0	43	0	0	55	0	0	0	0	0	0	0	4	8	0	0	12	39	10	0	0	0	49	116
6:45 PM	18	0	31	0	0	49	0	0	0	0	0	0	0	12	7	0	0	19	23	8	0	0	0	31	99
Hourly Total	56	0	162	0	0	218	0	0	0	0	0	0	0	43	55	0	0	98	154	38	0	0	0	192	508
Grand Total	702	6	2263	0	2	2971	8	3	0	0	4	11	1	628	673	0	38	1302	2234	514	5	9	0	2762	7046
Approach %	23.6	0.2	76.2	0.0	-	-	72.7	27.3	0.0	0.0	-	-	0.1	48.2	51.7	0.0	-	-	80.9	18.6	0.2	0.3	-	-	-
Total %	10.0	0.1	32.1	0.0	-	42.2	0.1	0.0	0.0	0.0	-	0.2	0.0	8.9	9.6	0.0	-	18.5	31.7	7.3	0.1	0.1	-	39.2	-
All Vehicles (no classification)	702	6	2263	0	-	2971	8	3	0	0	-	11	1	628	673	0	-	1302	2234	513	5	9	-	2761	7045
% All Vehicles (no classification)	100.0	100.0	100.0	-	-	100.0	100.0	100.0	-	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	99.8	100.0	100.0	-	100.0	100.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	2	-	-	-	-	-	4	-	-	-	-	-	38	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-