



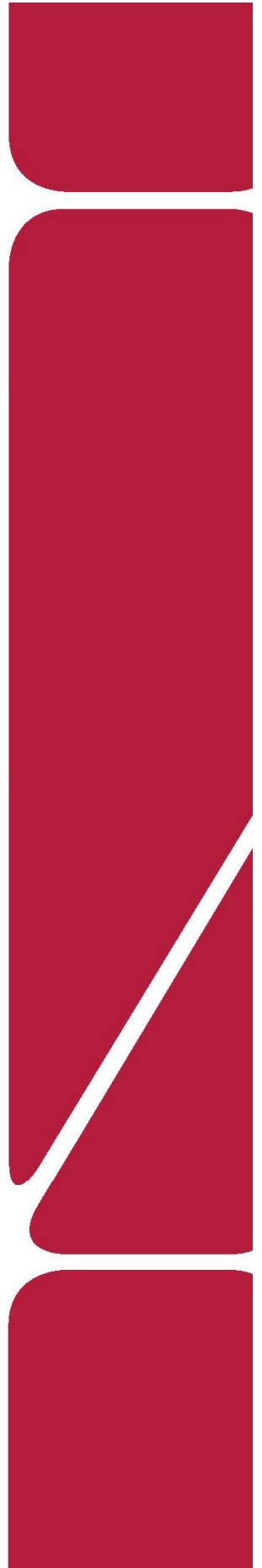
Traffic Impact Study

Majestic Commercenter  
Building 16  
Aurora, Colorado

Prepared for:

Commerce Construction Co., L.P.

**Kimley»Horn**



# T R A F F I C   I M P A C T   S T U D Y

## **Majestic Commercenter Building 16**

Aurora, Colorado

**Prepared for**  
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## 1.0 EXECUTIVE SUMMARY

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Majestic Commercenter Building 16 is anticipated to be located along the south side of 32<sup>nd</sup> Parkway, approximately 1,200 feet west of the 32<sup>nd</sup> Parkway and Himalaya Road intersection in Aurora, Colorado. The project will include an approximate 552,270 square foot industrial building.

MCC Building 16 is anticipated to be completed within the next couple of years; therefore, the analysis was conducted for the 2022 short-term horizon as well as the 2040 long-term horizon per City of Aurora requirements.

The purpose of this study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system in an effort to develop improvements required for the identified impacts. The intersection of 32<sup>nd</sup> Parkway & Himalaya Road and the proposed driveway accesses along 32<sup>nd</sup> Parkway are included for evaluation within this study.

Regional access will be provided by Interstate 70 (I-70) and E-470. Primary access is provided by 32<sup>nd</sup> Parkway and Tower Road. Direct access will be provided by two driveways along 32<sup>nd</sup> Parkway. For the west access on 32<sup>nd</sup> Parkway, a median modification is proposed to allow full turning movements. The east access along 32<sup>nd</sup> Parkway is the existing access for Building 15, which will be shared with this project.

Majestic Commercenter Building 16 is anticipated to generate approximately 1,862 daily trips with 221 of those trips occurring during each of the morning and afternoon peak hours. Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, existing and anticipated surrounding demographic information, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source.

Based on the analysis presented in this report, Kimley-Horn believes the proposed Majestic Commercenter Building 16 project will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following recommendations:

- The intersection of 32<sup>nd</sup> Parkway and Himalaya Road wasn't found to warrant or require signalization yet based on this level of development. However, as was previously recommended and installed already by the City of Aurora, the intersection was converted from two-way stop control to all-way stop control (AWSC) for existing traffic. This intersection meets warrants for AWSC under existing traffic conditions with the speed of traffic along 32<sup>nd</sup> Parkway being above 40 miles per hour (85<sup>th</sup> percentile speeds found to be 48.5 mph eastbound and 52.5 mph westbound).
- It is recommended that separate northbound and southbound left turn lanes be designated on the Himalaya Road approaches to 32<sup>nd</sup> Parkway, as identified also in the Majestic Phase 11 project traffic study. These left turn lanes should provide a length of 100 feet. There is currently sufficient pavement width to incorporate these left turn lanes; therefore, it is believed that this improvement will only require pavement striping.
- The existing raised median within 32<sup>nd</sup> Parkway is recommended to be modified to allow an opening at the proposed west access to allow full turning movements. It is recommended that a 100-foot westbound left turn be constructed while maintaining the existing taper to the east for the back-to-back left turn lane for Victory Packaging. Also, it is recommended that the new west access operate with stop-control with the installation of a R1-1 "STOP" sign on exiting driveway approach to 32<sup>nd</sup> Parkway. The project is proposing two exiting lanes for separate left and right turning movements at the west access. This access is also providing a wider than standard receiving lane to accommodate heavy vehicles.
- Per City of Aurora turn lane requirements, eastbound right turn lanes are required at both project accesses along 32<sup>nd</sup> Parkway. It is recommended that these right turn lanes provide a length of 100 feet based on CDOT storage requirements. These right turn lanes were requested to be designed and constructed with a 109-foot taper.

- Any on-site and off-site signing and striping improvements should be incorporated into the Civil Drawings and conform to City of Aurora standards as well as the Manual on Uniform Traffic Control Devices – 2009 Edition (MUTCD).

## 2.0 INTRODUCTION

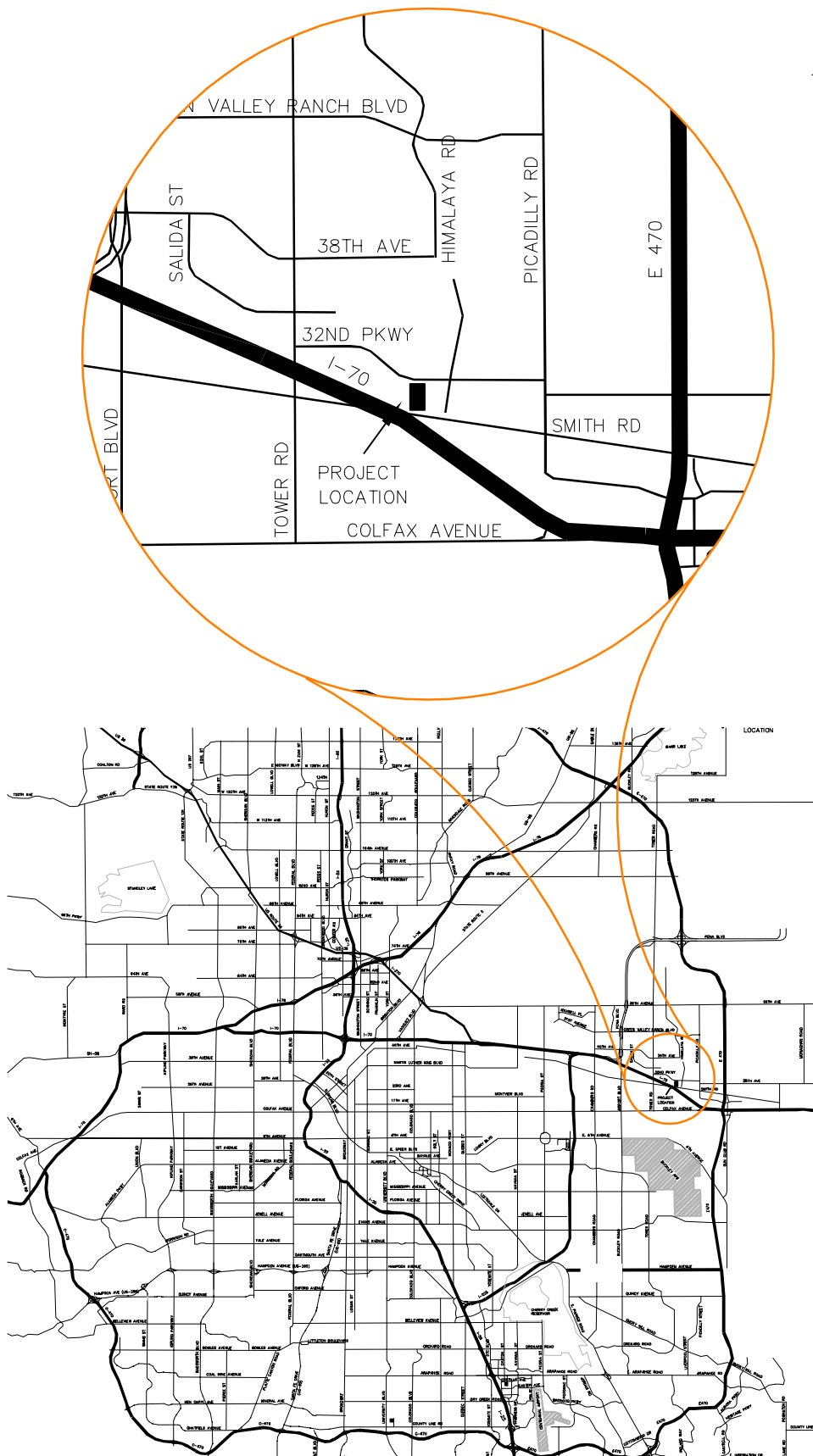
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Kimley-Horn has prepared this report to document the results of a Traffic Impact study of future traffic conditions associated with the proposed Majestic Commercenter Building 16 project to be located along the south side of 32<sup>nd</sup> Parkway, approximately 1,200 feet west of the 32<sup>nd</sup> Parkway and Himalaya Road intersection in Aurora, Colorado. A vicinity map illustrating the project location with respect to the surrounding area is shown in **Figure 1**. The project is anticipated to include an approximate 552,270 square foot industrial building. A site plan for the proposed development is provided in **Appendix F**.

The purpose of this study is to identify project traffic generation characteristics to determine potential project traffic related impacts on the local street system in an effort to develop improvements required for the identified impacts. The intersection of 32<sup>nd</sup> Parkway & Himalaya Road and the proposed driveway accesses along 32<sup>nd</sup> Parkway are included for evaluation within this study.

Building 16 is anticipated to be completed within the next couple of years; therefore, the analysis was conducted for the 2022 short-term horizon as well as the 2040 long-term horizon per City of Aurora requirements.

Regional access will be provided by Interstate 70 (I-70) and E-470. Primary access is provided by 32<sup>nd</sup> Parkway and Tower Road. Direct access will be provided by two driveways along 32<sup>nd</sup> Parkway. For the west access on 32<sup>nd</sup> Parkway, a median modification is proposed to allow full turning movements. The east access along 32<sup>nd</sup> Parkway is the existing access for Building 15, which will be shared with this project.



MAJESTIC COMMERCCENTER  
 BUILDING 16  
 VICINITY MAP

FIGURE 1

## 3.0 EXISTING CONDITIONS

---

### 3.1 Existing Study Area

The existing project site consists of a vacant parcel with a newly built warehouse (Building 15) to the east of this proposed project. To the north, east, and west are a mix of industrial uses and vacant parcels. South of the site is Interstate 70 (I-70). The land uses and roadway network surrounding the site are shown within the aerial of **Figure 2**.

### 3.2 Existing Roadway Network

Through the study area, 32<sup>nd</sup> Parkway is a raised median divided roadway providing two through lanes of travel each direction, eastbound and westbound, east of Tower Road. 32<sup>nd</sup> Parkway has a posted speed limit of 40 miles per hour. Left turn lanes have been constructed at major intersections and access points along the roadway.

Himalaya Road has been constructed with an existing width to provide two through lanes northbound and southbound, north of 32<sup>nd</sup> Parkway. This roadway is not striped presently, therefore it effectively operates with a single through lane in each direction. South of 32<sup>nd</sup> Parkway, Himalaya Road has an existing width to provide a single through lane in each direction.

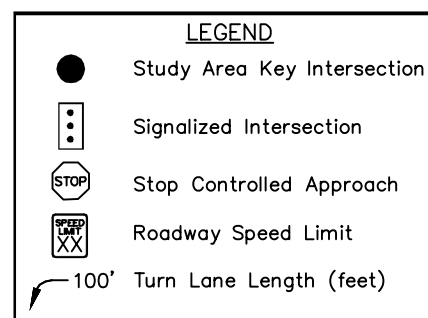
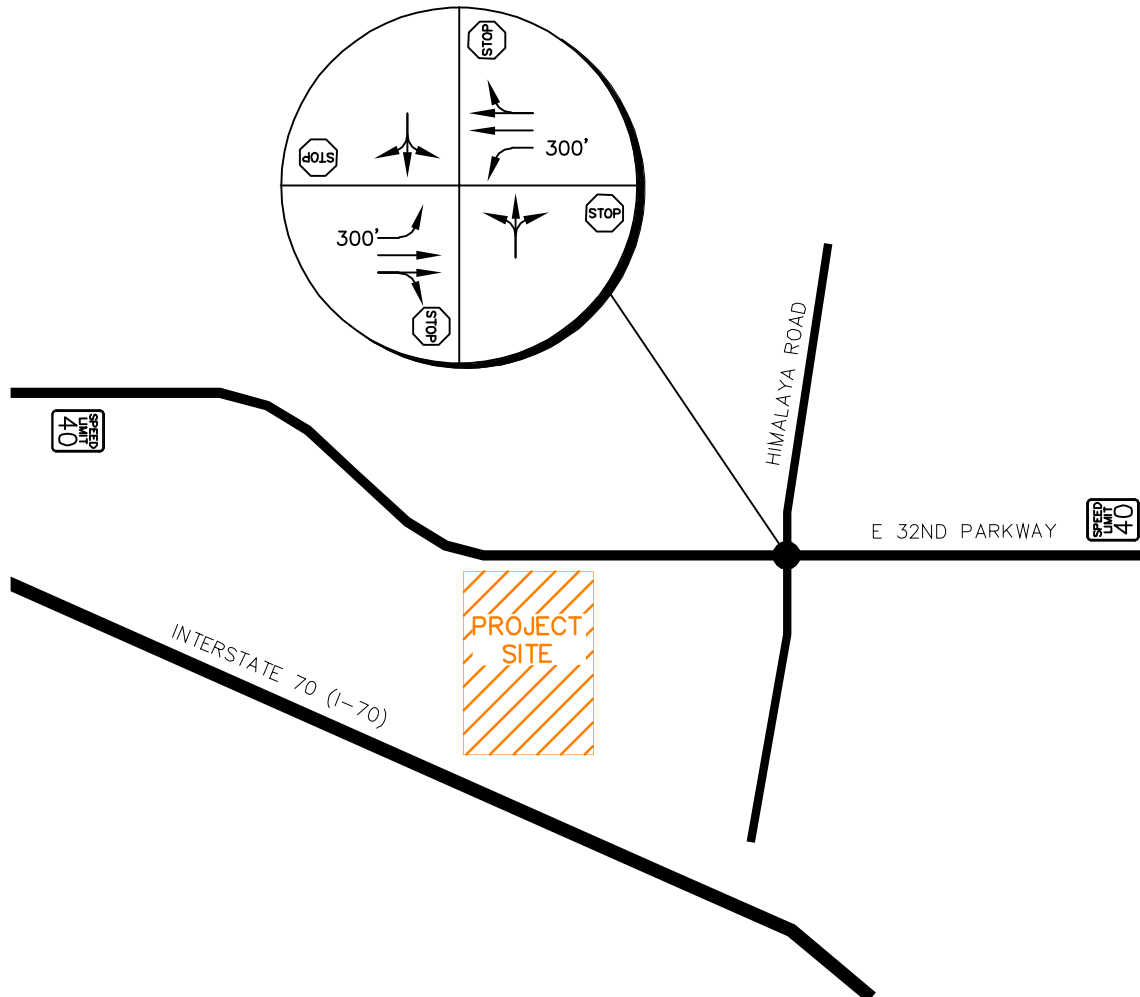
The 32<sup>nd</sup> Parkway and Himalaya Road intersection operated with two-way stop control on the northbound and southbound Himalaya Road approaches at the time of the initial traffic study preparation and during the count time period. However, this intersection has been recently improved to operate with all-way stop control. The eastbound and westbound approaches of 32<sup>nd</sup> Parkway have separate left turn lanes and two through lanes. The northbound approach has a single approach lane, although the roadway width is adequate to provide separate left turn and shared through/right turn lanes. The southbound approach is unmarked but provides enough pavement width to provide a separate left turn, through, and right turn lane.

Existing intersection lane configurations are shown in **Figure 3**.



MAJESTIC COMMERCENTER  
BUILDING 16  
SITE AREA

FIGURE 2



MAJESTIC COMMERCENTER  
BUILDING 16  
EXISTING LANE CONFIGURATIONS

FIGURE 3

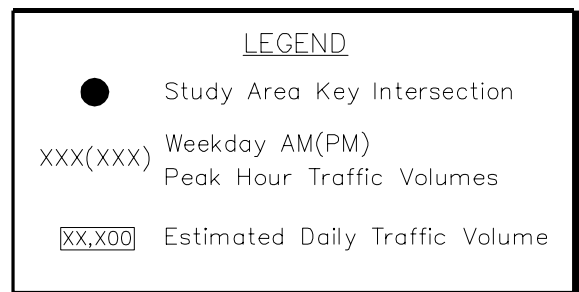
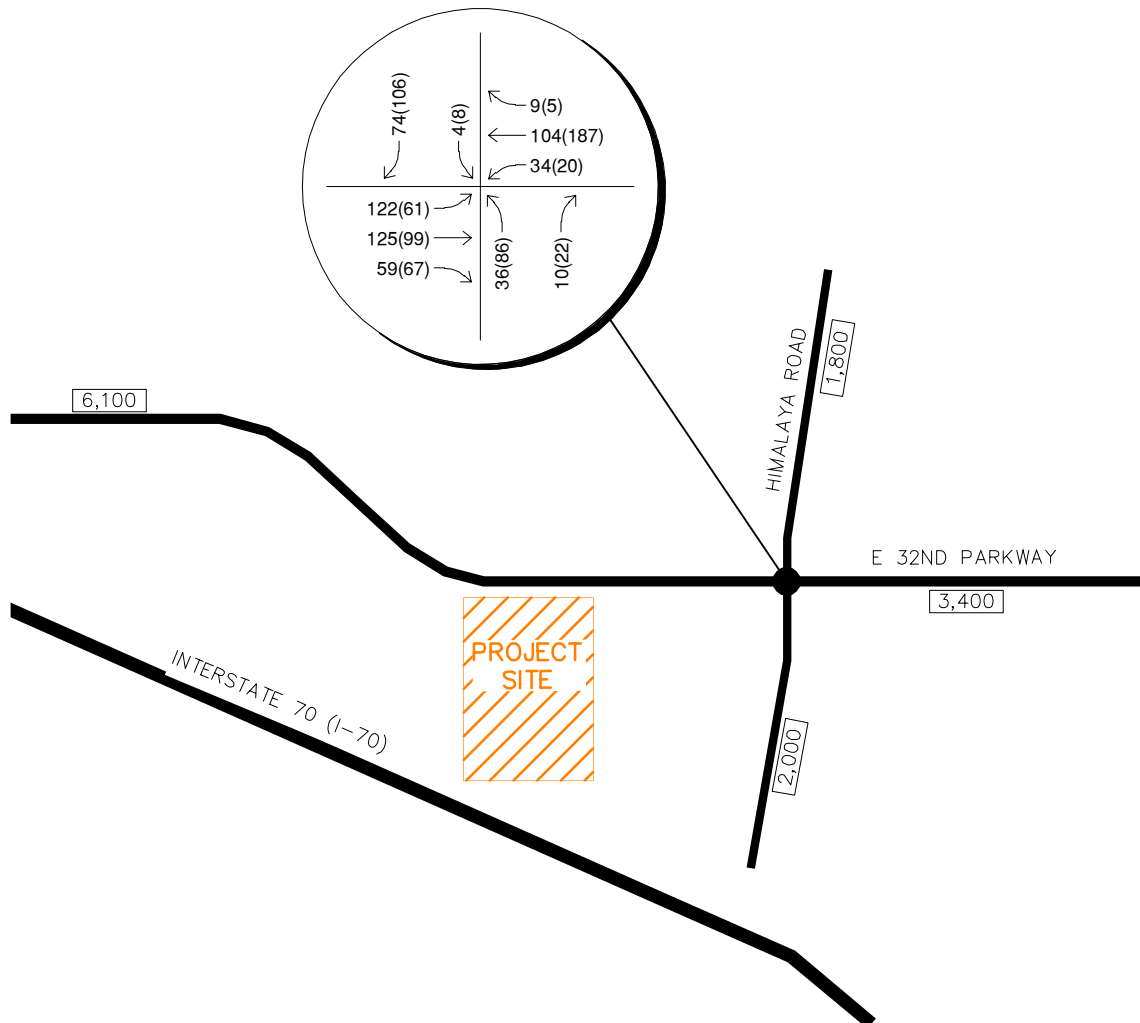
### **3.3 Existing Traffic Volumes**

Existing peak hour turning movement counts were conducted at the key intersections on Tuesday, August 11, 2020. The counts were conducted in 15-minute intervals during the morning and afternoon peak hours of adjacent street traffic from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM on this count date. In addition, 12-hour turning movement counts were collected at the intersection of 32<sup>nd</sup> Parkway and Himalaya Road for use in running the traffic signal warrant evaluations to determine the turning volumes. Per request of the City of Aurora, 72-hour tube counts were also collected from Tuesday, November 17, 2020 through Thursday, November 19, 2020. Existing turning movement counts are shown in **Figure 4** with count sheets provided in **Appendix A**.

### **3.4 Adjusted Existing Traffic Volumes**

The collected turning movement counts were conducted during the COVID-19 pandemic and were therefore compared to previous 2018 turning movement counts. This comparison identified that the counts conducted in 2020 were higher than adjusted 2018 counts conducted previously. Therefore, the traffic volume through this area does not appear to be affected significantly by the pandemic because the uses surrounding the area are industrial and essential businesses that are fully open. Therefore, no adjustments were determined to be necessary.

Tuesday, August 11, 2020  
 7:00 to 8:00 AM (4:15 to 5:15 PM)



MAJESTIC COMMERCENTER  
 BUILDING 16  
 EXISTING TRAFFIC VOLUMES

FIGURE 4

## 4.0 FUTURE CONDITIONS

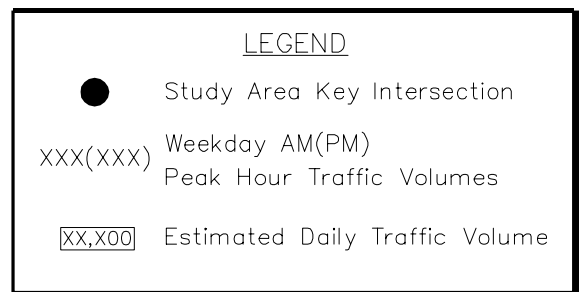
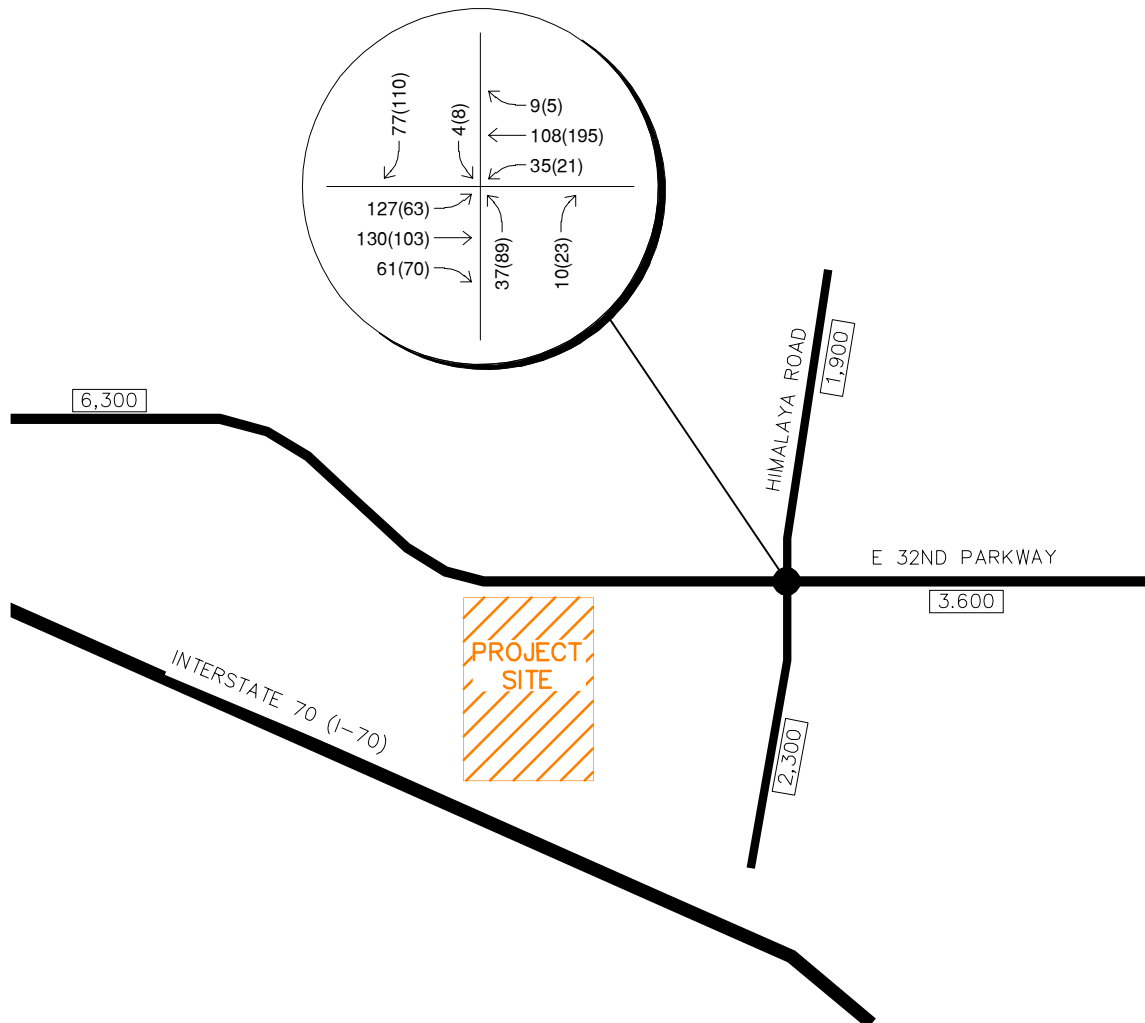
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### 4.1 Proposed Project Access

Direct access to the site is proposed along 32<sup>nd</sup> Parkway. The east access is existing and shared with the parcel to the east of the project site (Building 15). The new west access is proposed approximately 900 feet west of the east access. A median modification within 32<sup>nd</sup> Parkway is proposed at this west access to allow full turning movements.

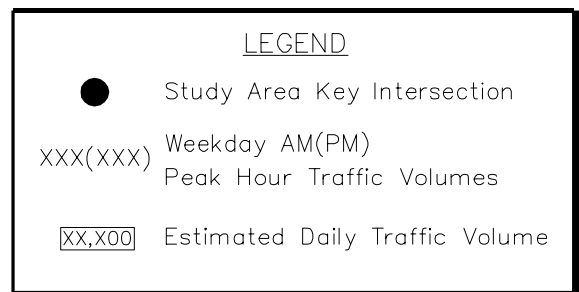
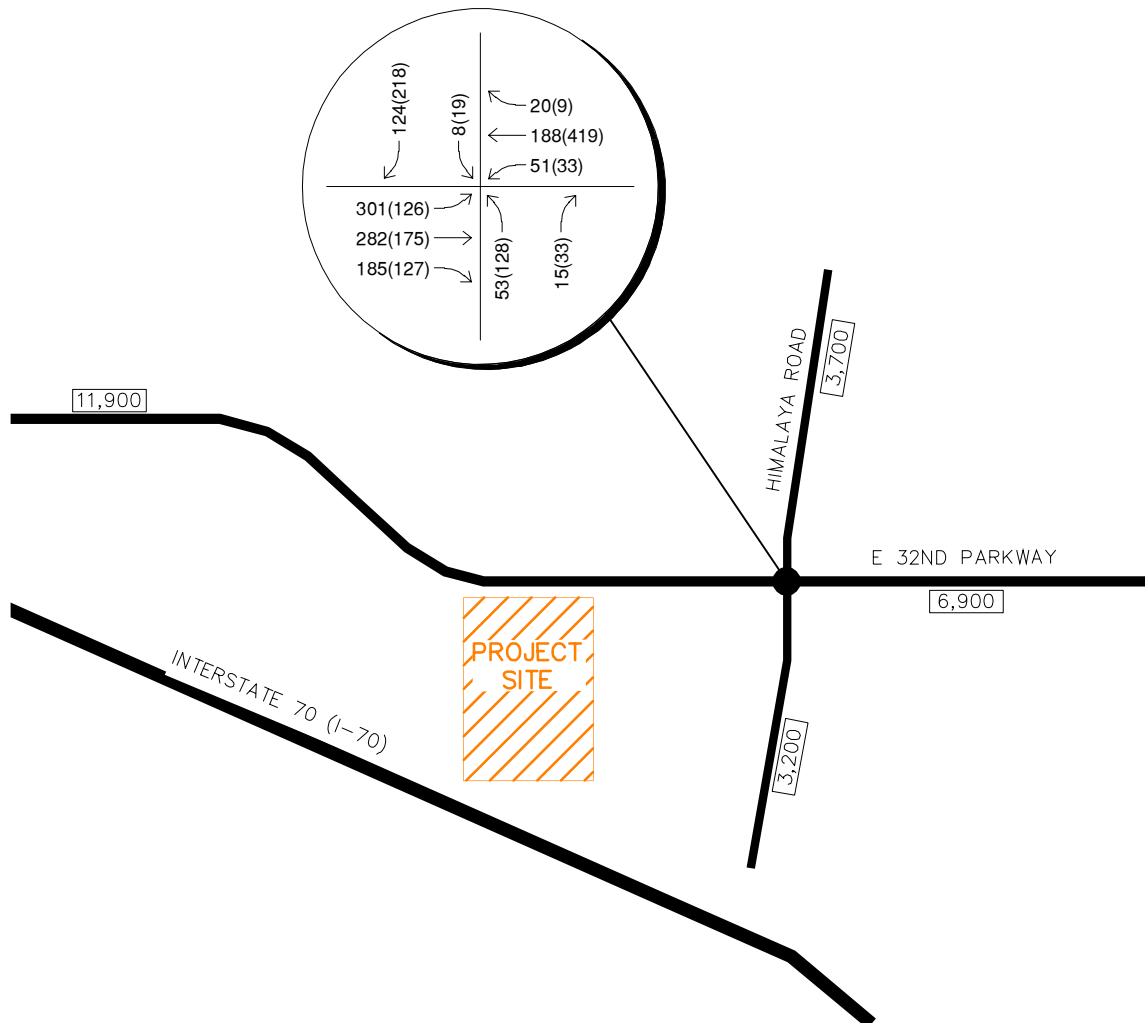
### 4.2 Unspecified Development Traffic Growth

To be consistent with the City of Aurora Traffic Impact Study Guidelines, a two percent annual growth rate was used to estimate future traffic volume conditions. In addition, project traffic volumes estimated from Majestic Commercenter Phase 11, which includes development of approximately 807,133 square feet of warehouse use, 117,845 square feet of office space were included in 2040 background traffic projections. Background traffic volumes for 2022 and 2040 are shown in **Figures 5** and **6**, respectively. **Appendix B** includes the background traffic information from Majestic Commercenter Phase 11.



MAJESTIC COMMERCENTER  
 BUILDING 16  
 2022 BACKGROUND VOLUMES

FIGURE 5



MAJESTIC COMMERCENTER  
BUILDING 16  
2040 BACKGROUND VOLUMES

FIGURE 6

## 5.0 PROJECT TRAFFIC CHARACTERISTICS

### 5.1 Trip Generation

Site-generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Manual*<sup>1</sup> published by the Institute of Transportation Engineers (ITE). ITE has established trip rates in nationwide studies of similar land uses. For this study, Kimley-Horn used the ITE Trip Generation Report rate that applies to Industrial Park (ITE Code 130) for traffic associated with the development.

Majestic Commercenter Building 16 is anticipated to generate approximately 1,862 daily trips with 221 of those trips occurring during each of the morning and afternoon peak hours. The project traffic generation is shown in **Table 1** while the trip generation calculation worksheet is provided in **Appendix C**.

**Table 1 – Majestic Commercenter Building 16 Project Trip Generation**

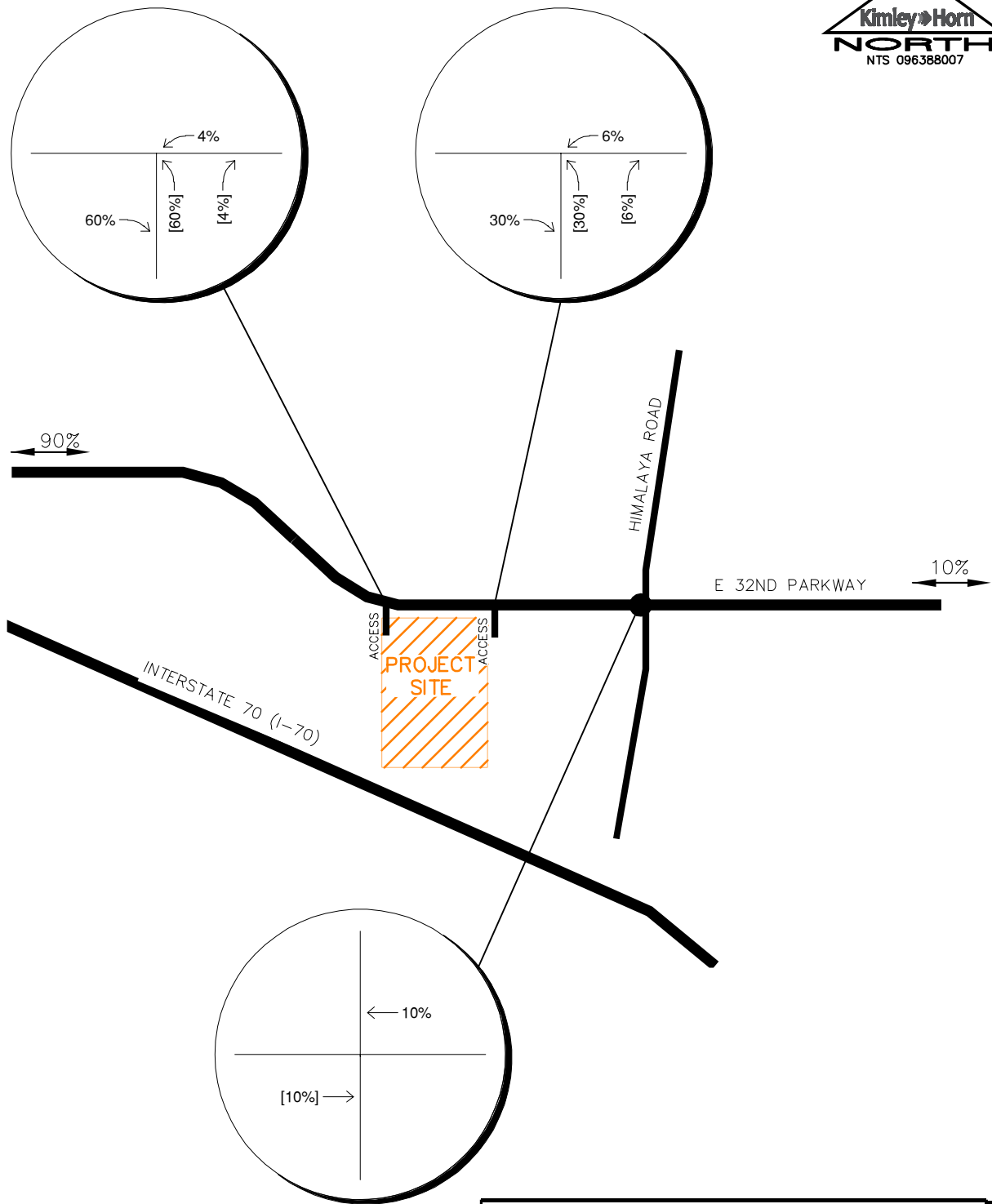
Land Use and Quantity	Daily	Weekday Vehicle Trips					
		AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Industrial Park (ITE 130) – 552,270 SF	1,862	179	42	221	46	175	221

### 5.2 Trip Distribution

Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns, existing and anticipated surrounding demographic information, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site-generated traffic that approaches the site from a given direction and departs the site back to the original source. The project trip distribution for the proposed development is illustrated in **Figure 7**.

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<sup>1</sup> Institute of Transportation Engineers, *Trip Generation Manual*, Tenth Edition, Washington DC, 2017.



MAJESTIC COMMERCCENTER  
BUILDING 16  
TRIP DISTRIBUTION

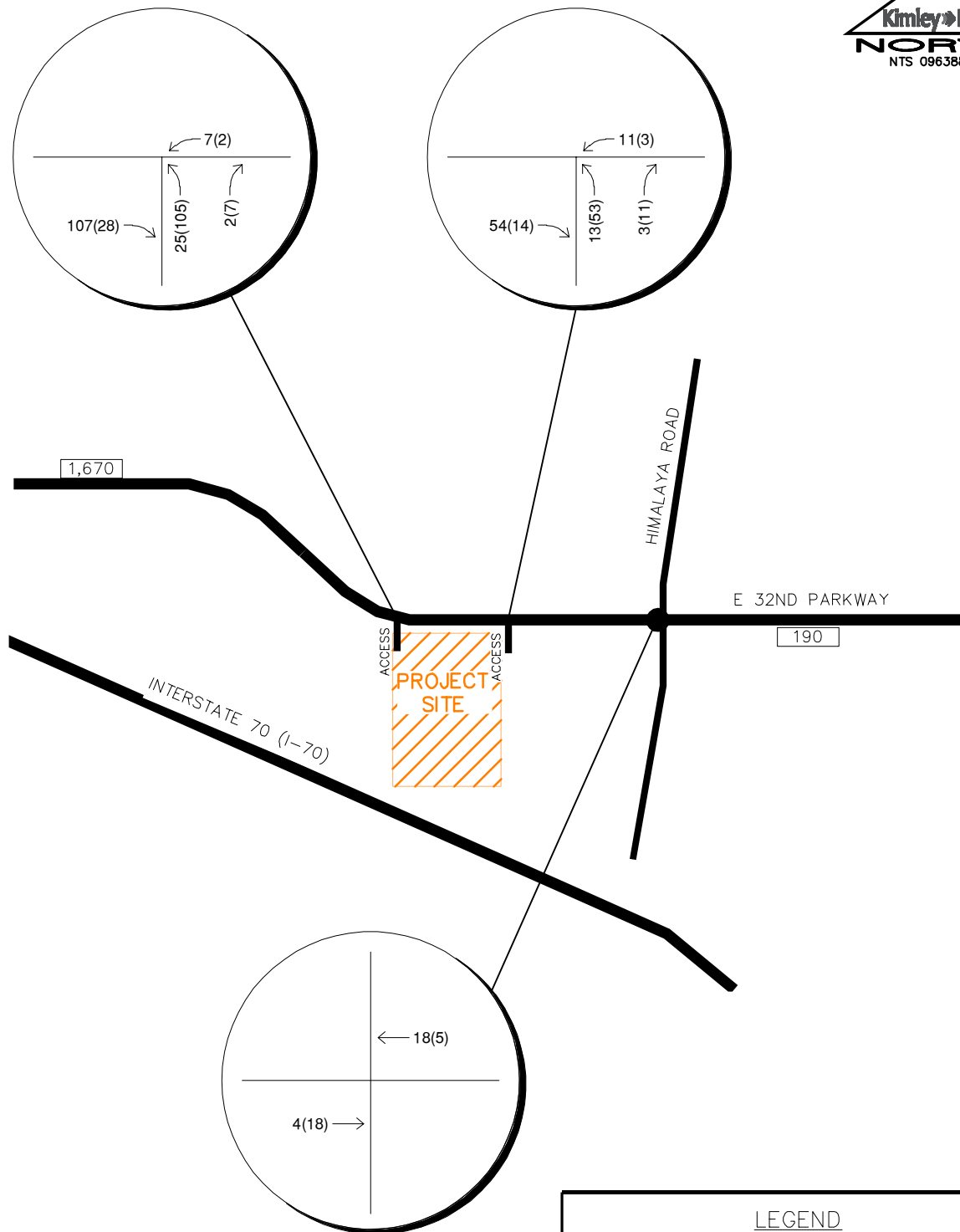
FIGURE 7

### **5.3 Traffic Assignment**

Traffic assignment was obtained by applying the distribution from **Figure 7** to the estimated traffic generation of the project shown in **Table 1**. The traffic assignment is shown in **Figure 8**.

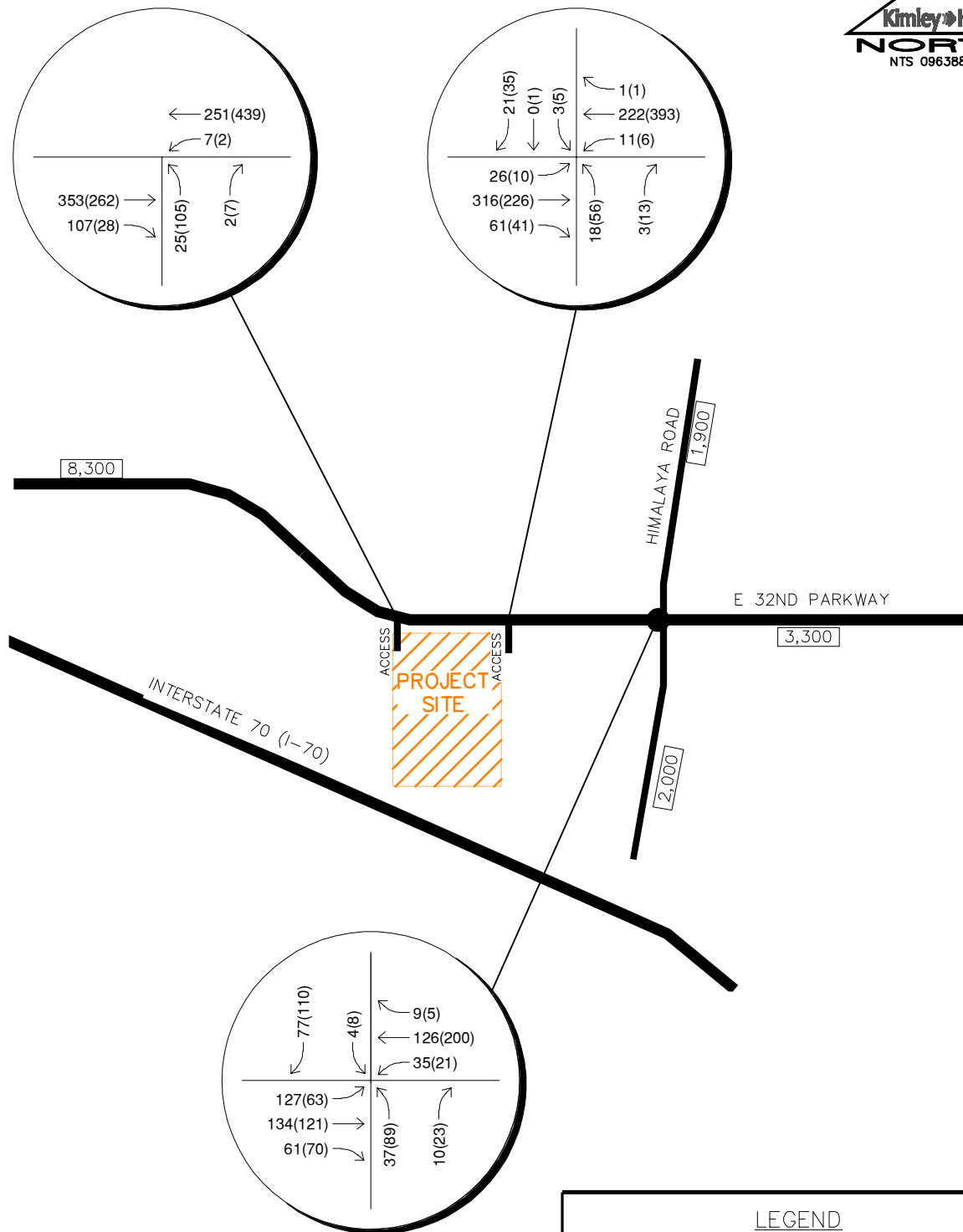
### **5.4 Total (Background Plus Project) Traffic**

Project traffic volumes were added to the background volumes to represent estimated traffic conditions for the short-term 2022 horizon. **Figure 9** illustrates the background plus project traffic volumes for the 2022 horizon at the study key intersections. The 2040 total full buildout traffic volumes for the study area are shown in **Figure 10**.



MAJESTIC COMMERCENTER  
 BUILDING 16  
 PROJECT TRAFFIC ASSIGNMENT

FIGURE 8

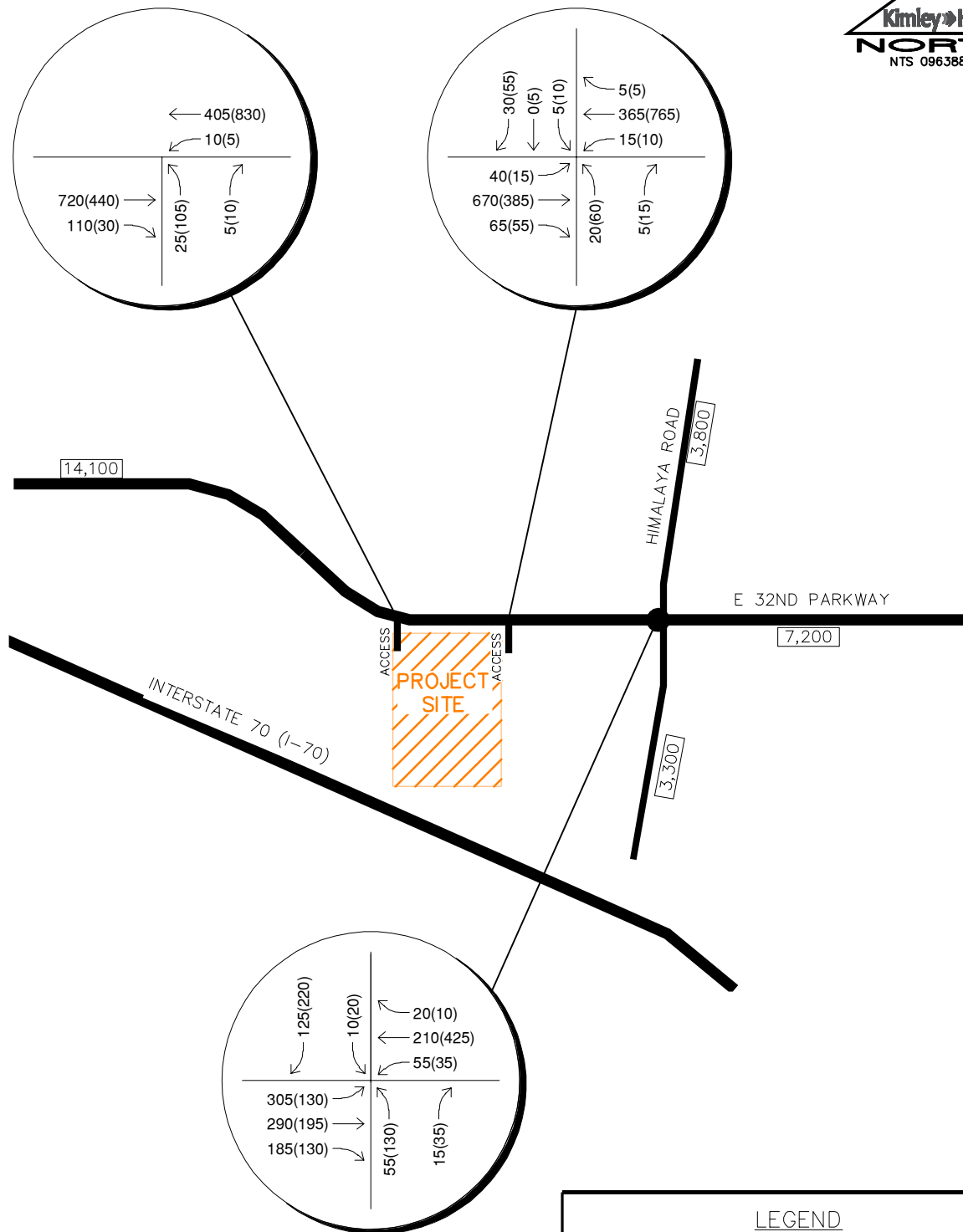


**LEGEND**

- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM)  
Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

MAJESTIC COMMERCENTER  
 BUILDING 16  
 2022 TOTAL TRAFFIC VOLUMES

FIGURE 9



**LEGEND**

- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM)  
Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

MAJESTIC COMMERCENTER  
 BUILDING 16  
 2040 TOTAL TRAFFIC VOLUMES

FIGURE 10

## 6.0 TRAFFIC OPERATIONS ANALYSIS

Kimley-Horn's analysis of traffic operations in the vicinity of the site was conducted to determine potential capacity deficiencies in the 2022 and 2040 development horizons at the identified key intersections. The acknowledged source for determining overall capacity is the current edition of the *Highway Capacity Manual*<sup>2</sup>.

### 6.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). According to City of Aurora guidelines for signalized intersections, individual movements may be allowed to fall to LOS E, but in most cases the overall intersection must operate (or be projected to operate) at a LOS D or better during AM and PM peak periods. If the existing LOS for an intersection is less than LOS D, potential alternatives to improve the intersection should be provided to achieve LOS D or maintain the existing critical lane volume with the addition of site generated traffic. Minor movements at unsignalized intersections, such as left turns onto a major arterial from a side street, may be allowed to fall below LOS D pending the specific conditions. Movements which have a light traffic demand and a viable travel alternative may be allowed to fall below LOS D. **Table 2** shows the definition of LOS for signalized and unsignalized intersections.

**Table 2 – Level of Service Definitions**

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Definitions provided from the Highway Capacity Manual, Sixth Edition, Transportation Research Board, 2016.

Study area intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. Under the unsignalized analysis, the LOS for a two-way stop-

<sup>2</sup> Transportation Research Board, *Highway Capacity Manual*, Sixth Edition, Washington DC, 2016.

controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the intersection as a whole. LOS for a signalized, roundabout, and four-way stop controlled intersection is defined for each approach and for the intersection. The intersection analysis was conducted using Synchro software with the analysis results reported using the Highway Capacity Manual (HCM) procedure. According to City of Aurora guidelines, if traffic signal warrants or multiway stop warrant is met, then a roundabout shall also be considered at the intersection. For this study, roundabout control was evaluated as an alternative control in addition to all-way stop control at the intersection of 32<sup>nd</sup> Parkway and Himalaya Road. The intersection analysis was conducted using Synchro software with the analysis results reported using the Highway Capacity Manual (HCM) procedure.

## **6.2 Intersection Operational Analysis**

Calculations for the LOS at the study key intersections are provided in **Appendix D**. The LOS analyses are based on the lane geometry and intersection control shown in **Figure 2**. The LOS analyses determine what improvements may be needed at the intersections and proposed accesses to handle background traffic growth and project related traffic in the two study horizons. Existing peak hour factors were utilized in the existing and 2022 analysis years while an average of the existing peak hour factors and the standard 0.92 were used in 2040. Heavy vehicle usage percentages were incorporated in the operations analysis and can be found in the traffic counts attached in **Appendix A**.

### **32<sup>nd</sup> Parkway and Himalaya Road**

The existing 32<sup>nd</sup> Parkway and Himalaya Road intersection was recently improved to operate with all-way stop control. A roundabout was considered for the control of this intersection and evaluated as an alternative; however, it is believed that all way stop control is preferred to a roundabout due to the large amount of trucks traveling through this intersection. A vehicle classification count performed along 32<sup>nd</sup> Parkway in this area indicates a heavy vehicle usage of approximately 30 percent during the morning peak hour and 25 percent during the afternoon peak hour (classification counts attached in **Appendix A**). It is recommended that the northbound and southbound approaches include designation with separate left turn lanes. These left turn lanes should provide a length of 100 feet. There is currently sufficient pavement width to incorporate these left turn lanes; therefore, it is believed that this improvement will only require pavement striping. As an all-way stop or roundabout control intersection, acceptable

operations result throughout the 2040 horizon. **Table 3** provides the results of the LOS analysis conducted at this intersection.

**Table 3 – 32<sup>nd</sup> Parkway and Himalaya Road LOS Results**

Scenario	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
<b>2020 Existing (Previous TWSC)</b>				
Northbound Approach	16.1	C	16.5	C
Eastbound Left	8.3	A	8.2	A
Westbound Left	8.4	A	8.1	A
Southbound Approach	10.0	B	11.1	B
<b>2022 Background (AWSC) ##</b>	<b>10.9</b>	<b>B</b>	<b>12.9</b>	<b>B</b>
Eastbound Approach	11.1	B	11.7	B
Westbound Approach	10.8	B	13.5	B
Northbound Approach	10.8	B	13.3	B
Southbound Approach	10.3	B	13.3	B
<b>2022 Background (RAB) ###</b>	<b>6.4</b>	<b>A</b>	<b>7.1</b>	<b>A</b>
<b>2022 Total Traffic (AWSC) ##</b>	<b>11.1</b>	<b>B</b>	<b>13.2</b>	<b>B</b>
Eastbound Approach	11.3	B	12.0	B
Westbound Approach	11.0	B	13.8	B
Northbound Approach	10.9	B	13.6	B
Southbound Approach	10.5	B	13.6	B
<b>2022 Total Traffic (RAB) ###</b>	<b>6.7</b>	<b>A</b>	<b>7.2</b>	<b>A</b>
<b>2040 Background (AWSC) ##</b>	<b>16.5</b>	<b>C</b>	<b>20.3</b>	<b>C</b>
Eastbound Approach	18.4	C	16.3	C
Westbound Approach	13.2	B	25.0	C
Northbound Approach	12.8	B	17.0	C
Southbound Approach	13.6	B	20.8	C
<b>2040 Background (RAB) ###</b>	<b>9.7</b>	<b>A</b>	<b>11.1</b>	<b>B</b>
<b>2040 Total Traffic (AWSC) ##</b>	<b>17.2</b>	<b>C</b>	<b>21.4</b>	<b>C</b>
Eastbound Approach	19.4	C	17.1	C
Westbound Approach	13.9	B	26.6	D
Northbound Approach	13.1	B	17.5	C
Southbound Approach	14.0	B	21.9	C
<b>2040 Total Traffic (RAB) ###</b>	<b>10.2</b>	<b>B</b>	<b>11.4</b>	<b>B</b>

# - Separate NB and SB left turn lanes; ## - All Way Stop Control; ### = Roundabout Control

### Majestic Building 16 Access Intersections

Access will be provided by 32<sup>nd</sup> Parkway for Majestic Commercenter Building 16. An existing full movement access (32<sup>nd</sup> Parkway East Access) on 32<sup>nd</sup> Parkway is located approximately 1,000 feet west of the 32<sup>nd</sup> Parkway and Himalaya Road intersection that serves Building 15 that will be shared with this Building 16 project. A proposed new full movement access driveway (32<sup>nd</sup> Parkway West Access) will also be constructed approximately 900 feet west of the existing driveway, which will require a median cut to allow westbound left turn movements into the site with a 100-foot left turn lane and northbound left turn movements out of the site. As discussed later in Section 6.5, the westbound left turn lane into the 32<sup>nd</sup> Parkway West Access is not required by City of Aurora warrant criteria; however, will be constructed with the project to provide safer traffic conditions. Eastbound right-turn lanes with 100 feet of length will be required at the both project accesses based on City of Aurora criteria. The project is proposing two exiting lanes for separate left and right turning movements at the west access. This access is also providing a wider than standard receiving lane to accommodate heavy vehicles. It is recommended to install a R1-1 "STOP" sign on the north approach of the proposed west driveway access. **Table 4** provides the results of the level of service for these two access intersections. As shown in the table, both project accesses are anticipated to operate at acceptable level of services during years 2022 and 2040.

**Table 4 – Majestic Building 16 Access Intersections Level of Service Results**

Intersection	2022 Background Plus Project				2040 Background Plus Project			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
<b>32<sup>nd</sup> Parkway West Access</b>								
Northbound Left	12.3	B	13.4	B	17.6	C	18.8	C
Northbound Right	9.6	A	9.3	A	11.3	B	10.0	B
Westbound Left	8.7	A	8.0	A	10.3	B	8.6	A
<b>32<sup>nd</sup> Parkway East Access</b>								
Northbound Approach	12.8	B	12.7	B	19.3	C	18.3	C
Eastbound Left	8.0	A	8.7	A	8.6	A	10.5	B
Westbound Left	8.4	A	8.0	A	9.9	A	8.5	A
Southbound Approach	10.6	B	10.7	B	12.4	B	15.3	C

### 6.3 Traffic Signal Warrant Analysis

A signal warrant analysis was completed for existing year 2020, short-term 2022 horizon, and long-term 2040 horizon. It was found that a traffic signal is not warranted during the existing or short-term horizon. However, based on the 85<sup>th</sup> percentile speed of traffic traveling along 32<sup>nd</sup> Parkway being above 40 miles per hour (48.5 mph eastbound and 52.5 mph westbound), a traffic signal may be warranted by the 2040 long-term horizon with the projected volumes. As previously identified and already installed in the field, the intersection meets all-way stop control warrants, as this control has already been installed at the intersection. All-way stop control and traffic signal warrant calculation sheets are included in **Appendix E**.

### 6.4 Queue Analysis

A queuing analysis was conducted for the driveway accesses. There are no defined turn lanes at the external studied intersections; therefore, a queue analysis was not conducted for the study intersections. Results were obtained from the 95<sup>th</sup> percentile queue lengths obtained from the Synchro analysis. Queue length calculations for unsignalized intersections are provided within the level of service operational sheets provided in **Appendix D**. Results of the queuing analysis and recommendations at the study area intersections are provided in **Table 5**.

**Table 5 – Turn lane Length Analysis Results**

Intersection Turn Lane	Existing Turn Lane Length (feet)	2022 Calculated Queue Length (ft)	2022 Recommended Turn Lane Length (ft)	2040 Calculated Queue Length (ft)	2040 Recommended Turn Lane Length (ft)
<b>32<sup>nd</sup> Pkwy &amp; Himalaya Rd #</b>					
Northbound Left	DNE	50'	100'	50'	100'
Eastbound Left	300'	50'	300'	125'	300'
Westbound Left	300'	25'	300'	25'	300'
Southbound Left	DNE	25'	100'	25'	100'
<b>32<sup>nd</sup> Parkway West Access</b>					
Westbound Left	DNE	25'	100'	25'	100'
Northbound Left	DNE	25'	50'	50'	50'
Northbound Right	DNE	25'	50'	25'	50'
<b>32<sup>nd</sup> Parkway East Access</b>					
Northbound Approach	50'	25'	50'	25'	50'
Eastbound Left	160'	25'	160'	25'	160'
Westbound Left	135'	25'	135'	25'	135'

# = All Way Stop Control; DNE = Does Not Exist; **XX'** = Recommended Turn Lane Length

As shown in the vehicle queuing table, all vehicle queues are expected to be managed and contained within the existing and proposed turn lane. Left turn lanes should be designated with a length of 100 feet at the northbound and southbound approaches of the 32<sup>nd</sup> Parkway and

Himalaya Road intersection. There is currently sufficient pavement width to incorporate these left turn lanes; therefore, it is believed that this improvement will only require pavement striping. A request for a median modification to the west driveway will include constructing a 100-foot westbound left turn lane with the existing 75-foot taper. The reported exiting movement queue lengths at the project accesses are one vehicle in 2022 and two vehicles or less in 2040; therefore, appropriate throat depths are existing and proposed at the project accesses.

## 6.5 Turn Lane Requirement Analysis

The City of Aurora has directed use of the Colorado Department of Transportation (CDOT) State Highway Access Code (SHAC) guidelines to determine if turn lanes are warranted for the project accesses along 32<sup>nd</sup> Parkway. CDOT classifies their state highways based on roadway types. The Non-Rural Arterial Category NR-B (moderate travel speeds and relatively moderate to high traffic volumes) was assigned to 32<sup>nd</sup> Parkway based on matching the characteristics of the CDOT roadways.

According to the State Highway Access Code for category NR-B roadways with a speed limit of 40 miles per hour or less, the following thresholds apply for an auxiliary lane:

- A left turn lane with storage length plus taper is required for any access with a projected peak hour left ingress turning volume greater than 25 vehicles per hour (vph).
- A right turn lane with storage length plus taper is required for any access with a projected peak hour right ingress turning volume greater than 50 vehicles per hour (vph).

32<sup>nd</sup> Parkway currently has a posted speed limit of 40 miles per hour within the project limits, therefore, right turn lane and left turn lane requirements at the project access intersections along 32<sup>nd</sup> Parkway are as follows:

### 32<sup>nd</sup> Parkway and West Access

- A westbound left turn lane **is not** warranted along 32<sup>nd</sup> Parkway at the West Access based on projected 2022 background plus project traffic volumes being seven (7) westbound left turns during the peak hour and the threshold being 25 vph. However, through coordination with the City of Aurora, the project can construct a westbound left turn lane at the west access to improve safety and to help facilitate heavy vehicles into the site. CDOT access code requires storage plus taper for left turn lanes along NR-B roadways with the storage length being one foot per left turning vehicle during the peak

hour. Since the number of vehicles is turning left is less than the minimum storage standard, the minimum storage length of 100 feet should be provided at this location. As such, it is recommended that the westbound left turn lane at the west access be constructed with a length of 100 feet while maintaining the existing 75-foot taper shared with the eastbound left turn lane to the east.

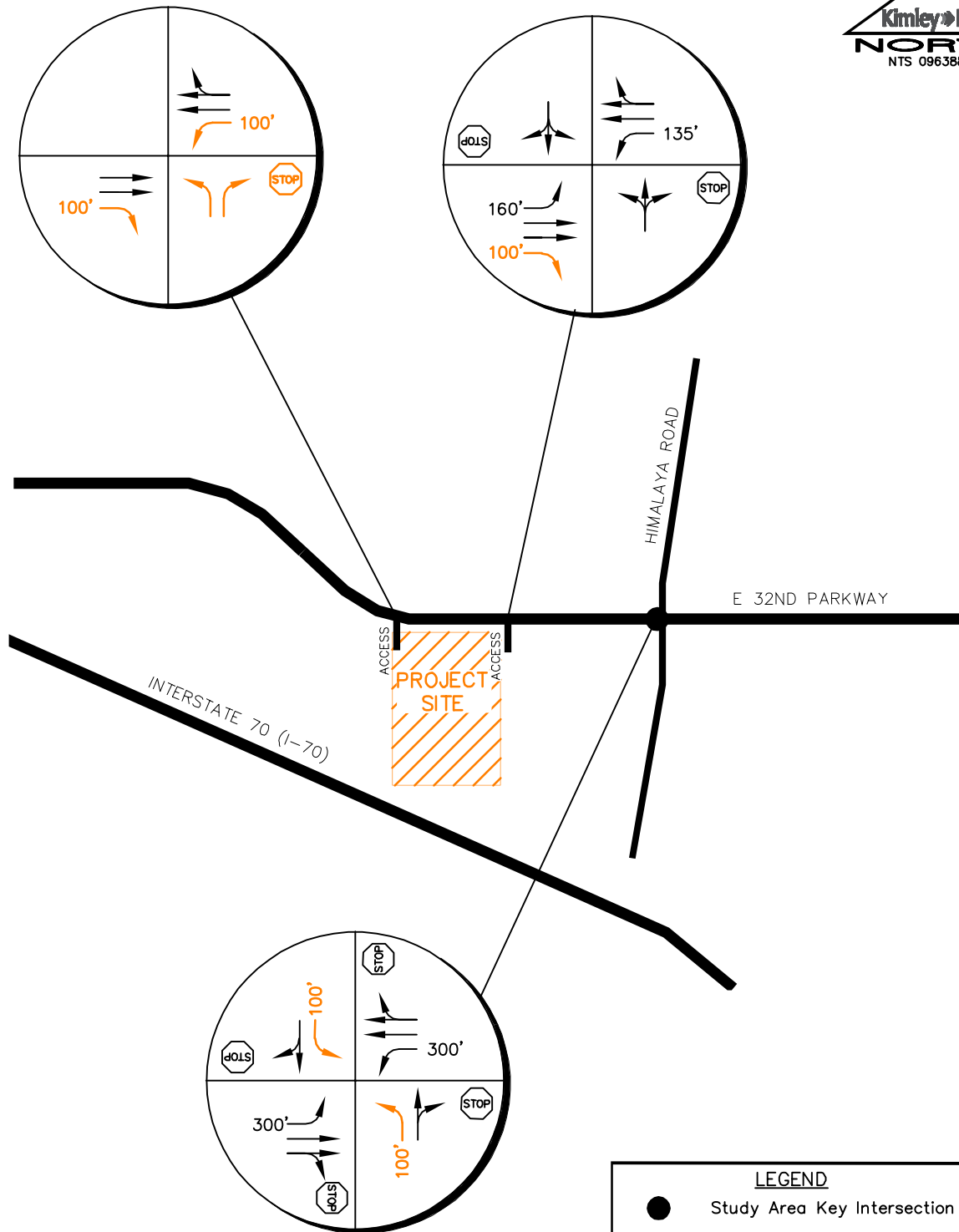
- An eastbound right turn lane along 32<sup>nd</sup> Parkway **is** warranted along 32<sup>nd</sup> Parkway at the West Access based on projected 2022 background plus project traffic volumes being 107 eastbound right turns during the peak hour and the threshold being 50 vph. CDOT access code requires storage plus taper for left turn lanes along NR-B roadways with the storage length being one foot per left turning vehicle during the peak hour; therefore, the storage length of 100 feet should be provided at this location. As such, it is recommended that this right turn lane provide a length of 100 feet with a City of Aurora requested 109-foot taper.

#### 32<sup>nd</sup> Parkway and East Access

- A westbound left turn lane currently exists but **is not** warranted along 32<sup>nd</sup> Parkway at the East Access based on projected 2022 background plus project traffic volumes being 11 westbound left turns (13 vph with 10% heavy vehicles with a passenger equivalent of one truck to 3 cars) during the peak hour and the threshold being 25 vph. If considering the known speed being above 40 mph in the area based on a vehicular volume speed count, the threshold for requiring a left turn lane is 10 vehicle per hour which **is met**. In any case, this left turn lane currently exists and modifications are not recommended.
- An eastbound right turn lane along 32<sup>nd</sup> Parkway **is** warranted along 32<sup>nd</sup> Parkway at the East Access based on projected 2022 background plus project traffic volumes being 61 eastbound right turns during the peak hour and the threshold being 50 vph. Since the approach of this access does not stop; the minimum storage length of 100 feet should be provided at this location. As such, it is recommended that this right turn lane provide a length of 100 feet with a City of Aurora requested 109-foot taper.

## **6.6 Improvement Summary**

Based on the results of the intersection operations, turn lane queuing analysis, improvements were identified as being needed at key study intersections throughout the long term 2040 twenty-year planning horizon. These improvements are summarized in **Figure 11**.



MAJESTIC COMMERCCENTER  
 BUILDING 16  
 RECOMMENDED IMPROVEMENTS

FIGURE 11

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

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Based on the analysis presented in this report, Kimley-Horn believes the proposed Majestic Commercenter Building 16 project will be successfully incorporated into the existing and future roadway network. Analysis of the existing street network, the proposed project development, and expected traffic volumes resulted in the following recommendations:

- The intersection of 32<sup>nd</sup> Parkway and Himalaya Road wasn't found to warrant or require signalization yet based on this level of development. However, as was previously recommended and installed already by the City of Aurora, the intersection was converted from two-way stop control to all-way stop control (AWSC) for existing traffic. This intersection meets warrants for AWSC under existing traffic conditions with the speed of traffic along 32<sup>nd</sup> Parkway being above 40 miles per hour (85<sup>th</sup> percentile speeds found to be 48.5 mph eastbound and 52.5 mph westbound).
- It is recommended that separate northbound and southbound left turn lanes be designated on the Himalaya Road approaches to 32<sup>nd</sup> Parkway, as identified also in the Majestic Phase 11 project traffic study. These left turn lanes should provide a length of 100 feet. There is currently sufficient pavement width to incorporate these left turn lanes; therefore, it is believed that this improvement will only require pavement striping.
- The existing raised median within 32<sup>nd</sup> Parkway is recommended to be modified to allow an opening at the proposed west access to allow full turning movements. It is recommended that a 100-foot westbound left turn be constructed while maintaining the existing taper to the east for the back-to-back left turn lane for Victory Packaging. Also, it is recommended that the new west access operate with stop-control with the installation of a R1-1 "STOP" sign on exiting driveway approach to 32<sup>nd</sup> Parkway. The project is proposing two exiting lanes for separate left and right turning movements at the west access. This access is also providing a wider than standard receiving lane to accommodate heavy vehicles.
- Per City of Aurora turn lane requirements, eastbound right turn lanes are required at both project accesses along 32<sup>nd</sup> Parkway. It is recommended that these right turn lanes provide a length of 100 feet based on CDOT storage requirements. These right turn lanes were requested to be designed and constructed with a 109-foot taper.

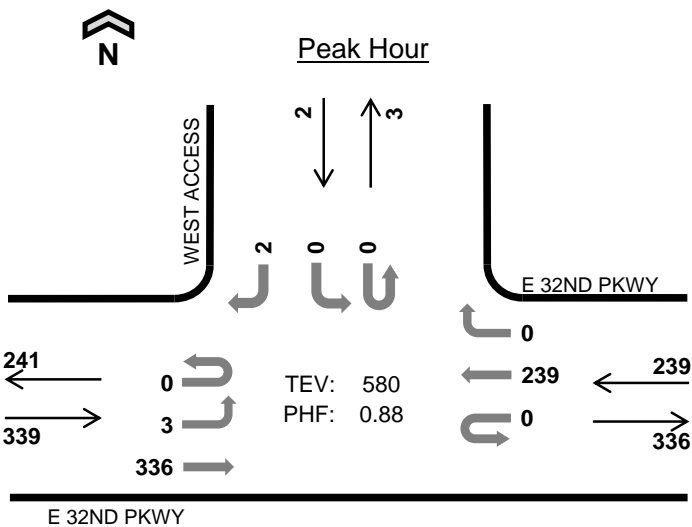
- Any on-site and off-site signing and striping improvements should be incorporated into the Civil Drawings and conform to City of Aurora standards as well as the Manual on Uniform Traffic Control Devices – 2009 Edition (MUTCD).

# APPENDICES

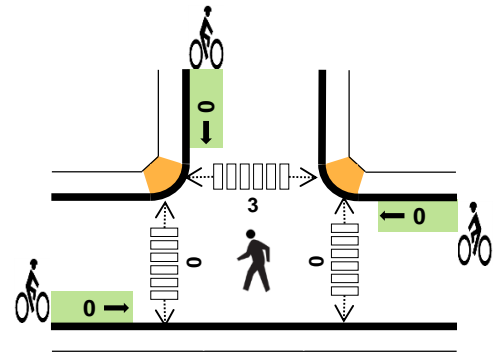
# APPENDIX A

## Intersection Counts

# WEST ACCESS E 32ND PKWY



Date: Tue, Aug 11, 2020  
Count Period: 7:00 AM to 9:00 AM  
Peak Hour: 7:00 AM to 8:00 AM



	HV %:	PHF
EB	16.8%	0.78
WB	40.2%	0.83
NB	-	-
SB	0.0%	0.50
TOTAL	26.4%	0.88

## Two-Hour Count Summaries

Interval Start	E 32ND PKWY				E 32ND PKWY				0				WEST ACCESS				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	3	72	0	0	0	48	0	0	0	0	0	0	0	0	0	123	0
7:15 AM	0	0	75	0	0	0	72	0	0	0	0	0	0	0	0	1	148	0
7:30 AM	0	0	80	0	0	0	64	0	0	0	0	0	0	0	0	0	144	0
7:45 AM	0	0	109	0	0	0	55	0	0	0	0	0	0	0	0	1	165	580
8:00 AM	0	1	75	0	0	0	41	0	0	0	0	0	0	0	0	0	117	574
8:15 AM	0	0	73	0	0	0	46	0	0	0	0	0	0	0	0	1	120	546
8:30 AM	0	0	67	0	0	0	36	0	0	0	0	0	0	0	0	1	104	506
8:45 AM	0	0	76	0	0	0	36	0	0	0	0	0	0	1	0	0	113	454
Count Total	0	4	627	0	0	0	398	0	0	0	0	0	0	1	0	4	1,034	0
Peak Hour	0	3	336	0	0	0	239	0	0	0	0	0	0	0	0	2	580	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	13	20	0	0	33	0	0	0	0	0	0	0	0	0	0
7:15 AM	14	36	0	0	50	0	0	0	0	0	0	0	2	0	2
7:30 AM	9	18	0	0	27	0	0	0	0	0	0	0	0	0	0
7:45 AM	21	22	0	0	43	0	0	0	0	0	0	0	1	0	1
8:00 AM	13	19	0	0	32	0	0	0	0	0	0	0	0	0	0
8:15 AM	14	24	0	1	39	0	0	0	0	0	0	0	0	0	0
8:30 AM	12	18	0	1	31	0	0	0	0	0	0	0	0	0	0
8:45 AM	19	10	0	0	29	0	0	0	0	0	0	0	0	0	0
Count Total	115	167	0	2	284	0	0	0	0	0	0	0	3	0	3
Peak Hr	57	96	0	0	153	0	0	0	0	0	0	0	3	0	3

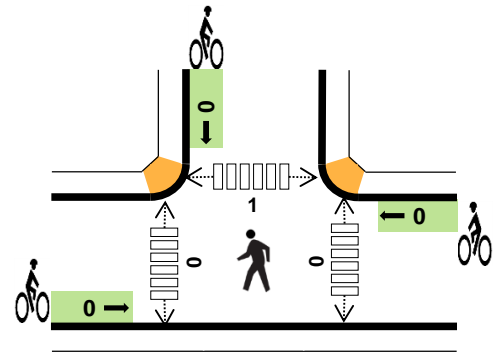
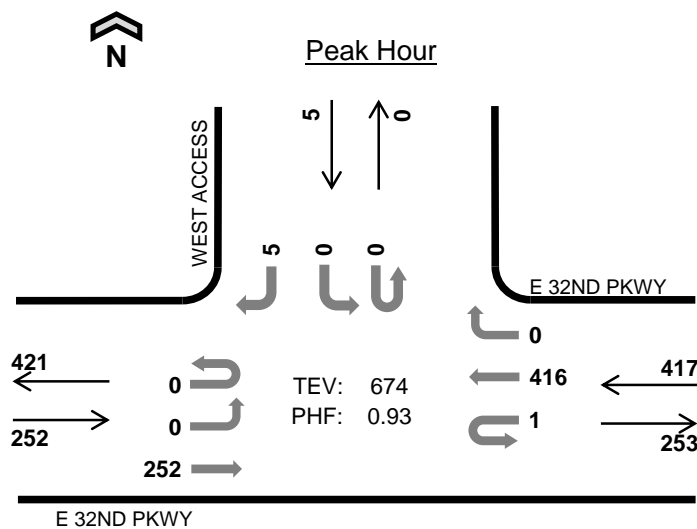
**WEST ACCESS  
E 32ND PKWY**



**Date: Tue, Aug 11, 2020**

**Count Period: 4:00 PM to 6:00 PM**

**Peak Hour: 4:30 PM to 5:30 PM**



	HV %:	PHF
EB	24.2%	0.83
WB	11.0%	0.85
NB	-	-
SB	20.0%	0.42
TOTAL	16.0%	0.93

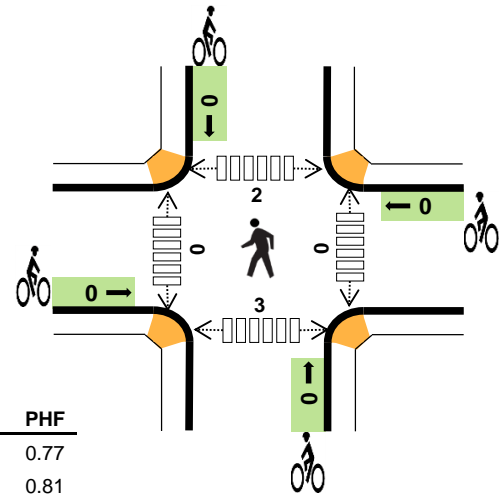
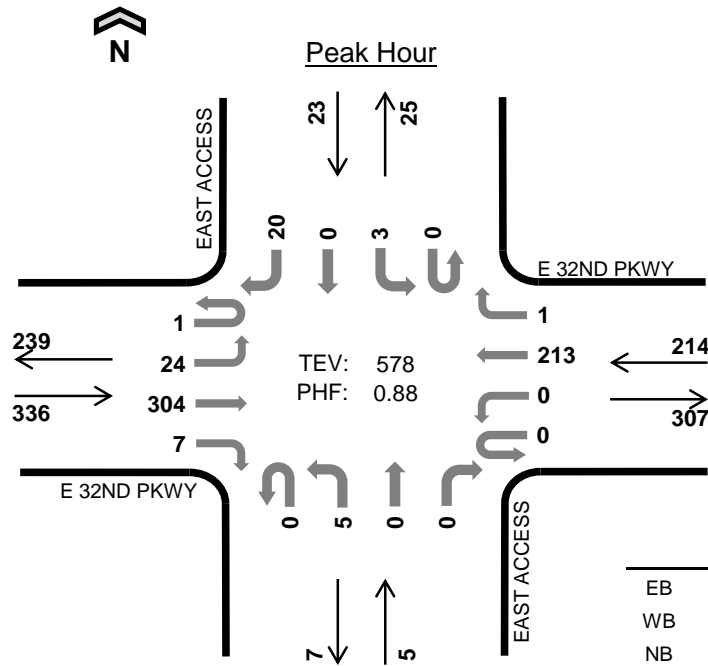
## Two-Hour Count Summaries

[illegible]

*Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.*

[illegible]

# EAST ACCESS E 32ND PKWY



	HV %:	PHF
EB	17.0%	0.77
WB	38.8%	0.81
NB	0.0%	0.63
SB	65.2%	0.72
TOTAL	26.8%	0.88

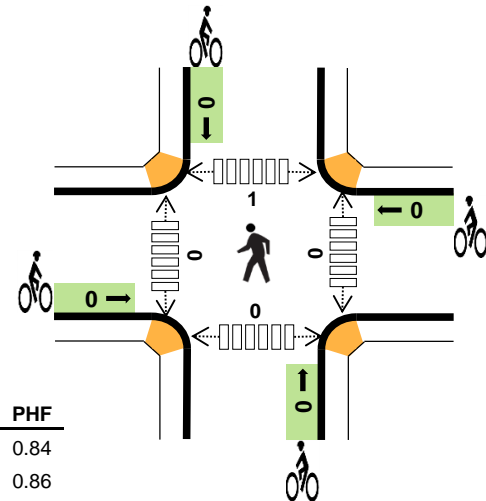
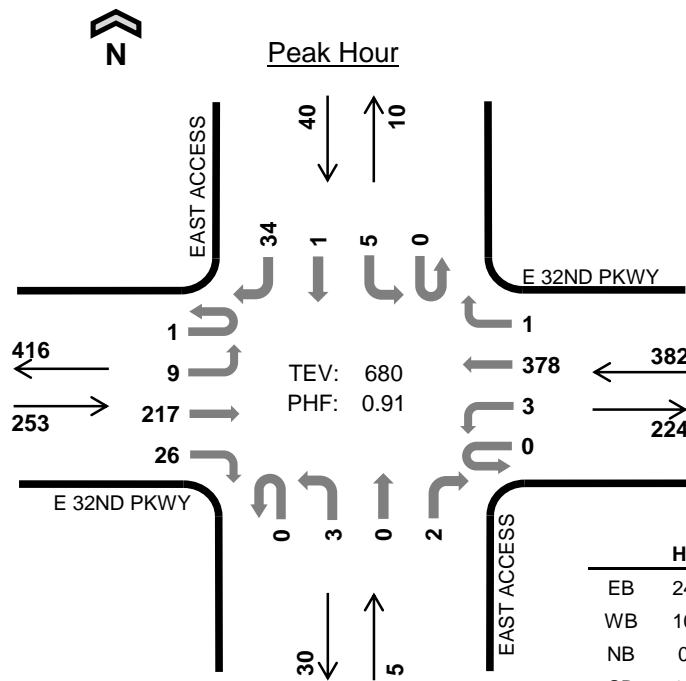
## Two-Hour Count Summaries

Interval Start	E 32ND PKWY Eastbound				E 32ND PKWY Westbound				EAST ACCESS Northbound				EAST ACCESS Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	7	62	3	0	0	42	1	0	0	0	0	0	1	0	6	122	0
7:15 AM	1	2	72	0	0	0	66	0	0	2	0	0	0	0	0	3	146	0
7:30 AM	0	3	73	4	0	0	56	0	0	1	0	0	0	1	0	7	145	0
7:45 AM	0	12	97	0	0	0	49	0	0	2	0	0	0	1	0	4	165	578
8:00 AM	0	7	66	2	0	0	36	0	0	0	0	0	0	0	0	5	116	572
8:15 AM	0	8	62	3	0	0	42	2	0	2	0	0	0	2	0	2	123	549
8:30 AM	0	5	62	0	1	0	33	1	0	2	0	0	0	5	0	1	110	514
8:45 AM	0	3	72	2	0	0	30	2	0	1	0	0	0	2	0	5	117	466
Count Total	1	47	566	14	1	0	354	6	0	10	0	0	0	12	0	33	1,044	0
Peak Hour	1	24	304	7	0	0	213	1	0	5	0	0	0	3	0	20	578	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	11	19	0	2	32	0	0	0	0	0	0	0	0	0	0
7:15 AM	14	33	0	3	50	0	0	0	0	0	0	0	0	3	3
7:30 AM	11	13	0	6	30	0	0	0	0	0	0	0	2	0	2
7:45 AM	21	18	0	4	43	0	0	0	0	0	0	0	0	0	0
8:00 AM	12	14	0	5	31	0	0	0	0	0	0	0	0	0	0
8:15 AM	14	22	0	2	38	0	0	0	0	0	0	0	2	0	2
8:30 AM	12	19	0	1	32	0	0	0	1	1	0	0	2	1	3
8:45 AM	19	8	0	3	30	0	0	0	0	0	0	0	2	0	2
Count Total	114	146	0	26	286	0	0	0	1	1	0	0	8	4	12
Peak Hour	57	83	0	15	155	0	0	0	0	0	0	0	2	3	5

# EAST ACCESS E 32ND PKWY



	HV %:	PHF
EB	24.1%	0.84
WB	10.5%	0.86
NB	0.0%	0.63
SB	17.5%	0.67
TOTAL	15.9%	0.91

## Two-Hour Count Summaries

Interval Start	E 32ND PKWY Eastbound				E 32ND PKWY Westbound				EAST ACCESS Northbound				EAST ACCESS Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	4	53	0	0	0	92	1	0	3	0	0	0	0	0	5	158	0
4:15 PM	0	5	43	5	0	1	88	2	0	0	0	0	0	0	0	4	148	0
4:30 PM	0	4	65	6	0	0	94	1	0	1	0	0	0	2	1	4	178	0
4:45 PM	0	1	62	9	0	1	80	0	0	0	0	1	0	2	0	5	161	645
5:00 PM	1	2	48	9	0	1	110	0	0	0	0	1	0	1	0	14	187	674
5:15 PM	0	2	42	2	0	1	94	0	0	2	0	0	0	0	0	11	154	680
5:30 PM	0	0	35	2	0	0	59	0	0	21	0	6	0	2	0	3	128	630
5:45 PM	0	1	39	1	1	0	68	0	0	9	0	7	0	2	0	3	131	600
Count Total	1	19	387	34	1	4	685	4	0	36	0	15	0	9	1	49	1,245	0
Peak Hour	1	9	217	26	0	3	378	1	0	3	0	2	0	5	1	34	680	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	16	11	0	0	27	0	0	0	0	0	0	0	0	0	0
4:15 PM	17	8	0	0	25	0	0	0	0	0	0	0	0	0	0
4:30 PM	18	15	0	1	34	0	0	0	0	0	0	0	0	0	0
4:45 PM	13	10	0	1	24	0	0	0	0	0	0	0	0	0	0
5:00 PM	19	5	0	3	27	0	0	0	0	0	0	0	1	0	1
5:15 PM	11	10	0	2	23	0	0	0	0	0	0	0	0	0	0
5:30 PM	5	9	0	1	15	0	0	0	0	0	0	0	0	1	1
5:45 PM	5	8	0	1	14	0	0	0	0	0	0	0	0	4	4
Count Total	104	76	0	9	189	0	0	0	0	0	0	0	1	5	6
Peak Hour	61	40	0	7	108	0	0	0	0	0	0	0	1	0	1

## Y AND HIMALAYA ROAD

Date:

Tue, Aug 11, 2020

Count Period:

7:00 AM to 7:00 PM



## Twelve-Hour Count Summaries

Interval Start	E 32ND PKWY				E 32ND PKWY				HIMALAYA RD				HIMALAYA RD				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	25	19	19	0	8	22	3	0	6	0	1	0	1	0	19	123	0
7:15 AM	0	23	34	14	1	9	38	1	0	9	0	2	0	0	0	17	148	0
7:30 AM	0	27	33	17	0	4	24	1	0	12	0	3	0	1	0	22	144	0
7:45 AM	0	47	39	9	1	11	20	4	0	9	0	4	0	2	0	16	162	577
AM Peak Hour	0	122	125	59	2	32	104	9	0	36	0	10	0	4	0	74		
8:00 AM	0	15	42	10	0	5	17	3	0	4	0	0	0	1	2	16	115	569
8:15 AM	1	21	30	12	0	2	27	2	0	1	1	8	0	0	0	14	119	540
8:30 AM	0	19	35	16	0	2	15	1	0	3	1	1	0	1	1	17	112	508
8:45 AM	0	17	35	19	0	10	22	3	0	0	0	2	0	1	0	9	118	464
9:00 AM	0	24	37	25	0	4	23	0	0	6	1	2	0	0	0	19	141	490
9:15 AM	0	15	22	25	1	1	20	1	0	2	0	1	0	1	0	9	98	469
9:30 AM	0	21	30	33	0	1	33	1	1	6	0	2	0	1	0	21	150	507
9:45 AM	0	28	24	20	0	5	34	1	0	9	0	4	0	1	0	18	144	533
10:00 AM	0	12	23	23	0	3	39	1	0	33	0	4	0	3	0	25	166	558
10:15 AM	0	9	37	22	0	5	32	1	0	42	0	9	0	1	1	16	175	635
10:30 AM	0	12	28	10	0	1	27	3	0	9	0	0	0	0	0	18	108	593
10:45 AM	0	19	23	8	0	0	29	1	0	12	1	7	0	1	0	14	115	564
11:00 AM	0	16	20	9	0	2	38	2	0	12	0	10	0	0	0	18	127	525
11:15 AM	0	12	28	12	0	5	37	0	0	18	1	14	0	0	1	19	147	497
11:30 AM	1	23	32	8	0	0	62	0	0	17	0	12	0	0	0	20	175	564
11:45 AM	1	30	32	7	0	2	48	2	0	13	3	2	0	0	3	29	172	621
12:00 PM	1	21	37	6	0	6	92	2	0	9	1	4	0	1	0	30	210	704
12:15 PM	0	23	49	12	0	0	50	3	0	7	0	2	0	2	0	27	175	732
12:30 PM	0	16	48	7	0	4	62	5	0	9	0	2	0	0	0	22	175	732
12:45 PM	0	27	43	4	0	3	35	8	0	7	0	6	0	1	0	22	156	716
1:00 PM	0	11	29	8	1	3	44	8	0	5	1	2	0	0	1	14	127	633
1:15 PM	0	23	33	5	1	6	37	2	0	6	0	1	0	3	0	18	135	593
1:30 PM	1	25	38	12	1	2	41	1	0	10	0	1	0	1	0	27	160	578
1:45 PM	1	32	27	11	0	4	37	2	0	7	0	2	0	3	0	19	145	567
2:00 PM	0	27	39	13	0	1	37	5	0	3	0	2	0	1	0	22	150	590
2:15 PM	1	22	29	12	2	1	49	1	0	3	1	4	1	0	0	20	146	601
2:30 PM	0	27	25	16	1	6	74	2	0	19	0	6	0	4	0	48	228	669
2:45 PM	0	46	32	11	0	2	42	1	0	18	0	1	0	0	0	28	181	705
3:00 PM	0	24	33	8	0	5	44	2	0	14	0	3	0	1	0	38	172	727
3:15 PM	0	23	24	8	0	4	40	2	0	17	0	7	0	0	0	35	160	741
3:30 PM	0	17	22	13	0	1	58	2	0	7	0	5	0	2	0	50	177	690
3:45 PM	0	18	19	14	0	1	41	3	0	16	0	3	0	3	0	21	139	648
4:00 PM	0	11	18	21	0	1	40	2	0	28	0	14	0	6	2	26	169	645
4:15 PM	0	12	24	13	0	4	50	2	0	17	0	4	0	2	0	22	150	635
4:30 PM	0	16	21	19	0	9	35	1	0	22	0	10	0	4	0	38	175	633
4:45 PM	0	18	33	22	0	2	49	0	0	17	0	5	0	1	0	17	164	658
5:00 PM	0	15	21	13	0	5	53	2	0	30	0	3	0	1	0	29	172	661
PM Peak Hour	0	61	99	67	0	20	187	5	0	86	0	22	0	8	0	106		
5:15 PM	0	8	28	6	0	0	44	2	0	23	0	5	0	0	0	26	142	653
5:30 PM	0	10	30	4	0	0	32	1	0	12	0	1	0	1	0	17	108	586
5:45 PM	0	7	36	7	0	2	35	0	0	14	0	3	0	1	0	19	124	546
6:00 PM	0	11	22	14	0	2	35	0	0	16	0	3	0	0	0	25	128	502
6:15 PM	0	12	15	15	0	0	15	2	0	13	0	3	0	0	0	18	93	453
6:30 PM	0	10	16	13	0	1	38	0	0	15	0	1	0	0	0	18	112	457
6:45 PM	0	17	21	10	0	2	19	0	0	10	0	4	0	0	0	21	104	437
Count Total	7	944	1,415	635	9	157	1,835	92	1	597	11	195	1	53	11	1,073	7,036	0
AM Total (7:00 - 9:00)	1	160	255	160	1	30	191	12	1	31	3	20	0	6	3	123	997	0
PM Total (4:00 - 6:00)	0	90	189	82	0	12	271	7	0	133	0	23	0	3	0	173	983	0
AM Peak (9:00 - 10:00)	0	88	113	103	1	11	110	3	1	23	1	9	0	3	0	67	533	0
PM Peak (5:00 - 6:00)	0	40	115	30	0	7	164	5	0	79	0	12	0	3	0	91	546	0

## Daily Vehicle Volume Report

Study Date: Tuesday, 11/17/2020

Unit ID: RDC 74

Location: Aurora, CO

Comments: Eastbound 32nd, West of Himalaya

	Eastbound Volume
00:00 - 00:59	65
01:00 - 01:59	61
02:00 - 02:59	36
03:00 - 03:59	95
04:00 - 04:59	134
05:00 - 05:59	375
06:00 - 06:59	450
07:00 - 07:59	383
08:00 - 08:59	430
09:00 - 09:59	488
10:00 - 10:59	405
11:00 - 11:59	477
12:00 - 12:59	449
13:00 - 13:59	421
14:00 - 14:59	384
15:00 - 15:59	432
16:00 - 16:59	390
17:00 - 17:59	311
18:00 - 18:59	221
19:00 - 19:59	128
20:00 - 20:59	107
21:00 - 21:59	82
22:00 - 22:59	75
23:00 - 23:59	50
Totals	6449
AM Peak Time	09:18 - 10:17
AM Peak Volume	499
PM Peak Time	12:02 - 13:01
PM Peak Volume	453

## Daily Vehicle Volume Report

Study Date: Wednesday, 11/18/2020

Unit ID: RDC 74

Location: Aurora, CO

Comments: Eastbound 32nd, West of Himalaya

	Eastbound Volume
00:00 - 00:59	76
01:00 - 01:59	59
02:00 - 02:59	39
03:00 - 03:59	66
04:00 - 04:59	167
05:00 - 05:59	375
06:00 - 06:59	465
07:00 - 07:59	412
08:00 - 08:59	455
09:00 - 09:59	505
10:00 - 10:59	428
11:00 - 11:59	457
12:00 - 12:59	471
13:00 - 13:59	422
14:00 - 14:59	419
15:00 - 15:59	413
16:00 - 16:59	312
17:00 - 17:59	228
18:00 - 18:59	226
19:00 - 19:59	218
20:00 - 20:59	176
21:00 - 21:59	117
22:00 - 22:59	130
23:00 - 23:59	60
<b>Totals</b>	<b>6696</b>
<b>AM Peak Time</b>	<b>09:28 - 10:27</b>
<b>AM Peak Volume</b>	<b>541</b>
<b>PM Peak Time</b>	<b>12:01 - 13:00</b>
<b>PM Peak Volume</b>	<b>472</b>

## Daily Vehicle Volume Report

Study Date: Thursday, 11/19/2020

Unit ID: RDC 74

Location: Aurora, CO

Comments: Eastbound 32nd, West of Himalaya

	Eastbound Volume
00:00 - 00:59	92
01:00 - 01:59	77
02:00 - 02:59	31
03:00 - 03:59	76
04:00 - 04:59	148
05:00 - 05:59	386
06:00 - 06:59	491
07:00 - 07:59	415
08:00 - 08:59	411
09:00 - 09:59	471
10:00 - 10:59	389
11:00 - 11:59	419
12:00 - 12:59	429
13:00 - 13:59	430
14:00 - 14:59	406
15:00 - 15:59	372
16:00 - 16:59	295
17:00 - 17:59	245
18:00 - 18:59	216
19:00 - 19:59	210
20:00 - 20:59	152
21:00 - 21:59	108
22:00 - 22:59	105
23:00 - 23:59	68
<b>Totals</b>	<b>6442</b>
<b>AM Peak Time</b>	<b>05:47 - 06:46</b>
<b>AM Peak Volume</b>	<b>525</b>
<b>PM Peak Time</b>	<b>13:15 - 14:14</b>
<b>PM Peak Volume</b>	<b>446</b>

## Daily Vehicle Volume Report

Study Date: Tuesday, 11/17/2020

Unit ID: RDC 46

Location: Aurora, CO

Comments: Westbound 32nd, East of Himalaya

	Westbound Volume
00:00 - 00:59	41
01:00 - 01:59	30
02:00 - 02:59	29
03:00 - 03:59	37
04:00 - 04:59	47
05:00 - 05:59	89
06:00 - 06:59	141
07:00 - 07:59	173
08:00 - 08:59	232
09:00 - 09:59	249
10:00 - 10:59	248
11:00 - 11:59	336
12:00 - 12:59	287
13:00 - 13:59	304
14:00 - 14:59	411
15:00 - 15:59	326
16:00 - 16:59	304
17:00 - 17:59	242
18:00 - 18:59	97
19:00 - 19:59	78
20:00 - 20:59	54
21:00 - 21:59	28
22:00 - 22:59	29
23:00 - 23:59	46
<b>Totals</b>	<b>3858</b>
<b>AM Peak Time</b>	<b>10:58 - 11:57</b>
<b>AM Peak Volume</b>	<b>338</b>
<b>PM Peak Time</b>	<b>13:53 - 14:52</b>
<b>PM Peak Volume</b>	<b>421</b>

## Daily Vehicle Volume Report

Study Date: Wednesday, 11/18/2020

Unit ID: RDC 46

Location: Aurora, CO

Comments: Westbound 32nd, East of Himalaya

	Westbound Volume
00:00 - 00:59	39
01:00 - 01:59	25
02:00 - 02:59	20
03:00 - 03:59	27
04:00 - 04:59	47
05:00 - 05:59	99
06:00 - 06:59	145
07:00 - 07:59	175
08:00 - 08:59	266
09:00 - 09:59	306
10:00 - 10:59	312
11:00 - 11:59	362
12:00 - 12:59	361
13:00 - 13:59	311
14:00 - 14:59	389
15:00 - 15:59	327
16:00 - 16:59	299
17:00 - 17:59	203
18:00 - 18:59	101
19:00 - 19:59	71
20:00 - 20:59	53
21:00 - 21:59	48
22:00 - 22:59	32
23:00 - 23:59	39
<b>Totals</b>	<b>4057</b>
<b>AM Peak Time</b>	<b>10:56 - 11:55</b>
<b>AM Peak Volume</b>	<b>376</b>
<b>PM Peak Time</b>	<b>13:53 - 14:52</b>
<b>PM Peak Volume</b>	<b>399</b>

## Daily Vehicle Volume Report

Study Date: Thursday, 11/19/2020

Unit ID: RDC 46

Location: Aurora, CO

Comments: Westbound 32nd, East of Himalaya

	Westbound Volume
00:00 - 00:59	40
01:00 - 01:59	41
02:00 - 02:59	32
03:00 - 03:59	29
04:00 - 04:59	46
05:00 - 05:59	95
06:00 - 06:59	143
07:00 - 07:59	216
08:00 - 08:59	211
09:00 - 09:59	235
10:00 - 10:59	243
11:00 - 11:59	338
12:00 - 12:59	296
13:00 - 13:59	299
14:00 - 14:59	371
15:00 - 15:59	315
16:00 - 16:59	253
17:00 - 17:59	196
18:00 - 18:59	109
19:00 - 19:59	84
20:00 - 20:59	55
21:00 - 21:59	40
22:00 - 22:59	41
23:00 - 23:59	37
Totals	3765
AM Peak Time	10:55 - 11:54
AM Peak Volume	346
PM Peak Time	13:52 - 14:51
PM Peak Volume	392

## Daily Vehicle Volume Report

Study Date: Tuesday, 11/17/2020

Unit ID: RDC 71

Location: Aurora, CO

Comments: Northbound Himalaya South of 32nd

	Northbound Volume
00:00 - 00:59	8
01:00 - 01:59	7
02:00 - 02:59	4
03:00 - 03:59	4
04:00 - 04:59	2
05:00 - 05:59	12
06:00 - 06:59	20
07:00 - 07:59	28
08:00 - 08:59	34
09:00 - 09:59	29
10:00 - 10:59	70
11:00 - 11:59	82
12:00 - 12:59	55
13:00 - 13:59	51
14:00 - 14:59	54
15:00 - 15:59	51
16:00 - 16:59	67
17:00 - 17:59	44
18:00 - 18:59	37
19:00 - 19:59	27
20:00 - 20:59	13
21:00 - 21:59	17
22:00 - 22:59	5
23:00 - 23:59	2
Totals	723
AM Peak Time	10:56 - 11:55
AM Peak Volume	87
PM Peak Time	16:04 - 17:03
PM Peak Volume	72

## Daily Vehicle Volume Report

Study Date: Wednesday, 11/18/2020

Unit ID: RDC 71

Location: Aurora, CO

Comments: Northbound Himalaya South of 32nd

	Northbound Volume
00:00 - 00:59	8
01:00 - 01:59	12
02:00 - 02:59	4
03:00 - 03:59	4
04:00 - 04:59	3
05:00 - 05:59	11
06:00 - 06:59	31
07:00 - 07:59	33
08:00 - 08:59	25
09:00 - 09:59	19
10:00 - 10:59	53
11:00 - 11:59	55
12:00 - 12:59	50
13:00 - 13:59	41
14:00 - 14:59	57
15:00 - 15:59	33
16:00 - 16:59	60
17:00 - 17:59	47
18:00 - 18:59	26
19:00 - 19:59	46
20:00 - 20:59	33
21:00 - 21:59	21
22:00 - 22:59	18
23:00 - 23:59	4
Totals	694
AM Peak Time	10:30 - 11:29
AM Peak Volume	60
PM Peak Time	13:50 - 14:49
PM Peak Volume	63

## Daily Vehicle Volume Report

Study Date: Thursday, 11/19/2020

Unit ID: RDC 71

Location: Aurora, CO

Comments: Northbound Himalaya South of 32nd

	Northbound Volume
00:00 - 00:59	10
01:00 - 01:59	7
02:00 - 02:59	3
03:00 - 03:59	4
04:00 - 04:59	3
05:00 - 05:59	13
06:00 - 06:59	14
07:00 - 07:59	23
08:00 - 08:59	21
09:00 - 09:59	25
10:00 - 10:59	69
11:00 - 11:59	51
12:00 - 12:59	50
13:00 - 13:59	40
14:00 - 14:59	58
15:00 - 15:59	39
16:00 - 16:59	54
17:00 - 17:59	43
18:00 - 18:59	32
19:00 - 19:59	46
20:00 - 20:59	31
21:00 - 21:59	12
22:00 - 22:59	10
23:00 - 23:59	6
Totals	664
AM Peak Time	09:51 - 10:50
AM Peak Volume	71
PM Peak Time	14:27 - 15:26
PM Peak Volume	63

## Daily Vehicle Volume Report

Study Date: Tuesday, 11/17/2020

Unit ID: RDC 73

Location: Aurora, CO

Comments: Southbound Himalaya, North of 32nd

	Southbound Volume
00:00 - 00:59	56
01:00 - 01:59	60
02:00 - 02:59	53
03:00 - 03:59	28
04:00 - 04:59	30
05:00 - 05:59	54
06:00 - 06:59	77
07:00 - 07:59	113
08:00 - 08:59	94
09:00 - 09:59	113
10:00 - 10:59	88
11:00 - 11:59	143
12:00 - 12:59	115
13:00 - 13:59	129
14:00 - 14:59	168
15:00 - 15:59	197
16:00 - 16:59	175
17:00 - 17:59	103
18:00 - 18:59	76
19:00 - 19:59	65
20:00 - 20:59	74
21:00 - 21:59	58
22:00 - 22:59	122
23:00 - 23:59	72
Totals	2263
AM Peak Time	10:58 - 11:57
AM Peak Volume	145
PM Peak Time	14:36 - 15:35
PM Peak Volume	207

## Daily Vehicle Volume Report

Study Date: Wednesday, 11/18/2020

Unit ID: RDC 73

Location: Aurora, CO

Comments: Southbound Himalaya, North of 32nd

	Southbound Volume
00:00 - 00:59	31
01:00 - 01:59	44
02:00 - 02:59	22
03:00 - 03:59	38
04:00 - 04:59	37
05:00 - 05:59	45
06:00 - 06:59	63
07:00 - 07:59	124
08:00 - 08:59	108
09:00 - 09:59	90
10:00 - 10:59	94
11:00 - 11:59	117
12:00 - 12:59	128
13:00 - 13:59	106
14:00 - 14:59	134
15:00 - 15:59	196
16:00 - 16:59	160
17:00 - 17:59	114
18:00 - 18:59	80
19:00 - 19:59	73
20:00 - 20:59	79
21:00 - 21:59	73
22:00 - 22:59	93
23:00 - 23:59	78
Totals	2127
AM Peak Time	06:56 - 07:55
AM Peak Volume	128
PM Peak Time	14:37 - 15:36
PM Peak Volume	203

## Daily Vehicle Volume Report

Study Date: Thursday, 11/19/2020

Unit ID: RDC 73

Location: Aurora, CO

Comments: Southbound Himalaya, North of 32nd

	Southbound Volume
00:00 - 00:59	70
01:00 - 01:59	41
02:00 - 02:59	56
03:00 - 03:59	18
04:00 - 04:59	35
05:00 - 05:59	50
06:00 - 06:59	99
07:00 - 07:59	130
08:00 - 08:59	108
09:00 - 09:59	86
10:00 - 10:59	113
11:00 - 11:59	157
12:00 - 12:59	118
13:00 - 13:59	111
14:00 - 14:59	166
15:00 - 15:59	187
16:00 - 16:59	164
17:00 - 17:59	126
18:00 - 18:59	75
19:00 - 19:59	75
20:00 - 20:59	71
21:00 - 21:59	80
22:00 - 22:59	95
23:00 - 23:59	66
<b>Totals</b>	<b>2297</b>
<b>AM Peak Time</b>	<b>10:56 - 11:55</b>
<b>AM Peak Volume</b>	<b>160</b>
<b>PM Peak Time</b>	<b>14:51 - 15:50</b>
<b>PM Peak Volume</b>	<b>214</b>

## Vehicle Classification Report Summary



**Location:** E 32ND PKWY E/O HIMALAYA RD

**Count Direction:** Eastbound / Westbound

**Date Range:** 10/13/2020 to 10/13/2020

**Site Code:** 01

	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Study Total														
Eastbound	16	1,541	457	8	273	164	0	22	160	5	0	0	7	2,653
Percent	0.6%	58.1%	17.2%	0.3%	10.3%	6.2%	0.0%	0.8%	6.0%	0.2%	0.0%	0.0%	0.3%	100%
Westbound	28	1,382	515	37	567	178	0	31	196	4	0	0	19	2,957
Percent	0.9%	46.7%	17.4%	1.3%	19.2%	6.0%	0.0%	1.0%	6.6%	0.1%	0.0%	0.0%	0.6%	100%
Total	44	2,923	972	45	840	342	0	53	356	9	0	0	26	5,610
Percent	0.8%	52.1%	17.3%	0.8%	15.0%	6.1%	0.0%	0.9%	6.3%	0.2%	0.0%	0.0%	0.5%	100%

### FHWA Vehicle Classification

Class 1 - Motorcycles	Class 8 - Four or Fewer Axle Single-Trailer Trucks
Class 2 - Passenger Cars	Class 9 - Five-Axle Single-Trailer Trucks
Class 3 - Other Two-Axle, Four-Tire Single Unit Vehicles	Class 10 - Six or More Axle Single-Trailer Trucks
Class 4 - Buses	Class 11 - Five or fewer Axle Multi-Trailer Trucks
Class 5 - Two-Axle, Six-Tire, Single-Unit Trucks	Class 12 - Six-Axle Multi-Trailer Trucks
Class 6 - Three-Axle Single-Unit Trucks	Class 13 - Seven or More Axle Multi-Trailer Trucks
Class 7 - Four or More Axle Single-Unit Trucks	

**Location:** E 32ND PKWY E/O HIMALAYA RD  
**Date Range:** 10/13/2020 to 10/13/2020  
**Site Code:** 01

**Tuesday, October 13, 2020**  
**Eastbound**

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	1	22	3	0	0	2	0	1	0	0	0	0	0	29
1:00 AM	1	7	2	0	0	2	0	0	1	1	0	0	0	14
2:00 AM	0	8	2	0	0	5	0	0	2	0	0	0	0	17
3:00 AM	0	8	1	1	0	1	0	0	3	0	0	0	0	14
4:00 AM	0	34	7	0	1	2	0	0	1	0	0	0	0	45
5:00 AM	0	104	34	0	9	1	0	1	3	0	0	0	0	152
6:00 AM	0	148	53	1	12	4	0	0	4	0	0	0	0	222
7:00 AM	3	96	41	0	24	13	0	0	7	0	0	0	0	184
8:00 AM	2	79	28	0	16	13	0	2	6	0	0	0	0	146
9:00 AM	0	53	25	0	23	13	0	0	10	0	0	0	0	124
10:00 AM	0	51	26	0	32	6	0	2	13	0	0	0	1	131
11:00 AM	0	89	21	0	28	14	0	3	14	0	0	0	1	170
12:00 PM	1	118	35	0	28	12	0	3	10	1	0	0	1	209
1:00 PM	0	85	20	0	22	18	0	1	15	1	0	0	1	163
2:00 PM	2	70	22	4	19	7	0	4	12	0	0	0	1	141
3:00 PM	3	106	21	0	20	15	0	2	18	0	0	0	0	185
4:00 PM	2	107	39	1	12	8	0	0	5	2	0	0	0	176
5:00 PM	0	131	34	0	13	4	0	0	7	0	0	0	0	189
6:00 PM	0	62	16	0	8	4	0	2	3	0	0	0	0	95
7:00 PM	1	49	13	1	2	4	0	0	7	0	0	0	0	77
8:00 PM	0	44	4	0	0	4	0	1	1	0	0	0	1	55
9:00 PM	0	32	4	0	0	7	0	0	5	0	0	0	0	48
10:00 PM	0	18	2	0	0	2	0	0	8	0	0	0	0	30
11:00 PM	0	20	4	0	4	3	0	0	5	0	0	0	1	37
<b>Total</b>	<b>16</b>	<b>1,541</b>	<b>457</b>	<b>8</b>	<b>273</b>	<b>164</b>	<b>0</b>	<b>22</b>	<b>160</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>2,653</b>
<b>Percent</b>	<b>0.6%</b>	<b>58.1%</b>	<b>17.2%</b>	<b>0.3%</b>	<b>10.3%</b>	<b>6.2%</b>	<b>0.0%</b>	<b>0.8%</b>	<b>6.0%</b>	<b>0.2%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.3%</b>	

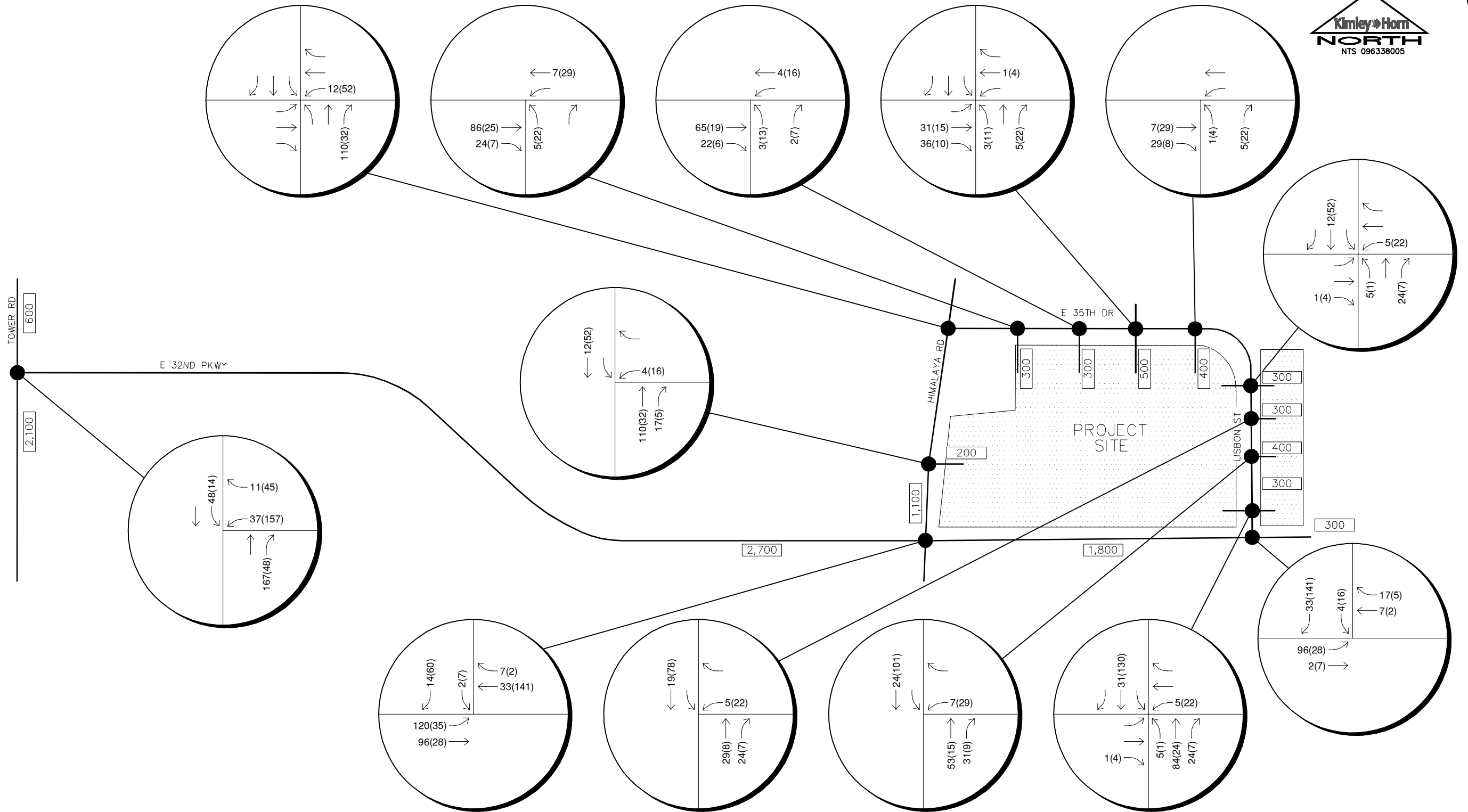
**Location:** E 32ND PKWY E/O HIMALAYA RD  
**Date Range:** 10/13/2020 to 10/13/2020  
**Site Code:** 01

**Tuesday, October 13, 2020**  
**Westbound**

Time	FHWA Vehicle Classification													Total Volume
	1	2	3	4	5	6	7	8	9	10	11	12	13	
12:00 AM	0	23	3	0	1	0	0	0	1	0	0	0	0	28
1:00 AM	1	12	4	1	0	2	0	0	1	0	0	0	0	21
2:00 AM	0	11	3	0	3	2	0	0	4	1	0	0	0	24
3:00 AM	0	6	3	0	4	1	0	0	5	0	0	0	0	19
4:00 AM	0	15	11	0	10	1	0	0	3	0	0	0	1	41
5:00 AM	0	27	11	1	38	2	0	0	1	0	0	0	0	80
6:00 AM	2	66	24	0	33	3	0	0	4	0	0	0	0	132
7:00 AM	2	76	38	1	40	10	0	1	7	0	0	0	0	175
8:00 AM	1	58	33	3	27	11	0	2	18	0	0	0	0	153
9:00 AM	1	46	31	1	29	16	0	1	15	0	0	0	3	143
10:00 AM	1	49	26	2	27	11	0	6	12	0	0	0	2	136
11:00 AM	1	101	31	5	46	16	0	7	17	0	0	0	0	224
12:00 PM	3	92	34	2	36	15	0	3	10	0	0	0	3	198
1:00 PM	3	82	21	4	31	17	0	4	20	1	0	0	3	186
2:00 PM	2	158	43	2	44	11	0	2	15	0	0	0	2	279
3:00 PM	1	131	40	1	53	4	0	2	9	0	0	0	1	242
4:00 PM	3	102	50	3	42	13	0	0	12	1	0	0	0	226
5:00 PM	4	129	43	6	43	10	0	2	14	0	0	0	1	252
6:00 PM	2	74	20	2	22	6	0	0	5	0	0	0	1	132
7:00 PM	1	49	16	1	13	1	0	1	3	0	0	0	1	86
8:00 PM	0	21	13	1	11	7	0	0	8	1	0	0	0	62
9:00 PM	0	13	5	1	9	3	0	0	6	0	0	0	0	37
10:00 PM	0	27	4	0	3	9	0	0	4	0	0	0	0	47
11:00 PM	0	14	8	0	2	7	0	0	2	0	0	0	1	34
<b>Total</b>	<b>28</b>	<b>1,382</b>	<b>515</b>	<b>37</b>	<b>567</b>	<b>178</b>	<b>0</b>	<b>31</b>	<b>196</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>2,957</b>
<b>Percent</b>	<b>0.9%</b>	<b>46.7%</b>	<b>17.4%</b>	<b>1.3%</b>	<b>19.2%</b>	<b>6.0%</b>	<b>0.0%</b>	<b>1.0%</b>	<b>6.6%</b>	<b>0.1%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.6%</b>	

# APPENDIX B

## Background Traffic



**LEGEND**

- Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

MAJESTIC COMMERCCENTER PHASE 11  
AND LISBON STREET BUILDINGS  
AURORA, COLORADO  
PROJECT TRAFFIC ASSIGNMENT

FIGURE 7

# APPENDIX C

## Trip Generation Worksheet

Project Majestic Commercenter Building 16

Subject Trip Generation for Industrial Park

Designed by MAG

Date August 17, 2020

Job No. \_\_\_\_\_

Checked by Curtis Rowe

Date \_\_\_\_\_

Sheet No. 1 of 1

## **TRIP GENERATION MANUAL TECHNIQUES**

ITE Trip Generation Manual 10th Edition, Average Rate Equations

Land Use Code - Industrial Park (130)

Independant Variable - 1000 Square Feet Gross Floor Feet (X)

Gross Floor Area = 552,270

X = 552.3

T = Average Vehicle Trip Ends

### **Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (100 Series Page 22)**

T = 0.40 (X)

T = 0.40 \* 552.27

Directional Distribution: 81% ent. 19% exit.

T = 221 Average Vehicle Trip Ends

179 entering 42 exiting

179 + 42 = 221

### **Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (100 Series Page 23)**

T = 0.40 (X)

T = 0.40 \* 552.27

Directional Distribution: 21% ent. 79% exit.

T = 221 Average Vehicle Trip Ends

46 entering 175 exiting

46 + 175 = 221

### **Weekday (100 Series Page 21)**

T = 3.37 (X)

T = 3.37 \* 552.27

Directional Distribution: 50% entering, 50% exiting







T = 1862 Average Vehicle Trip Ends

931 entering 931 exiting

931 + 931 = 1862

# APPENDIX D







## Intersection Analysis Worksheets









Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	122	125	59	34	104	9	36	0	10	4	0	74
Future Vol, veh/h	122	125	59	34	104	9	36	0	10	4	0	74
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	66	66	66	69	69	69	92	92	92
Heavy Vehicles, %	25	25	25	35	35	35	20	20	20	30	30	30
Mvmt Flow	165	169	80	52	158	14	52	0	14	4	0	80









Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	172	0	0	249	0	0	722	815	125	684	848	86
Stage 1	-	-	-	-	-	-	539	539	-	269	269	-
Stage 2	-	-	-	-	-	-	183	276	-	415	579	-
Critical Hdwy	4.6	-	-	4.8	-	-	7.9	6.9	7.3	8.1	7.1	7.5
Critical Hdwy Stg 1	-	-	-	-	-	-	6.9	5.9	-	7.1	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.9	5.9	-	7.1	6.1	-
Follow-up Hdwy	2.45	-	-	2.55	-	-	3.7	4.2	3.5	3.8	4.3	3.6
Pot Cap-1 Maneuver	1250	-	-	1105	-	-	283	279	848	285	250	872
Stage 1	-	-	-	-	-	-	451	477	-	640	621	-
Stage 2	-	-	-	-	-	-	752	638	-	516	435	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1250	-	-	1105	-	-	223	231	848	243	207	872
Mov Cap-2 Maneuver	-	-	-	-	-	-	339	343	-	351	302	-
Stage 1	-	-	-	-	-	-	391	414	-	556	592	-
Stage 2	-	-	-	-	-	-	651	608	-	440	378	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.3			1.9			16.1			10		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	390	1250	-	-	1105	-	-	810
HCM Lane V/C Ratio	0.171	0.132	-	-	0.047	-	-	0.105
HCM Control Delay (s)	16.1	8.3	-	-	8.4	-	-	10
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0.5	-	-	0.1	-	-	0.3

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	99	67	20	187	5	86	0	22	8	0	106
Future Vol, veh/h	61	99	67	20	187	5	86	0	22	8	0	106
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	69	69	69	63	63	63	60	60	60
Heavy Vehicles, %	15	15	15	30	30	30	15	15	15	25	25	25
Mvmt Flow	77	125	85	29	271	7	137	0	35	13	0	177
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	278	0	0	210	0	0	516	658	105	550	697	139
Stage 1	-	-	-	-	-	-	322	322	-	333	333	-
Stage 2	-	-	-	-	-	-	194	336	-	217	364	-
Critical Hdwy	4.4	-	-	4.7	-	-	7.8	6.8	7.2	8	7	7.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.8	5.8	-	7	6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.8	5.8	-	7	6	-
Follow-up Hdwy	2.35	-	-	2.5	-	-	3.65	4.15	3.45	3.75	4.25	3.55
Pot Cap-1 Maneuver	1193	-	-	1176	-	-	414	357	889	371	320	815
Stage 1	-	-	-	-	-	-	629	618	-	595	588	-
Stage 2	-	-	-	-	-	-	753	609	-	703	568	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1193	-	-	1176	-	-	303	326	889	332	292	815
Mov Cap-2 Maneuver	-	-	-	-	-	-	432	446	-	470	428	-
Stage 1	-	-	-	-	-	-	588	578	-	556	573	-
Stage 2	-	-	-	-	-	-	575	594	-	632	531	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.2			0.8			16.5			11.1		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	483	1193	-	-	1176	-	-	775				
HCM Lane V/C Ratio	0.355	0.065	-	-	0.025	-	-	0.245				
HCM Control Delay (s)	16.5	8.2	-	-	8.1	-	-	11.1				
HCM Lane LOS	C	A	-	-	A	-	-	B				
HCM 95th %tile Q(veh)	1.6	0.2	-	-	0.1	-	-	1				









Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	127	130	61	35	108	9	37	0	10	4	0	77
Future Vol, veh/h	127	130	61	35	108	9	37	0	10	4	0	77
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	66	66	66	69	69	69	92	92	92
Heavy Vehicles, %	25	25	25	35	35	35	20	20	20	30	30	30
Mvmt Flow	172	176	82	53	164	14	54	0	14	4	0	84
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	178	0	0	258	0	0	749	845	129	709	879	89
Stage 1	-	-	-	-	-	-	561	561	-	277	277	-
Stage 2	-	-	-	-	-	-	188	284	-	432	602	-
Critical Hdwy	4.6	-	-	4.8	-	-	7.9	6.9	7.3	8.1	7.1	7.5
Critical Hdwy Stg 1	-	-	-	-	-	-	6.9	5.9	-	7.1	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.9	5.9	-	7.1	6.1	-
Follow-up Hdwy	2.45	-	-	2.55	-	-	3.7	4.2	3.5	3.8	4.3	3.6
Pot Cap-1 Maneuver	1243	-	-	1095	-	-	270	267	843	273	239	868
Stage 1	-	-	-	-	-	-	437	466	-	633	615	-
Stage 2	-	-	-	-	-	-	746	632	-	503	423	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1243	-	-	1095	-	-	210	219	843	231	196	868
Mov Cap-2 Maneuver	-	-	-	-	-	-	326	332	-	337	289	-
Stage 1	-	-	-	-	-	-	377	402	-	546	585	-
Stage 2	-	-	-	-	-	-	641	602	-	426	365	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.3			1.9			16.3			9.9		
HCM LOS							C			A		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	326	843	1243	-	-	1095	-	-	337	868		
HCM Lane V/C Ratio	0.164	0.017	0.138	-	-	0.048	-	-	0.013	0.096		
HCM Control Delay (s)	18.2	9.3	8.4	-	-	8.5	-	-	15.8	9.6		
HCM Lane LOS	C	A	A	-	-	A	-	-	C	A		
HCM 95th %tile Q(veh)	0.6	0.1	0.5	-	-	0.2	-	-	0	0.3		

Intersection												
Int Delay, s/veh	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	63	103	70	21	195	5	89	0	23	8	0	110
Future Vol, veh/h	63	103	70	21	195	5	89	0	23	8	0	110
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	79	69	69	69	63	63	63	60	60	60
Heavy Vehicles, %	15	15	15	30	30	30	15	15	15	30	30	30
Mvmt Flow	80	130	89	30	283	7	141	0	37	13	0	183
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	290	0	0	219	0	0	537	685	110	572	726	145
Stage 1	-	-	-	-	-	-	335	335	-	347	347	-
Stage 2	-	-	-	-	-	-	202	350	-	225	379	-
Critical Hdwy	4.4	-	-	4.7	-	-	7.8	6.8	7.2	8.1	7.1	7.5
Critical Hdwy Stg 1	-	-	-	-	-	-	6.8	5.8	-	7.1	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.8	5.8	-	7.1	6.1	-
Follow-up Hdwy	2.35	-	-	2.5	-	-	3.65	4.15	3.45	3.8	4.3	3.6
Pot Cap-1 Maneuver	1180	-	-	1166	-	-	400	344	882	348	299	794
Stage 1	-	-	-	-	-	-	618	610	-	571	568	-
Stage 2	-	-	-	-	-	-	745	600	-	683	548	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1180	-	-	1166	-	-	286	312	882	310	271	794
Mov Cap-2 Maneuver	-	-	-	-	-	-	416	434	-	448	408	-
Stage 1	-	-	-	-	-	-	576	569	-	532	553	-
Stage 2	-	-	-	-	-	-	558	584	-	610	511	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.2			0.8			16.2			11.1		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	416	882	1180	-	-	1166	-	-	448	794		
HCM Lane V/C Ratio	0.34	0.041	0.068	-	-	0.026	-	-	0.03	0.231		
HCM Control Delay (s)	18	9.3	8.3	-	-	8.2	-	-	13.3	10.9		
HCM Lane LOS	C	A	A	-	-	A	-	-	B	B		
HCM 95th %tile Q(veh)	1.5	0.1	0.2	-	-	0.1	-	-	0.1	0.9		

Intersection

Intersection Delay, s/veh 10.9

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	127	130	61	35	108	9	37	0	10	4	0	77
Future Vol, veh/h	127	130	61	35	108	9	37	0	10	4	0	77
Peak Hour Factor	0.74	0.74	0.74	0.66	0.66	0.66	0.69	0.69	0.69	0.92	0.92	0.92
Heavy Vehicles, %	25	25	25	35	35	35	20	20	20	30	30	30
Mvmt Flow	172	176	82	53	164	14	54	0	14	4	0	84
Number of Lanes	1	2	0	1	2	0	1	1	0	1	1	0









Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	11.1	10.8	10.8	10.3
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	0%	100%	42%	0%	100%	80%	0%	0%
Vol Right, %	0%	100%	0%	0%	58%	0%	0%	20%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	10	127	87	104	35	72	45	4	77
LT Vol	37	0	127	0	0	35	0	0	4	0
Through Vol	0	0	0	87	43	0	72	36	0	0
RT Vol	0	10	0	0	61	0	0	9	0	77
Lane Flow Rate	54	14	172	117	141	53	109	68	4	84
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.112	0.025	0.316	0.199	0.224	0.106	0.202	0.124	0.009	0.15
Departure Headway (Hd)	7.508	6.305	6.635	6.132	5.72	7.183	6.679	6.538	7.642	6.44
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	478	568	542	587	629	500	538	549	469	557
Service Time	5.248	4.046	4.362	3.858	3.446	4.915	4.412	4.27	5.381	4.179
HCM Lane V/C Ratio	0.113	0.025	0.317	0.199	0.224	0.106	0.203	0.124	0.009	0.151
HCM Control Delay	11.2	9.2	12.4	10.4	10.1	10.8	11.1	10.2	10.5	10.3
HCM Lane LOS	B	A	B	B	B	B	B	B	B	B
HCM 95th-tile Q	0.4	0.1	1.3	0.7	0.9	0.4	0.7	0.4	0	0.5

Intersection

Intersection Delay, s/veh 12.9

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	63	103	70	21	195	5	89	0	23	8	0	110
Future Vol, veh/h	63	103	70	21	195	5	89	0	23	8	0	110
Peak Hour Factor	0.79	0.79	0.79	0.69	0.69	0.69	0.63	0.63	0.63	0.60	0.60	0.60
Heavy Vehicles, %	15	15	15	30	30	30	15	15	15	30	30	30
Mvmt Flow	80	130	89	30	283	7	141	0	37	13	0	183
Number of Lanes	1	2	0	1	2	0	1	1	0	1	1	0









Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	11.7	13.5	13.3	13.3
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	0%	100%	33%	0%	100%	93%	0%	0%
Vol Right, %	0%	100%	0%	0%	67%	0%	0%	7%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	89	23	63	69	104	21	130	70	8	110
LT Vol	89	0	63	0	0	21	0	0	8	0
Through Vol	0	0	0	69	34	0	130	65	0	0
RT Vol	0	23	0	0	70	0	0	5	0	110
Lane Flow Rate	141	37	80	87	132	30	188	101	13	183
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.311	0.068	0.171	0.174	0.247	0.067	0.386	0.207	0.03	0.355
Departure Headway (Hd)	7.938	6.731	7.732	7.222	6.744	7.892	7.383	7.332	8.176	6.969
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	453	533	466	499	535	456	490	492	439	517
Service Time	5.674	4.467	5.446	4.937	4.458	5.603	5.094	5.043	5.911	4.704
HCM Lane V/C Ratio	0.311	0.069	0.172	0.174	0.247	0.066	0.384	0.205	0.03	0.354
HCM Control Delay	14.2	10	12	11.5	11.7	11.2	14.7	11.9	11.2	13.5
HCM Lane LOS	B	A	B	B	B	B	B	B	B	B
HCM 95th-tile Q	1.3	0.2	0.6	0.6	1	0.2	1.8	0.8	0.1	1.6

<b>Intersection</b>						
Intersection Delay, s/veh	6.4					
Intersection LOS	A					
<b>Approach</b>	<b>EB</b>		<b>WB</b>		<b>NB</b>	<b>SB</b>
Entry Lanes	2		2		1	1
Conflicting Circle Lanes	1		1		1	1
Adj Approach Flow, veh/h	430		231		68	88
Demand Flow Rate, veh/h	537		312		82	114
Vehicles Circulating, veh/h	77		280		440	358
Vehicles Exiting, veh/h	395		242		174	234
Ped Vol Crossing Leg, #/h	0		0		0	0
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	6.2		7.2		5.9	6.1
Approach LOS	A		A		A	A
<b>Lane</b>	<b>Left</b>	<b>Right</b>	<b>Left</b>	<b>Right</b>	<b>Left</b>	<b>Left</b>
Designated Moves	LT	R	LT	R	LTR	LTR
Assumed Moves	LT	R	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.810	0.190	0.939	0.061	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.609	2.609
Critical Headway, s	4.544	4.544	4.544	4.544	4.976	4.976
Entry Flow, veh/h	435	102	293	19	82	114
Cap Entry Lane, veh/h	1324	1324	1101	1101	881	958
Entry HV Adj Factor	0.800	0.804	0.740	0.737	0.829	0.772
Flow Entry, veh/h	348	82	217	14	68	88
Cap Entry, veh/h	1059	1064	814	811	731	739
V/C Ratio	0.329	0.077	0.266	0.017	0.093	0.119
Control Delay, s/veh	6.7	4.0	7.4	4.6	5.9	6.1
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	0	1	0	0	0

<b>Intersection</b>						
Intersection Delay, s/veh	7.1					
Intersection LOS	A					
<b>Approach</b>	<b>EB</b>		<b>WB</b>		<b>NB</b>	<b>SB</b>
Entry Lanes	2		2		1	1
Conflicting Circle Lanes	1		1		1	1
Adj Approach Flow, veh/h	299		320		178	196
Demand Flow Rate, veh/h	344		416		205	255
Vehicles Circulating, veh/h	56		254		259	569
Vehicles Exiting, veh/h	768		210		141	101
Ped Vol Crossing Leg, #/h	0		0		0	0
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	4.4		8.2		5.8	10.7
Approach LOS	A		A		A	B
<b>Lane</b>	<b>Left</b>	<b>Right</b>	<b>Left</b>	<b>Right</b>	<b>Left</b>	<b>Left</b>
Designated Moves	LT	R	LT	R	LTR	LTR
Assumed Moves	LT	R	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.703	0.297	0.978	0.022	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.609	2.609
Critical Headway, s	4.544	4.544	4.544	4.544	4.976	4.976
Entry Flow, veh/h	242	102	407	9	205	255
Cap Entry Lane, veh/h	1350	1350	1127	1127	1060	772
Entry HV Adj Factor	0.870	0.873	0.769	0.778	0.868	0.769
Flow Entry, veh/h	210	89	313	7	178	196
Cap Entry, veh/h	1174	1178	867	877	920	594
V/C Ratio	0.179	0.076	0.361	0.008	0.193	0.330
Control Delay, s/veh	4.6	3.7	8.3	4.2	5.8	10.7
LOS	A	A	A	A	A	B
95th %tile Queue, veh	1	0	2	0	1	1









Intersection												
Intersection Delay, s/veh	11.1											
Intersection LOS	B											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	127	134	61	35	126	9	37	0	10	4	0	77
Future Vol, veh/h	127	134	61	35	126	9	37	0	10	4	0	77
Peak Hour Factor	0.74	0.74	0.74	0.66	0.66	0.66	0.69	0.69	0.69	0.92	0.92	0.92
Heavy Vehicles, %	25	25	25	35	35	35	20	20	20	30	30	30
Mvmt Flow	172	181	82	53	191	14	54	0	14	4	0	84
Number of Lanes	1	2	0	1	2	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	11.3	11	10.9	10.5
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	0%	100%	42%	0%	100%	82%	0%	0%
Vol Right, %	0%	100%	0%	0%	58%	0%	0%	18%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	10	127	89	106	35	84	51	4	77
LT Vol	37	0	127	0	0	35	0	0	4	0
Through Vol	0	0	0	89	45	0	84	42	0	0
RT Vol	0	10	0	0	61	0	0	9	0	77
Lane Flow Rate	54	14	172	121	143	53	127	77	4	84
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.113	0.026	0.32	0.208	0.23	0.106	0.237	0.141	0.009	0.152
Departure Headway (Hd)	7.612	6.41	6.711	6.208	5.801	7.212	6.708	6.584	7.747	6.544
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	471	558	537	579	620	497	536	545	462	548
Service Time	5.355	4.152	4.439	3.935	3.528	4.946	4.442	4.318	5.488	4.285
HCM Lane V/C Ratio	0.115	0.025	0.32	0.209	0.231	0.107	0.237	0.141	0.009	0.153
HCM Control Delay	11.3	9.3	12.6	10.6	10.3	10.8	11.5	10.4	10.6	10.5
HCM Lane LOS	B	A	B	B	B	B	B	B	B	B
HCM 95th-tile Q	0.4	0.1	1.4	0.8	0.9	0.4	0.9	0.5	0	0.5

Intersection												
Intersection Delay, s/veh	13.2											
Intersection LOS	B											









Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	63	121	70	21	200	5	89	0	23	8	0	110
Future Vol, veh/h	63	121	70	21	200	5	89	0	23	8	0	110
Peak Hour Factor	0.79	0.79	0.79	0.69	0.69	0.69	0.63	0.63	0.63	0.60	0.60	0.60
Heavy Vehicles, %	15	15	15	30	30	30	15	15	15	30	30	30
Mvmt Flow	80	153	89	30	290	7	141	0	37	13	0	183
Number of Lanes	1	2	0	1	2	0	1	1	0	1	1	0









Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	12	13.8	13.6	13.6
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	0%	100%	37%	0%	100%	93%	0%	0%
Vol Right, %	0%	100%	0%	0%	63%	0%	0%	7%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	89	23	63	81	110	21	133	72	8	110
LT Vol	89	0	63	0	0	21	0	0	8	0
Through Vol	0	0	0	81	40	0	133	67	0	0
RT Vol	0	23	0	0	70	0	0	5	0	110
Lane Flow Rate	141	37	80	102	140	30	193	104	13	183
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.316	0.069	0.172	0.206	0.264	0.067	0.4	0.213	0.031	0.36
Departure Headway (Hd)	8.049	6.841	7.76	7.25	6.798	7.956	7.446	7.397	8.286	7.078
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	448	524	463	495	529	451	485	486	433	508
Service Time	5.786	4.578	5.496	4.987	4.534	5.691	5.181	5.132	6.023	4.815
HCM Lane V/C Ratio	0.315	0.071	0.173	0.206	0.265	0.067	0.398	0.214	0.03	0.36
HCM Control Delay	14.5	10.1	12.1	11.9	12	11.3	15.1	12.1	11.3	13.8
HCM Lane LOS	B	B	B	B	B	B	C	B	B	B
HCM 95th-tile Q	1.3	0.2	0.6	0.8	1.1	0.2	1.9	0.8	0.1	1.6









Intersection						
Intersection Delay, s/veh	6.7					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		2		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	435		258		68	
Demand Flow Rate, veh/h	543		349		82	
Vehicles Circulating, veh/h	77		280		446	
Vehicles Exiting, veh/h	432		248		174	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	6.2		7.6		5.9	
Approach LOS	A		A		A	
Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	R	LT	R	LTR	LTR
Assumed Moves	LT	R	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.812	0.188	0.946	0.054	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.609	2.609
Critical Headway, s	4.544	4.544	4.544	4.544	4.976	4.976
Entry Flow, veh/h	441	102	330	19	82	114
Cap Entry Lane, veh/h	1324	1324	1101	1101	876	922
Entry HV Adj Factor	0.800	0.804	0.740	0.737	0.829	0.772
Flow Entry, veh/h	353	82	244	14	68	88
Cap Entry, veh/h	1059	1064	814	811	726	712
V/C Ratio	0.333	0.077	0.300	0.017	0.094	0.124
Control Delay, s/veh	6.8	4.0	7.8	4.6	5.9	6.4
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	0	1	0	0	0

Intersection						
Intersection Delay, s/veh	7.2					
Intersection LOS	A					
Approach	EB		WB		NB	SB
Entry Lanes	2		2		1	1
Conflicting Circle Lanes	1		1		1	1
Adj Approach Flow, veh/h	322		327		178	196
Demand Flow Rate, veh/h	370		425		205	255
Vehicles Circulating, veh/h	56		254		285	578
Vehicles Exiting, veh/h	777		236		141	101
Ped Vol Crossing Leg, #/h	0		0		0	0
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	4.5		8.3		6.0	10.8
Approach LOS	A		A		A	B
Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	R	LT	R	LTR	LTR
Assumed Moves	LT	R	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.724	0.276	0.979	0.021	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.609	2.609
Critical Headway, s	4.544	4.544	4.544	4.544	4.976	4.976
Entry Flow, veh/h	268	102	416	9	205	255
Cap Entry Lane, veh/h	1350	1350	1127	1127	1032	765
Entry HV Adj Factor	0.870	0.873	0.769	0.778	0.868	0.769
Flow Entry, veh/h	233	89	320	7	178	196
Cap Entry, veh/h	1174	1178	867	877	896	588
V/C Ratio	0.199	0.076	0.369	0.008	0.199	0.333
Control Delay, s/veh	4.8	3.7	8.4	4.2	6.0	10.8
LOS	A	A	A	A	A	B
95th %tile Queue, veh	1	0	2	0	1	1

Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	301	282	185	51	188	20	53	0	15	8	0	124
Future Vol, veh/h	301	282	185	51	188	20	53	0	15	8	0	124
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	25	25	25	35	35	35	20	20	20	30	30	30
Mvmt Flow	327	307	201	55	204	22	58	0	16	9	0	135
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	226	0	0	508	0	0	1274	1398	254	1133	1487	113
Stage 1	-	-	-	-	-	-	1062	1062	-	325	325	-
Stage 2	-	-	-	-	-	-	212	336	-	808	1162	-
Critical Hdwy	4.6	-	-	4.8	-	-	7.9	6.9	7.3	8.1	7.1	7.5
Critical Hdwy Stg 1	-	-	-	-	-	-	6.9	5.9	-	7.1	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.9	5.9	-	7.1	6.1	-
Follow-up Hdwy	2.45	-	-	2.55	-	-	3.7	4.2	3.5	3.8	4.3	3.6
Pot Cap-1 Maneuver	1188	-	-	854	-	-	107	119	694	127	95	836
Stage 1	-	-	-	-	-	-	209	262	-	590	582	-
Stage 2	-	-	-	-	-	-	721	597	-	286	216	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1188	-	-	854	-	-	67	81	694	93	65	836
Mov Cap-2 Maneuver	-	-	-	-	-	-	133	156	-	138	97	-
Stage 1	-	-	-	-	-	-	152	190	-	428	545	-
Stage 2	-	-	-	-	-	-	566	559	-	202	157	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.6			1.9			42.3			11.5		
HCM LOS							E			B		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	133	694	1188	-	-	854	-	-	138	836		
HCM Lane V/C Ratio	0.433	0.023	0.275	-	-	0.065	-	-	0.063	0.161		
HCM Control Delay (s)	51.3	10.3	9.2	-	-	9.5	-	-	32.8	10.1		
HCM Lane LOS	F	B	A	-	-	A	-	-	D	B		
HCM 95th %tile Q(veh)	1.9	0.1	1.1	-	-	0.2	-	-	0.2	0.6		

Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	126	175	127	33	419	9	128	0	33	19	0	218
Future Vol, veh/h	126	175	127	33	419	9	128	0	33	19	0	218
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	0	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	15	15	15	30	30	30	15	15	15	30	30	30
Mvmt Flow	137	190	138	36	455	10	139	0	36	21	0	237
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	465	0	0	328	0	0	833	1070	164	901	1134	233
Stage 1	-	-	-	-	-	-	533	533	-	532	532	-
Stage 2	-	-	-	-	-	-	300	537	-	369	602	-
Critical Hdwy	4.4	-	-	4.7	-	-	7.8	6.8	7.2	8.1	7.1	7.5
Critical Hdwy Stg 1	-	-	-	-	-	-	6.8	5.8	-	7.1	6.1	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.8	5.8	-	7.1	6.1	-
Follow-up Hdwy	2.35	-	-	2.5	-	-	3.65	4.15	3.45	3.8	4.3	3.6
Pot Cap-1 Maneuver	1006	-	-	1049	-	-	240	200	812	193	163	690
Stage 1	-	-	-	-	-	-	466	492	-	434	459	-
Stage 2	-	-	-	-	-	-	649	490	-	552	423	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1006	-	-	1049	-	-	~ 138	167	812	161	136	690
Mov Cap-2 Maneuver	-	-	-	-	-	-	241	286	-	301	276	-
Stage 1	-	-	-	-	-	-	403	425	-	375	443	-
Stage 2	-	-	-	-	-	-	411	473	-	456	365	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.7			0.6			32.6			13.3		
HCM LOS							D			B		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	241	812	1006	-	-	1049	-	-	301	690		
HCM Lane V/C Ratio	0.577	0.044	0.136	-	-	0.034	-	-	0.069	0.343		
HCM Control Delay (s)	38.5	9.6	9.1	-	-	8.6	-	-	17.8	12.9		
HCM Lane LOS	E	A	A	-	-	A	-	-	C	B		
HCM 95th %tile Q(veh)	3.3	0.1	0.5	-	-	0.1	-	-	0.2	1.5		
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			









Intersection												
Intersection Delay, s/veh	16.5											
Intersection LOS	C											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	301	282	185	51	188	20	53	0	15	8	0	124
Future Vol, veh/h	301	282	185	51	188	20	53	0	15	8	0	124
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	25	25	25	35	35	35	20	20	20	30	30	30
Mvmt Flow	327	307	201	55	204	22	58	0	16	9	0	135
Number of Lanes	1	2	0	1	2	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	18.4	13.2	12.8	13.6
HCM LOS	C	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	0%	100%	34%	0%	100%	76%	0%	0%
Vol Right, %	0%	100%	0%	0%	66%	0%	0%	24%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	53	15	301	188	279	51	125	83	8	124
LT Vol	53	0	301	0	0	51	0	0	8	0
Through Vol	0	0	0	188	94	0	125	63	0	0
RT Vol	0	15	0	0	185	0	0	20	0	124
Lane Flow Rate	58	16	327	204	303	55	136	90	9	135
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.145	0.035	0.666	0.387	0.535	0.131	0.302	0.195	0.022	0.291
Departure Headway (Hd)	9.04	7.83	7.326	6.819	6.35	8.483	7.976	7.804	8.978	7.771
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	397	457	497	531	570	424	451	460	399	462
Service Time	6.787	5.576	5.026	4.519	4.05	6.221	5.714	5.542	6.719	5.512
HCM Lane V/C Ratio	0.146	0.035	0.658	0.384	0.532	0.13	0.302	0.196	0.023	0.292
HCM Control Delay	13.3	10.9	23.4	13.8	16.1	12.5	14.1	12.4	11.9	13.7
HCM Lane LOS	B	B	C	B	C	B	B	B	B	B
HCM 95th-tile Q	0.5	0.1	4.8	1.8	3.2	0.4	1.3	0.7	0.1	1.2

Intersection	
Intersection Delay, s/veh	20.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	126	175	127	33	419	9	128	0	33	19	0	218
Future Vol, veh/h	126	175	127	33	419	9	128	0	33	19	0	218
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	15	15	15	30	30	30	15	15	15	30	30	30
Mvmt Flow	137	190	138	36	455	10	139	0	36	21	0	237
Number of Lanes	1	2	0	1	2	0	1	1	0	1	1	0









Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	16.3	25	17	20.8
HCM LOS	C	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	0%	100%	31%	0%	100%	94%	0%	0%
Vol Right, %	0%	100%	0%	0%	69%	0%	0%	6%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	128	33	126	117	185	33	279	149	19	218
LT Vol	128	0	126	0	0	33	0	0	19	0
Through Vol	0	0	0	117	58	0	279	140	0	0
RT Vol	0	33	0	0	127	0	0	9	0	218
Lane Flow Rate	139	36	137	127	201	36	304	162	21	237
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.376	0.085	0.342	0.299	0.448	0.091	0.725	0.384	0.056	0.559
Departure Headway (Hd)	9.73	8.51	8.991	8.501	8.007	9.111	8.596	8.553	9.703	8.486
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	370	421	400	425	451	395	422	423	369	424
Service Time	7.487	6.266	6.737	6.222	5.728	6.823	6.309	6.265	7.453	6.236
HCM Lane V/C Ratio	0.376	0.086	0.343	0.299	0.446	0.091	0.72	0.383	0.057	0.559
HCM Control Delay	18.3	12.1	16.4	14.8	17.1	12.7	30.9	16.5	13	21.5
HCM Lane LOS	C	B	C	B	C	B	D	C	B	C
HCM 95th-tile Q	1.7	0.3	1.5	1.2	2.3	0.3	5.7	1.8	0.2	3.3

Intersection						
Intersection Delay, s/veh	9.7					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		2		1	
Conflicting Circle Lanes	1		1		1	
Adj Approach Flow, veh/h	835		281		74	
Demand Flow Rate, veh/h	1044		379		89	
Vehicles Circulating, veh/h	86		479		805	
Vehicles Exiting, veh/h	520		415		325	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	10.0		10.0		9.1	
Approach LOS	B		B		A	
Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	R	LT	R	LTR	LTR
Assumed Moves	LT	R	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.760	0.240	0.921	0.079	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.609	2.609
Critical Headway, s	4.544	4.544	4.544	4.544	4.976	4.976
Entry Flow, veh/h	793	251	349	30	89	188
Cap Entry Lane, veh/h	1313	1313	918	918	607	900
Entry HV Adj Factor	0.800	0.801	0.741	0.733	0.831	0.766
Flow Entry, veh/h	634	201	259	22	74	144
Cap Entry, veh/h	1050	1052	681	673	505	689
V/C Ratio	0.604	0.191	0.380	0.033	0.147	0.209
Control Delay, s/veh	11.5	5.2	10.4	5.7	9.1	7.6
LOS	B	A	B	A	A	A
95th %tile Queue, veh	4	1	2	0	1	1

Intersection						
Intersection Delay, s/veh	11.1					
Intersection LOS	B					
Approach	EB		WB		NB	SB
Entry Lanes	2		2		1	1
Conflicting Circle Lanes	1		1		1	1
Adj Approach Flow, veh/h	465		501		175	258
Demand Flow Rate, veh/h	535		652		201	335
Vehicles Circulating, veh/h	74		318		404	798
Vehicles Exiting, veh/h	1059		287		206	171
Ped Vol Crossing Leg, #/h	0		0		0	0
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	5.3		13.6		6.9	19.3
Approach LOS	A		B		A	C
Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	R	LT	R	LTR	LTR
Assumed Moves	LT	R	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.703	0.297	0.980	0.020	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.609	2.609
Critical Headway, s	4.544	4.544	4.544	4.544	4.976	4.976
Entry Flow, veh/h	376	159	639	13	201	335
Cap Entry Lane, veh/h	1328	1328	1063	1063	914	611
Entry HV Adj Factor	0.869	0.868	0.769	0.769	0.871	0.770
Flow Entry, veh/h	327	138	491	10	175	258
Cap Entry, veh/h	1153	1152	818	818	796	471
V/C Ratio	0.283	0.120	0.601	0.012	0.220	0.548
Control Delay, s/veh	5.8	4.1	13.8	4.5	6.9	19.3
LOS	A	A	B	A	A	C
95th %tile Queue, veh	1	0	4	0	1	3









Intersection	
Intersection Delay, s/veh	17.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	305	290	185	55	210	20	55	0	15	10	0	125
Future Vol, veh/h	305	290	185	55	210	20	55	0	15	10	0	125
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	25	25	25	35	35	35	20	20	20	30	30	30
Mvmt Flow	332	315	201	60	228	22	60	0	16	11	0	136
Number of Lanes	1	2	0	1	2	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	19.4	13.9	13.1	14
HCM LOS	C	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	0%	100%	34%	0%	100%	78%	0%	0%
Vol Right, %	0%	100%	0%	0%	66%	0%	0%	22%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	15	305	193	282	55	140	90	10	125
LT Vol	55	0	305	0	0	55	0	0	10	0
Through Vol	0	0	0	193	97	0	140	70	0	0
RT Vol	0	15	0	0	185	0	0	20	0	125
Lane Flow Rate	60	16	332	210	306	60	152	98	11	136
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.153	0.036	0.687	0.406	0.552	0.142	0.341	0.215	0.028	0.3
Departure Headway (Hd)	9.223	8.011	7.461	6.954	6.488	8.58	8.072	7.914	9.15	7.942
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	389	447	487	521	560	418	446	454	392	452
Service Time	6.973	5.761	5.161	4.654	4.188	6.323	5.815	5.657	6.893	5.684
HCM Lane V/C Ratio	0.154	0.036	0.682	0.403	0.546	0.144	0.341	0.216	0.028	0.301
HCM Control Delay	13.6	11.1	25	14.3	16.9	12.7	15	12.8	12.2	14.1
HCM Lane LOS	B	B	C	B	C	B	B	B	B	B
HCM 95th-tile Q	0.5	0.1	5.2	2	3.3	0.5	1.5	0.8	0.1	1.2

Intersection												
Intersection Delay, s/veh	21.4											
Intersection LOS	C											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	195	130	35	425	10	130	0	35	20	0	220
Future Vol, veh/h	130	195	130	35	425	10	130	0	35	20	0	220
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	15	15	15	30	30	30	15	15	15	30	30	30
Mvmt Flow	141	212	141	38	462	11	141	0	38	22	0	239
Number of Lanes	1	2	0	1	2	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	3	3
HCM Control Delay	17.1	26.6	17.5	21.9
HCM LOS	C	D	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	0%	100%	33%	0%	100%	93%	0%	0%
Vol Right, %	0%	100%	0%	0%	67%	0%	0%	7%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	35	130	130	195	35	283	152	20	220
LT Vol	130	0	130	0	0	35	0	0	20	0
Through Vol	0	0	0	130	65	0	283	142	0	0
RT Vol	0	35	0	0	130	0	0	10	0	220
Lane Flow Rate	141	38	141	141	212	38	308	165	22	239
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.39	0.092	0.358	0.338	0.478	0.098	0.748	0.398	0.06	0.577
Departure Headway (Hd)	9.932	8.71	9.122	8.606	8.124	9.255	8.74	8.692	9.899	8.681
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	363	411	394	418	443	388	416	414	362	416
Service Time	7.688	6.465	6.87	6.354	5.872	7.001	6.486	6.438	7.649	6.43
HCM Lane V/C Ratio	0.388	0.092	0.358	0.337	0.479	0.098	0.74	0.399	0.061	0.575
HCM Control Delay	18.9	12.4	16.9	15.7	18.1	13	33.3	17.1	13.3	22.7
HCM Lane LOS	C	B	C	C	C	B	D	C	B	C
HCM 95th-tile Q	1.8	0.3	1.6	1.5	2.5	0.3	6.1	1.9	0.2	3.5

Intersection						
Intersection Delay, s/veh	10.2					
Intersection LOS	B					
Approach	EB		WB		NB	SB
Entry Lanes	2		2		1	1
Conflicting Circle Lanes	1		1		1	1
Adj Approach Flow, veh/h	848		310		76	147
Demand Flow Rate, veh/h	1060		419		91	191
Vehicles Circulating, veh/h	95		487		823	461
Vehicles Exiting, veh/h	557		427		332	445
Ped Vol Crossing Leg, #/h	0		0		0	0
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	10.4		11.0		9.3	8.1
Approach LOS	B		B		A	A
Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	R	LT	R	LTR	LTR
Assumed Moves	LT	R	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.763	0.237	0.928	0.072	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.609	2.609
Critical Headway, s	4.544	4.544	4.544	4.544	4.976	4.976
Entry Flow, veh/h	809	251	389	30	91	191
Cap Entry Lane, veh/h	1302	1302	912	912	596	862
Entry HV Adj Factor	0.800	0.801	0.741	0.733	0.835	0.770
Flow Entry, veh/h	647	201	288	22	76	147
Cap Entry, veh/h	1042	1043	675	669	498	664
V/C Ratio	0.621	0.193	0.427	0.033	0.153	0.222
Control Delay, s/veh	12.0	5.2	11.4	5.7	9.3	8.1
LOS	B	A	B	A	A	A
95th %tile Queue, veh	5	1	2	0	1	1

Intersection						
Intersection Delay, s/veh	11.4					
Intersection LOS	B					
Approach	EB		WB		NB	SB
Entry Lanes	2		2		1	1
Conflicting Circle Lanes	1		1		1	1
Adj Approach Flow, veh/h	494		511		179	261
Demand Flow Rate, veh/h	568		664		206	340
Vehicles Circulating, veh/h	78		324		435	812
Vehicles Exiting, veh/h	1074		317		211	176
Ped Vol Crossing Leg, #/h	0		0		0	0
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	5.5		14.1		7.3	20.2
Approach LOS	A		B		A	C
Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	R	LT	R	LTR	LTR
Assumed Moves	LT	R	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.715	0.285	0.979	0.021	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.609	2.609
Critical Headway, s	4.544	4.544	4.544	4.544	4.976	4.976
Entry Flow, veh/h	406	162	650	14	206	340
Cap Entry Lane, veh/h	1323	1323	1057	1057	885	603
Entry HV Adj Factor	0.870	0.870	0.770	0.786	0.869	0.768
Flow Entry, veh/h	353	141	500	11	179	261
Cap Entry, veh/h	1151	1151	814	831	769	463
V/C Ratio	0.307	0.122	0.615	0.013	0.233	0.564
Control Delay, s/veh	6.0	4.2	14.3	4.5	7.3	20.2
LOS	A	A	B	A	A	C
95th %tile Queue, veh	1	0	4	0	1	3

HCM 6th TWSC  
2: West Access & E 32nd Parkway

2022 Total AM.syn  
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Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	353	107	7	251	25	2
Future Vol, veh/h	353	107	7	251	25	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	0	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	17	12	12	40	12	12
Mvmt Flow	384	116	8	273	27	2
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	500	0	537	192
Stage 1	-	-	-	-	384	-
Stage 2	-	-	-	-	153	-
Critical Hdwy	-	-	4.34	-	7.04	7.14
Critical Hdwy Stg 1	-	-	-	-	6.04	-
Critical Hdwy Stg 2	-	-	-	-	6.04	-
Follow-up Hdwy	-	-	2.32	-	3.62	3.42
Pot Cap-1 Maneuver	-	-	993	-	450	787
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	830	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	993	-	446	787
Mov Cap-2 Maneuver	-	-	-	-	520	-
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	823	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0.2	12.1			
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	520	787	-	-	993	-
HCM Lane V/C Ratio	0.052	0.003	-	-	0.008	-
HCM Control Delay (s)	12.3	9.6	-	-	8.7	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-

HCM 6th TWSC  
2: West Access & E 32nd Parkway

2022 Total PM.syn  
03/17/2021

Intersection

Int Delay, s/veh 1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	262	28	2	439	105	7
Future Vol, veh/h	262	28	2	439	105	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	0	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	24	10	10	11	10	10
Mvmt Flow	285	30	2	477	114	8

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	315
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.3
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.3
Pot Cap-1 Maneuver	-	-	1186
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1186
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	544	854	-	-	1186	-
HCM Lane V/C Ratio	0.21	0.009	-	-	0.002	-
HCM Control Delay (s)	13.4	9.3	-	-	8	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-

HCM 6th TWSC  
2: West Access & E 32nd Parkway

2040 Total AM.syn  
03/17/2021

Intersection								
Int Delay, s/veh	0.5							
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑		
Traffic Vol, veh/h	720	110	10	405	25	5		
Future Vol, veh/h	720	110	10	405	25	5		
Conflicting Peds, #/hr	0	0	0	0	0	0		
Sign Control	Free	Free	Free	Free	Stop	Stop		
RT Channelized	-	None	-	None	-	None		
Storage Length	-	150	150	-	0	0		
Veh in Median Storage, #	0	-	-	0	1	-		
Grade, %	0	-	-	0	0	-		
Peak Hour Factor	92	92	92	92	92	92		
Heavy Vehicles, %	17	12	12	40	12	12		
Mvmt Flow	783	120	11	440	27	5		
Major/Minor	Major1		Major2		Minor1			
Conflicting Flow All	0	0	903	0	1025	392		
Stage 1	-	-	-	-	783	-		
Stage 2	-	-	-	-	242	-		
Critical Hdwy	-	-	4.34	-	7.04	7.14		
Critical Hdwy Stg 1	-	-	-	-	6.04	-		
Critical Hdwy Stg 2	-	-	-	-	6.04	-		
Follow-up Hdwy	-	-	2.32	-	3.62	3.42		
Pot Cap-1 Maneuver	-	-	689	-	215	579		
Stage 1	-	-	-	-	386	-		
Stage 2	-	-	-	-	747	-		
Platoon blocked, %	-	-		-				
Mov Cap-1 Maneuver	-	-	689	-	212	579		
Mov Cap-2 Maneuver	-	-	-	-	313	-		
Stage 1	-	-	-	-	386	-		
Stage 2	-	-	-	-	735	-		
Approach	EB		WB		NB			
HCM Control Delay, s	0		0.2		16.6			
HCM LOS	C							
Minor Lane/Major Mvmt	NBLn1		NBLn2		EBT	EBR	WBL	WBT
Capacity (veh/h)	313		579		-	-	689	-
HCM Lane V/C Ratio	0.087		0.009		-	-	0.016	-
HCM Control Delay (s)	17.6		11.3		-	-	10.3	-
HCM Lane LOS	C		B		-	-	B	-
HCM 95th %tile Q(veh)	0.3		0		-	-	0	-

HCM 6th TWSC  
2: West Access & E 32nd Parkway

2040 Total PM.syn  
03/17/2021

Intersection








Int Delay, s/veh 1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	440	30	5	830	105	10
Future Vol, veh/h	440	30	5	830	105	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	150	150	-	0	0
Veh in Median Storage, #	0	-	-	0	1	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	24	10	10	11	10	10
Mvmt Flow	478	33	5	902	114	11

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	511
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.3
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.3
Pot Cap-1 Maneuver	-	-	996
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	996
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	18
HCM LOS			C








Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	374	738	-	-	996	-
HCM Lane V/C Ratio	0.305	0.015	-	-	0.005	-
HCM Control Delay (s)	18.8	10	-	-	8.6	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1.3	0	-	-	0	-

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	316	61	11	222	1	18	0	3	3	0	21
Future Vol, veh/h	26	316	61	11	222	1	18	0	3	3	0	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	17	17	12	12	39	2	12	2	12	65	2	65
Mvmt Flow	28	343	66	12	241	1	20	0	3	3	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	242	0	0	409	0	0	544	665	172	494	731	121
Stage 1	-	-	-	-	-	-	399	399	-	266	266	-
Stage 2	-	-	-	-	-	-	145	266	-	228	465	-
Critical Hdwy	4.44	-	-	4.34	-	-	7.74	6.54	7.14	8.8	6.54	8.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.74	5.54	-	7.8	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	7.8	5.54	-
Follow-up Hdwy	2.37	-	-	2.32	-	-	3.62	4.02	3.42	4.15	4.02	3.95
Pot Cap-1 Maneuver	1219	-	-	1078	-	-	401	379	811	340	347	739
Stage 1	-	-	-	-	-	-	572	601	-	566	687	-
Stage 2	-	-	-	-	-	-	815	687	-	602	561	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1219	-	-	1078	-	-	379	366	811	330	335	739
Mov Cap-2 Maneuver	-	-	-	-	-	-	457	448	-	408	422	-
Stage 1	-	-	-	-	-	-	559	587	-	553	679	-
Stage 2	-	-	-	-	-	-	781	679	-	586	548	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.4	12.8	10.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	487	1219	-	-	1078	-	-	671
HCM Lane V/C Ratio	0.047	0.023	-	-	0.011	-	-	0.039
HCM Control Delay (s)	12.8	8	-	-	8.4	-	-	10.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	226	41	6	393	1	56	0	13	5	1	35
Future Vol, veh/h	10	226	41	6	393	1	56	0	13	5	1	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	24	24	10	10	11	11	10	2	10	18	2	18
Mvmt Flow	11	246	45	7	427	1	61	0	14	5	1	38








Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	428	0	0	291	0	0	496	710	123	587	755	214
Stage 1	-	-	-	-	-	-	268	268	-	442	442	-
Stage 2	-	-	-	-	-	-	228	442	-	145	313	-
Critical Hdwy	4.58	-	-	4.3	-	-	7.7	6.54	7.1	7.86	6.54	7.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.7	5.54	-	6.86	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.7	5.54	-	6.86	5.54	-
Follow-up Hdwy	2.44	-	-	2.3	-	-	3.6	4.02	3.4	3.68	4.02	3.48
Pot Cap-1 Maneuver	986	-	-	1212	-	-	439	357	880	361	336	744
Stage 1	-	-	-	-	-	-	692	686	-	524	575	-
Stage 2	-	-	-	-	-	-	732	575	-	798	656	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	986	-	-	1212	-	-	410	351	880	351	330	744
Mov Cap-2 Maneuver	-	-	-	-	-	-	498	437	-	429	426	-
Stage 1	-	-	-	-	-	-	684	678	-	518	572	-
Stage 2	-	-	-	-	-	-	689	572	-	776	649	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			12.7			10.7		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	542	986	-	-	1212	-	-	672
HCM Lane V/C Ratio	0.138	0.011	-	-	0.005	-	-	0.066
HCM Control Delay (s)	12.7	8.7	-	-	8	-	-	10.7
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.2

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	670	65	15	365	5	20	0	5	5	0	30
Future Vol, veh/h	40	670	65	15	365	5	20	0	5	5	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	17	17	12	12	39	39	12	2	12	65	2	65
Mvmt Flow	43	728	71	16	397	5	22	0	5	5	0	33








Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	402	0	0	799	0	0	1045	1248	364	882	1317	201
Stage 1	-	-	-	-	-	-	814	814	-	432	432	-
Stage 2	-	-	-	-	-	-	231	434	-	450	885	-
Critical Hdwy	4.44	-	-	4.34	-	-	7.74	6.54	7.14	8.8	6.54	8.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.74	5.54	-	7.8	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	7.8	5.54	-
Follow-up Hdwy	2.37	-	-	2.32	-	-	3.62	4.02	3.42	4.15	4.02	3.95
Pot Cap-1 Maneuver	1053	-	-	758	-	-	170	172	605	160	156	643
Stage 1	-	-	-	-	-	-	317	390	-	432	581	-
Stage 2	-	-	-	-	-	-	723	579	-	419	361	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1053	-	-	758	-	-	154	162	605	151	146	643
Mov Cap-2 Maneuver	-	-	-	-	-	-	245	270	-	250	250	-
Stage 1	-	-	-	-	-	-	304	374	-	414	569	-
Stage 2	-	-	-	-	-	-	672	567	-	398	346	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.4			19.3			12.4		
HCM LOS							C			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	278	1053	-	-	758	-	-	525
HCM Lane V/C Ratio	0.098	0.041	-	-	0.022	-	-	0.072
HCM Control Delay (s)	19.3	8.6	-	-	9.9	-	-	12.4
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	0.2

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	15	385	55	10	765	5	60	0	15	10	5	55
Future Vol, veh/h	15	385	55	10	765	5	60	0	15	10	5	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	150	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	24	24	10	10	11	11	10	2	10	18	2	18
Mvmt Flow	16	418	60	11	832	5	65	0	16	11	5	60

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	837	0	0	478	0	0	891	1309	209	1098	1367	419
Stage 1	-	-	-	-	-	-	450	450	-	857	857	-
Stage 2	-	-	-	-	-	-	441	859	-	241	510	-
Critical Hdwy	4.58	-	-	4.3	-	-	7.7	6.54	7.1	7.86	6.54	7.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.7	5.54	-	6.86	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.7	5.54	-	6.86	5.54	-
Follow-up Hdwy	2.44	-	-	2.3	-	-	3.6	4.02	3.4	3.68	4.02	3.48
Pot Cap-1 Maneuver	667	-	-	1026	-	-	225	158	773	148	146	540
Stage 1	-	-	-	-	-	-	537	570	-	287	372	-
Stage 2	-	-	-	-	-	-	544	371	-	697	536	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	667	-	-	1026	-	-	192	152	773	141	141	540
Mov Cap-2 Maneuver	-	-	-	-	-	-	309	260	-	229	257	-
Stage 1	-	-	-	-	-	-	524	556	-	280	368	-
Stage 2	-	-	-	-	-	-	472	367	-	666	523	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			18.3			15.3		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	351	667	-	-	1026	-	-	424
HCM Lane V/C Ratio	0.232	0.024	-	-	0.011	-	-	0.179
HCM Control Delay (s)	18.3	10.5	-	-	8.5	-	-	15.3
HCM Lane LOS	C	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0	-	-	0.6

# APPENDIX E

## All Way Stop Control and Signal Warrant Analysis

# 32nd Parkway and Himalaya Road (AWSC Warrant)- Existing 2020

85th Percentile Speed on Major Street > 40mph? Y = 70% Reduction

Begin Time	Himalaya Road			Himalaya Road			E 32nd Pkwy			E 32nd Pkwy		
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
6:00 AM												
7:00 AM	36	0	10	4	0	74	122	125	59	34	104	9
8:00 AM	8	2	11	3	3	56	73	142	57	19	81	9
9:00 AM	24	1	9	3	0	67	88	113	103	12	110	3
10:00 AM	96	1	20	5	1	73	52	111	63	9	127	6
11:00 AM	60	4	38	0	4	86	83	112	36	9	185	4
12:00 PM	32	1	14	4	0	101	88	177	29	13	239	18
1:00 PM	28	1	6	7	1	78	93	127	36	18	159	13
2:00 PM	43	1	13	6	0	118	123	125	52	13	202	9
3:00 PM	54	0	18	6	0	144	82	98	43	11	183	9
4:00 PM	84	0	33	13	2	103	57	96	75	16	174	5
5:00 PM	65	0	9	2	0	72	33	79	23	5	129	5
6:00 PM	54	0	11	0	0	82	50	74	52	5	107	2
7:00 PM												
	787			1118			2951			2056		

Insert Threshold ->

210

140

NB

SB

Major

Minor

Satisfied

Conflict

Conflict

Total

Total

?

0	0	0	0
46	78	453	124
21	62	381	83
34	70	429	104
117	79	368	196
102	90	429	192
47	105	564	152
35	86	446	121
57	124	524	181
72	150	426	222
117	118	423	235
74	74	274	148
65	82	290	147
0	0	0	0

Satisfied

8

# TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS EXISTING 2020 VOLUMES

INTERSECTION NAME: E 32nd Parkway and Himalaya Road

COUNT DATE: 08/11/20

INTERSECTION CONDITION:

MAJOR STREET: E 32nd Parkway  
MINOR STREET: Himalaya Road

# OF APPROACH LANES: 2  
# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N  
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

			MAJOR ST BOTH APPROACHES	HIGHEST HOUR MINOR ST HIGHEST APPROACH	WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
					MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	CONDITION A			CONDITION B				
											MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES					420	105		630	53		336	84		504	42			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	453	78	Y				Y		Y			Y				
08:00 AM	TO	09:00 AM	381	62					Y		Y			Y				
09:00 AM	TO	10:00 AM	429	70	Y				Y		Y			Y				
10:00 AM	TO	11:00 AM	368	117		Y			Y		Y	Y	Y	Y				
11:00 AM	TO	12:00 PM	429	102	Y				Y		Y	Y	Y	Y				
12:00 PM	TO	01:00 PM	564	105	Y	Y	Y		Y		Y	Y	Y	Y	Y			
01:00 PM	TO	02:00 PM	446	86	Y				Y		Y	Y	Y	Y	Y			
02:00 PM	TO	03:00 PM	524	124	Y	Y	Y		Y		Y	Y	Y	Y	Y			
03:00 PM	TO	04:00 PM	426	150	Y	Y	Y		Y		Y	Y	Y	Y	Y			
04:00 PM	TO	05:00 PM	423	118	Y	Y	Y		Y		Y	Y	Y	Y	Y			
05:00 PM	TO	06:00 PM	274	74					Y					Y				
06:00 PM	TO	07:00 PM	290	82					Y					Y				
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM																
09:00 PM	TO	10:00 PM																
			5,007	1,168	4			0			72						0	0
					8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			8 HOURS OF BOTH COND. A AND COND. B NEEDED NOT SATISFIED						4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant

Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

WARRANT 3 -- Peak Hour Warrant

# 32nd Parkway and Himalaya Road (AWSC Warrant)- Total 2022

85th Percentile Speed on Major Street > 40mph?

Y = 70% Reduction

Insert Threshold ->

210

140

NB

SB

Major

Minor

Satisfied

Conflict

Conflict

Total

Total

?

Begin Time	Himalaya Road			Himalaya Road			E 32nd Pkwy			E 32nd Pkwy		
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
6:00 AM												
7:00 AM	37	0	10	4	0	77	127	134	61	35	126	9
8:00 AM	8	2	11	3	3	58	76	151	59	20	98	9
9:00 AM	25	1	9	3	0	70	92	122	107	12	132	3
10:00 AM	100	1	21	5	1	76	54	119	66	9	148	6
11:00 AM	62	4	40	0	4	89	86	121	37	9	212	4
12:00 PM	33	1	15	4	0	105	92	188	30	14	269	19
1:00 PM	29	1	6	7	1	81	97	152	37	19	171	14
2:00 PM	45	1	14	6	0	123	128	155	54	14	217	9
3:00 PM	56	0	19	6	0	150	85	129	45	11	198	9
4:00 PM	87	0	34	14	2	107	59	125	78	17	188	5
5:00 PM	68	0	9	2	0	75	34	100	24	5	139	5
6:00 PM	56	0	11	0	0	85	52	84	54	5	113	2
7:00 PM												
818.8			1163			3215			2280			

0	0	0	0
48	81	493	129
22	65	413	86
35	73	468	108
122	82	403	204
106	94	470	200
49	109	611	158
36	89	490	126
59	129	577	188
75	156	478	231
122	123	472	244
77	77	308	154
68	85	311	153
0	0	0	0

Satisfied

8

# TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS BACKGROUND 2022 + PROJECT VOLUMES

INTERSECTION NAME: E 32nd Parkway and Himalaya Road

COUNT DATE: 08/11/20

INTERSECTION CONDITION:

MAJOR STREET: E 32nd Parkway  
MINOR STREET: Himalaya Road

# OF APPROACH LANES: 2  
# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N  
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

			MAJOR ST BOTH APPROACHES	HIGHEST HOUR MINOR ST HIGHEST APPROACH	WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
					MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	CONDITION A			CONDITION B				
											MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES					420	105		630	53		336	84		504	42			
06:00 AM	TO	07:00 AM	0	0														
07:00 AM	TO	08:00 AM	493	81	Y				Y		Y			Y				
08:00 AM	TO	09:00 AM	413	65					Y		Y			Y				
09:00 AM	TO	10:00 AM	468	73	Y				Y		Y			Y				
10:00 AM	TO	11:00 AM	403	122		Y			Y		Y	Y	Y	Y				
11:00 AM	TO	12:00 PM	470	106	Y	Y	Y		Y		Y	Y	Y	Y				
12:00 PM	TO	01:00 PM	611	109	Y	Y	Y		Y		Y	Y	Y	Y	Y			
01:00 PM	TO	02:00 PM	490	89	Y				Y		Y	Y	Y	Y	Y			
02:00 PM	TO	03:00 PM	577	129	Y	Y	Y		Y		Y	Y	Y	Y	Y			
03:00 PM	TO	04:00 PM	478	156	Y	Y	Y		Y		Y	Y	Y	Y	Y			
04:00 PM	TO	05:00 PM	472	123	Y	Y	Y		Y		Y	Y	Y	Y	Y			
05:00 PM	TO	06:00 PM	308	77					Y					Y				
06:00 PM	TO	07:00 PM	311	85					Y			Y		Y				
07:00 PM	TO	08:00 PM	0	0														
08:00 PM	TO	09:00 PM																
09:00 PM	TO	10:00 PM																
			5,495	1,215	5			0			72						0	0
					8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			8 HOURS OF BOTH COND. A AND COND. B NEEDED NOT SATISFIED						4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant

Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

WARRANT 3 -- Peak Hour Warrant

# 32nd Parkway and Himalaya Road (AWSC Warrant)- Total 2040

85th Percentile Speed on Major Street > 40mph?

Y = 70% Reduction

Insert Threshold ->

210

140

NB

SB

Major

Minor

Satisfied

Conflict

Conflict

Total

Total

?

Begin Time	Himalaya Road			Himalaya Road			E 32nd Pkwy			E 32nd Pkwy		
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
6:00 AM												
7:00 AM	53	0	15	8	0	124	301	276	88	51	206	20
8:00 AM	12	3	16	6	4	94	202	281	85	28	160	18
9:00 AM	36	1	13	6	0	114	254	260	153	18	215	11
10:00 AM	143	1	30	9	1	121	185	246	94	13	235	15
11:00 AM	89	6	56	2	6	143	254	264	53	13	331	14
12:00 PM	48	1	21	8	0	166	265	363	43	19	412	35
1:00 PM	42	1	9	18	1	183	177	240	53	27	400	21
2:00 PM	64	1	19	19	0	259	232	250	77	19	504	16
3:00 PM	80	0	27	20	0	305	175	215	64	16	494	16
4:00 PM	125	0	49	29	3	235	133	206	111	24	458	10
5:00 PM	97	0	13	10	0	167	84	163	34	7	338	9
6:00 PM	80	0	16	3	0	147	88	128	77	7	219	4
7:00 PM												
	1169			2214			6175			4407		

0	0	0	0
61	70	941	131
31	105	775	136
51	120	911	171
174	132	788	306
152	151	930	302
70	174	1137	244
52	203	919	255
85	278	1099	363
107	325	980	432
174	267	942	441
110	177	636	287
97	150	524	246
0	0	0	0

Satisfied

10

# TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS BACKGROUND 2040 + PROJECT VOLUMES

INTERSECTION NAME: E 32nd Parkway and Himalaya Road

COUNT DATE: 08/11/20

INTERSECTION CONDITION:

MAJOR STREET: E 32nd Parkway  
MINOR STREET: Himalaya Road

# OF APPROACH LANES: 2  
# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N  
85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

			MAJOR ST BOTH APPROACHES	HIGHEST HOUR  MINOR ST HIGHEST APPROACH	WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3	
					MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	CONDITION A			CONDITION B					
											MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET			
THRESHOLD VALUES					600	150			900	75		480	120		720	60			
06:00 AM	TO	07:00 AM	0	0															
07:00 AM	TO	08:00 AM	941	70	Y			Y			Y			Y	Y	Y			
08:00 AM	TO	09:00 AM	775	105	Y				Y		Y			Y	Y	Y			
09:00 AM	TO	10:00 AM	911	120	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y			
10:00 AM	TO	11:00 AM	788	174	Y	Y	Y		Y		Y	Y	Y	Y	Y	Y			
11:00 AM	TO	12:00 PM	930	152	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
12:00 PM	TO	01:00 PM	1,137	174	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
01:00 PM	TO	02:00 PM	919	203	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
02:00 PM	TO	03:00 PM	1,099	278	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
03:00 PM	TO	04:00 PM	980	325	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
04:00 PM	TO	05:00 PM	942	267	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
05:00 PM	TO	06:00 PM	636	177	Y	Y	Y		Y		Y	Y	Y		Y				
06:00 PM	TO	07:00 PM	524	150					Y		Y	Y	Y		Y				
07:00 PM	TO	08:00 PM	0	0															
08:00 PM	TO	09:00 PM																	
09:00 PM	TO	10:00 PM																	
			10,582	2,195	8			7			10			10			5	2	
					8 HOURS NEEDED SATISFIED			8 HOURS NEEDED NOT SATISFIED			8 HOURS OF BOTH COND. A AND COND. B NEEDED SATISFIED						4 HRS NEEDED SATISFIED	1 HR NEEDED SATISFIED	

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant

Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

WARRANT 3 -- Peak Hour Warrant

## Vehicle Speed Report Summary

Location: E 32ND PKWY E/O HIMALAYA RD

Count Direction: Eastbound / Westbound

Date Range: 10/13/2020 to 10/13/2020

Site Code: 01

	Speed Range (mph)																	Total
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	Volume
<b>Study Total</b>																		
<b>Eastbound</b>	2	13	15	15	29	132	571	948	658	196	56	10	6	1	1	0	0	2,653
<b>Percent</b>	0.1%	0.5%	0.6%	0.6%	1.1%	5.0%	21.5%	35.7%	24.8%	7.4%	2.1%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	100%
<b>Westbound</b>	2	9	8	8	18	106	353	810	861	550	159	57	9	5	2	0	0	2,957
<b>Percent</b>	0.1%	0.3%	0.3%	0.3%	0.6%	3.6%	11.9%	27.4%	29.1%	18.6%	5.4%	1.9%	0.3%	0.2%	0.1%	0.0%	0.0%	100%
<b>Total</b>	4	22	23	23	47	238	924	1,758	1,519	746	215	67	15	6	3	0	0	5,610
<b>Percent</b>	0.1%	0.4%	0.4%	0.4%	0.8%	4.2%	16.5%	31.3%	27.1%	13.3%	3.8%	1.2%	0.3%	0.1%	0.1%	0.0%	0.0%	100%

Total Study Percentile Speed Summary				Total Study Speed Statistics			
<b>Eastbound</b>				<b>Eastbound</b>			
50th Percentile (Median)	42.9	mph		Mean (Average) Speed	42.8	mph	
85th Percentile	48.5	mph		10 mph Pace	37.5 - 47.5	mph	
95th Percentile	53.0	mph		Percent in Pace	64.8	%	
<b>Westbound</b>				<b>Westbound</b>			
50th Percentile (Median)	46.0	mph		Mean (Average) Speed	45.9	mph	
85th Percentile	52.5	mph		10 mph Pace	41.7 - 51.7	mph	
95th Percentile	56.8	mph		Percent in Pace	57.0	%	

Location: E 32ND PKWY E/O HIMALAYA RD  
Date Range: 10/13/2020 to 10/13/2020  
Site Code: 01



Tuesday, October 13, 2020  
Eastbound

Time	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
12:00 AM	2	0	0	0	0	0	7	12	5	3	0	0	0	0	0	0	0	29
1:00 AM	0	0	0	0	1	1	5	4	2	0	1	0	0	0	0	0	0	14
2:00 AM	0	0	0	0	0	3	3	3	5	2	1	0	0	0	0	0	0	17
3:00 AM	0	0	0	0	2	2	2	3	4	0	0	1	0	0	0	0	0	14
4:00 AM	0	0	0	0	0	3	10	16	13	0	2	0	1	0	0	0	0	45
5:00 AM	0	0	1	0	0	3	15	54	53	20	5	1	0	0	0	0	0	152
6:00 AM	0	1	2	0	0	3	40	73	62	36	4	0	0	0	1	0	0	222
7:00 AM	0	1	2	3	1	3	25	62	60	19	6	1	0	1	0	0	0	184
8:00 AM	0	0	0	4	1	3	27	42	47	14	4	3	1	0	0	0	0	146
9:00 AM	0	0	0	1	4	6	26	48	33	5	1	0	0	0	0	0	0	124
10:00 AM	0	1	0	1	1	16	48	38	18	4	3	1	0	0	0	0	0	131
11:00 AM	0	0	2	1	5	9	49	67	26	8	2	1	0	0	0	0	0	170
12:00 PM	0	1	2	0	5	11	28	81	61	16	2	0	2	0	0	0	0	209
1:00 PM	0	2	2	0	4	13	34	60	36	9	3	0	0	0	0	0	0	163
2:00 PM	0	1	2	1	0	9	47	39	36	4	2	0	0	0	0	0	0	141
3:00 PM	0	0	0	1	0	12	42	86	34	10	0	0	0	0	0	0	0	185
4:00 PM	0	2	0	0	0	7	44	63	40	10	10	0	0	0	0	0	0	176
5:00 PM	0	0	0	0	2	4	37	69	54	16	5	1	1	0	0	0	0	189
6:00 PM	0	2	1	0	1	5	21	37	20	5	3	0	0	0	0	0	0	95
7:00 PM	0	0	0	1	1	4	29	25	12	3	1	0	1	0	0	0	0	77
8:00 PM	0	0	1	0	0	5	13	19	14	3	0	0	0	0	0	0	0	55
9:00 PM	0	0	0	1	0	5	7	20	12	3	0	0	0	0	0	0	0	48
10:00 PM	0	2	0	0	1	2	5	10	4	5	0	1	0	0	0	0	0	30
11:00 PM	0	0	0	1	0	3	7	17	7	1	1	0	0	0	0	0	0	37
<b>Total</b>	<b>2</b>	<b>13</b>	<b>15</b>	<b>15</b>	<b>29</b>	<b>132</b>	<b>571</b>	<b>948</b>	<b>658</b>	<b>196</b>	<b>56</b>	<b>10</b>	<b>6</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2,653</b>
<b>Percent</b>	<b>0.1%</b>	<b>0.5%</b>	<b>0.6%</b>	<b>0.6%</b>	<b>1.1%</b>	<b>5.0%</b>	<b>21.5%</b>	<b>35.7%</b>	<b>24.8%</b>	<b>7.4%</b>	<b>2.1%</b>	<b>0.4%</b>	<b>0.2%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	

Daily Percentile Speed Summary			Speed Statistics		
50th Percentile (Median)	42.9	mph	Mean (Average) Speed	42.8	mph
85th Percentile	48.5	mph	10 mph Pace	37.5 - 47.5	mph
95th Percentile	53.0	mph	Percent in Pace	64.8	%

Location: E 32ND PKWY E/O HIMALAYA RD  
Date Range: 10/13/2020 to 10/13/2020  
Site Code: 01



Tuesday, October 13, 2020  
Westbound

Time	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
12:00 AM	0	0	0	0	0	1	2	6	11	5	2	1	0	0	0	0	0	28
1:00 AM	0	0	0	0	0	1	4	7	6	0	1	1	1	0	0	0	0	21
2:00 AM	0	0	0	0	0	0	5	9	6	2	2	0	0	0	0	0	0	24
3:00 AM	0	0	0	0	1	1	4	5	4	2	1	1	0	0	0	0	0	19
4:00 AM	0	0	0	0	2	3	5	8	8	9	4	2	0	0	0	0	0	41
5:00 AM	0	0	0	0	1	2	8	12	23	22	10	2	0	0	0	0	0	80
6:00 AM	0	1	0	0	0	2	12	32	35	34	10	4	1	0	1	0	0	132
7:00 AM	1	1	2	0	0	3	10	35	55	41	18	6	1	2	0	0	0	175
8:00 AM	0	0	1	0	0	4	16	36	50	32	11	2	1	0	0	0	0	153
9:00 AM	0	0	0	1	2	4	27	45	32	21	9	2	0	0	0	0	0	143
10:00 AM	0	1	0	0	0	5	22	45	42	14	3	4	0	0	0	0	0	136
11:00 AM	0	0	1	0	0	5	33	71	65	39	5	4	1	0	0	0	0	224
12:00 PM	0	1	1	0	4	8	36	49	51	34	9	5	0	0	0	0	0	198
1:00 PM	0	1	1	0	2	11	21	62	49	30	7	2	0	0	0	0	0	186
2:00 PM	0	3	0	1	0	7	36	81	80	57	8	5	0	1	0	0	0	279
3:00 PM	0	0	0	0	0	6	20	64	82	50	12	5	0	2	1	0	0	242
4:00 PM	1	0	1	3	0	8	13	51	84	49	12	2	2	0	0	0	0	226
5:00 PM	0	0	0	0	0	4	17	62	87	59	19	4	0	0	0	0	0	252
6:00 PM	0	1	0	1	1	12	15	42	38	14	5	2	1	0	0	0	0	132
7:00 PM	0	0	1	0	1	5	15	30	15	15	3	1	0	0	0	0	0	86
8:00 PM	0	0	0	0	0	6	10	20	12	8	4	1	1	0	0	0	0	62
9:00 PM	0	0	0	0	1	3	8	15	7	3	0	0	0	0	0	0	0	37
10:00 PM	0	0	0	0	2	1	7	16	12	6	2	1	0	0	0	0	0	47
11:00 PM	0	0	0	2	1	4	7	7	7	4	2	0	0	0	0	0	0	34
<b>Total</b>	<b>2</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>18</b>	<b>106</b>	<b>353</b>	<b>810</b>	<b>861</b>	<b>550</b>	<b>159</b>	<b>57</b>	<b>9</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2,957</b>
<b>Percent</b>	<b>0.1%</b>	<b>0.3%</b>	<b>0.3%</b>	<b>0.3%</b>	<b>0.6%</b>	<b>3.6%</b>	<b>11.9%</b>	<b>27.4%</b>	<b>29.1%</b>	<b>18.6%</b>	<b>5.4%</b>	<b>1.9%</b>	<b>0.3%</b>	<b>0.2%</b>	<b>0.1%</b>	<b>0.0%</b>	<b>0.0%</b>	

Daily Percentile Speed Summary			Speed Statistics		
50th Percentile (Median)	46.0	mph	Mean (Average) Speed	45.9	mph
85th Percentile	52.5	mph	10 mph Pace	41.7 - 51.7	mph
95th Percentile	56.8	mph	Percent in Pace	56.95	%

Location: E 32ND PKWY E/O HIMALAYA RD  
Date Range: 10/13/2020 to 10/13/2020  
Site Code: 01

**Total Study Average  
Eastbound**

Time	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
12:00 AM	2	0	0	0	0	0	7	12	5	3	0	0	0	0	0	0	0	29
1:00 AM	0	0	0	0	1	1	5	4	2	0	1	0	0	0	0	0	0	14
2:00 AM	0	0	0	0	0	3	3	3	5	2	1	0	0	0	0	0	0	17
3:00 AM	0	0	0	0	2	2	2	3	4	0	0	1	0	0	0	0	0	14
4:00 AM	0	0	0	0	0	3	10	16	13	0	2	0	1	0	0	0	0	45
5:00 AM	0	0	1	0	0	3	15	54	53	20	5	1	0	0	0	0	0	152
6:00 AM	0	1	2	0	0	3	40	73	62	36	4	0	0	0	1	0	0	222
7:00 AM	0	1	2	3	1	3	25	62	60	19	6	1	0	1	0	0	0	184
8:00 AM	0	0	0	4	1	3	27	42	47	14	4	3	1	0	0	0	0	146
9:00 AM	0	0	0	1	4	6	26	48	33	5	1	0	0	0	0	0	0	124
10:00 AM	0	1	0	1	1	16	48	38	18	4	3	1	0	0	0	0	0	131
11:00 AM	0	0	2	1	5	9	49	67	26	8	2	1	0	0	0	0	0	170
12:00 PM	0	1	2	0	5	11	28	81	61	16	2	0	2	0	0	0	0	209
1:00 PM	0	2	2	0	4	13	34	60	36	9	3	0	0	0	0	0	0	163
2:00 PM	0	1	2	1	0	9	47	39	36	4	2	0	0	0	0	0	0	141
3:00 PM	0	0	0	1	0	12	42	86	34	10	0	0	0	0	0	0	0	185
4:00 PM	0	2	0	0	0	7	44	63	40	10	10	0	0	0	0	0	0	176
5:00 PM	0	0	0	0	2	4	37	69	54	16	5	1	1	0	0	0	0	189
6:00 PM	0	2	1	0	1	5	21	37	20	5	3	0	0	0	0	0	0	95
7:00 PM	0	0	0	1	1	4	29	25	12	3	1	0	1	0	0	0	0	77
8:00 PM	0	0	1	0	0	5	13	19	14	3	0	0	0	0	0	0	0	55
9:00 PM	0	0	0	1	0	5	7	20	12	3	0	0	0	0	0	0	0	48
10:00 PM	0	2	0	0	1	2	5	10	4	5	0	1	0	0	0	0	0	30
11:00 PM	0	0	0	1	0	3	7	17	7	1	1	0	0	0	0	0	0	37
<b>Total</b>	<b>2</b>	<b>13</b>	<b>15</b>	<b>15</b>	<b>29</b>	<b>132</b>	<b>571</b>	<b>948</b>	<b>658</b>	<b>196</b>	<b>56</b>	<b>10</b>	<b>6</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2,653</b>
<b>Percent</b>	<b>0.1%</b>	<b>0.5%</b>	<b>0.6%</b>	<b>0.6%</b>	<b>1.1%</b>	<b>5.0%</b>	<b>21.5%</b>	<b>35.7%</b>	<b>24.8%</b>	<b>7.4%</b>	<b>2.1%</b>	<b>0.4%</b>	<b>0.2%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	

Note: Average only considered on days with 24-hours of data.

Total Study Percentile Speed Summary			Total Study Speed Statistics		
50th Percentile (Median)	42.9	mph	Mean (Average) Speed	42.8	mph
85th Percentile	48.5	mph	10 mph Pace	37.5 - 47.5	mph
95th Percentile	53.0	mph	Percent in Pace	64.8	%

Location: E 32ND PKWY E/O HIMALAYA RD  
 Date Range: 10/13/2020 to 10/13/2020  
 Site Code: 01

**Total Study Average  
Westbound**

Time	Speed Range (mph)																	Total Volume
	0 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80	80 - 85	85 +	
12:00 AM	0	0	0	0	0	1	2	6	11	5	2	1	0	0	0	0	0	28
1:00 AM	0	0	0	0	0	1	4	7	6	0	1	1	1	0	0	0	0	21
2:00 AM	0	0	0	0	0	0	5	9	6	2	2	0	0	0	0	0	0	24
3:00 AM	0	0	0	0	1	1	4	5	4	2	1	1	0	0	0	0	0	19
4:00 AM	0	0	0	0	2	3	5	8	8	9	4	2	0	0	0	0	0	41
5:00 AM	0	0	0	0	1	2	8	12	23	22	10	2	0	0	0	0	0	80
6:00 AM	0	1	0	0	0	2	12	32	35	34	10	4	1	0	1	0	0	132
7:00 AM	1	1	2	0	0	3	10	35	55	41	18	6	1	2	0	0	0	175
8:00 AM	0	0	1	0	0	4	16	36	50	32	11	2	1	0	0	0	0	153
9:00 AM	0	0	0	1	2	4	27	45	32	21	9	2	0	0	0	0	0	143
10:00 AM	0	1	0	0	0	5	22	45	42	14	3	4	0	0	0	0	0	136
11:00 AM	0	0	1	0	0	5	33	71	65	39	5	4	1	0	0	0	0	224
12:00 PM	0	1	1	0	4	8	36	49	51	34	9	5	0	0	0	0	0	198
1:00 PM	0	1	1	0	2	11	21	62	49	30	7	2	0	0	0	0	0	186
2:00 PM	0	3	0	1	0	7	36	81	80	57	8	5	0	1	0	0	0	279
3:00 PM	0	0	0	0	0	6	20	64	82	50	12	5	0	2	1	0	0	242
4:00 PM	1	0	1	3	0	8	13	51	84	49	12	2	2	0	0	0	0	226
5:00 PM	0	0	0	0	0	4	17	62	87	59	19	4	0	0	0	0	0	252
6:00 PM	0	1	0	1	1	12	15	42	38	14	5	2	1	0	0	0	0	132
7:00 PM	0	0	1	0	1	5	15	30	15	15	3	1	0	0	0	0	0	86
8:00 PM	0	0	0	0	0	6	10	20	12	8	4	1	1	0	0	0	0	62
9:00 PM	0	0	0	0	1	3	8	15	7	3	0	0	0	0	0	0	0	37
10:00 PM	0	0	0	0	2	1	7	16	12	6	2	1	0	0	0	0	0	47
11:00 PM	0	0	0	2	1	4	7	7	7	4	2	0	0	0	0	0	0	34
<b>Total</b>	<b>2</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>18</b>	<b>106</b>	<b>353</b>	<b>810</b>	<b>861</b>	<b>550</b>	<b>159</b>	<b>57</b>	<b>9</b>	<b>5</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2,957</b>
<b>Percent</b>	<b>0.1%</b>	<b>0.3%</b>	<b>0.3%</b>	<b>0.3%</b>	<b>0.6%</b>	<b>3.6%</b>	<b>11.9%</b>	<b>27.4%</b>	<b>29.1%</b>	<b>18.6%</b>	<b>5.4%</b>	<b>1.9%</b>	<b>0.3%</b>	<b>0.2%</b>	<b>0.1%</b>	<b>0.0%</b>	<b>0.0%</b>	

Note: Average only considered on days with 24-hours of data.

Total Study Percentile Speed Summary			Total Study Speed Statistics		
50th Percentile (Median)	46.0	mph	Mean (Average) Speed	45.9	mph
85th Percentile	52.5	mph	10 mph Pace	41.7 - 51.7	mph
95th Percentile	56.8	mph	Percent in Pace	57.0	%

# APPENDIX F

## Conceptual Site Plan

