

**TRANSPORT COLORADO**  
**ISP #1 City of Aurora**  
***NEATS Refresh* Travel Demand Model**  
Traffic Impact Analysis

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## I. INTRODUCTION

TransPort Colorado, a multi-year master-planned business environment in the City of Aurora, is planning to construct the first two parcels of its overall development area. These two parcels will include a 288,000 square foot (sf) warehouse, along with a rail transload facility that will eventually provide short-line rail access for numerous TransPort Colorado warehouse and industrial parcels. Originally, the transload facility will provide rail delivery of goods and materials to the proposed warehouse.

These first two parcels will be located along 32<sup>nd</sup> Avenue near Manila Road in the approximate southeast quadrant of TransPort Colorado. Given the industrial/warehousing nature of these sites, the primary access route will be along Manila Road to/from the I-70/Manila Road interchange, while secondary access will be provided to/from the west via 32<sup>nd</sup> Avenue and Imboden Road. **Figure I** provides a vicinity map of the two site locations.

The components of this Traffic Impact Analysis (TIA) are based on information contained in the summary of the pre-application meeting notes, along with follow-up discussions with City of Aurora staff. This report provides an assessment of the traffic impacts related to the development of the first two parcels, and it includes estimates of traffic growth not related to TransPort Colorado, particularly the Rocky Mountain Rail Park and its influence at Colorado Department of Transportation (CDOT) managed intersections.

Specific elements of this report include:

- Evaluation of existing operational conditions
- Background traffic projections for the Years 2025 and 2040
- Trip generation estimates for the proposed land uses
- Analysis of project impacts
- Traffic signalization warrant information
- Discussion on pedestrian connectivity
- Recommendations for public improvements

Of note, this report includes information on an alternative access route via 32<sup>nd</sup> Avenue and Quail Run Drive, which identifies travel conditions for this route if the 32<sup>nd</sup> Avenue to Imboden Road route is not available (more in **Section IV.C.**).



## II. EXISTING CONDITIONS

### II.A. Land Use

The land areas near the first two parcels are largely undeveloped with the exception of the Colorado Air and Space Port (Space Port) to the north and some single-family homes along the south side of US 36 adjacent Petterson Road. Residential and commercial uses exist in the Towns of Watkins and Bennett, along with small residential enclaves somewhat distant from the project site.

### II.B. Roadway System

Several existing roadways are spaced along 1-mile land sections, although most of these roads currently have very little traffic and are somewhat discontinuous. One interstate highway and one United States highway will provide access routes for the first two parcels. **Figure 2** provides a representation of the surrounding roadway network, its laneage, and its speed limit characteristics. Following are more detailed descriptions of the primary roadways adjacent and near the project site.

#### ***Interstate 70 (I-70)***

I-70 is a major interstate route that bisects the State of Colorado at its approximate north/south midpoint. Not only is this route the primary east/west corridor for interstate travel in Colorado, but this route provides access to numerous states outside Colorado, from Utah to Maryland. I-70 has four travel lanes for vehicle movements and is posted with a speed limit of 75 miles per hour (MPH).

There are two interchanges with I-70 near the project site. The Manila Road interchange is near the midpoint of TransPort Colorado and is proposed to be one of the primary interstate access routes for the TransPort Colorado land uses, including the first two parcels. Four miles to the west of the Manila Road interchange is the Watkins Road interchange.





#### ***United States 36 (US 36)***

US 36 traverses the project area in an east/west alignment, and it is directly adjacent to Union Pacific Railroad (UPRR) trackage that will provide rail access for the transload facility. The centerline-to-centerline distance between these two facilities is approximately 250 feet. US 36 is two lanes wide and has a posted speed limit of 55 MPH. Several section line roadways intersect US 36, and each intersecting roadway is controlled by stop signs at US 36. CDOT classifies US 36 as a Rural Highway (R-B) in this area.

#### ***Imboden, Quail Run, Cavanaugh, Manila, Petterson, and Schumaker Roads***

Each of these roadways exists at 1-mile intervals adjacent, within, or near TransPort Colorado, with each having a north/south orientation. Only Imboden and Petterson Roads are continuous for any significant distance adjacent to TransPort Colorado, however. Both of these roadways extend from US 36 to the north past the TransPort Colorado boundary. Quail Run Road extends from US 36 to the south of I-70 and is grade-separated via an underpass. Only Manila Road and Imboden Road will provide access routes for the development of the first two parcels.

## LEGEND

-  = Number of Through Lanes
-  = Paved Roadway
-  = Gravel Roadway
-  = Posted Speed Limit



## **48<sup>th</sup> and 56<sup>th</sup> Avenues**

48<sup>th</sup> and 56<sup>th</sup> Avenues have an east/west orientation and are separated by a 1-mile distance. 48<sup>th</sup> Avenue is paved between Imboden and Manila Roads. Most of 48<sup>th</sup> Avenue in the vicinity of the project is two lanes wide; however, to the west of Imboden Road, an unimproved one-lane roadway provides access only to a private residence.

56<sup>th</sup> Avenue is a two-lane roadway that extends westward from Imboden Road, past E-470, and into the City & County of Denver and Commerce City. To the east of Imboden Road, it exists for only an approximate 1-mile distance along the northern boundary of the Space Port. 56<sup>th</sup> Avenue is two lanes wide, and its alignment to the east of Imboden Road is gravel.

## **II.C. Rail Facility**

The UPRR parallels the northern boundary of US 36. The UPRR trackage extends from the Denver metropolitan area to the east into Kansas and points beyond. There is only one track within the railroad right-of-way, and approximately three trains use this track each day.

## **II.D. Traffic Volumes**

Existing traffic volumes were recorded at intersections critical to the development of the first two parcels, including the two interchange ramp terminals with I-70 at Manila Road. These movements were recorded during the AM and PM peak hours, the typical time periods when vehicle activity is greatest. As shown on **Figure 3**, vehicle movements at these intersections and at the interchange ramp terminals are relatively low when compared to traffic volume levels in other parts of the City of Aurora. All left, through, and right turn movements are less than 120 vehicles per hour (vph), with only a few movements greater than 100 vph.

Daily traffic volumes were also recorded. These measurements include the level of vehicle activity on a roadway for a 24-hour period. **Figure 3** shows that daily traffic volume levels along Imboden Road are about 2,400 vehicles per day (vpd), while along Manila Road, the level is only about 300 vpd. US 36 traffic volumes are about 1,600 vpd, and traffic volume along I-70 is 23,000 vpd adjacent to the site. Daily traffic volumes along I-70 and US 36 were acquired from CDOT's Online Transportation Information System (OTIS). **Appendix A** includes the recorded traffic volume data.

## **II.E. Traffic Control**

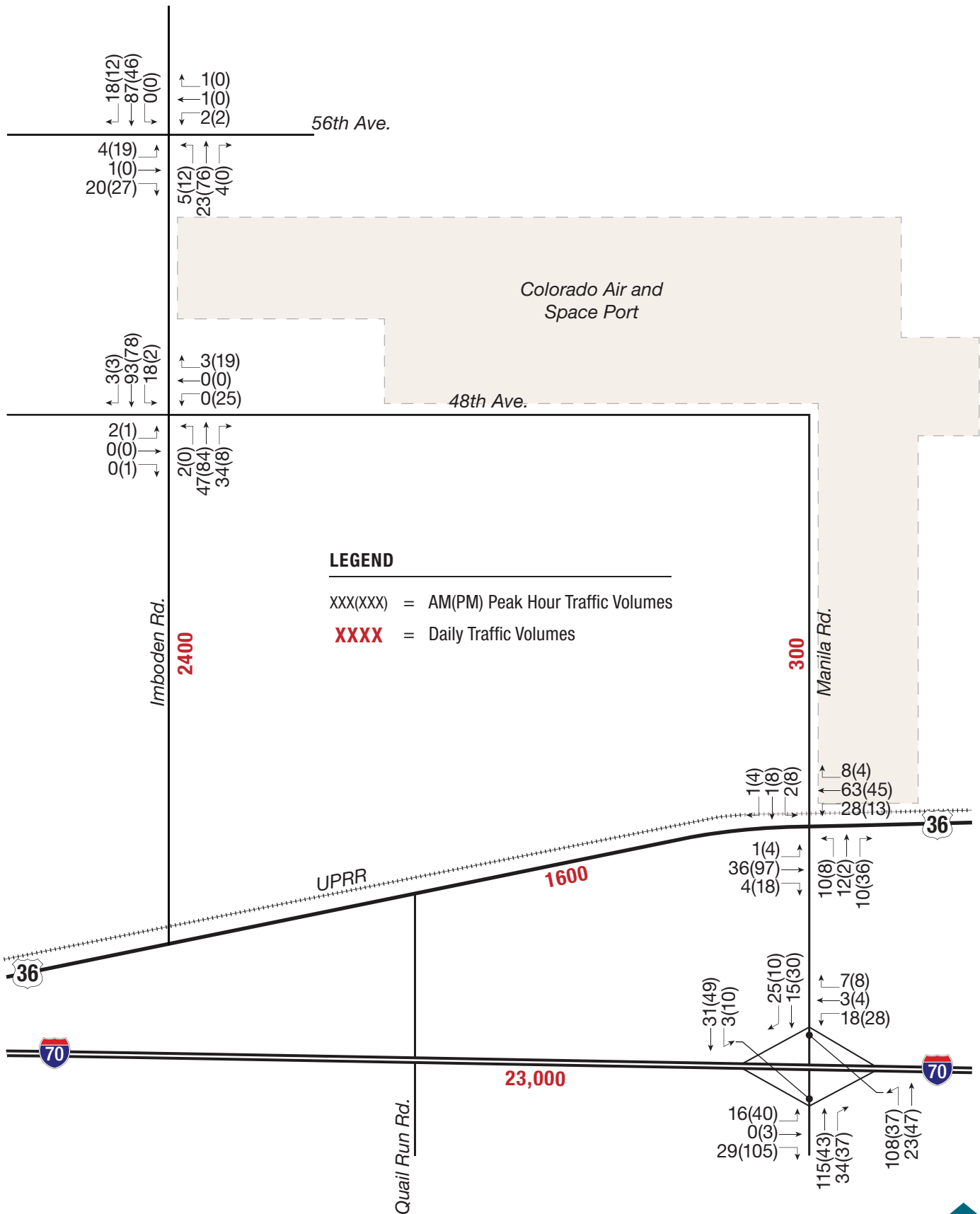
Control of vehicle movements at intersections is carried out via stop signs. All stop signs are used on the "minor" street intersection or ramp terminal approaches where vehicle right-of-way assignment is necessary.

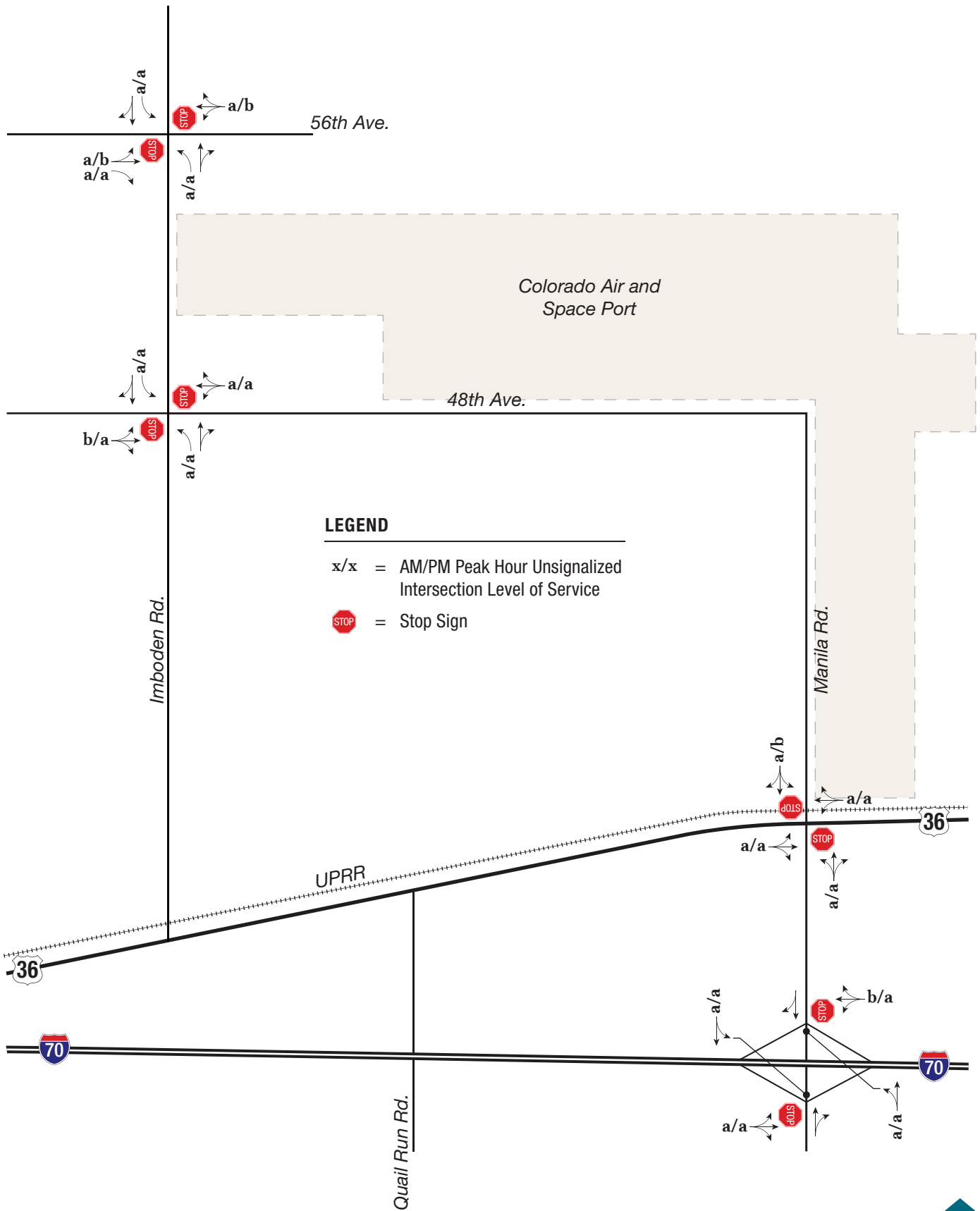
## **II.F. Traffic Operations**

Traffic operations were evaluated according to techniques documented in the *Highway Capacity Manual*, 6<sup>th</sup> Edition (Transportation Research Board, 2016) using the existing traffic volumes, intersection geometry, and traffic control. For stop-controlled intersections, level of service (LOS) is calculated for each vehicle movement that must yield the right-of-way to an oncoming or crossing vehicle. In urbanized areas, LOS D is typically considered to be acceptable for peak hour traffic operations and it is the standard set in the City of Aurora traffic impact study guidelines. Analysis was performed using Synchro 10 software (Version 10.3.151.0).

**Figure 4** shows the existing traffic control, intersection geometry, and results of the LOS analyses. **Appendix B** includes the LOS criteria, and **Appendix C** includes the analysis worksheets. All intersections currently operate within acceptable parameters, at LOS B or better, during peak hours.







### III. BACKGROUND CONDITIONS

#### III.A. Roadway Network Plan

The *Northeast Area Transportation Study Refresh (NEATS Refresh)* was updated for the City of Aurora in October 2018. This publication summarized the build-out transportation recommendations for the *NEATS Refresh* planning area for the roadway, transit and trail systems. The boundary for this study effort was approximately between Picadilly Road on the west, Schumaker Road on the east, Jewell Avenue on the south, and 72<sup>nd</sup> Avenue on the north.

While the first two parcels of TransPort Colorado are within the *NEATS Refresh* boundary, major roadway improvements are not expected for only the impacts related to these two parcels. Regardless, *NEATS Refresh* identified the future classifications of nearby roadways that will provide access for the first two parcels, being Major Arterials along Manila Road, 48<sup>th</sup> Avenue and 56<sup>th</sup> Avenue.

#### III.B. Background Traffic Volumes and Intersection Operations Year 2025

Background traffic volume projections for this time period are based on two data sources and they start with information contained in *NEATS Refresh* to understand yearly growth rates. This resource found that existing traffic volumes are projected to grow about 6.4 percent annually for a total growth of approximately 55 percent by the Year 2025.

Additionally, it is understood that a new development is underway adjacent to Petterson Road. This project is called the Rocky Mountain Rail Park (RMRP), and it will include rail served parcels on the north side of US 36, with a separate parcel on the south side of US 36 that will house a paving operation plant.

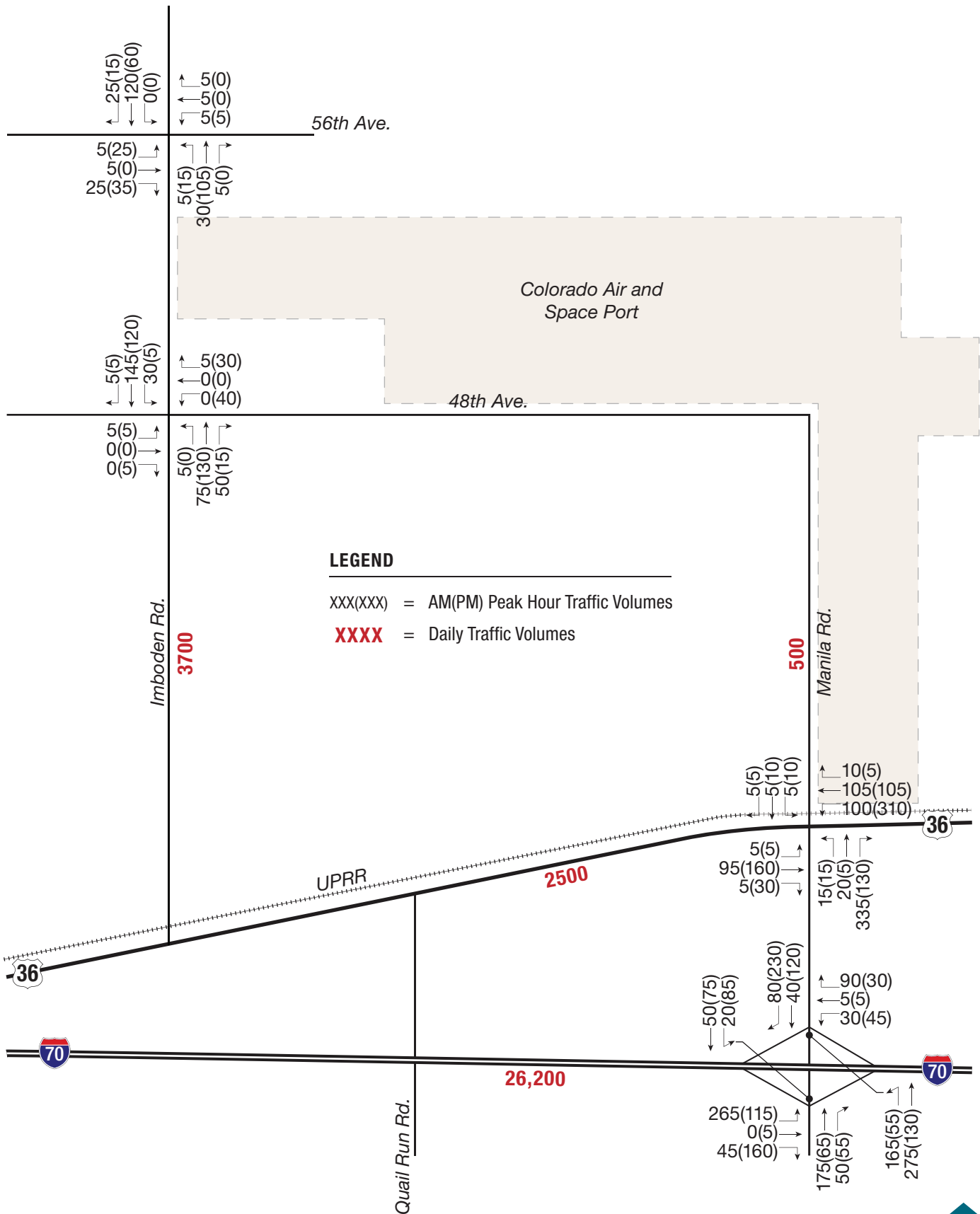
Considering these two sources, the traffic volumes represented on **Figure 5** contain projected background traffic volumes levels for the Year 2025 without the development of the two TransPort Colorado parcels.

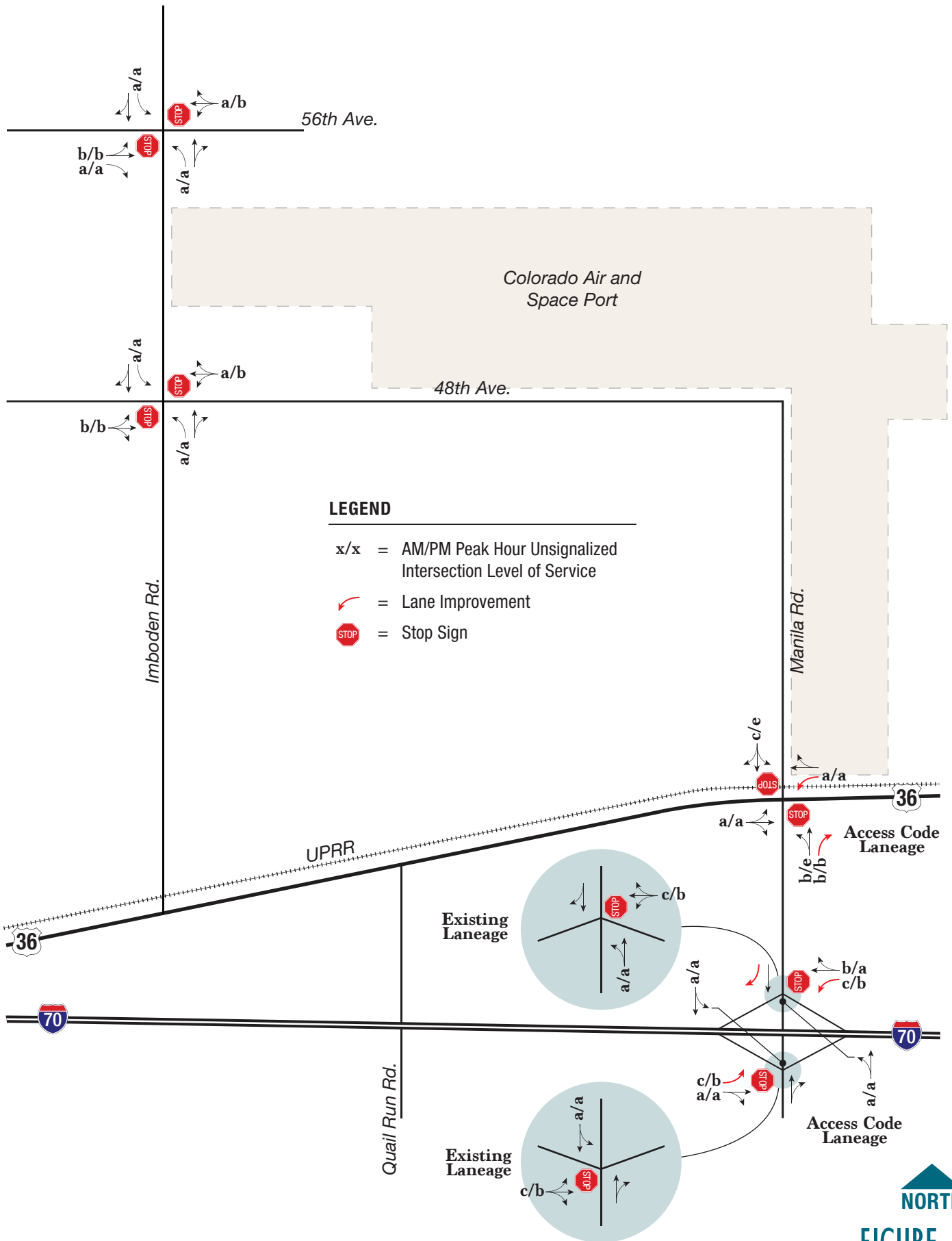
As can be seen from this information, certain movements become relatively sizable, primarily related to the development of the RMRP. For example, the northbound right turn and westbound left turn at the US 36/Manila Road intersection are projected to reach 300 vph during the peak hours, while the eastbound left turn and southbound right turn at the I-70 interchange are also quite high. When compared to existing traffic volumes, and considering the percentage growth rates, most of the traffic volume increases can be attributed to the construction of the RMRP.

**Figure 6** illustrates the projected laneage needs based on *State Highway Access Code* (the *Code*) criteria, which the City of Aurora follows to determine where auxiliary lanes should be installed. **Figure 6** also includes the operational results. Increases in background traffic require a few improvements when considering the *Code* criteria:

- US 36/Manila Road – Northbound right turn lane and westbound left turn lane
- I-70 Westbound Ramp/Manila Road – Southbound right turn lane and westbound left turn lane, recommendation to CDOT is to defer improvements until further development occurs
- I-70 Eastbound Exit Ramp/Manila Road – Eastbound left turn lane, recommendation to CDOT is to defer improvements until further development occurs

While volume thresholds are met for an eastbound left turn lane at 56<sup>th</sup> Avenue/Imboden Road, for a northbound right turn lane at 48<sup>th</sup> Avenue/Imboden Road, and for a westbound left turn lane at 48<sup>th</sup> Avenue/Imboden Road, the following and opposing traffic volumes are low enough that these lanes are not required based on SHAC criteria.





As shown on **Figure 6**, northbound and southbound movements across or onto US 36 on Manila Road are projected to experience LOS E during the PM peak hour. This level of delay can primarily be related to the development of the RMRP located on the east side of the Space Port adjacent to Petterson Road. For example, the northbound right turn and westbound left turn at this intersection reach 300 vph during the peak hours, resulting in smaller vehicle gaps for northbound and southbound movements to proceed into or across this intersection. Northbound through and left movements and all southbound movements remain low in volume, ranging from 5 to 20 during peak hours, and no mitigation is recommended at this time.

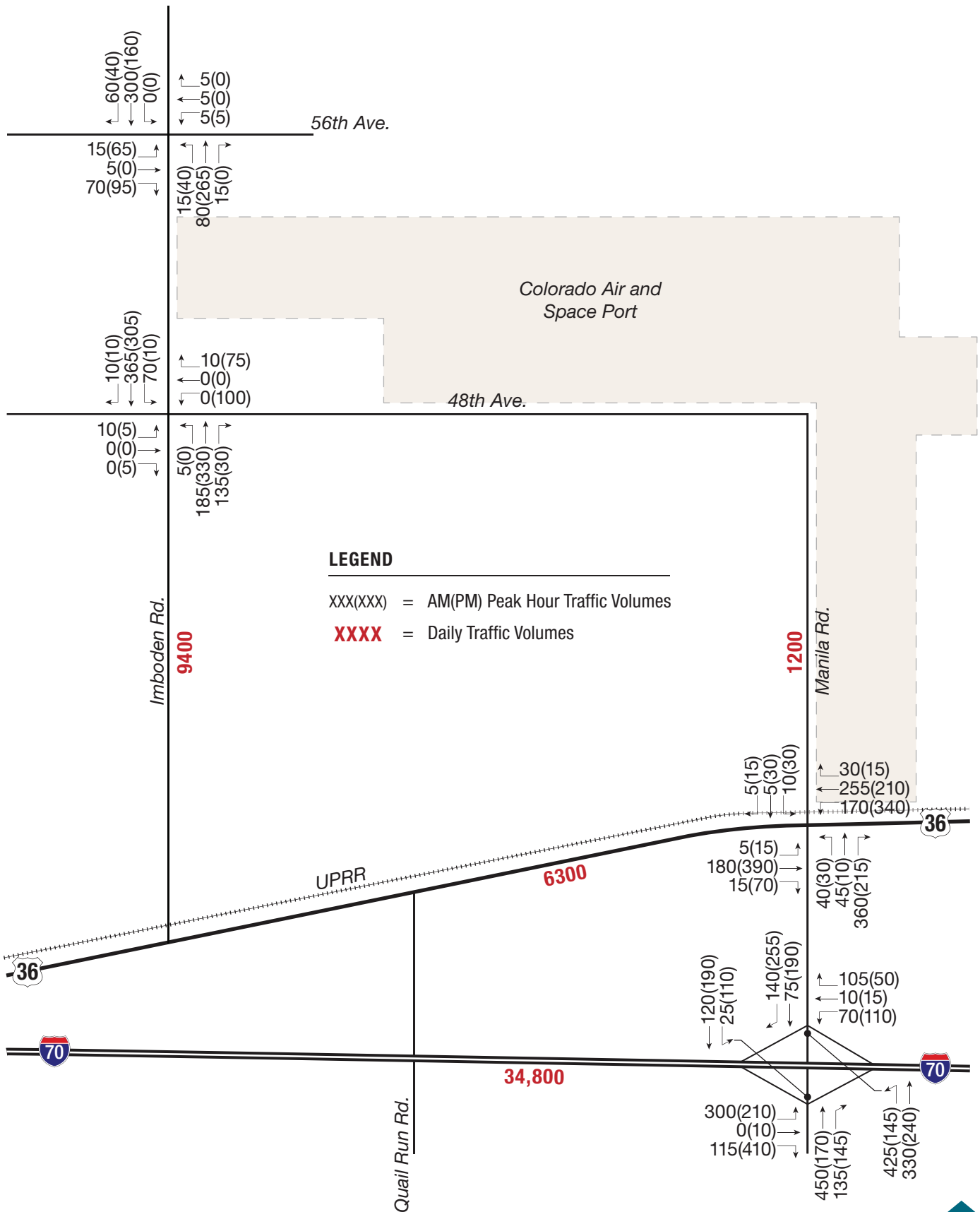
## Year 2040

Similar to the Year 2025, background traffic projections used yearly growth rates but for a longer time period, along with the projections for the RMRP. Annual growth continues at a 6.4 percent pace for a total of about 290 percent over the next 20 years. When combined, the background traffic volume projections for the Year 2040 are included on **Figure 7**.

**Figure 8** illustrates the projected laneage needs and operational analyses when considering the Code criteria. These analyses find that the following improvements are required for the Year 2040 background conditions:

- 56<sup>th</sup> Avenue/Imboden Road – Eastbound left turn lane and southbound right turn lane
- 48<sup>th</sup> Avenue/Imboden Road – Northbound right turn lane and westbound left turn lane
- US 36/Manila Road – Northbound right turn lane, eastbound right turn lane, southbound left turn lane, and westbound left turn lane
- I-70 Westbound Exit Ramp/Manila Road – Southbound right turn lane and westbound left turn lane
- I-70 Eastbound Exit Ramp/Manila Road – Eastbound left turn lane

Regardless of the operational conditions for years 2025 or 2040, none of these intersections are projected to meet traffic signalization warrants as defined by the *Manual On Uniform Traffic Control Devices* (MUTCD) under background conditions. Peak hour signalization warrants for background conditions have been included in **Appendix D**. While analyzed for the purposes of completeness in this report, the year 2040 analyses do not take into account the current CDOT system level feasibility study for this area of I-70. That study is in its early stages and no recommendations are available at this time. As that report develops, it will consider TransPort Colorado impacts, along with other nearby development, to assist in making decisions related to roadway and interchange recommendations.







## IV. ISP I DEVELOPMENT CONDITIONS

This section summarizes the land use information, traffic volume projections, and operational analyses for the development of the proposed transload facility and a 288,000sf warehouse.

### IV.A. ISP I Land Uses

Two parcels are currently being planned for this ISP I submittal. The transload facility will occupy approximately 76 acres on which there will be several rail track alignments to manage freight deliveries. Space will be provided for certain transload operations where materials will be stored on-site for pickup or dropoff by local businesses. The transload site will be the starting point for future short-track delivery of materials to several industrial parcels in TransPort Colorado. Besides the rail track alignments, only a small amount of office space for employees will be provided (1,500 – 2,000sf).

The warehouse site is planned for 288,000sf of building on approximately 40 acres. Office space, inside storage, and loading docks, along with outdoor storage, will be available.

**Figure 9 and Figure 10** represent the proposed site plans for these two sites. Access for both sites will be along 32<sup>nd</sup> Avenue, which will extend between Manila and Imboden Roads. Both sites will be along the south side of this street. Access for the transload facility will be located at the approximate alignment of an extension of Cavanaugh Road, while access for the warehouse is to the west of a new drainage channel adjacent to Manila Road.

### IV.B. Trip Generation Estimates

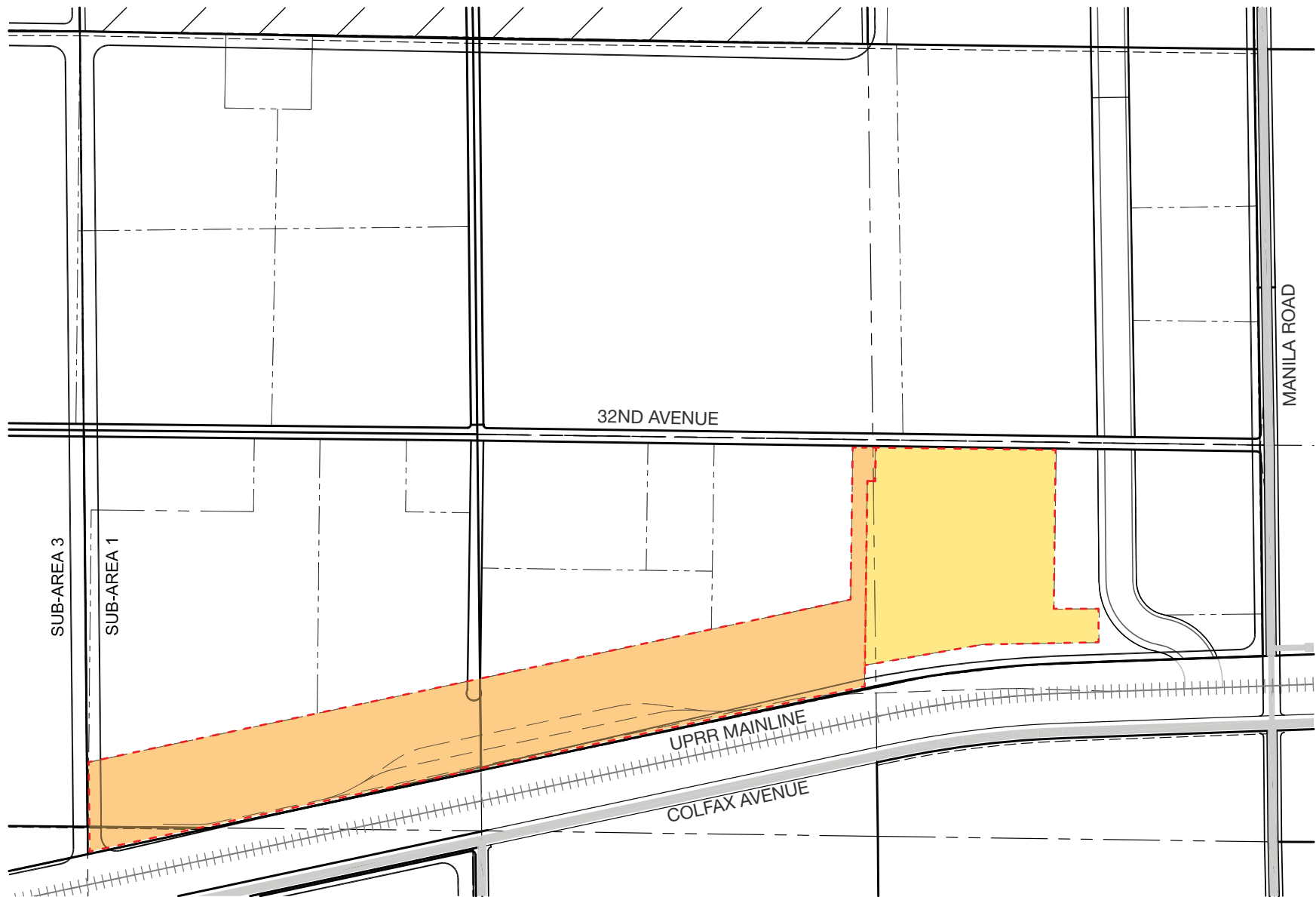
**Table I** includes the trip generation estimates for the two development sites. These estimates are based on operational discussions with the owners of the transload facility, Alpenglow Rail. Those discussions found that an average of six rail cars will be delivered to the site each day. Some of those rail cars will be shipped directly to future warehouse sites, while others will be unloaded on-site for pickup by delivery trucks. Each rail car requires only two semi-trucks for deliveries. Only three employees will work at the site during a normal weekday schedule.

Estimates for the warehouse site use the Light Industrial trip generation category contained in *Trip Generation*, 10<sup>th</sup> Edition, by the Institute of Transportation Engineers (ITE), 2017, to be consistent with previous analyses for the TransPort Colorado FDP submittal. The site has a total of four driveways; two for employee/customer use and two for delivery use. The delivery path is one way with trucks entering on the east and exiting on the west side of the site.

**Table I. ISP I Trip Generation Estimates**

Land Use	Acres (±)	Building Square Footage (ksf)	Daily Vehicle-Trips	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Transload Facility	76	1.5-2.0	35	4	1	5	1	4	5
Warehouse	40	288	1,149	86	12	98	10	67	77
<b>TOTALS =</b>			<b>1,184</b>	<b>90</b>	<b>13</b>	<b>103</b>	<b>11</b>	<b>71</b>	<b>82</b>

When compared to the MTIS (original traffic study for the entire TransPort project), the transload facility and 40 acres of Subarea I development were projected to result in 1,162 daily trips. The current proposed development represents a 1.9 percent increase in traffic volume projections.



#### LEGEND

- = Transload Facility
- = Warehouse Site



**FIGURE 9**  
**Transload Facility**  
**Site Plan**



#### IV.C. Trip Distribution and Assignment

Estimates of vehicle routing to/from the transload and warehouse sites were developed based on the location of each site and on the available access routes. Both sites will have a strong orientation to/from I-70 along Manila Road, but two access scenarios for movements to/from the west are evaluated in this report due to the timing of land annexation:

- **Scenario A** – This access scenario is the preferred one and it will likely be the one constructed. Access to/from the west will occur along 32<sup>nd</sup> Avenue with a connection to Imboden Road. Part of the roadway will be designed to facilitate the future construction of the Imboden Road/Quail Run Road alignment, i.e., there will be a “Z” movement in the roadway as represented on **Figure 11**. Access to/from the west can also occur along Manila Road and 48<sup>th</sup> Avenue, but that route is considered less convenient, but it is available.
- **Scenario B** – Vehicles will travel to/from the west along 32<sup>nd</sup> Avenue but would be required to travel along a new road that follows the future alignment of Quail Run Drive. Motorists would then access 48<sup>th</sup> Avenue and then Imboden Road. This scenario is much less convenient for patrons of the two development sites. It is also represented on **Figure 11**.

**Figure 12** summarizes the trip distribution estimates, and **Figure 13** illustrates the projected site generated traffic volumes for the two development sites. As shown on these figures, given the industrial/warehousing nature of these two projects, the projected vehicle trips have a high orientation toward I-70 and particularly toward the west to/from the Denver metropolitan area. It can also be seen that the largest vehicle levels are less than 70 vph (across US 36), along with the left turn and right turn movements at the eastbound and westbound I-70 ramp terminals.

#### IV.D. 2025 Total Traffic Volumes

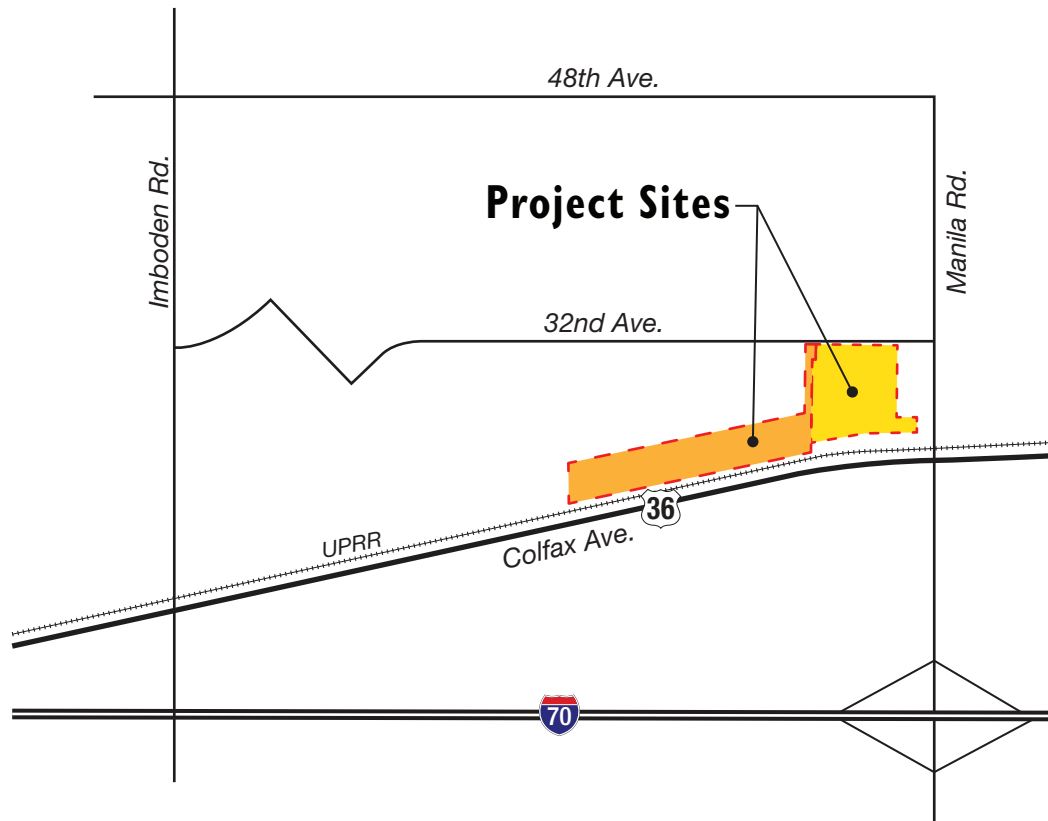
**Figure 14** represents the combination of projected background traffic volumes, along with the estimated site generated volumes for year 2025, including the two access scenarios described previously. As seen from this information, certain intersection movements reach levels in excess of 300 vehicle trips during the AM and PM peak hours:

- US 36 westbound left turn at Manila Road (310 in the PM peak hour) (primarily related to the RMRP)
- Northbound Manila Road right turn at US 36 (335 in the AM peak hour) (primarily related to the RMRP)
- Southbound right turn on Manila Road at the westbound I-70 ramp terminal (272 in the PM peak hour)
- Eastbound left turn onto Manila Road from the eastbound I-70 ramp terminal (317 in the AM peak hour)

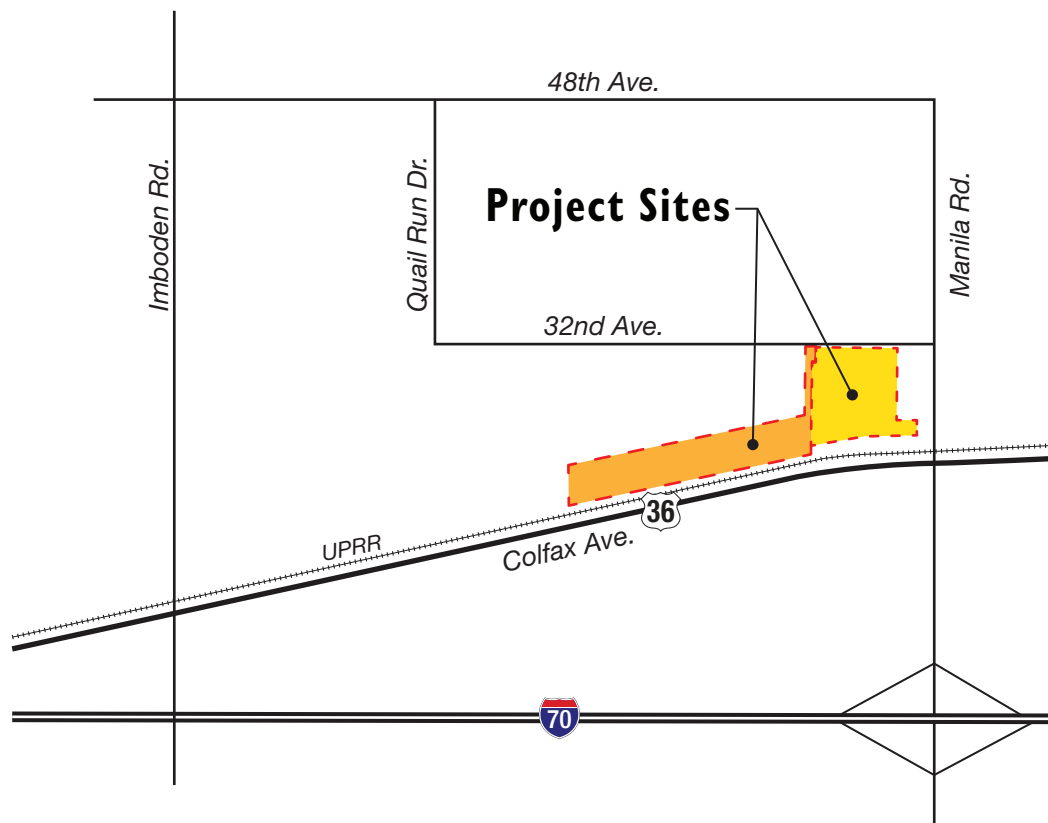
The directionality and peak periods for these movements are not surprising, i.e., toward the north and east during the AM peak hour and to/from the south and west during the PM peak hour.

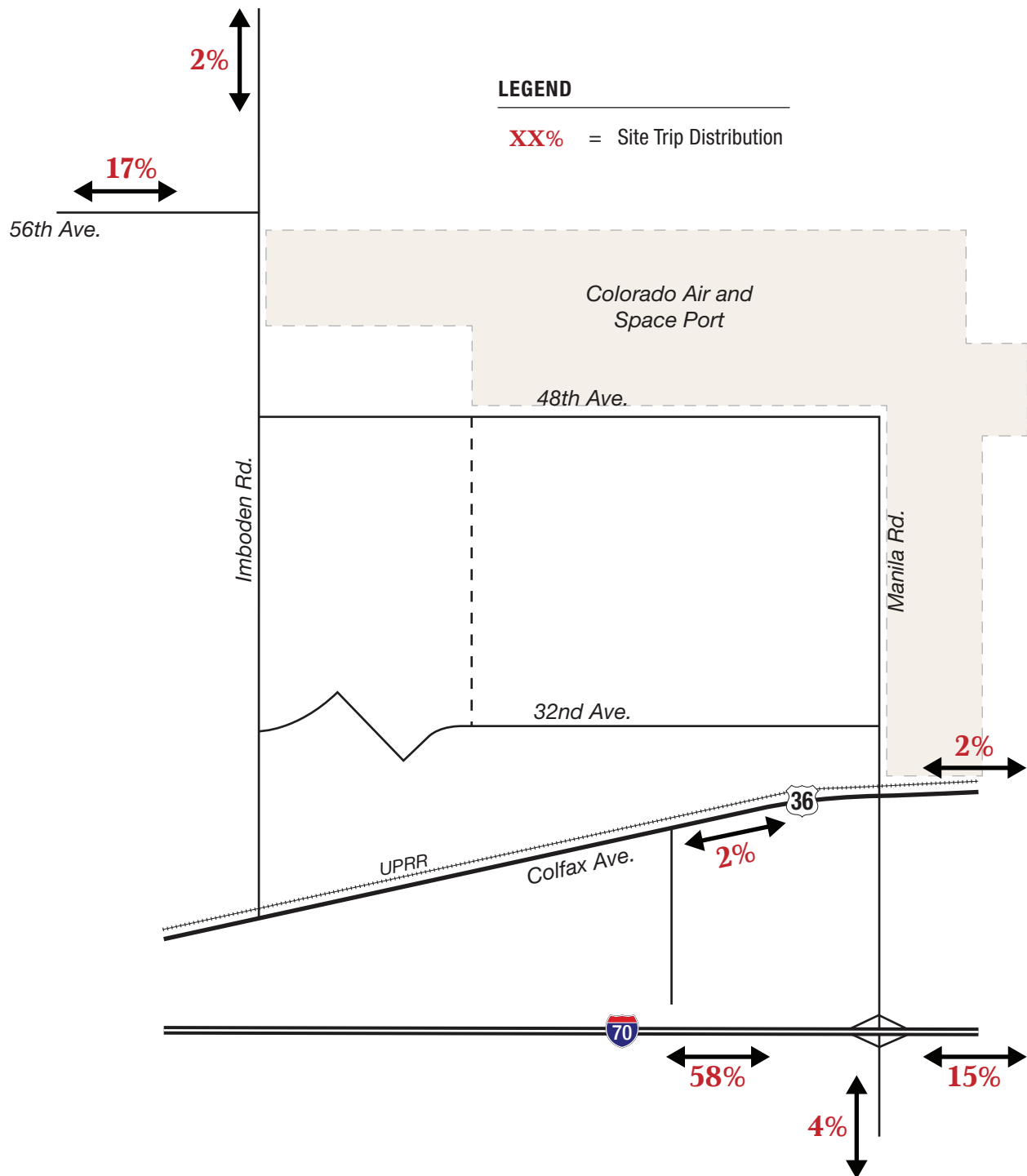
Volume levels at intersections on Imboden Road remain relatively low with no turning movements exceeding 50 vehicles and no through movements exceeding 170 during in the peak hours.

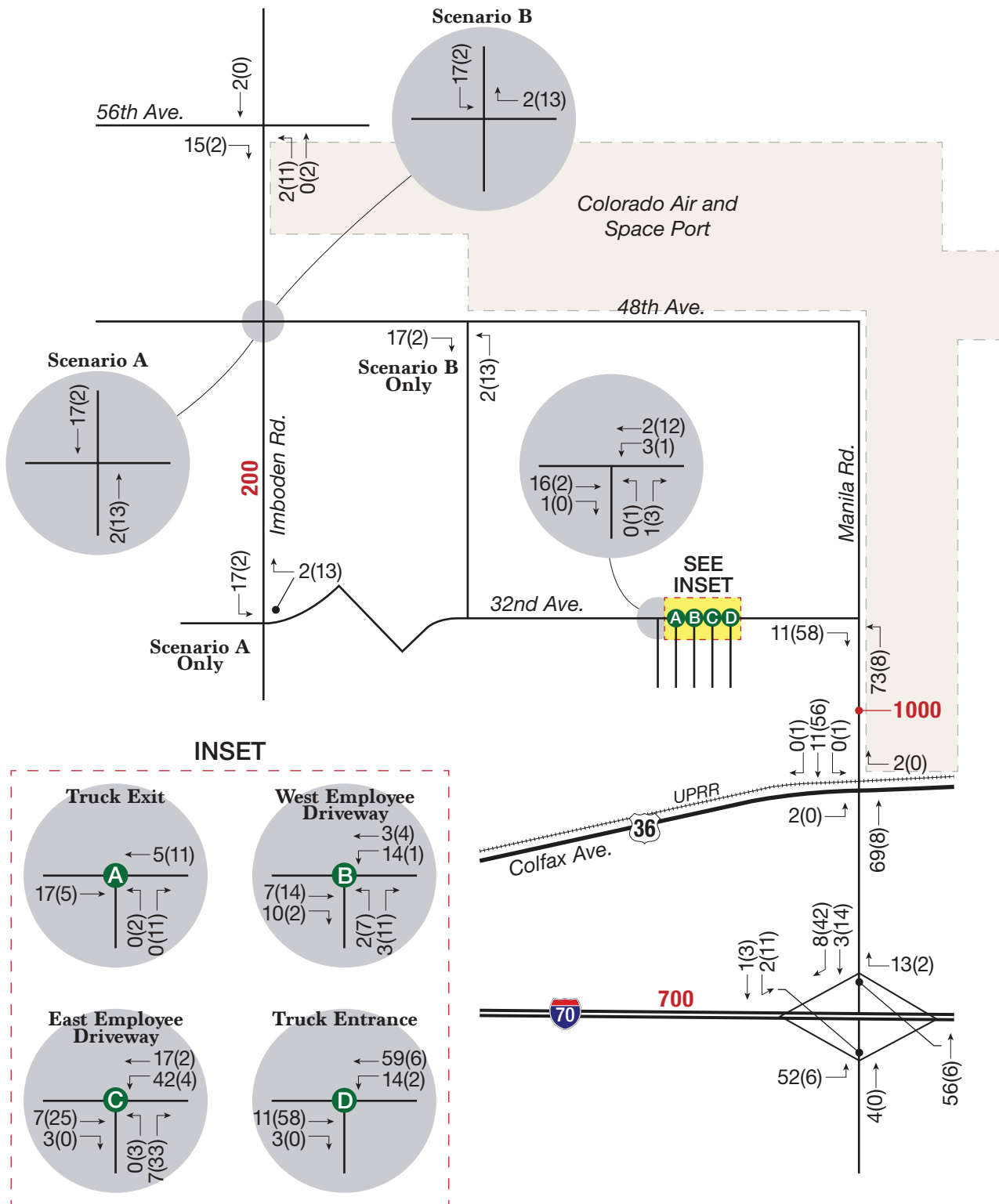
## Scenario A



## Scenario B



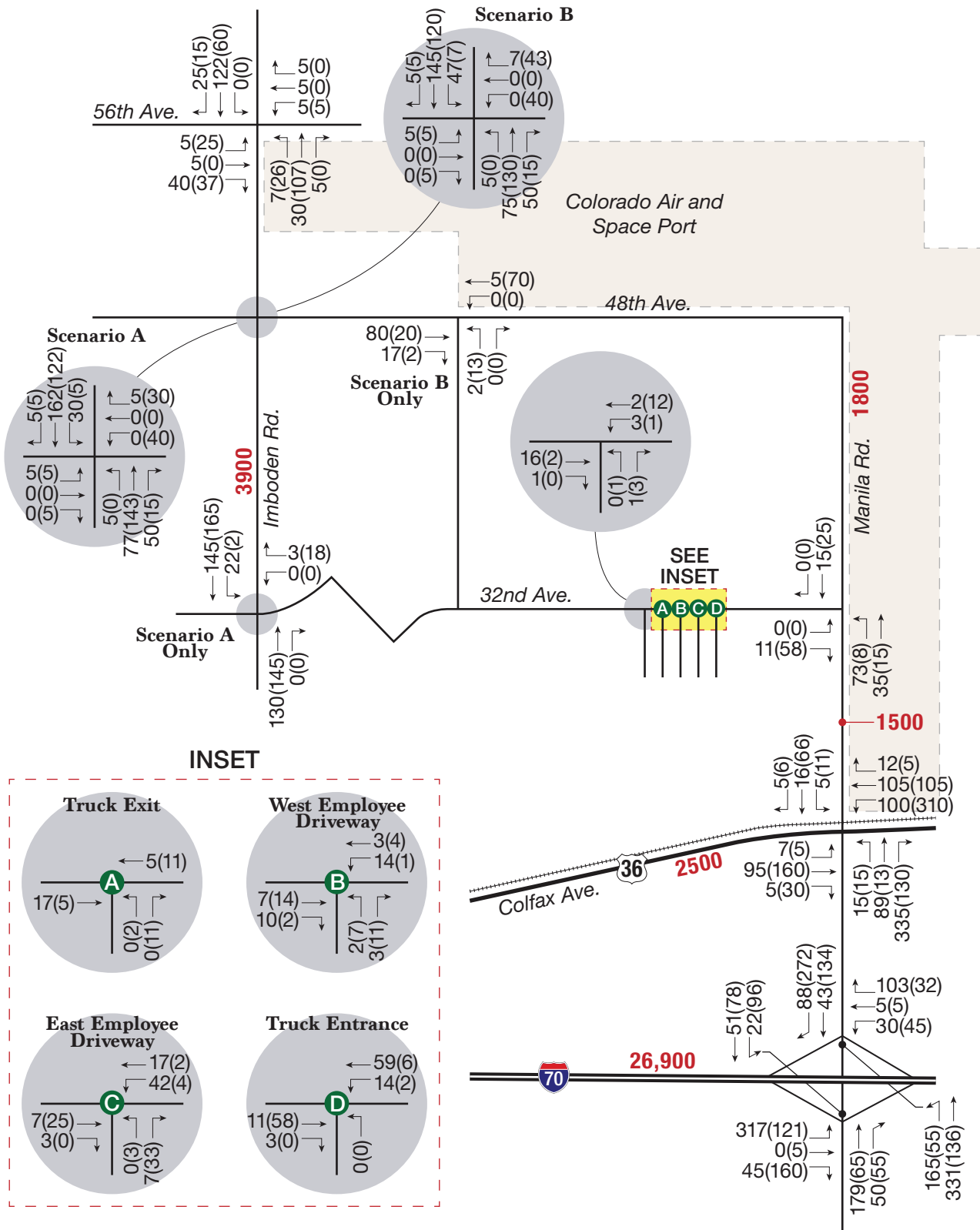




#### LEGEND

xxx(xxx) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes



#### LEGEND

xxx(xxx) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes



NOTE: Drawing Not to Scale



**FIGURE 14**  
**2025 Total**  
**Traffic Volumes**



#### IV.E. 2025 Operational Conditions

Intersection operations for both access scenarios are projected to operate at LOS C or better except for a few vehicle movements:

- **US 36/Manila Road Intersection** – Northbound movements on Manila Road that attempt maneuvers across or onto US 36 are projected to experience sufficient average vehicle delay to result in LOS F during the PM peak hour. While these movements are not excessive, they are impeded by the large number of westbound left turn movements that are mostly attributed to the RMRP. As noted previously for background conditions, the rail park projects more than 300 westbound left turns during the PM peak hour, resulting in smaller vehicle gaps for northbound and southbound movements to proceed into or across this intersection. Of note, vehicle queuing on the southbound approach is not projected to extend to the UPRR tracks.

Traffic signal warrant analyses (**Appendix F**) find that this intersection is not projected to meet warrants for traffic signal installation by completion of the first two development parcels. As such, if all of the vehicle-trips associated with the Rocky Mountain Rail Park come to fruition, northbound and southbound motorists will experience a higher level of delay than desired during the PM peak hour. Traffic volumes should be monitored and signalization warrants checked periodically as TransPort Colorado and the Rocky Mountain Rail Park advance.

- **Westbound and Eastbound I-70 Ramp Terminals** – While the southbound right turn movement and both the westbound and eastbound left turn lanes have been identified as meeting Code criteria for installation during both the 2025 background and build scenarios, it is believed that those improvements could be deferred until additional development occurs in the area. Like background conditions, **Figure 15** finds that there are similar LOS results with or without these improvements (LOS C or better). **Appendix G** provides the LOS worksheets.

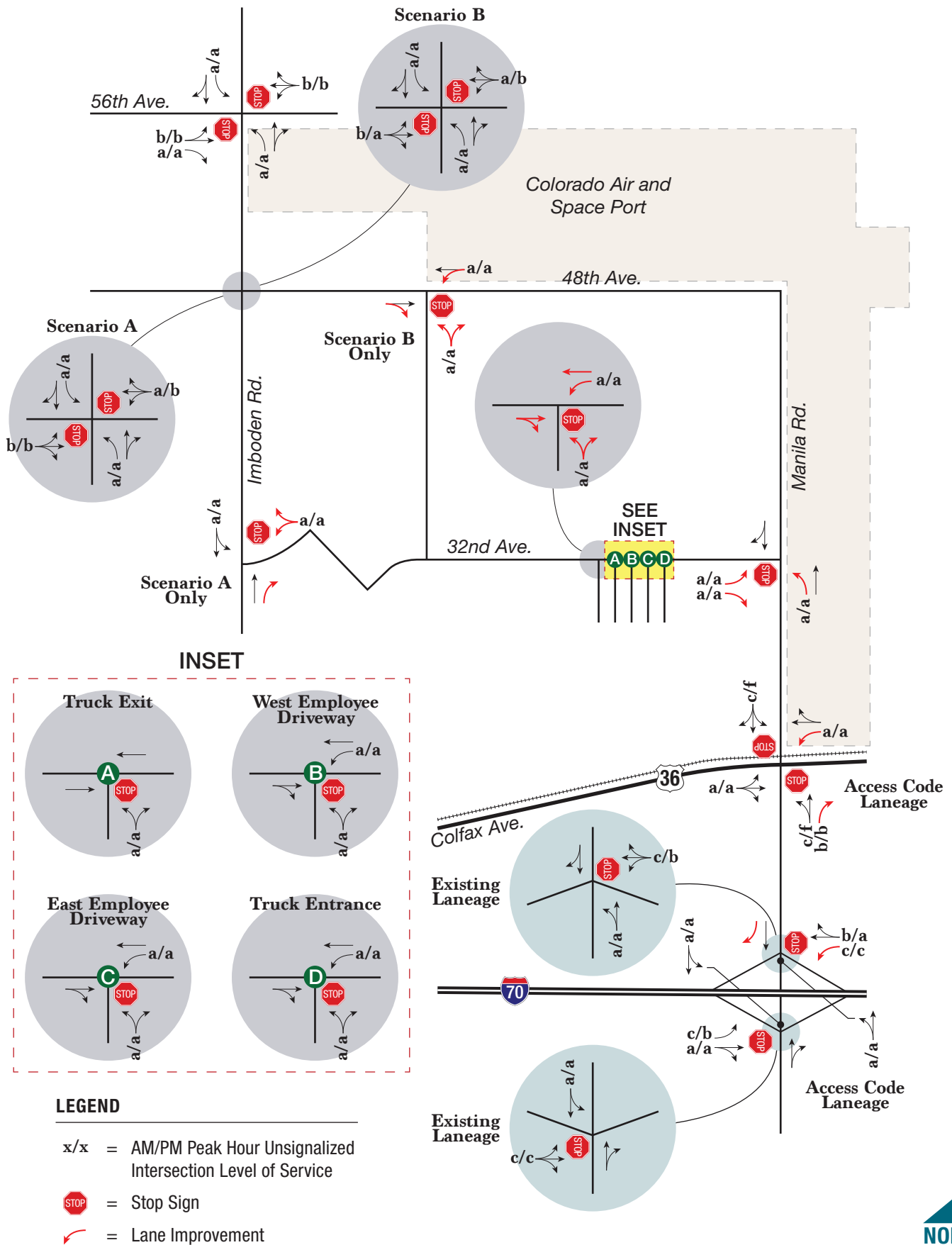
#### IV.F. 2040 Total Traffic Volumes

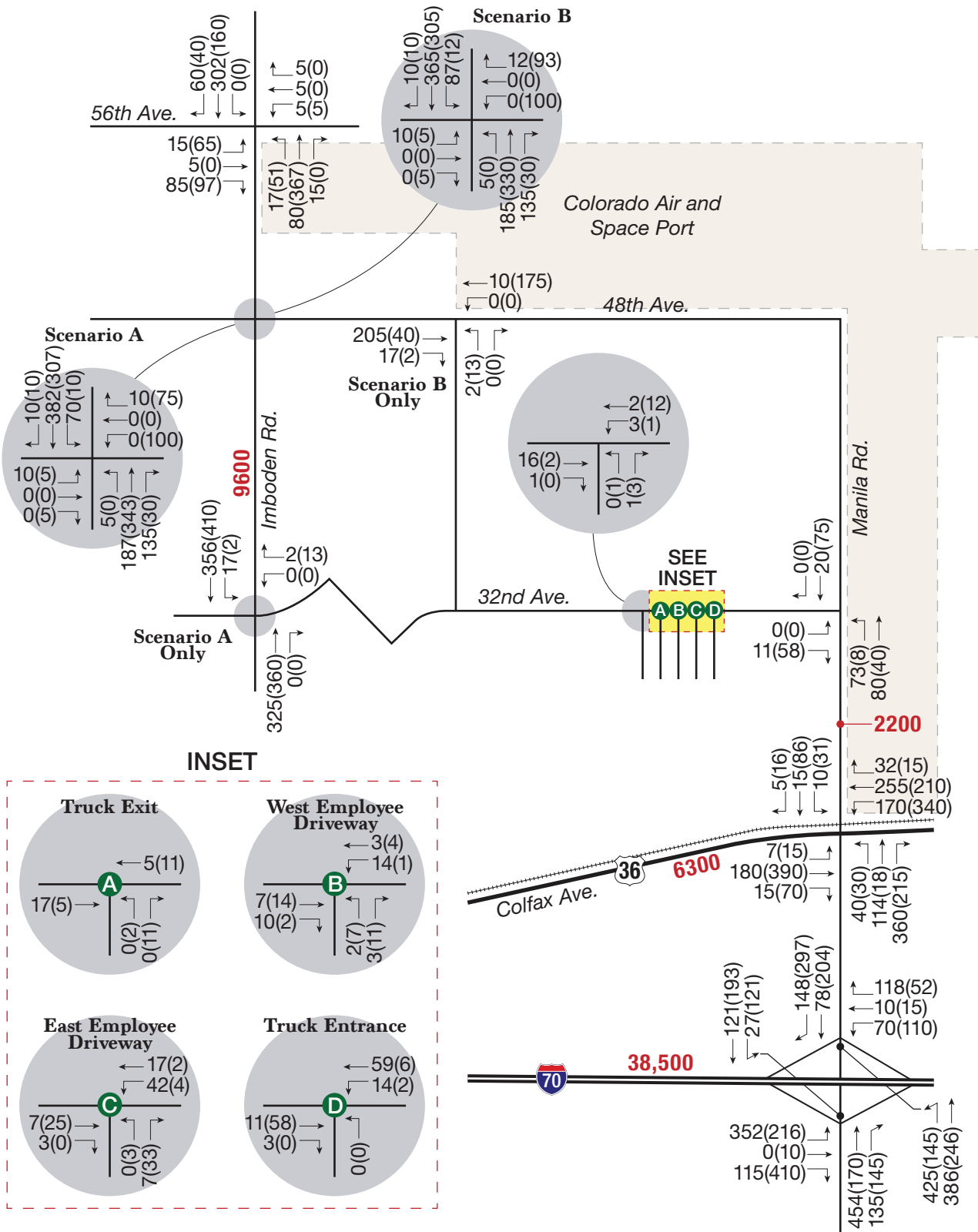
**Figure 16** represents the combination of projected background traffic volumes, along with the estimated site generated volumes for year 2040, including the two access scenarios described previously. As seen from this information, certain intersection movements are now projected to reach levels in excess of 300 vehicle trips during the AM and PM peak hours, each related to an additional 15 years of background traffic growth from the year 2025 condition:

- US 36 westbound left turn at Manila Road (340 in the PM peak hour)
- Northbound Manila Road right turn at US 36 (360 in the AM peak hour)
- Southbound right turn on Manila Road at the westbound I-70 ramp terminal (297 in the PM peak hour)
- Eastbound left turn onto Manila Road from the eastbound I-70 ramp terminal (352 in the AM peak hour)

Once again, the directionality and peak periods for these movements are not surprising, i.e., toward the north and east during the AM peak hour and to/from the south and west during the PM peak hour.

Volumes at intersections on Imboden Road remain relatively low with no turning movements exceeding 140 vehicles and no through movements exceeding 390 during in the peak hours.





#### LEGEND

xxx(xxx) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes

## IV.G. 2040 Operational Conditions

Intersection operations for both access scenarios are projected to operate acceptable except for a few vehicle movements, ones related to the primary travel paths to/from I-70:

- **US 36/Manila Road Intersection** – Both northbound and southbound left turns are projected to experience sufficient average vehicle delay to result in LOS F during the AM and PM peak hours as will the southbound crossing maneuver of US 36 during the PM peak hour. As noted previously, these traffic volume levels are impeded by the large number of westbound left turn movements that are mostly attributable to the RMRP.

Traffic signal warrant analyses included in **Appendix F** find that this intersection is not projected to meet warrants for traffic signal installation by completion of the first two development parcels, although the criterion is close to being met during the PM peak hour. As such, if all of the vehicle-trips associated with the RMRP come to fruition, northbound and southbound motorists will continue to experience a higher level of delay than desired during the peak hours. Vehicle queuing on the southbound approach is not projected to extend to the UPRR tracks, however.

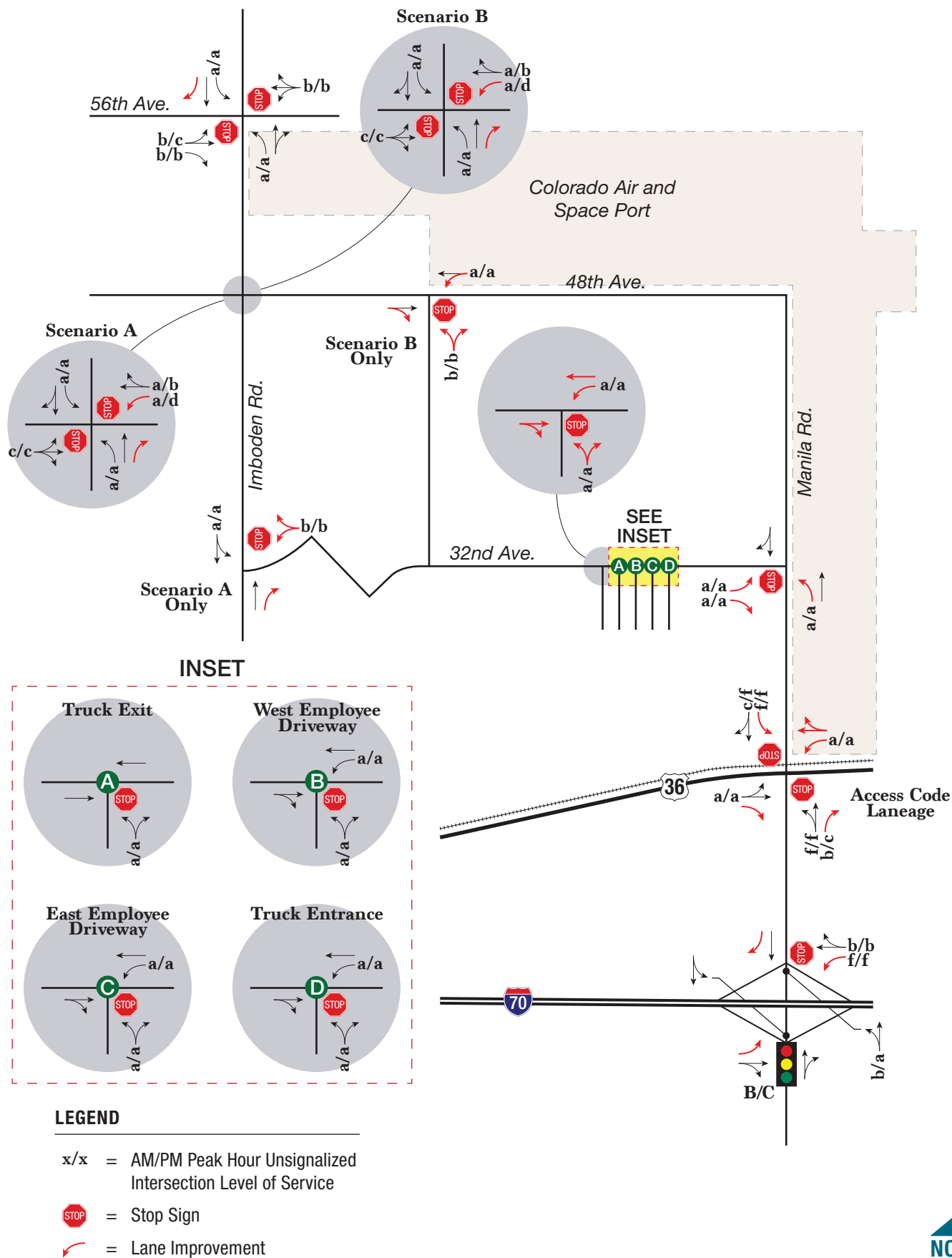
- **Westbound I-70 Ramp Terminal** – Similar to the year 2025 timeframe, certain movements will meet *Code* criteria for installation of additional lanes. Even with these additional lanes, the westbound left turn is still projected to operate at LOS F during both the AM and PM peak hours. Traffic signalization warrants are not projected to be met, however.
- **Eastbound I-70 Ramp Terminal** – This intersection is projected to meet peak hour signalization warrants in addition to meeting *Code* criteria for installation of an eastbound left turn lane. LOS B/C is expected if this intersection is signalized.

**Figure 17** illustrates the projected operations for the 2040 build scenario.

## IV.H. Recommended Roadway Laneage

As shown on **Figure 16** (2025) and **Figure 17** (2040), intersection geometry recommendations are consistent between these two time periods with a few exceptions, primarily due to the same intersection movements being affected by background traffic growth when combined with the first two sites for TransPort Colorado. Through laneage requirements can remain as what exists today since the two development sites do not add much traffic to the overall street network.

Manila Road, Imboden Road, and 48<sup>th</sup> Avenue can remain as two-lane facilities, while the new 32<sup>nd</sup> Avenue should be designed as a Three Lane Collector to City of Aurora standards (one travel lane in each direction with a striped center median). This configuration will allow the striping of left turn lanes at Manila Road (eastbound) and at each site access point. It is understood that 32<sup>nd</sup> Avenue is proposed to be constructed with a smaller cross-section to the west of the transload facility access point since turn lanes will not be necessary for that portion of the roadway at the currently proposed level of development.



## IV.1 Auxiliary Lane Recommendations

Projected traffic volume information, along with the estimated intersection operational analyses, was used to recommend the type and dimensional characteristics for each auxiliary lane needed for each intersection to function appropriately. City of Aurora *Traffic Impact Study Guidelines* indicate that the Code should be used to determine the auxiliary lane vehicle storage and taper lengths. These values can yield overly conservative estimates, however, which can result in vehicle storage well in excess of the 95<sup>th</sup> percentile projected queue lengths (which already incorporate a heavy vehicle percentage), often by an order of magnitude.

Additionally, the Code data do not account for other conditions at an intersection such as low opposing through movements, for example, if a left-turn movement is in question. Rather, it is recommended that the values in **Table 2** corresponding to the 95<sup>th</sup> percentile lengths be used for vehicle storage lengths, along with transition tapers in accordance with Code sizing for NR-B facilities. Refer to **Table 3** on page 29 for auxiliary lanes that are the responsibility of TransPort Colorado.

**Table 2. Auxiliary Lane Recommendations (Year 2025)**

Intersection	Approach	Movement	95 <sup>th</sup> Percentile Queue Length (ft) <sup>1</sup>		Recommended Storage Length	Access Code Storage Length <sup>2</sup>
			AM	PM		
Imboden Road/ 56 <sup>th</sup> Avenue	Northbound	Left Turn <sup>3</sup>	0	3	50'	40'
	Southbound	Left Turn <sup>3</sup>	0	0	50'	25'
	Eastbound	Right Turn <sup>3</sup>	5	0	50'	50'
Imboden Road/ 48 <sup>th</sup> Avenue (Access Scenario A)	Northbound	Left Turn <sup>3</sup>	0	0	50'	25'
	Southbound	Left Turn <sup>3</sup>	3	0	75'	40'
Imboden Road/ 48 <sup>th</sup> Avenue (Access Scenario B)	Northbound	Left Turn <sup>3</sup>	0	0	50'	25'
	Southbound	Left Turn <sup>3</sup>	3	3	75'	50'
Imboden Road/ 32 <sup>nd</sup> Avenue (Access Scenario A)	Northbound	Right Turn	0	0	50'	25'
32 <sup>nd</sup> Avenue/ Transload Driveway	Westbound	Left Turn	0	0	75'	25'
32 <sup>nd</sup> Avenue/ West Employee Driveway	Westbound	Left Turn	0	0	50'	25'
32 <sup>nd</sup> Avenue/ East Employee Driveway	Westbound	Left Turn	3	0	50'	50'
32 <sup>nd</sup> Avenue/ Truck Entrance	Westbound	Left Turn	0	0	75'	50'

Intersection	Approach	Movement	95 <sup>th</sup> Percentile Queue Length (ft) <sup>1</sup>		Recommended Storage Length	Access Code Storage Length <sup>2</sup>
			AM	PM		
Manila Road/ 32 <sup>nd</sup> Avenue	Eastbound	Left Turn	0	0	50'	25'
	Northbound	Left Turn	5	0	125'	125'
US 36/Manila Road	Westbound	Left Turn	8	30	100'	435'
	Northbound	Right Turn	55	18	100'	470'
Manila Road/ I-70 Westbound Ramp	Southbound	Right Turn	0	0	0'	110'
	Westbound	Left Turn	20	13	50'	50'
Manila Road/ I-70 Eastbound Ramp	Eastbound	Left Turn	110	28	150'	445'

<sup>1</sup> Calculations based on HCM methodology using a heavy vehicle percentage of 20 percent.  
<sup>2</sup> Number shown is based on volume adjustments of 3 PCE per heavy vehicle.  
<sup>3</sup> Existing lane meets needs

Given the number of driveways on 32<sup>nd</sup> Avenue, all of which have westbound left turns, a continuous shared left turn lane should be installed from Manila Road to the west edge of full 32<sup>nd</sup> Avenue construction in preparation for future development on the north side of 32<sup>nd</sup>. This approach would align with the previous recommendations that 32<sup>nd</sup> Avenue should be designed as a 3-lane Collector. A narrower two-lane cross-section would be sufficient for 32<sup>nd</sup> Avenue to the west of the current proposed development since traffic volumes would remain low and this connection is primarily to provide a secondary access as a requirement set by Aurora Fire Life Safety.

## VI.J Pedestrian Connectivity

The City of Aurora Three Lane Collector typical section will be constructed for 32<sup>nd</sup> Avenue. Pedestrian amenities will include a detached shared used path along both sides of 32<sup>nd</sup> Avenue. These infrastructure will ultimately connect with the larger pedestrian/bicyclist/trail network that is foreseen for all of TransPort Colorado, particularly a connection to the Bear Gulch Trail.

## VI.K ISP 1 Improvements

While **Table 2** identified the auxiliary lane requirements at each study area intersection based on Code criteria, not all of these movements reflect trips to/from the first two TransPort Colorado sites (they reflect improvements needed to satisfy background traffic growth). For example, a northbound right turn movement at the Imboden Road/48<sup>th</sup> Avenue intersection, which requires a separate right turn lane, does not have any vehicle movements related to the currently proposed development within TransPort Colorado. As such, **Table 2** contains only a summary of the projected improvements needed for new streets or intersection movements related to the development of the first two TransPort Colorado parcels. The left turn lane improvements on Manila and Imboden Roads could be deferred, however, until additional development parcels are being considered since conflicting traffic volumes are relatively low and these intersections will continue to operate well without these left turn lanes.

**Table 3. ISP I Improvement Recommendations**

Location	Improvement
32 <sup>nd</sup> Avenue	Construct City of Aurora Three Lane Collector street between Manila Road and the western site boundary for the transload facility with a continuous shared left turn lane. The portion to the west of the transload facility can have a reduced cross-section.
Manila Road/ 32 <sup>nd</sup> Avenue Intersection	Stripe an exclusive eastbound left turn lane within the Three Lane Collector cross-section at Manila Road (50'); construct northbound left turn lane (435' deceleration length [includes 162' taper]) with 125' of vehicle storage. Can be deferred until additional sites are developed but is recommended as a possible improvement in preparation of future development.
Imboden Road/32 <sup>nd</sup> Avenue Intersection	Construct southbound left turn lane (435' deceleration length, which includes 162' taper) with 75' of vehicle storage. Imboden Road immediately to the north of 32 <sup>nd</sup> Avenue will have significantly reduced traffic volumes in the future when the Imboden Road/Quail Run Road realignment occurs, possibly eliminating the need for this improvement. Given that this improvement is a borderline need and may not be warranted with future roadway alignments, the developer has proposed providing a northbound right turn lane (435' deceleration length, which includes 162' taper) to help reduce conflicts at this intersection and defer the southbound left until a later date.



## V. SUMMARY AND RECOMMENDATIONS

TransPort Colorado, a multi-year master-planned business environment in the City of Aurora, is planning to construct the first two parcels of its overall development area. These two parcels will include a 288,000sf warehouse along with a rail transload facility that will eventually provide short-line rail access for numerous TransPort Colorado warehouse and industrial parcels.

The first two parcels will be located along 32<sup>nd</sup> Avenue near Manila Road in the approximate southeast quadrant of TransPort Colorado. Given the industrial/warehousing nature of these sites, the primary access route will be along Manila Road to/from the I-70/Manila Road interchange, while secondary access will be provided to/from the west via 32<sup>nd</sup> Avenue and Imboden Road for trips toward the northwest via Imboden Road and 56<sup>th</sup> Avenue.

32<sup>nd</sup> Avenue between Manila and Imboden Roads is planned to be constructed as part of this project, while an alternate route that uses part of the new 32<sup>nd</sup> Avenue and a new Quail Run Drive alignment may be used depending on land annexation timeframes.

The two development parcels will have direct access to 32<sup>nd</sup> Avenue. Vehicle movements to/from the sites will use the Three Lane Collector street typical section that includes one through lane for vehicle movements in each direction, along with a striped center turn lane.

Trip generation for the two development sites is projected to be 1,183 daily, with 103 trips during the AM peak hour and 82 during the PM peak hour. These levels are relatively low trip generation levels given the amount of acreage that the two parcels cover, not unexpected for these types of land uses, however. The MTIS projected the transload facility and 40 acres of Subarea I development to create 1,162 daily trips. The current proposed development represents a 1.9 percent increase in traffic volume projections.

Only a few intersection improvements have been identified beyond those intersection improvements that are already needed or that should be constructed as part of the RMRP (see table below). While these improvements meet the City of Aurora criteria for installation, operational analyses find that the left turn lanes on Manila and Imboden Road could be deferred until other sites in TransPort Colorado are proposed for development.

Location	Improvement
32 <sup>nd</sup> Avenue	Construct City of Aurora Three Lane Collector street between Manila Road and the western site boundary for the transload facility with a continuous shared left turn lane. The portion to the west of the transload facility can have a reduced cross-section.
Manila Road/ 32 <sup>nd</sup> Avenue Intersection	Stripe an exclusive eastbound left turn lane within the Three Lane Collector cross-section at Manila Road (50'); construct northbound left turn lane (435' deceleration length [includes 162' taper] with 125' of vehicle storage. Can be deferred until additional sites are developed but is recommended as a possible improvement in preparation of future development.
Imboden Road/32 <sup>nd</sup> Avenue Intersection	Construct southbound left turn lane (435' deceleration length, which includes 162' taper) with 75' of vehicle storage. Imboden Road immediately north of 32 <sup>nd</sup> Avenue will see significantly reduced volumes in the future when the Imboden Road/Quail Run Road realignment occurs, possibly eliminating the need for this improvement. Given that this improvement is a borderline need and may not be warranted with future roadway alignments, the developer has proposed providing a northbound right turn lane (435' deceleration length, which includes 162' taper) to help reduce conflicts at this intersection and defer the southbound left turn lane until a later date.

## APPENDIX A. RECORDED TRAFFIC VOLUMES

**All Traffic Data**  
Wheat Ridge, CO 80033

Date Start: 06-Sep-18  
Date End: 06-Sep-18  
Site Code: 7  
IMBODEN RD N.O. US 36

Start Time	06-Sep-18 Thu	NB	SB							Total
12:00 AM		8	5							13
01:00		6	0							6
02:00		2	3							5
03:00		6	6							12
04:00		23	8							31
05:00		64	40							104
06:00		99	99							198
07:00		83	99							182
08:00		78	79							157
09:00		96	72							168
10:00		56	53							109
11:00		74	62							136
12:00 PM		82	78							160
01:00		70	51							121
02:00		76	61							137
03:00		82	79							161
04:00		96	121							217
05:00		102	80							182
06:00		51	71							122
07:00		43	32							75
08:00		33	25							58
09:00		24	16							40
10:00		12	21							33
11:00		7	14							21
Total		1273	1175							2448
Percent		52.0%	48.0%							
AM Peak	-	06:00	06:00	-	-	-	-	-	-	06:00
Vol.	-	99	99	-	-	-	-	-	-	198
PM Peak	-	17:00	16:00	-	-	-	-	-	-	16:00
Vol.	-	102	121	-	-	-	-	-	-	217
Grand Total		1273	1175							2448
Percent		52.0%	48.0%							
ADT		ADT 2,448	AADT 2,448							

## All Traffic Data

### Wheat Ridge, CO 80033

Date Start: 06-Sep-18  
Date End: 06-Sep-18  
Site Code: 8  
N MANILA RD N.O. US 369

Start Time	06-Sep-18	NB	SB							Total
12:00 AM		0	0							0
01:00		0	0							0
02:00		0	0							0
03:00		0	0							0
04:00		0	0							0
05:00		3	1							4
06:00		11	2							13
07:00		19	3							22
08:00		13	5							18
09:00		7	7							14
10:00		8	8							16
11:00		11	8							19
12:00 PM		11	13							24
01:00		13	8							21
02:00		16	6							22
03:00		19	21							40
04:00		3	19							22
05:00		20	13							33
06:00		7	22							29
07:00		2	22							24
08:00		2	9							11
09:00		4	8							12
10:00		1	1							2
11:00		0	1							1
Total		170	177							347
Percent		49.0%	51.0%							
AM Peak	-	07:00	10:00	-	-	-	-	-	-	07:00
Vol.	-	19	8	-	-	-	-	-	-	22
PM Peak	-	17:00	18:00	-	-	-	-	-	-	15:00
Vol.	-	20	22	-	-	-	-	-	-	40
Grand Total		170	177							347
Percent		49.0%	51.0%							
ADT		ADT 347	AADT 347							



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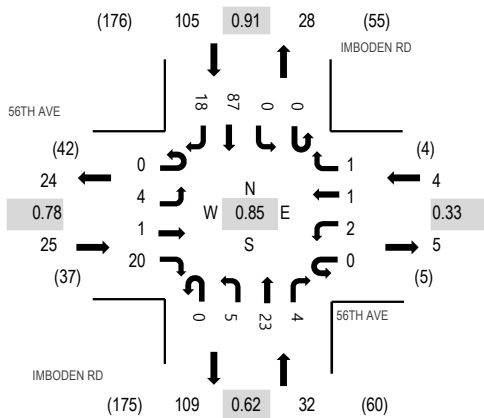
**Location:** 1 IMBODEN RD & 56TH AVE AM

**Date:** Thursday, February 6, 2020

**Peak Hour:** 06:30 AM - 07:30 AM

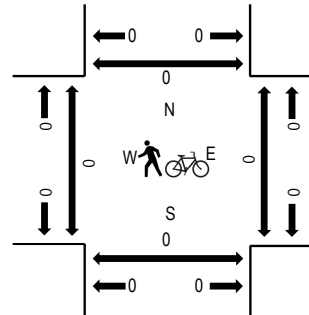
**Peak 15-Minutes:** 06:45 AM - 07:00 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	56TH AVE Eastbound				56TH AVE Westbound				IMBODEN RD Northbound				IMBODEN RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
6:30 AM	0	1	0	5	0	0	0	1	0	2	4	3	0	0	25	4	45	166	0	0	0	0
6:45 AM	0	1	1	6	0	0	0	0	0	2	10	1	0	0	23	5	49	140	0	0	0	0
7:00 AM	0	1	0	6	0	2	1	0	0	1	5	0	0	0	23	5	44	118	0	0	0	0
7:15 AM	0	1	0	3	0	0	0	0	0	0	4	0	0	0	16	4	28	111	0	0	0	0
7:30 AM	0	0	0	2	0	0	0	0	0	0	4	0	0	0	10	3	19	111	0	0	0	0
7:45 AM	0	0	0	1	0	0	0	0	0	2	10	0	0	0	11	3	27		0	0	0	0
8:00 AM	0	3	0	4	0	0	0	0	0	0	4	0	0	0	20	6	37		0	0	0	0
8:15 AM	0	0	0	2	0	0	0	0	0	2	6	0	0	0	16	2	28		0	0	0	0
Count Total	0	7	1	29	0	2	1	1	0	9	47	4	0	0	144	32	277		0	0	0	0
Peak Hour	0	4	1	20	0	2	1	1	0	5	23	4	0	0	87	18	166		0	0	0	0



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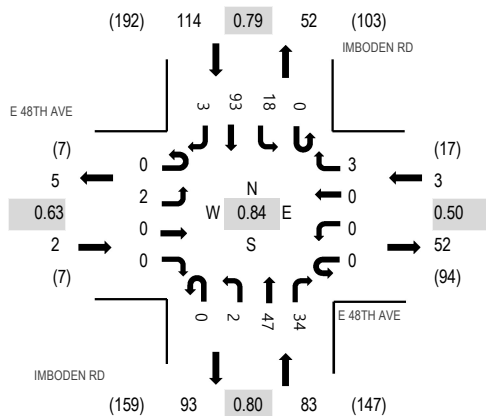
**Location:** 2 IMBODEN RD & E 48TH AVE AM

**Date:** Thursday, September 6, 2018

**Peak Hour:** 06:30 AM - 07:30 AM

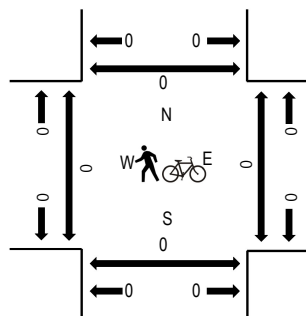
**Peak 15-Minutes:** 06:45 AM - 07:00 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	E 48TH AVE Eastbound				E 48TH AVE Westbound				IMBODEN RD Northbound				IMBODEN RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
6:30 AM	0	0	0	0	0	0	0	2	0	0	9	12	0	5	30	1	59	202	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	2	13	9	0	5	29	2	60	178	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	17	9	0	5	14	0	45	160	0	0	0	0
7:15 AM	0	2	0	0	0	0	0	1	0	0	8	4	0	3	20	0	38	150	0	0	0	0
7:30 AM	0	2	0	0	0	1	0	1	0	0	12	3	0	4	12	0	35	161	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	3	0	0	10	8	0	6	14	1	42		0	0	0	0
8:00 AM	0	0	0	1	0	2	0	0	0	1	5	5	0	5	16	0	35		0	0	0	0
8:15 AM	0	2	0	0	0	6	0	1	0	0	15	5	0	6	14	0	49		0	0	0	0
Count Total	0	6	0	1	0	9	0	8	0	3	89	55	0	39	149	4	363		0	0	0	0
Peak Hour	0	2	0	0	0	0	0	3	0	2	47	34	0	18	93	3	202		0	0	0	0



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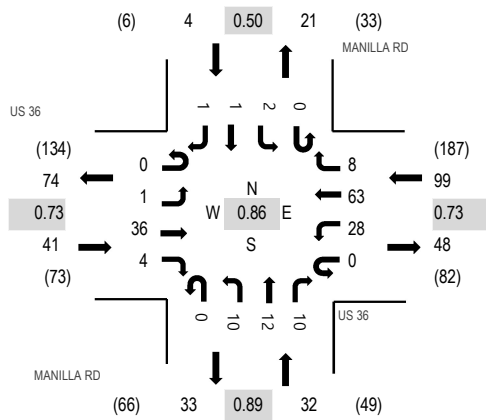
Location: 4 MANILLA RD & US 36 AM

Date: Thursday, September 6, 2018

Peak Hour: 06:45 AM - 07:45 AM

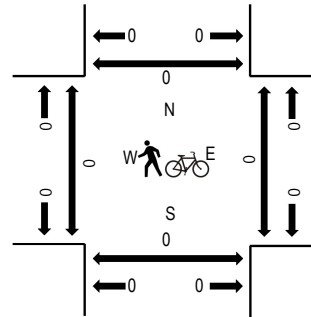
Peak 15-Minutes: 07:30 AM - 07:45 AM

### Peak Hour - All Vehicles



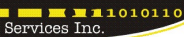
Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

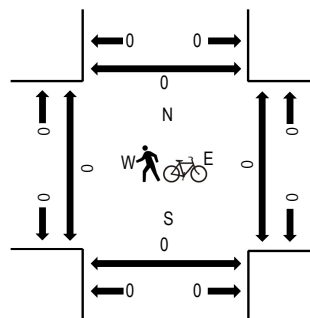
Interval Start Time	US 36 Eastbound				US 36 Westbound				MANILLA RD Northbound				MANILLA RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
6:30 AM	0	0	6	0	0	7	27	3	0	0	0	1	0	0	0	0	44	169	0	0	0	0
6:45 AM	0	0	9	2	0	6	14	2	0	3	2	2	0	1	0	0	41	176	0	0	0	0
7:00 AM	0	0	9	1	0	11	13	1	0	2	3	2	0	1	1	0	44	174	0	0	0	0
7:15 AM	0	0	5	1	0	2	20	2	0	3	3	3	0	0	0	1	40	164	0	0	0	0
7:30 AM	0	1	13	0	0	9	16	3	0	2	4	3	0	0	0	0	51	146	0	0	0	0
7:45 AM	0	0	6	3	0	10	13	1	0	1	2	3	0	0	0	0	39		0	0	0	0
8:00 AM	0	0	10	1	0	6	11	2	0	2	0	1	0	0	1	0	34		0	0	0	0
8:15 AM	0	1	5	0	0	4	3	1	0	3	2	2	0	0	1	0	22		0	0	0	0
Count Total	0	2	63	8	0	55	117	15	0	16	16	17	0	2	3	1	315		0	0	0	0
Peak Hour	0	1	36	4	0	28	63	8	0	10	12	10	0	2	1	1	176		0	0	0	0



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**Peak 15-Minutes:** 07:15 AM - 07:30 AM

### Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Interval Start Time	I-70 WB ON RAMP Eastbound				I-70 WB OFF RAMP Westbound				MANILLA RD Northbound				MANILLA RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
6:30 AM	0	0	0	0	0	3	0	2	0	32	2	0	0	0	0	6	45	194	0	0	0	0
6:45 AM	0	0	0	0	0	2	1	1	0	25	4	0	0	0	2	3	38	192	0	0	0	0
7:00 AM	0	0	0	0	0	3	1	3	0	23	7	0	0	0	6	9	52	199	0	0	0	0
7:15 AM	0	0	0	0	0	7	2	1	0	36	9	0	0	0	1	3	59	182	0	0	0	0
7:30 AM	0	0	0	0	0	1	0	1	0	26	6	0	0	0	3	6	43	147	0	0	0	0
7:45 AM	0	0	0	0	0	7	0	2	0	23	1	0	0	0	5	7	45		0	0	0	0
8:00 AM	0	0	0	0	0	2	1	2	0	19	2	0	0	0	6	3	35		0	0	0	0
8:15 AM	0	0	0	0	0	2	0	0	0	11	6	0	0	0	3	2	24		0	0	0	0
Count Total	0	0	0	0	0	27	5	12	0	195	37	0	0	0	26	39	341		0	0	0	0
Peak Hour	0	0	0	0	0	18	3	7	0	108	23	0	0	0	15	25	199		0	0	0	0

Interval Start Time	I-70 WB ON RAMP Eastbound				I-70 WB OFF RAMP Westbound				MANILLA RD Northbound				MANILLA RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
6:30 AM	0	0	0	0	0	3	0	2	0	32	2	0	0	0	0	6	45	194	0	0	0	0
6:45 AM	0	0	0	0	0	2	1	1	0	25	4	0	0	0	2	3	38	192	0	0	0	0
7:00 AM	0	0	0	0	0	3	1	3	0	23	7	0	0	0	6	9	52	199	0	0	0	0
7:15 AM	0	0	0	0	0	7	2	1	0	36	9	0	0	0	1	3	59	182	0	0	0	0
7:30 AM	0	0	0	0	0	1	0	1	0	26	6	0	0	0	3	6	43	147	0	0	0	0
7:45 AM	0	0	0	0	0	7	0	2	0	23	1	0	0	0	5	7	45		0	0	0	0
8:00 AM	0	0	0	0	0	2	1	2	0	19	2	0	0	0	6	3	35		0	0	0	0
8:15 AM	0	0	0	0	0	2	0	0	0	11	6	0	0	0	3	2	24		0	0	0	0
Count Total	0	0	0	0	0	27	5	12	0	195	37	0	0	0	26	39	341		0	0	0	0
Peak Hour	0	0	0	0	0	18	3	7	0	108	23	0	0	0	15	25	199		0	0	0	0





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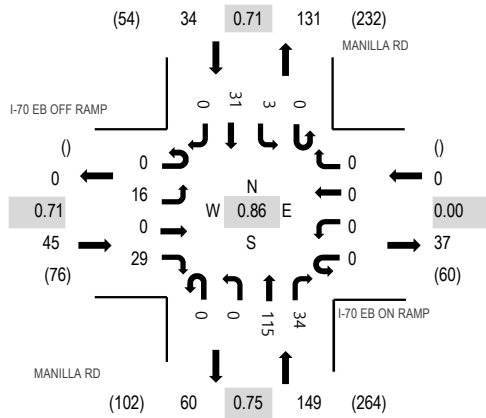
**Location:** 6 MANILLA RD & I-70 EB ON RAMP AM

**Date:** Thursday, September 6, 2018

**Peak Hour:** 07:00 AM - 08:00 AM

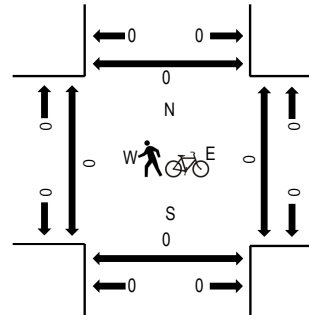
**Peak 15-Minutes:** 07:15 AM - 07:30 AM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	I-70 EB OFF RAMP Eastbound				I-70 EB ON RAMP Westbound				MANILLA RD Northbound				MANILLA RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
6:30 AM	0	2	0	3	0	0	0	0	0	0	32	2	0	1	2	0	42	200	0	0	0	0
6:45 AM	0	1	0	4	0	0	0	0	0	0	28	3	0	1	2	0	39	212	0	0	0	0
7:00 AM	0	3	0	7	0	0	0	0	0	0	28	5	0	1	9	0	53	228	0	0	0	0
7:15 AM	0	4	0	4	0	0	0	0	0	0	40	10	0	1	7	0	66	225	0	0	0	0
7:30 AM	0	8	0	9	0	0	0	0	0	0	23	10	0	0	4	0	54	194	0	0	0	0
7:45 AM	0	1	0	9	0	0	0	0	0	0	24	9	0	1	11	0	55		0	0	0	0
8:00 AM	0	1	0	12	0	0	0	0	0	0	20	9	0	1	7	0	50		0	0	0	0
8:15 AM	0	1	0	7	0	0	0	0	0	0	16	5	0	1	5	0	35		0	0	0	0
Count Total	0	21	0	55	0	0	0	0	0	0	211	53	0	7	47	0	394		0	0	0	0
Peak Hour	0	16	0	29	0	0	0	0	0	0	115	34	0	3	31	0	228		0	0	0	0



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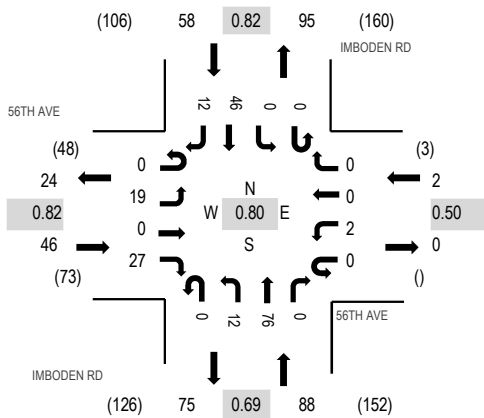
**Location:** 1 IMBODEN RD & 56TH AVE PM

**Date:** Thursday, February 6, 2020

**Peak Hour:** 04:15 PM - 05:15 PM

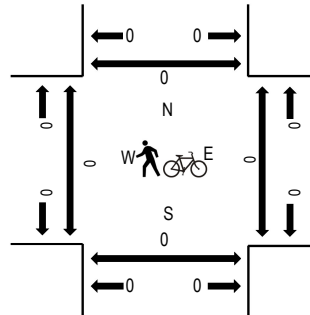
**Peak 15-Minutes:** 05:00 PM - 05:15 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	56TH AVE Eastbound				56TH AVE Westbound				IMBODEN RD Northbound				IMBODEN RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	2	0	5	0	0	0	0	0	2	10	0	0	0	9	2	30	163	0	0	0	0
4:15 PM	0	3	0	5	0	1	0	0	0	3	14	0	0	0	12	4	42	194	0	0	0	0
4:30 PM	0	5	0	9	0	0	0	0	0	4	16	0	0	0	7	1	42	193	0	0	0	0
4:45 PM	0	6	0	8	0	0	0	0	0	2	17	0	0	0	12	4	49	183	0	0	0	0
5:00 PM	0	5	0	5	0	1	0	0	0	3	29	0	0	0	15	3	61	171	0	0	0	0
5:15 PM	0	3	0	5	0	0	0	1	0	2	14	0	0	0	10	6	41		0	0	0	0
5:30 PM	0	2	0	2	0	0	0	0	0	5	14	0	0	0	7	2	32		0	0	0	0
5:45 PM	0	4	0	4	0	0	0	0	0	2	15	0	0	0	9	3	37		0	0	0	0
Count Total	0	30	0	43	0	2	0	1	0	23	129	0	0	0	81	25	334		0	0	0	0
Peak Hour	0	19	0	27	0	2	0	0	0	12	76	0	0	0	46	12	194		0	0	0	0



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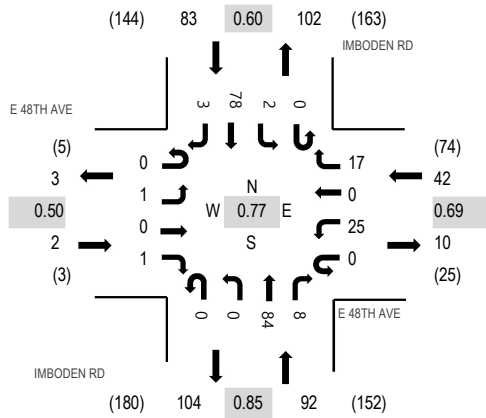
**Location:** 2 IMBODEN RD & E 48TH AVE PM

**Date:** Thursday, September 6, 2018

**Peak Hour:** 04:30 PM - 05:30 PM

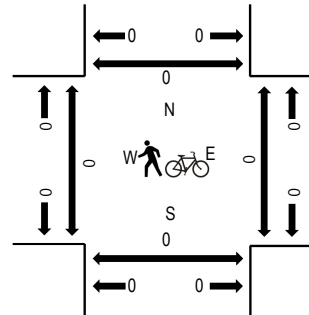
**Peak 15-Minutes:** 04:45 PM - 05:00 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	E 48TH AVE Eastbound				E 48TH AVE Westbound				IMBODEN RD Northbound				IMBODEN RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	4	0	1	0	0	11	4	0	4	12	1	37	196	0	0	0	0
4:15 PM	0	0	0	0	0	11	0	2	0	0	7	2	0	0	17	0	39	215	0	0	0	0
4:30 PM	0	0	0	0	0	7	0	3	0	0	23	0	0	1	14	1	49	219	0	0	0	0
4:45 PM	0	0	0	1	0	5	0	2	0	0	23	4	0	1	34	1	71	212	0	0	0	0
5:00 PM	0	0	0	0	0	8	0	9	0	0	25	2	0	0	11	1	56	177	0	0	0	0
5:15 PM	0	1	0	0	0	5	0	3	0	0	13	2	0	0	19	0	43		0	0	0	0
5:30 PM	0	0	0	0	0	2	0	3	0	0	19	3	0	2	13	0	42		0	0	0	0
5:45 PM	0	1	0	0	0	5	0	4	0	1	13	0	0	0	12	0	36		0	0	0	0
Count Total	0	2	0	1	0	47	0	27	0	1	134	17	0	8	132	4	373		0	0	0	0
Peak Hour	0	1	0	1	0	25	0	17	0	0	84	8	0	2	78	3	219		0	0	0	0



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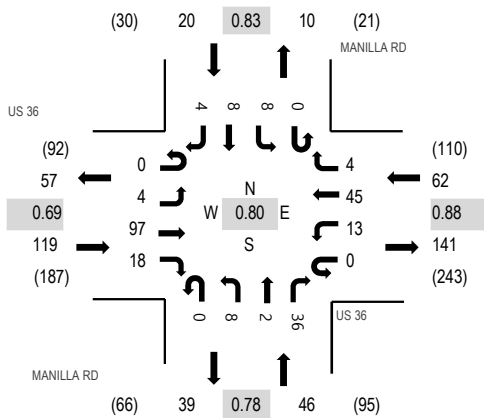
**Location:** 4 MANILLA RD & US 36 PM

**Date:** Thursday, September 6, 2018

**Peak Hour:** 04:30 PM - 05:30 PM

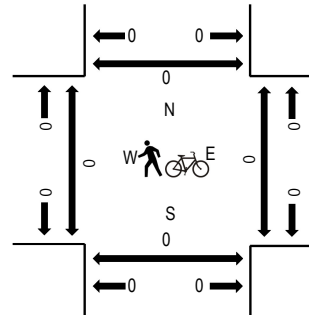
**Peak 15-Minutes:** 04:45 PM - 05:00 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	US 36				US 36				MANILLA RD				MANILLA RD				Total	Rolling Hour	Pedestrian Crossings			
	Eastbound				Westbound				Northbound				Southbound						West	East	South	North
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right						
4:00 PM	0	0	17	0	0	6	7	0	0	2	2	8	0	3	1	0	46	227	0	0	0	0
4:15 PM	0	0	20	0	0	6	11	0	0	0	1	7	0	0	4	0	49	239	0	0	0	0
4:30 PM	0	0	22	2	0	3	15	0	0	2	0	5	0	3	1	2	55	247	0	0	0	0
4:45 PM	0	2	32	9	0	5	8	0	0	4	0	13	0	2	2	0	77	235	0	0	0	0
5:00 PM	0	0	19	6	0	3	10	2	0	2	0	10	0	3	2	1	58	195	0	0	0	0
5:15 PM	0	2	24	1	0	2	12	2	0	0	2	8	0	0	3	1	57		0	0	0	0
5:30 PM	0	0	16	3	0	2	6	1	0	1	2	11	0	0	1	0	43		0	0	0	0
5:45 PM	0	0	12	0	0	3	5	1	0	3	4	8	0	0	1	0	37		0	0	0	0
Count Total	0	4	162	21	0	30	74	6	0	14	11	70	0	11	15	4	422		0	0	0	0
Peak Hour	0	4	97	18	0	13	45	4	0	8	2	36	0	8	8	4	247		0	0	0	0



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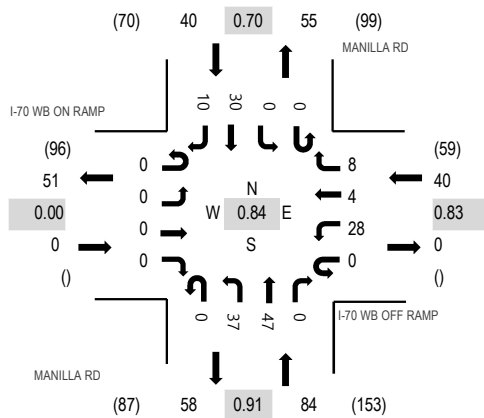
**Location:** 5 MANILLA RD & I-70 WB OFF RAMP PM

**Date:** Thursday, September 6, 2018

**Peak Hour:** 04:45 PM - 05:45 PM

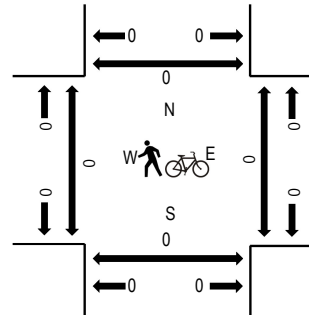
**Peak 15-Minutes:** 04:45 PM - 05:00 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	I-70 WB ON RAMP Eastbound				I-70 WB OFF RAMP Westbound				MANILLA RD Northbound				MANILLA RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	5	0	1	0	6	14	0	0	0	3	5	34	140	0	0	0	0
4:15 PM	0	0	0	0	0	1	0	0	0	11	8	0	0	0	6	4	30	149	0	0	0	0
4:30 PM	0	0	0	0	0	3	1	1	0	8	7	0	0	0	4	3	27	152	0	0	0	0
4:45 PM	0	0	0	0	0	7	0	3	0	9	14	0	0	0	13	3	49	164	0	0	0	0
5:00 PM	0	0	0	0	0	8	1	0	0	9	13	0	0	0	10	2	43	142	0	0	0	0
5:15 PM	0	0	0	0	0	5	2	2	0	12	7	0	0	0	1	4	33		0	0	0	0
5:30 PM	0	0	0	0	0	8	1	3	0	7	13	0	0	0	6	1	39		0	0	0	0
5:45 PM	0	0	0	0	0	5	0	2	0	4	11	0	0	0	2	3	27		0	0	0	0
Count Total	0	0	0	0	0	42	5	12	0	66	87	0	0	0	45	25	282		0	0	0	0
Peak Hour	0	0	0	0	0	28	4	8	0	37	47	0	0	0	30	10	164		0	0	0	0



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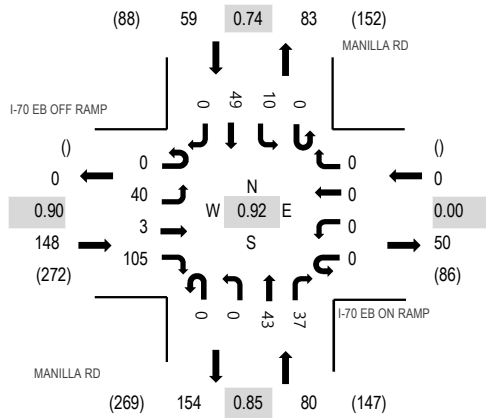
**Location:** 6 MANILLA RD & I-70 EB ON RAMP PM

**Date:** Thursday, September 6, 2018

**Peak Hour:** 04:45 PM - 05:45 PM

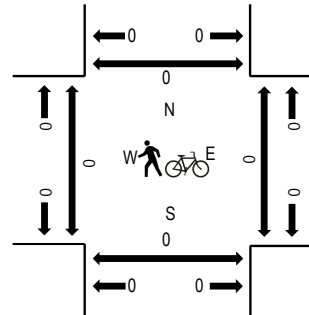
**Peak 15-Minutes:** 04:45 PM - 05:00 PM

### Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

### Peak Hour - Pedestrians/Bicycles on Crosswalk



### Traffic Counts

Interval Start Time	I-70 EB OFF RAMP Eastbound				I-70 EB ON RAMP Westbound				MANILLA RD Northbound				MANILLA RD Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	10	0	21	0	0	0	0	0	0	10	8	0	2	6	0	57	241	0	0	0	0
4:15 PM	0	9	0	24	0	0	0	0	0	0	10	7	0	3	3	0	56	261	0	0	0	0
4:30 PM	0	5	0	24	0	0	0	0	0	0	9	4	0	0	8	0	50	267	0	0	0	0
4:45 PM	0	12	3	26	0	0	0	0	0	0	11	6	0	2	18	0	78	287	0	0	0	0
5:00 PM	0	11	0	23	0	0	0	0	0	0	11	13	0	5	14	0	77	266	0	0	0	0
5:15 PM	0	7	0	30	0	0	0	0	0	0	12	7	0	1	5	0	62		0	0	0	0
5:30 PM	0	10	0	26	0	0	0	0	0	0	9	11	0	2	12	0	70		0	0	0	0
5:45 PM	0	9	0	22	0	0	0	0	0	0	7	12	0	0	7	0	57		0	0	0	0
Count Total	0	73	3	196	0	0	0	0	0	0	79	68	0	15	73	0	507		0	0	0	0
Peak Hour	0	40	3	105	0	0	0	0	0	0	43	37	0	10	49	0	287		0	0	0	0

## APPENDIX B. LEVEL OF SERVICE CRITERIA

**TABLE B1**  
**LEVEL OF SERVICE CRITERIA FOR**  
**TWO-WAY STOP CONTROLLED (TWSC) INTERSECTIONS AND ROUNDABOUTS**

Level of Service	Delay Range (sec/veh)
A	0.0 – 10.0
B	>10.0 – 15.0
C	>15.0 – 25.0
D	>25.0 – 35.0
E	>35.0 – 50.0
F	> 50.0
Adapted from <i>Highway Capacity Manual</i> , Transportation Research Board, 2010.	

**TABLE B2**  
**LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS**

Level of Service	Control Delay (sec/veh)	Qualitative Description
A	$\leq 10.0$	Good progression, short cycles, very few vehicle-stops.
B	>10.0 – 20.0	Good progression, and/or short cycle lengths, more vehicle-stops.
C	>20.0 – 35.0	Fair progression and/or longer cycle lengths, some individual cycle failures, many vehicle-stops
D	>35.0 – 55.0	Noticeable congestion and cycle failures, unfavorable progression, high v/c ratios, several stops.
E	>55.0 – 80.0	Limit of acceptable delay, poor progression, long cycles, high v/c ratios, frequent cycle failures.
F	> 80.0	Delay is unacceptable to most drivers, volume exceeds capacity, breakdown of traffic flow.
Adapted from <i>Highway Capacity Manual</i> , Transportation Research Board, 2010.		

## APPENDIX C. ANALYSIS WORKSHEETS – EXISTING CONDITIONS



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	4	1	20	2	1	1	5	23	4	0	87	18
Future Vol, veh/h	4	1	20	2	1	1	5	23	4	0	87	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	75	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	5	1	24	2	1	1	6	27	5	0	104	21

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	158	159	115	169	167	30	125	0	0	32	0	0
Stage 1	115	115	-	42	42	-	-	-	-	-	-	-
Stage 2	43	44	-	127	125	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	788	717	914	775	710	1019	1408	-	-	1524	-	-
Stage 1	868	783	-	950	842	-	-	-	-	-	-	-
Stage 2	949	841	-	856	775	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	783	714	914	752	707	1019	1408	-	-	1524	-	-
Mov Cap-2 Maneuver	783	714	-	752	707	-	-	-	-	-	-	-
Stage 1	865	783	-	946	839	-	-	-	-	-	-	-
Stage 2	943	838	-	832	775	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.1		9.6		1.2		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1408	-	-	768	914	791	1524	-	-
HCM Lane V/C Ratio	0.004	-	-	0.008	0.026	0.006	-	-	-
HCM Control Delay (s)	7.6	-	-	9.7	9	9.6	0	-	-
HCM Lane LOS	A	-	-	A	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	0	-	-

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	2	0	0	0	0	3	2	47	34	18	93	3
Future Vol, veh/h	2	0	0	0	0	3	2	47	34	18	93	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	2	0	0	0	0	4	2	56	40	21	111	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	237	255	113	235	237	76	115	0	0	96	0	0
Stage 1	155	155	-	80	80	-	-	-	-	-	-	-
Stage 2	82	100	-	155	157	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	699	634	916	701	649	961	1420	-	-	1443	-	-
Stage 1	826	752	-	907	811	-	-	-	-	-	-	-
Stage 2	904	795	-	826	751	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	688	624	916	693	639	961	1420	-	-	1443	-	-
Mov Cap-2 Maneuver	688	624	-	693	639	-	-	-	-	-	-	-
Stage 1	825	741	-	906	810	-	-	-	-	-	-	-
Stage 2	899	794	-	814	740	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	8.8	0.2	1.2
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1420	-	-	688	961	1443	-
HCM Lane V/C Ratio	0.002	-	-	0.003	0.004	0.015	-
HCM Control Delay (s)	7.5	-	-	10.3	8.8	7.5	-
HCM Lane LOS	A	-	-	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	36	4	28	63	8	10	12	10	2	1	1
Future Vol, veh/h	1	36	4	28	63	8	10	12	10	2	1	1
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	1	42	5	33	73	9	12	14	12	2	1	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	82	0	0	47	0	0	192	195	45	204	193	78
Stage 1	-	-	-	-	-	-	47	47	-	144	144	-
Stage 2	-	-	-	-	-	-	145	148	-	60	49	-
Critical Hdwy	4.21	-	-	4.21	-	-	7.21	6.61	6.31	7.21	6.61	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	6.21	5.61	-	6.21	5.61	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.21	5.61	-	6.21	5.61	-
Follow-up Hdwy	2.299	-	-	2.299	-	-	3.599	4.099	3.399	3.599	4.099	3.399
Pot Cap-1 Maneuver	1460	-	-	1505	-	-	748	685	1000	735	686	958
Stage 1	-	-	-	-	-	-	944	838	-	838	761	-
Stage 2	-	-	-	-	-	-	837	758	-	929	837	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1460	-	-	1505	-	-	732	669	1000	702	670	958
Mov Cap-2 Maneuver	-	-	-	-	-	-	732	669	-	702	670	-
Stage 1	-	-	-	-	-	-	943	837	-	837	743	-
Stage 2	-	-	-	-	-	-	815	741	-	902	836	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			2.1			9.9			9.9		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	769	1460	-	-	1505	-	-	743				
HCM Lane V/C Ratio	0.048	0.001	-	-	0.022	-	-	0.006				
HCM Control Delay (s)	9.9	7.5	0	-	7.4	0	-	9.9				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0				








Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Traffic Vol, veh/h	0	0	0	18	3	7	108	23	0	0	15	25
Future Vol, veh/h	0	0	0	18	3	7	108	23	0	0	15	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	0	0	0	21	4	8	129	27	0	0	18	30







Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	318	333	27	48	0	-
Stage 1	285	285	-	-	-	-
Stage 2	33	48	-	-	-	-
Critical Hdwy	6.51	6.61	6.31	4.21	-	-
Critical Hdwy Stg 1	5.51	5.61	-	-	-	-
Critical Hdwy Stg 2	5.51	5.61	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	2.299	-	-
Pot Cap-1 Maneuver	657	573	1023	1503	-	0
Stage 1	743	660	-	-	0	0
Stage 2	967	837	-	-	0	0
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	600	0	1023	1503	-	-
Mov Cap-2 Maneuver	600	0	-	-	-	-
Stage 1	678	0	-	-	-	-
Stage 2	967	0	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	6.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBTWBLn1	SBT	SBR
Capacity (veh/h)	1503	-	679	-
HCM Lane V/C Ratio	0.086	-	0.049	-
HCM Control Delay (s)	7.6	0	10.6	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.3	-	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	16	0	29	0	0	0	0	115	34	3	31	0
Future Vol, veh/h	16	0	29	0	0	0	0	115	34	3	31	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	15	15	15	15	15	15	15	15	15	15	15	15
Mvmt Flow	19	0	34	0	0	0	0	134	40	3	36	0
Major/Minor	Minor2						Major1			Major2		
Conflicting Flow All	196	216	36				-	0	0	174	0	0
Stage 1	42	42	-				-	-	-	-	-	-
Stage 2	154	174	-				-	-	-	-	-	-
Critical Hdwy	6.55	6.65	6.35				-	-	-	4.25	-	-
Critical Hdwy Stg 1	5.55	5.65	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.55	5.65	-				-	-	-	-	-	-
Follow-up Hdwy	3.635	4.135	3.435				-	-	-	2.335	-	-
Pot Cap-1 Maneuver	764	660	1001				0	-	-	1328	-	0
Stage 1	948	835	-				0	-	-	-	-	0
Stage 2	843	731	-				0	-	-	-	-	0
Platoon blocked, %								-	-	-		
Mov Cap-1 Maneuver	762	0	1001				-	-	-	1328	-	-
Mov Cap-2 Maneuver	762	0	-				-	-	-	-	-	-
Stage 1	948	0	-				-	-	-	-	-	-
Stage 2	841	0	-				-	-	-	-	-	-
Approach	EB						NB			SB		
HCM Control Delay, s	9.2						0			0.7		
HCM LOS	A											
Minor Lane/Major Mvmt		NBT	NBR	EBLn1	SBL	SBT						
Capacity (veh/h)		-	-	901	1328	-						
HCM Lane V/C Ratio		-	-	0.058	0.003	-						
HCM Control Delay (s)		-	-	9.2	7.7	0						
HCM Lane LOS		-	-	A	A	A						
HCM 95th %tile Q(veh)		-	-	0.2	0	-						

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	0	27	2	0	0	12	76	0	0	87	18
Future Vol, veh/h	19	0	27	2	0	0	12	76	0	0	87	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	75	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	23	0	33	2	0	0	14	92	0	0	105	22
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	236	236	116	253	247	92	127	0	0	92	0	0
Stage 1	116	116	-	120	120	-	-	-	-	-	-	-
Stage 2	120	120	-	133	127	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.2	6.6	6.3	4.2	-	-	4.2	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	702	651	915	684	642	944	1411	-	-	1454	-	-
Stage 1	870	784	-	865	781	-	-	-	-	-	-	-
Stage 2	865	781	-	852	776	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	696	644	915	655	636	944	1411	-	-	1454	-	-
Mov Cap-2 Maneuver	696	644	-	655	636	-	-	-	-	-	-	-
Stage 1	861	784	-	856	773	-	-	-	-	-	-	-
Stage 2	856	773	-	822	776	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.6		10.5		1		0					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1411	-	-	696	915	655	1454	-	-			
HCM Lane V/C Ratio	0.01	-	-	0.033	0.036	0.004	-	-	-			
HCM Control Delay (s)	7.6	-	-	10.3	9.1	10.5	0	-	-			
HCM Lane LOS	A	-	-	B	A	B	A	-	-			
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	0	-	-			

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	1	25	0	17	0	84	8	2	78	3
Future Vol, veh/h	1	0	1	25	0	17	0	84	8	2	78	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	1	0	1	32	0	22	0	109	10	3	101	4
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	234	228	103	224	225	114	105	0	0	119	0	0
Stage 1	109	109	-	114	114	-	-	-	-	-	-	-
Stage 2	125	119	-	110	111	-	-	-	-	-	-	-
Critical Hdwy	7.2	6.6	6.3	7.2	6.6	6.3	4.2	-	-	4.2	-	-
Critical Hdwy Stg 1	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.2	5.6	-	6.2	5.6	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	704	658	930	715	660	917	1438	-	-	1421	-	-
Stage 1	877	790	-	872	786	-	-	-	-	-	-	-
Stage 2	860	782	-	876	788	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	686	657	930	713	659	917	1438	-	-	1421	-	-
Mov Cap-2 Maneuver	686	657	-	713	659	-	-	-	-	-	-	-
Stage 1	877	788	-	872	786	-	-	-	-	-	-	-
Stage 2	839	782	-	873	786	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.6		9.9		0		0.2					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1438	-	-	790	784	1421	-	-				
HCM Lane V/C Ratio	-	-	-	0.003	0.07	0.002	-	-				
HCM Control Delay (s)	0	-	-	9.6	9.9	7.5	-	-				
HCM Lane LOS	A	-	-	A	A	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-				

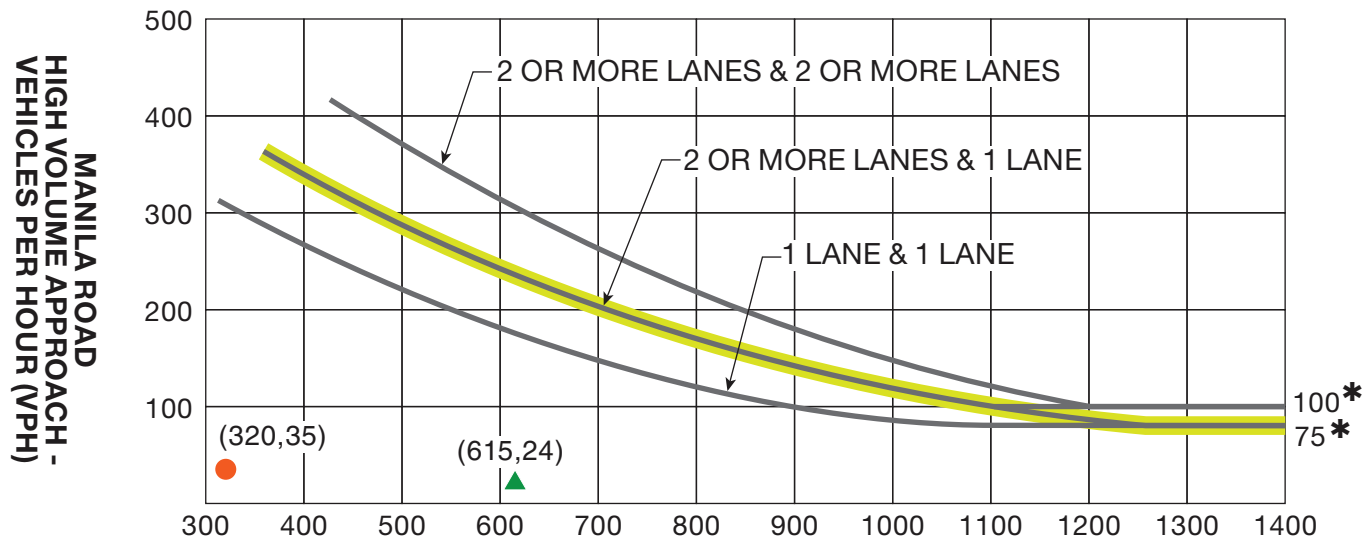
Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	97	18	13	45	4	8	2	36	8	8	4
Future Vol, veh/h	4	97	18	13	45	4	8	2	36	8	8	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	5	117	22	16	54	5	10	2	43	10	10	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	139	0	0	234	229	128	250	238	57
Stage 1	-	-	-	-	-	-	138	138	-	89	89	-
Stage 2	-	-	-	-	-	-	96	91	-	161	149	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.18	6.58	6.28	7.18	6.58	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.18	5.58	-	6.18	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.18	5.58	-	6.18	5.58	-
Follow-up Hdwy	2.272	-	-	2.272	-	-	3.572	4.072	3.372	3.572	4.072	3.372
Pot Cap-1 Maneuver	1507	-	-	1408	-	-	708	660	906	691	653	993
Stage 1	-	-	-	-	-	-	851	771	-	904	810	-
Stage 2	-	-	-	-	-	-	896	808	-	827	763	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1507	-	-	1408	-	-	688	649	906	648	643	993
Mov Cap-2 Maneuver	-	-	-	-	-	-	688	649	-	648	643	-
Stage 1	-	-	-	-	-	-	848	768	-	900	800	-
Stage 2	-	-	-	-	-	-	870	798	-	782	760	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			1.6			9.6			10.4		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	845	1507	-	-	1408	-	-	694				
HCM Lane V/C Ratio	0.066	0.003	-	-	0.011	-	-	0.035				
HCM Control Delay (s)	9.6	7.4	0	-	7.6	0	-	10.4				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				



Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕			↕			↕	
Traffic Vol, veh/h	0	0	0	28	4	8	37	47	0	0	30	10
Future Vol, veh/h	0	0	0	28	4	8	37	47	0	0	30	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	15	15	15	15	15	15	15	15	15	15	15	15
Mvmt Flow	0	0	0	33	5	10	44	56	0	0	36	12
Major/Minor				Minor1		Major1		Major2				
Conflicting Flow All				186	192	56	48	0	-	-	-	0
Stage 1				144	144	-	-	-	-	-	-	-
Stage 2				42	48	-	-	-	-	-	-	-
Critical Hdwy				6.55	6.65	6.35	4.25	-	-	-	-	-
Critical Hdwy Stg 1				5.55	5.65	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.55	5.65	-	-	-	-	-	-	-
Follow-up Hdwy				3.635	4.135	3.435	2.335	-	-	-	-	-
Pot Cap-1 Maneuver				774	680	975	1480	-	0	0	-	-
Stage 1				852	754	-	-	-	0	0	-	-
Stage 2				948	830	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				750	0	975	1480	-	-	-	-	-
Mov Cap-2 Maneuver				750	0	-	-	-	-	-	-	-
Stage 1				826	0	-	-	-	-	-	-	-
Stage 2				948	0	-	-	-	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				9.8		3.3		0				
HCM LOS				A								
Minor Lane/Major Mvmt		NBL	NBTWBLn1	SBT	SBR							
Capacity (veh/h)		1480	-	791	-	-						
HCM Lane V/C Ratio		0.03	-	0.06	-	-						
HCM Control Delay (s)		7.5	0	9.8	-	-						
HCM Lane LOS		A	A	A	-	-						
HCM 95th %tile Q(veh)		0.1	-	0.2	-	-						

Intersection												
Int Delay, s/veh	5.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Traffic Vol, veh/h	40	3	105	0	0	0	0	43	37	10	49	0
Future Vol, veh/h	40	3	105	0	0	0	0	43	37	10	49	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	13	13	13	13	13	13	13	13	13	13	13	13
Mvmt Flow	43	3	114	0	0	0	0	47	40	11	53	0
Major/Minor	Minor2						Major1			Major2		
Conflicting Flow All	142	162	53				-	0	0	87	0	0
Stage 1	75	75	-				-	-	-	-	-	-
Stage 2	67	87	-				-	-	-	-	-	-
Critical Hdwy	6.53	6.63	6.33				-	-	-	4.23	-	-
Critical Hdwy Stg 1	5.53	5.63	-				-	-	-	-	-	-
Critical Hdwy Stg 2	5.53	5.63	-				-	-	-	-	-	-
Follow-up Hdwy	3.617	4.117	3.417				-	-	-	2.317	-	-
Pot Cap-1 Maneuver	825	711	984				0	-	-	1442	-	0
Stage 1	921	811	-				0	-	-	-	-	0
Stage 2	929	802	-				0	-	-	-	-	0
Platoon blocked, %							-	-				
Mov Cap-1 Maneuver	818	0	984				-	-	-	1442	-	-
Mov Cap-2 Maneuver	818	0	-				-	-	-	-	-	-
Stage 1	921	0	-				-	-	-	-	-	-
Stage 2	922	0	-				-	-	-	-	-	-
Approach	EB						NB			SB		
HCM Control Delay, s	9.7						0			1.3		
HCM LOS	A											
Minor Lane/Major Mvmt		NBT	NBR	EBLn1	SBL	SBT						
Capacity (veh/h)		-	-	932	1442	-						
HCM Lane V/C Ratio		-	-	0.173	0.008	-						
HCM Control Delay (s)		-	-	9.7	7.5	0						
HCM Lane LOS		-	-	A	A	A						
HCM 95th %tile Q(veh)		-	-	0.6	0	-						

## APPENDIX D. TRAFFIC SIGNALIZATION WARRANT ANALYSES – BACKGROUND CONDITIONS

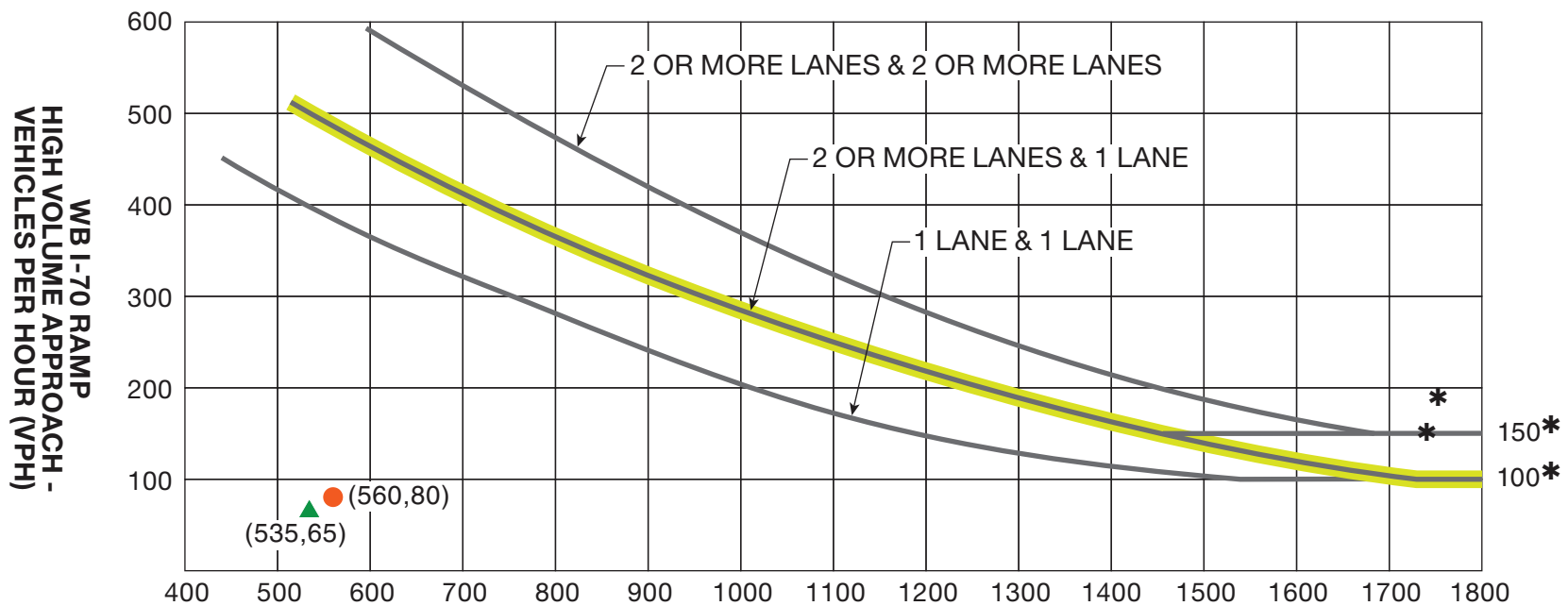


**COLFAX AVENUE (US 36) - TOTAL OF BOTH APPROACHES -  
VEHICLES PER HOUR (VPH)**

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

**LEGEND**

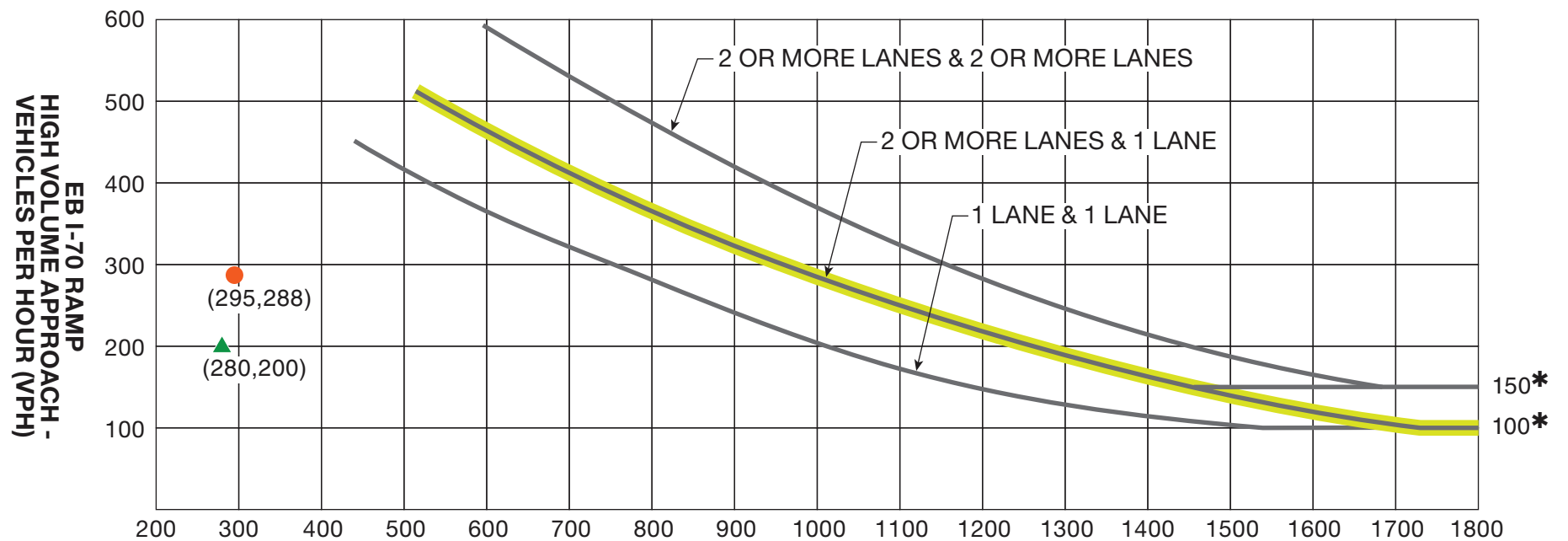
- = AM Peak Hour
- ▲ = PM Peak Hour



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

#### LEGEND

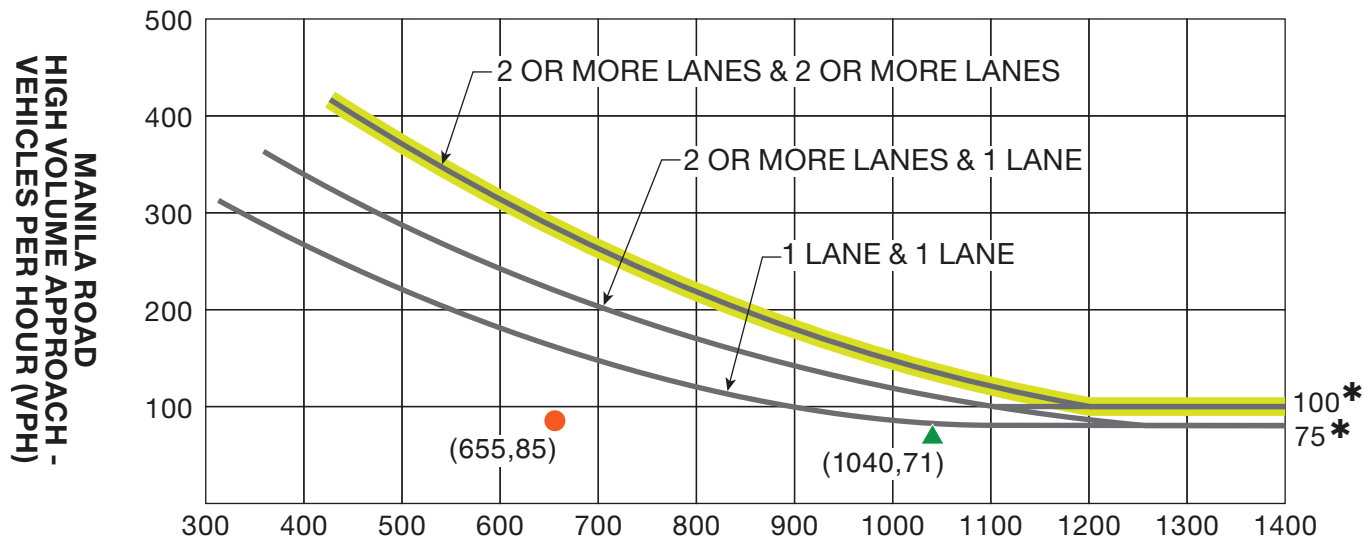
- = AM Peak Hour
- ▲ = PM Peak Hour



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

#### LEGEND

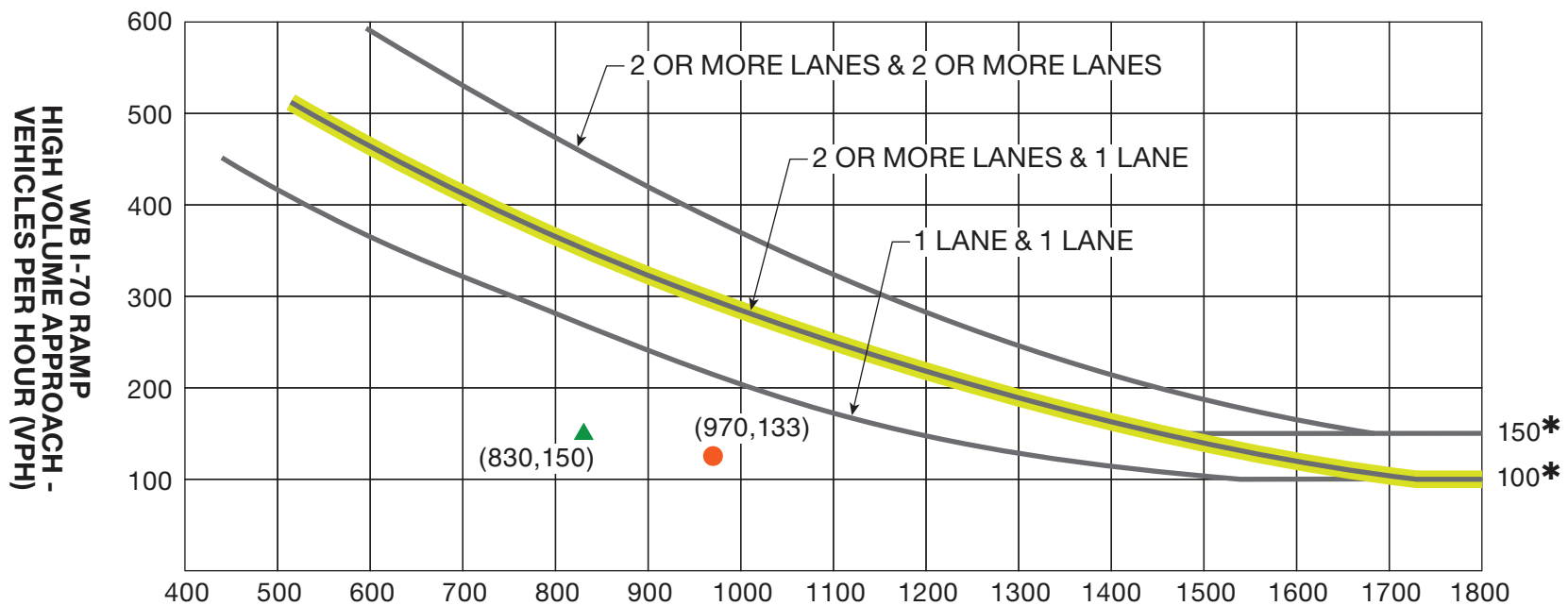
- = AM Peak Hour
- ▲ = PM Peak Hour



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

#### LEGEND

- = AM Peak Hour
- ▲ = PM Peak Hour

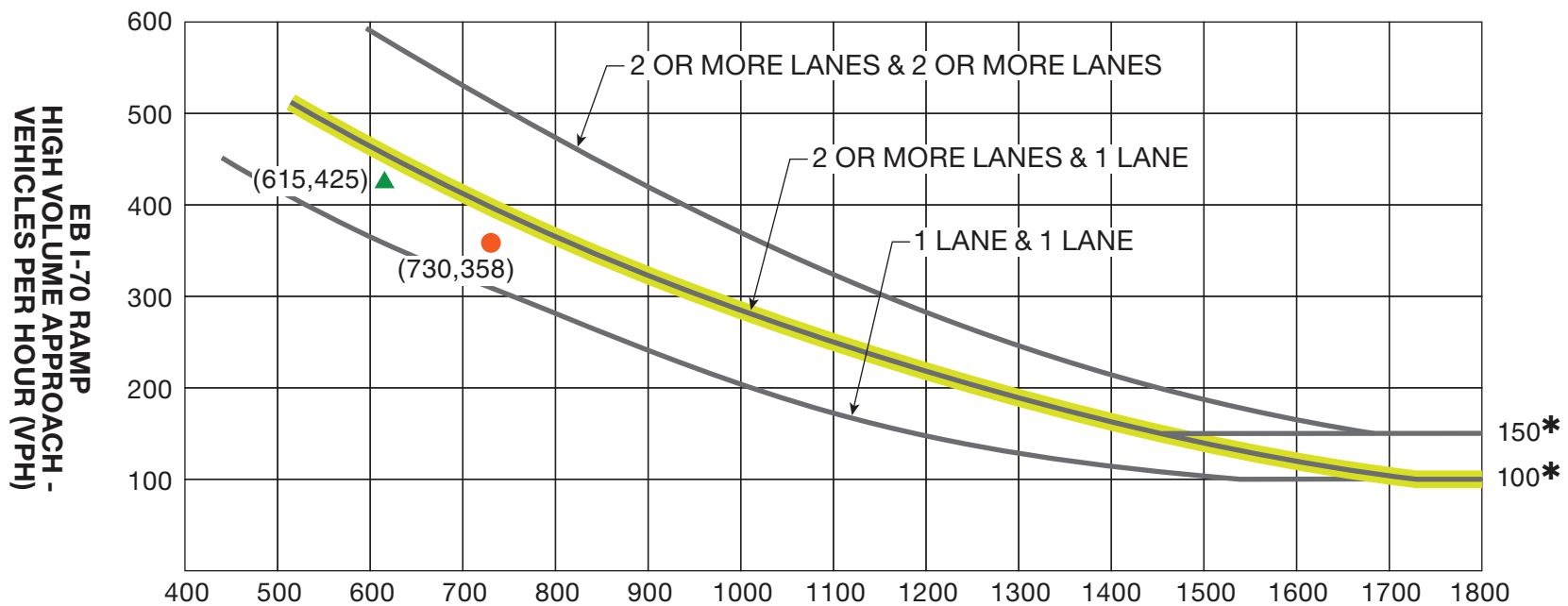


\* Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

#### LEGEND

- = AM Peak Hour
- ▲ = PM Peak Hour





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

#### LEGEND

- = AM Peak Hour
- ▲ = PM Peak Hour

## APPENDIX E. ANALYSIS WORKSHEETS – BACKGROUND CONDITIONS

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱		↰	↱	
Traffic Vol, veh/h	5	5	25	5	5	5	5	30	5	0	120	25
Future Vol, veh/h	5	5	25	5	5	5	5	30	5	0	120	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	75	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	6	6	30	6	6	6	6	36	6	0	143	30

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	215	212	158	227	224	39	173	0	0	42	0	0
Stage 1	158	158	-	51	51	-	-	-	-	-	-	-
Stage 2	57	54	-	176	173	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	723	670	864	710	659	1007	1351	-	-	1511	-	-
Stage 1	823	750	-	940	835	-	-	-	-	-	-	-
Stage 2	933	832	-	805	739	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	711	667	864	679	656	1007	1351	-	-	1511	-	-
Mov Cap-2 Maneuver	711	667	-	679	656	-	-	-	-	-	-	-
Stage 1	820	750	-	936	832	-	-	-	-	-	-	-
Stage 2	917	829	-	771	739	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.6		9.9		1		0	
HCM LOS	A		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1351	-	-	688	864	752	1511	-	-
HCM Lane V/C Ratio	0.004	-	-	0.017	0.034	0.024	-	-	-
HCM Control Delay (s)	7.7	-	-	10.3	9.3	9.9	0	-	-
HCM Lane LOS	A	-	-	B	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	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	5	0	0	0	0	5	5	75	50	30	145	5
Future Vol, veh/h	5	0	0	0	0	5	5	75	50	30	145	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	6	0	0	0	0	6	6	89	60	36	173	6





Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	382	409	176	379	382	119	179	0	0	149	0	0
Stage 1	248	248	-	131	131	-	-	-	-	-	-	-
Stage 2	134	161	-	248	251	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	560	518	844	563	537	909	1344	-	-	1379	-	-
Stage 1	736	685	-	851	771	-	-	-	-	-	-	-
Stage 2	848	748	-	736	683	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	543	502	844	550	521	909	1344	-	-	1379	-	-
Mov Cap-2 Maneuver	543	502	-	550	521	-	-	-	-	-	-	-
Stage 1	733	667	-	848	768	-	-	-	-	-	-	-
Stage 2	839	745	-	717	665	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.7		9		0.3		1.3	
HCM LOS	B		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1344	-	-	543	909	1379	-
HCM Lane V/C Ratio	0.004	-	-	0.011	0.007	0.026	-
HCM Control Delay (s)	7.7	-	-	11.7	9	7.7	-
HCM Lane LOS	A	-	-	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0.1	-

Intersection												
Int Delay, s/veh	8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Vol, veh/h	5	95	5	100	105	10	15	20	335	5	5	5
Future Vol, veh/h	5	95	5	100	105	10	15	20	335	5	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	500	-	-	-	-	500	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	6	110	6	116	122	12	17	23	390	6	6	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	134	0	0	116	0	0	491	491	113	692	488	128
Stage 1	-	-	-	-	-	-	125	125	-	360	360	-
Stage 2	-	-	-	-	-	-	366	366	-	332	128	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.3	6.7	6.4	7.3	6.7	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Follow-up Hdwy	2.38	-	-	2.38	-	-	3.68	4.18	3.48	3.68	4.18	3.48
Pot Cap-1 Maneuver	1347	-	-	1368	-	-	460	453	893	335	455	876
Stage 1	-	-	-	-	-	-	837	759	-	623	596	-
Stage 2	-	-	-	-	-	-	618	592	-	645	757	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1347	-	-	1368	-	-	421	412	893	169	414	876
Mov Cap-2 Maneuver	-	-	-	-	-	-	421	412	-	169	414	-
Stage 1	-	-	-	-	-	-	833	755	-	620	545	-
Stage 2	-	-	-	-	-	-	556	542	-	351	753	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			3.7			12.3			17		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	416	893	1347	-	-	1368	-	-	317			
HCM Lane V/C Ratio	0.098	0.436	0.004	-	-	0.085	-	-	0.055			
HCM Control Delay (s)	14.6	12.1	7.7	0	-	7.9	-	-	17			
HCM Lane LOS	B	B	A	A	-	A	-	-	C			
HCM 95th %tile Q(veh)	0.3	2.2	0	-	-	0.3	-	-	0.2			








Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	30	5	90	165	275	0	0	40	80
Future Vol, veh/h	0	0	0	30	5	90	165	275	0	0	40	80
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	0	0	0	36	6	107	196	327	0	0	48	95
Major/Minor				Minor1		Major1		Major2				
Conflicting Flow All				815	862	327	143	0	-	-	-	0
Stage 1				719	719	-	-	-	-	-	-	-
Stage 2				96	143	-	-	-	-	-	-	-
Critical Hdwy				6.6	6.7	6.4	4.3	-	-	-	-	-
Critical Hdwy Stg 1				5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy				3.68	4.18	3.48	2.38	-	-	-	-	-
Pot Cap-1 Maneuver				324	274	675	1336	-	0	0	-	-
Stage 1				451	407	-	-	-	0	0	-	-
Stage 2				885	745	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				266	0	675	1336	-	-	-	-	-
Mov Cap-2 Maneuver				266	0	-	-	-	-	-	-	-
Stage 1				370	0	-	-	-	-	-	-	-
Stage 2				885	0	-	-	-	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				13.6		3.1		0				
HCM LOS				B								
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT	SBR						
Capacity (veh/h)	1336	-	266	675	-	-						
HCM Lane V/C Ratio	0.147	-	0.134	0.168	-	-						
HCM Control Delay (s)	8.2	0	20.6	11.4	-	-						
HCM Lane LOS	A	A	C	B	-	-						
HCM 95th %tile Q(veh)	0.5	-	0.5	0.6	-	-						

Intersection												
Int Delay, s/veh	8.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	265	0	45	0	0	0	0	175	50	20	50	0
Future Vol, veh/h	265	0	45	0	0	0	0	175	50	20	50	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	308	0	52	0	0	0	0	203	58	23	58	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	336	365	58	-	0	0	261	0	0
Stage 1	104	104	-	-	-	-	-	-	-
Stage 2	232	261	-	-	-	-	-	-	-
Critical Hdwy	6.6	6.7	6.4	-	-	-	4.3	-	-
Critical Hdwy Stg 1	5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4.18	3.48	-	-	-	2.38	-	-
Pot Cap-1 Maneuver	624	536	960	0	-	-	1206	-	0
Stage 1	877	775	-	0	-	-	-	-	0
Stage 2	766	660	-	0	-	-	-	-	0
Platoon blocked, %				-	-	-	-	-	-
Mov Cap-1 Maneuver	612	0	960	-	-	-	1206	-	-
Mov Cap-2 Maneuver	612	0	-	-	-	-	-	-	-
Stage 1	877	0	-	-	-	-	-	-	-
Stage 2	751	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.6	0	2.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	612	960	1206	-
HCM Lane V/C Ratio	-	-	0.503	0.055	0.019	-
HCM Control Delay (s)	-	-	16.7	9	8	0
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	2.8	0.2	0.1	-

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	0	35	5	0	0	15	105	0	0	60	15
Future Vol, veh/h	25	0	35	5	0	0	15	105	0	0	60	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	75	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	30	0	42	6	0	0	18	125	0	0	71	18
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	241	241	80	262	250	125	89	0	0	125	0	0
Stage 1	80	80	-	161	161	-	-	-	-	-	-	-
Stage 2	161	161	-	101	89	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	695	645	956	673	638	902	1452	-	-	1408	-	-
Stage 1	907	811	-	820	748	-	-	-	-	-	-	-
Stage 2	820	748	-	883	804	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	689	637	956	637	630	902	1452	-	-	1408	-	-
Mov Cap-2 Maneuver	689	637	-	637	630	-	-	-	-	-	-	-
Stage 1	896	811	-	810	739	-	-	-	-	-	-	-
Stage 2	810	739	-	845	804	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.6		10.7		0.9		0					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1452	-	-	689	956	637	1408	-	-			
HCM Lane V/C Ratio	0.012	-	-	0.043	0.044	0.009	-	-	-			
HCM Control Delay (s)	7.5	-	-	10.5	8.9	10.7	0	-	-			
HCM Lane LOS	A	-	-	B	A	B	A	-	-			
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	0	-	-			








Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	5	0	5	40	0	30	0	130	15	5	120	5
Future Vol, veh/h	5	0	5	40	0	30	0	130	15	5	120	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	6	0	6	48	0	36	0	155	18	6	143	6





Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	340	331	146	325	325	164	149	0	0	173	0	0
Stage 1	158	158	-	164	164	-	-	-	-	-	-	-
Stage 2	182	173	-	161	161	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	597	574	878	611	579	858	1379	-	-	1351	-	-
Stage 1	823	750	-	817	746	-	-	-	-	-	-	-
Stage 2	799	739	-	820	748	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	570	572	878	605	577	858	1379	-	-	1351	-	-
Mov Cap-2 Maneuver	570	572	-	605	577	-	-	-	-	-	-	-
Stage 1	823	747	-	817	746	-	-	-	-	-	-	-
Stage 2	766	739	-	811	745	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.3		10.9		0		0.3	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1379	-	-	691	693	1351	-
HCM Lane V/C Ratio	-	-	-	0.017	0.12	0.004	-
HCM Control Delay (s)	0	-	-	10.3	10.9	7.7	-
HCM Lane LOS	A	-	-	B	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0	-

Intersection												
Int Delay, s/veh	7.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Vol, veh/h	5	160	30	310	105	5	15	5	130	10	10	5
Future Vol, veh/h	5	160	30	310	105	5	15	5	130	10	10	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	500	-	-	-	-	500	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	6	186	35	360	122	6	17	6	151	12	12	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	128	0	0	221	0	0	1070	1064	204	1139	1078	125
Stage 1	-	-	-	-	-	-	216	216	-	845	845	-
Stage 2	-	-	-	-	-	-	854	848	-	294	233	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.3	6.7	6.4	7.3	6.7	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Follow-up Hdwy	2.38	-	-	2.38	-	-	3.68	4.18	3.48	3.68	4.18	3.48
Pot Cap-1 Maneuver	1354	-	-	1249	-	-	184	207	793	164	203	879
Stage 1	-	-	-	-	-	-	747	692	-	333	355	-
Stage 2	-	-	-	-	-	-	329	354	-	677	680	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1354	-	-	1249	-	-	133	147	793	100	144	879
Mov Cap-2 Maneuver	-	-	-	-	-	-	133	147	-	100	144	-
Stage 1	-	-	-	-	-	-	743	689	-	331	253	-
Stage 2	-	-	-	-	-	-	222	252	-	541	677	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			6.7			14.1			36.5		
HCM LOS							B			E		
Minor Lane/Major Mvmt	NBLn1		NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1		
Capacity (veh/h)	136		793	1354	-	-	1249	-	-	143		
HCM Lane V/C Ratio	0.171		0.191	0.004	-	-	0.289	-	-	0.203		
HCM Control Delay (s)	36.9		10.6	7.7	0	-	9	-	-	36.5		
HCM Lane LOS	E		B	A	A	-	A	-	-	E		
HCM 95th %tile Q(veh)	0.6		0.7	0	-	-	1.2	-	-	0.7		

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	45	5	30	55	130	0	0	120	230
Future Vol, veh/h	0	0	0	45	5	30	55	130	0	0	120	230
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	0	0	0	54	6	36	65	155	0	0	143	274
Major/Minor				Minor1		Major1		Major2				
Conflicting Flow All				565	702	155	417	0	-	-	-	0
Stage 1				285	285	-	-	-	-	-	-	-
Stage 2				280	417	-	-	-	-	-	-	-
Critical Hdwy				6.6	6.7	6.4	4.3	-	-	-	-	-
Critical Hdwy Stg 1				5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy				3.68	4.18	3.48	2.38	-	-	-	-	-
Pot Cap-1 Maneuver				457	341	846	1052	-	0	0	-	-
Stage 1				724	644	-	-	-	0	0	-	-
Stage 2				728	561	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				426	0	846	1052	-	-	-	-	-
Mov Cap-2 Maneuver				426	0	-	-	-	-	-	-	-
Stage 1				675	0	-	-	-	-	-	-	-
Stage 2				728	0	-	-	-	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				12.4		2.6		0				
HCM LOS				B								
Minor Lane/Major Mvmt		NBL	NBT	WBLn1	WBLn2	SBT	SBR					
Capacity (veh/h)		1052	-	426	846	-	-					
HCM Lane V/C Ratio		0.062	-	0.126	0.049	-	-					
HCM Control Delay (s)		8.6	0	14.7	9.5	-	-					
HCM Lane LOS		A	A	B	A	-	-					
HCM 95th %tile Q(veh)		0.2	-	0.4	0.2	-	-					

Intersection												
Int Delay, s/veh	7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	115	5	160	0	0	0	0	65	55	85	75	0
Future Vol, veh/h	115	5	160	0	0	0	0	65	55	85	75	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	134	6	186	0	0	0	0	76	64	99	87	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	393	425	87	-	0	0	140	0	0
Stage 1	285	285	-	-	-	-	-	-	-
Stage 2	108	140	-	-	-	-	-	-	-
Critical Hdwy	6.6	6.7	6.4	-	-	-	4.3	-	-
Critical Hdwy Stg 1	5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4.18	3.48	-	-	-	2.38	-	-
Pot Cap-1 Maneuver	578	495	924	0	-	-	1340	-	0
Stage 1	724	644	-	0	-	-	-	-	0
Stage 2	873	748	-	0	-	-	-	-	0
Platoon blocked, %				-	-	-	-	-	-
Mov Cap-1 Maneuver	533	0	924	-	-	-	1340	-	-
Mov Cap-2 Maneuver	533	0	-	-	-	-	-	-	-
Stage 1	724	0	-	-	-	-	-	-	-
Stage 2	805	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0	4.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	533	924	1340	-
HCM Lane V/C Ratio	-	-	0.251	0.208	0.074	-
HCM Control Delay (s)	-	-	14	9.9	7.9	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	1	0.8	0.2	-

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕		↗	↕	↗
Traffic Vol, veh/h	15	5	70	5	5	5	15	80	15	0	300	60
Future Vol, veh/h	15	5	70	5	5	5	15	80	15	0	300	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	75	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	18	6	83	6	6	6	18	95	18	0	357	71
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	503	506	357	577	568	104	428	0	0	113	0	0
Stage 1	357	357	-	140	140	-	-	-	-	-	-	-
Stage 2	146	149	-	437	428	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	465	456	667	414	420	927	1085	-	-	1422	-	-
Stage 1	642	613	-	842	764	-	-	-	-	-	-	-
Stage 2	836	757	-	581	570	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	451	448	667	354	413	927	1085	-	-	1422	-	-
Mov Cap-2 Maneuver	451	448	-	354	413	-	-	-	-	-	-	-
Stage 1	631	613	-	828	751	-	-	-	-	-	-	-
Stage 2	810	744	-	503	570	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	11.7		12.9		1.1		0					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1085	-	-	450	667	474	1422	-	-			
HCM Lane V/C Ratio	0.016	-	-	0.053	0.125	0.038	-	-	-			
HCM Control Delay (s)	8.4	-	-	13.4	11.2	12.9	0	-	-			
HCM Lane LOS	A	-	-	B	B	B	A	-	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.4	0.1	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	10	0	0	0	0	10	5	185	135	70	365	10
Future Vol, veh/h	10	0	0	0	0	10	5	185	135	70	365	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	100	-	100	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	12	0	0	0	0	12	6	220	161	83	435	12

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	926	1000	441	839	845	220	447	0	0	381	0	0
Stage 1	607	607	-	232	232	-	-	-	-	-	-	-
Stage 2	319	393	-	607	613	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	240	235	598	275	290	798	1067	-	-	1130	-	-
Stage 1	468	472	-	751	696	-	-	-	-	-	-	-
Stage 2	674	590	-	468	469	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	222	216	598	259	267	798	1067	-	-	1130	-	-
Mov Cap-2 Maneuver	222	216	-	259	267	-	-	-	-	-	-	-
Stage 1	465	438	-	746	692	-	-	-	-	-	-	-
Stage 2	660	586	-	434	435	-	-	-	-	-	-	-





Approach	EB		WB		NB		SB	
HCM Control Delay, s	22.1		9.6		0.1		1.3	
HCM LOS	C		A					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1067	-	-	222	-	798	1130
HCM Lane V/C Ratio	0.006	-	-	0.054	-	0.015	0.074
HCM Control Delay (s)	8.4	-	-	22.1	0	9.6	8.4
HCM Lane LOS	A	-	-	C	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0.2	-	0	0.2

Intersection												
Int Delay, s/veh	10.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱	↰	↱	↱		↰	↱	↰	↱	
Traffic Vol, veh/h	5	180	15	170	255	30	40	45	360	10	5	5
Future Vol, veh/h	5	180	15	170	255	30	40	45	360	10	5	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	250	500	-	150	-	-	500	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	6	209	17	198	297	35	47	52	419	12	6	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	332	0	0	226	0	0	938	949	209	1158	931	297
Stage 1	-	-	-	-	-	-	221	221	-	693	693	-
Stage 2	-	-	-	-	-	-	717	728	-	465	238	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.3	6.7	6.4	7.3	6.7	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Follow-up Hdwy	2.38	-	-	2.38	-	-	3.68	4.18	3.48	3.68	4.18	3.48
Pot Cap-1 Maneuver	1133	-	-	1243	-	-	227	243	788	159	249	702
Stage 1	-	-	-	-	-	-	742	688	-	406	418	-
Stage 2	-	-	-	-	-	-	394	403	-	545	676	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1133	-	-	1243	-	-	193	203	788	52	208	702
Mov Cap-2 Maneuver	-	-	-	-	-	-	193	203	-	52	208	-
Stage 1	-	-	-	-	-	-	738	684	-	404	352	-
Stage 2	-	-	-	-	-	-	323	339	-	235	672	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			3.2			19.5			54.9		
HCM LOS							C			F		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	198	788	1133	-	-	1243	-	-	52	321		
HCM Lane V/C Ratio	0.499	0.531	0.005	-	-	0.159	-	-	0.224	0.036		
HCM Control Delay (s)	40	14.6	8.2	0	-	8.4	-	-	93.1	16.6		
HCM Lane LOS	E	B	A	A	-	A	-	-	F	C		
HCM 95th %tile Q(veh)	2.5	3.2	0	-	-	0.6	-	-	0.8	0.1		

Intersection												
Int Delay, s/veh	34.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	70	10	105	425	330	0	0	75	140
Future Vol, veh/h	0	0	0	70	10	105	425	330	0	0	75	140
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	0	0	0	83	12	125	506	393	0	0	89	167
Major/Minor				Minor1		Major1		Major2				
Conflicting Flow All				1578	1661	393	256	0	-	-	-	0
Stage 1				1405	1405	-	-	-	-	-	-	-
Stage 2				173	256	-	-	-	-	-	-	-
Critical Hdwy				6.6	6.7	6.4	4.3	-	-	-	-	-
Critical Hdwy Stg 1				5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy				3.68	4.18	3.48	2.38	-	-	-	-	-
Pot Cap-1 Maneuver				109	88	618	1211	-	0	0	-	-
Stage 1				207	189	-	-	-	0	0	-	-
Stage 2				815	664	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				~ 51	0	618	1211	-	-	-	-	-
Mov Cap-2 Maneuver				~ 51	0	-	-	-	-	-	-	-
Stage 1				96	0	-	-	-	-	-	-	-
Stage 2				815	0	-	-	-	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				192		5.7		0				
HCM LOS				F								
Minor Lane/Major Mvmt		NBL	NBTWBLn1	WBLn2	SBT	SBR						
Capacity (veh/h)		1211	-	51	618	-						
HCM Lane V/C Ratio		0.418	-	1.634	0.222	-						
HCM Control Delay (s)		10.1	0	\$ 487	12.5	-						
HCM Lane LOS		B	A	F	B	-						
HCM 95th %tile Q(veh)		2.1	-	8	0.8	-						
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			



Intersection												
Int Delay, s/veh	31.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	300	0	115	0	0	0	0	450	135	25	120	0
Future Vol, veh/h	300	0	115	0	0	0	0	450	135	25	120	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	349	0	134	0	0	0	0	523	157	29	140	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	800	878	140	-	0	0	680	0	0
Stage 1	198	198	-	-	-	-	-	-	-
Stage 2	602	680	-	-	-	-	-	-	-
Critical Hdwy	6.6	6.7	6.4	-	-	-	4.3	-	-
Critical Hdwy Stg 1	5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4.18	3.48	-	-	-	2.38	-	-
Pot Cap-1 Maneuver	~ 330	268	862	0	-	-	834	-	0
Stage 1	794	705	-	0	-	-	-	-	0
Stage 2	514	424	-	0	-	-	-	-	0
Platoon blocked, %				-	-	-	-	-	-
Mov Cap-1 Maneuver	~ 317	0	862	-	-	-	834	-	-
Mov Cap-2 Maneuver	~ 317	0	-	-	-	-	-	-	-
Stage 1	794	0	-	-	-	-	-	-	-
Stage 2	494	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	87.5	0	1.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	317	862	834	-
HCM Lane V/C Ratio	-	-	1.1	0.155	0.035	-
HCM Control Delay (s)	-	-	117.3	9.9	9.5	0
HCM Lane LOS	-	-	F	A	A	A
HCM 95th %tile Q(veh)	-	-	13.6	0.5	0.1	-









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










Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔		↔	↔		↔	↔	↔
Traffic Vol, veh/h	65	0	95	5	0	0	15	265	0	0	160	40
Future Vol, veh/h	65	0	95	5	0	0	15	265	0	0	160	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	75	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	77	0	113	6	0	0	18	315	0	0	190	48






Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	541	541	190	622	589	315	238	0	0	315	0	0
Stage 1	190	190	-	351	351	-	-	-	-	-	-	-
Stage 2	351	351	-	271	238	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	438	436	829	387	409	705	1278	-	-	1196	-	-
Stage 1	791	726	-	647	617	-	-	-	-	-	-	-
Stage 2	647	617	-	715	692	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	433	430	829	330	403	705	1278	-	-	1196	-	-
Mov Cap-2 Maneuver	433	430	-	330	403	-	-	-	-	-	-	-
Stage 1	780	726	-	638	608	-	-	-	-	-	-	-
Stage 2	638	608	-	617	692	-	-	-	-	-	-	-





Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.1		16.1		0.4		0	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1278	-	-	433	829	330	1196	-	-
HCM Lane V/C Ratio	0.014	-	-	0.179	0.136	0.018	-	-	-
HCM Control Delay (s)	7.9	-	-	15.1	10	16.1	0	-	-
HCM Lane LOS	A	-	-	C	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.5	0.1	0	-	-

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	5	100	0	75	0	330	30	10	305	10
Future Vol, veh/h	5	0	5	100	0	75	0	330	30	10	305	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	100	-	100	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	6	0	6	119	0	89	0	393	36	12	363	12
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	849	822	369	789	792	393	375	0	0	429	0	0
Stage 1	393	393	-	393	393	-	-	-	-	-	-	-
Stage 2	456	429	-	396	399	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	271	299	657	298	311	637	1136	-	-	1084	-	-
Stage 1	614	590	-	614	590	-	-	-	-	-	-	-
Stage 2	567	569	-	612	587	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	231	296	657	293	308	637	1136	-	-	1084	-	-
Mov Cap-2 Maneuver	231	296	-	293	308	-	-	-	-	-	-	-
Stage 1	614	584	-	614	590	-	-	-	-	-	-	-
Stage 2	488	569	-	600	581	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	15.9		19.5			0			0.3			
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1136	-	-	342 293 637 1084	-	-	-					
HCM Lane V/C Ratio	-	-	-	0.035 0.406 0.14 0.011	-	-	-					
HCM Control Delay (s)	0	-	-	15.9 25.4 11.6 8.4	-	-	-					
HCM Lane LOS	A	-	-	C D B A	-	-	-					
HCM 95th %tile Q(veh)	0	-	-	0.1 1.9 0.5 0	-	-	-					

Intersection												
Int Delay, s/veh	39.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	390	70	340	210	15	30	10	215	30	30	15
Future Vol, veh/h	15	390	70	340	210	15	30	10	215	30	30	15
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	-	-	250	500	-	150	-	-	500	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	17	453	81	395	244	17	35	12	250	35	35	17
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	261	0	0	534	0	0	1556	1538	453	1693	1602	244
Stage 1	-	-	-	-	-	-	487	487	-	1034	1034	-
Stage 2	-	-	-	-	-	-	1069	1051	-	659	568	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.3	6.7	6.4	7.3	6.7	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Follow-up Hdwy	2.38	-	-	2.38	-	-	3.68	4.18	3.48	3.68	4.18	3.48
Pot Cap-1 Maneuver	1206	-	-	949	-	-	83	106	571	66	96	753
Stage 1	-	-	-	-	-	-	530	522	-	259	288	-
Stage 2	-	-	-	-	-	-	248	282	-	424	479	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1206	-	-	949	-	-	~ 28	61	571	~ 21	55	753
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 28	61	-	~ 21	55	-
Stage 1	-	-	-	-	-	-	519	512	-	254	168	-
Stage 2	-	-	-	-	-	-	112	165	-	228	469	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			6.9			93.5			\$ 351.8		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	32 571 1206			-	-	949	-	-	21	80		
HCM Lane V/C Ratio	1.453 0.438 0.014			-	-	0.417	-	-	1.661	0.654		
HCM Control Delay (s)	\$ 509.4 16.1 8			0	-	11.5	-	-	\$ 712.8	111.1		
HCM Lane LOS	F C A			A	-	B	-	-	F	F		
HCM 95th %tile Q(veh)	5.2 2.2 0			-	-	2.1	-	-	4.6	3		
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Intersection												
Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	110	15	50	145	240	0	0	190	255
Future Vol, veh/h	0	0	0	110	15	50	145	240	0	0	190	255
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	0	0	0	131	18	60	173	286	0	0	226	304
Major/Minor				Minor1		Major1		Major2				
Conflicting Flow All				1010	1162	286	530	0	-	-	-	0
Stage 1				632	632	-	-	-	-	-	-	-
Stage 2				378	530	-	-	-	-	-	-	-
Critical Hdwy				6.6	6.7	6.4	4.3	-	-	-	-	-
Critical Hdwy Stg 1				5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy				3.68	4.18	3.48	2.38	-	-	-	-	-
Pot Cap-1 Maneuver				246	180	712	952	-	0	0	-	-
Stage 1				497	447	-	-	-	0	0	-	-
Stage 2				655	498	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				193	0	712	952	-	-	-	-	-
Mov Cap-2 Maneuver				193	0	-	-	-	-	-	-	-
Stage 1				390	0	-	-	-	-	-	-	-
Stage 2				655	0	-	-	-	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				39.1		3.6		0				
HCM LOS				E								
Minor Lane/Major Mvmt		NBL	NBT	WBLn1	WBLn2	SBT	SBR					
Capacity (veh/h)		952	-	193	712	-	-					
HCM Lane V/C Ratio		0.181	-	0.679	0.109	-	-					
HCM Control Delay (s)		9.6	0	55.9	10.7	-	-					
HCM Lane LOS		A	A	F	B	-	-					
HCM 95th %tile Q(veh)		0.7	-	4.1	0.4	-	-					

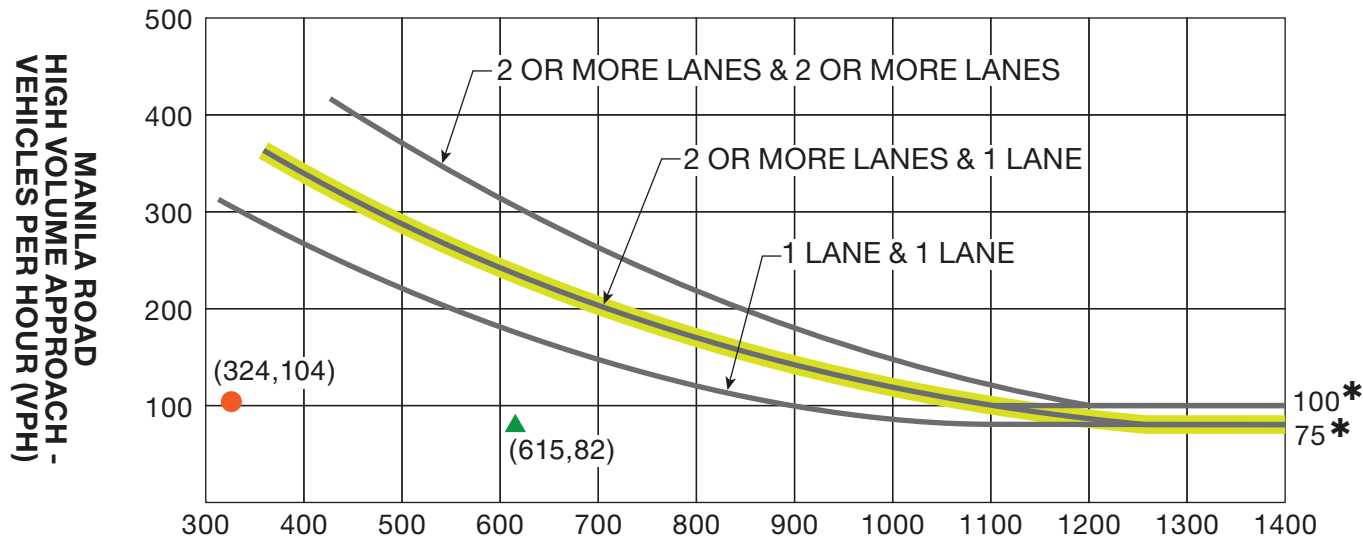
Intersection												
Int Delay, s/veh	15.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	210	10	410	0	0	0	0	170	145	110	190	0
Future Vol, veh/h	210	10	410	0	0	0	0	170	145	110	190	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	244	12	477	0	0	0	0	198	169	128	221	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	760	844	221	-	0	0	367	0	0
Stage 1	477	477	-	-	-	-	-	-	-
Stage 2	283	367	-	-	-	-	-	-	-
Critical Hdwy	6.6	6.7	6.4	-	-	-	4.3	-	-
Critical Hdwy Stg 1	5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4.18	3.48	-	-	-	2.38	-	-
Pot Cap-1 Maneuver	349	281	776	0	-	-	1099	-	0
Stage 1	589	527	-	0	-	-	-	-	0
Stage 2	725	592	-	0	-	-	-	-	0
Platoon blocked, %				-	-	-	-	-	-
Mov Cap-1 Maneuver	303	0	776	-	-	-	1099	-	-
Mov Cap-2 Maneuver	303	0	-	-	-	-	-	-	-
Stage 1	589	0	-	-	-	-	-	-	-
Stage 2	629	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.8	0	3.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	303	776	1099	-
HCM Lane V/C Ratio	-	-	0.806	0.629	0.116	-
HCM Control Delay (s)	-	-	52.1	17.2	8.7	0
HCM Lane LOS	-	-	F	C	A	A
HCM 95th %tile Q(veh)	-	-	6.6	4.5	0.4	-

## APPENDIX F. TRAFFIC SIGNALIZATION WARRANT ANALYSES – YEAR 2025 & 2040 CONDITIONS



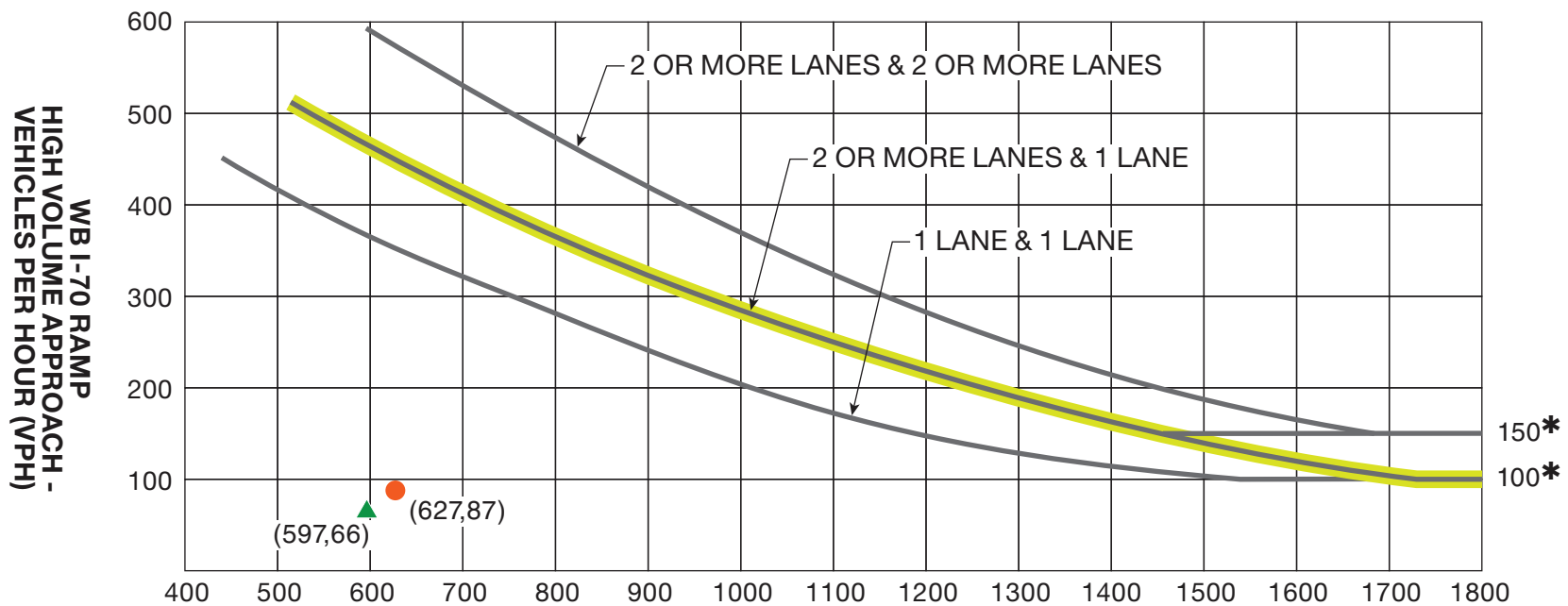
**COLFAX AVENUE (US 36) - TOTAL OF BOTH APPROACHES -  
VEHICLES PER HOUR (VPH)**

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

**LEGEND**

- = AM Peak Hour
- ▲ = PM Peak Hour

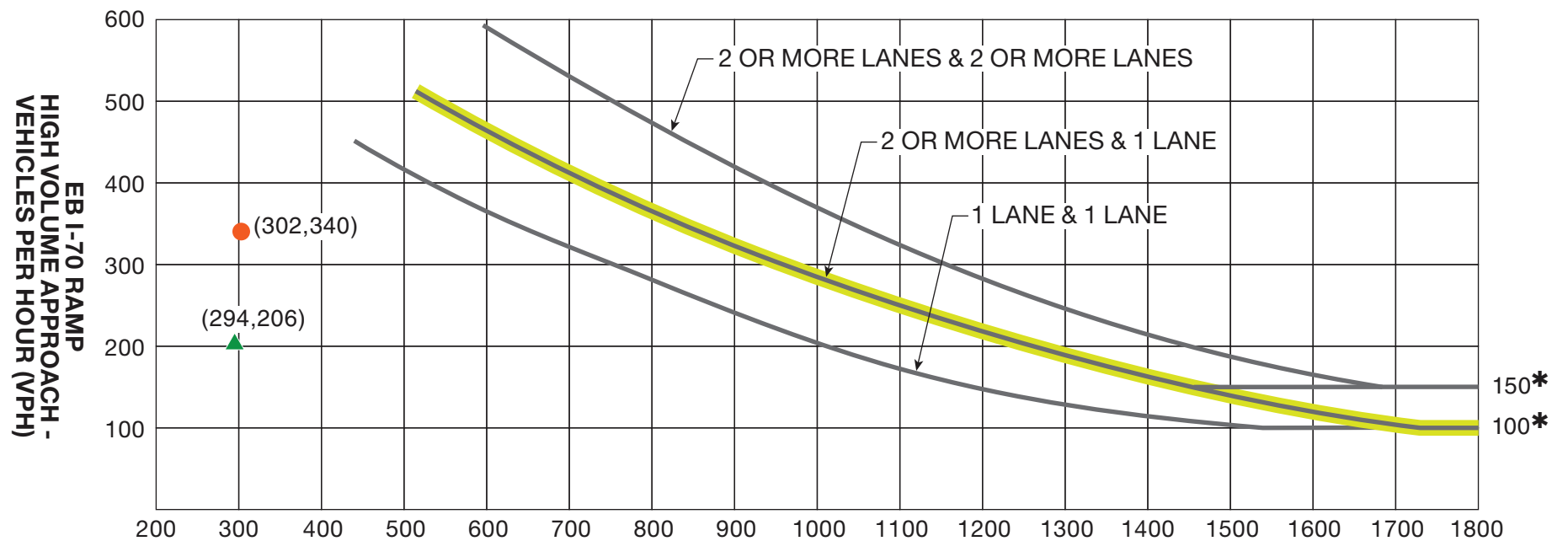




\* Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

#### LEGEND

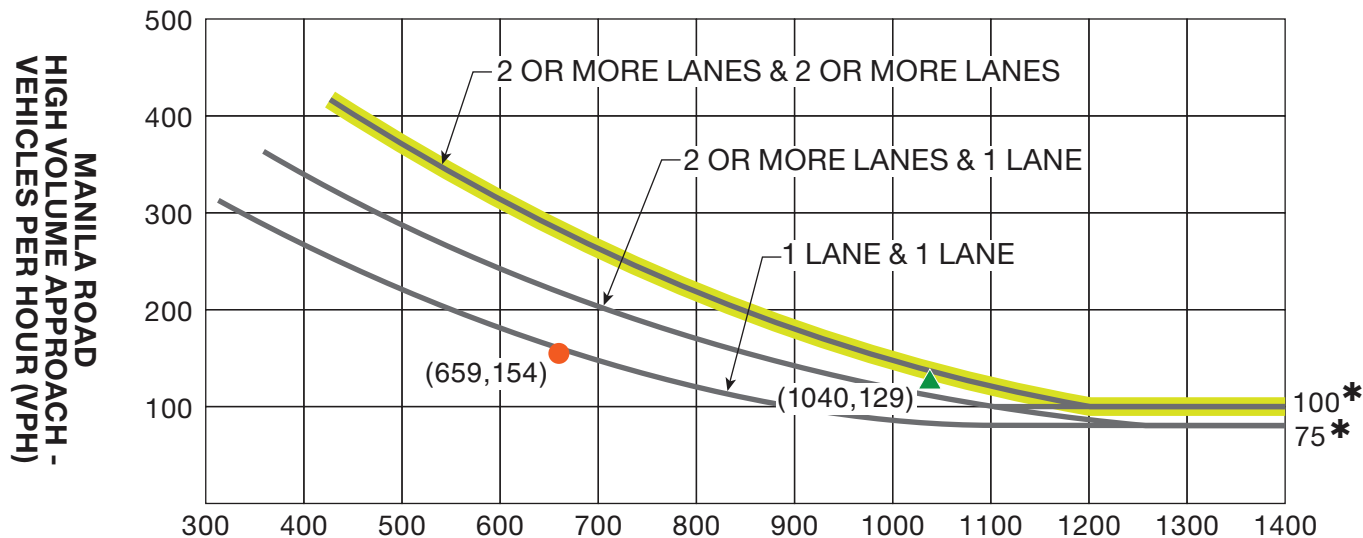
- = AM Peak Hour
- ▲ = PM Peak Hour



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

#### LEGEND

- = AM Peak Hour
- ▲ = PM Peak Hour



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

#### LEGEND

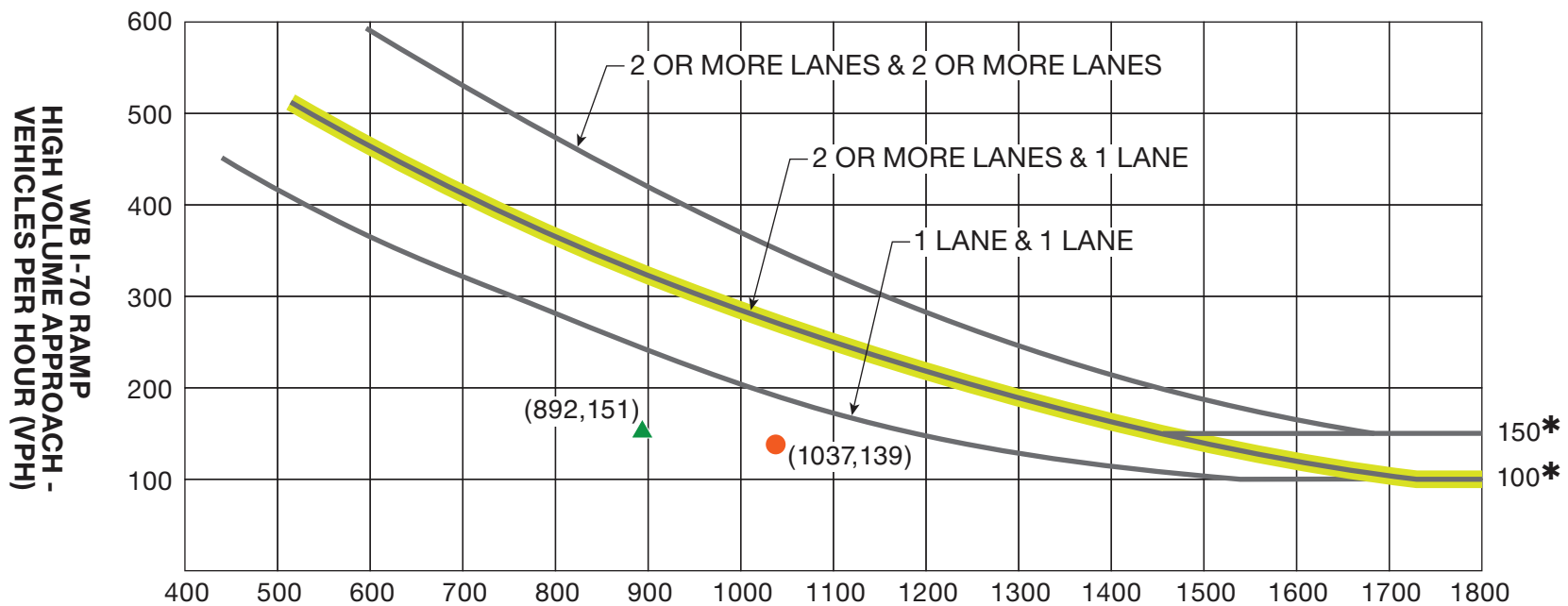
- = AM Peak Hour
- ▲ = PM Peak Hour



## WARRANT 3

**Colfax Avenue (US 36)/Manila Road**  
**2040 Total Traffic**  
**Peak Hour (70% Factor)**

**(Community Less than 10,000 Population or Above 40 mph On Major Street)**

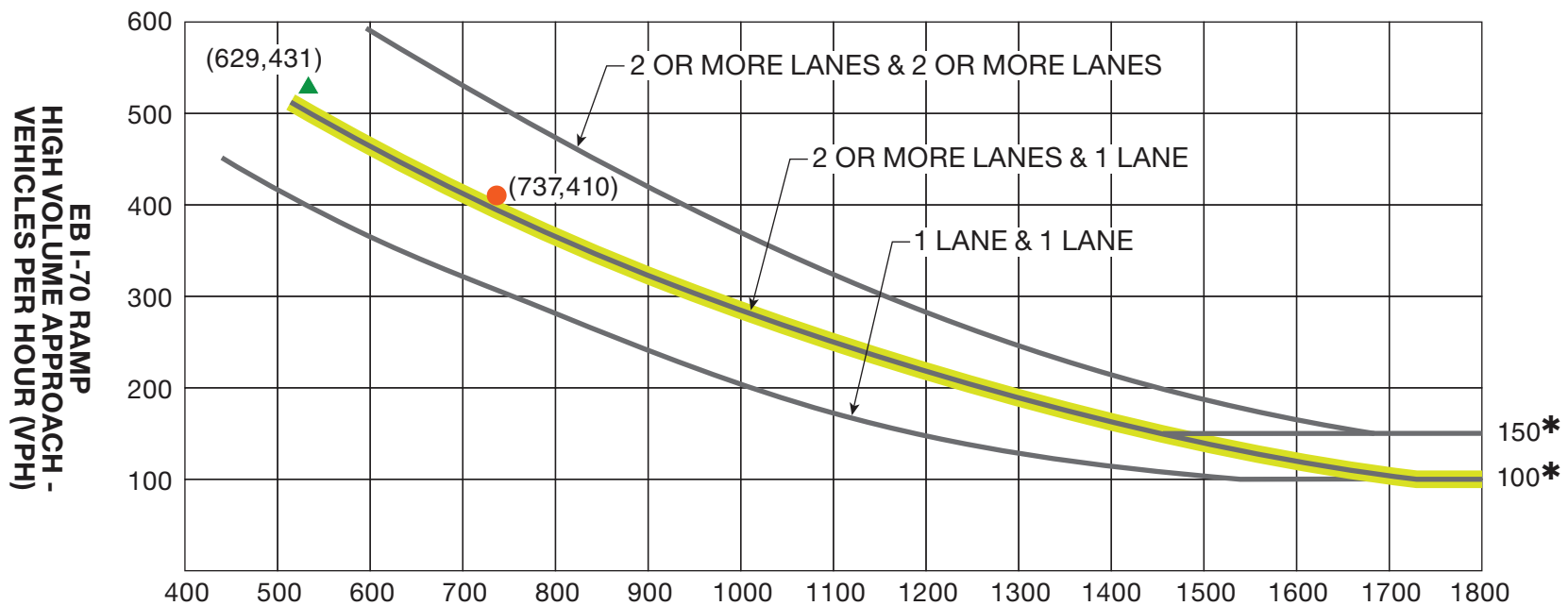


**MANILA ROAD - TOTAL OF BOTH APPROACHES -  
VEHICLES PER HOUR (VPH)**

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

**LEGEND**

- = AM Peak Hour
- ▲ = PM Peak Hour



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

#### LEGEND

- = AM Peak Hour
- ▲ = PM Peak Hour










## APPENDIX G. ANALYSIS WORKSHEETS – BUILD CONDITIONS

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱		↰	↱	
Traffic Vol, veh/h	5	5	40	5	5	5	7	30	5	0	122	25
Future Vol, veh/h	5	5	40	5	5	5	7	30	5	0	122	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	75	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	6	6	48	6	6	6	8	36	6	0	145	30

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	221	218	160	242	230	39	175	0	0	42	0	0
Stage 1	160	160	-	55	55	-	-	-	-	-	-	-
Stage 2	61	58	-	187	175	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	716	665	862	694	654	1007	1349	-	-	1511	-	-
Stage 1	821	749	-	935	832	-	-	-	-	-	-	-
Stage 2	928	829	-	794	737	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	704	661	862	648	650	1007	1349	-	-	1511	-	-
Mov Cap-2 Maneuver	704	661	-	648	650	-	-	-	-	-	-	-
Stage 1	816	749	-	929	827	-	-	-	-	-	-	-
Stage 2	910	824	-	744	737	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.6		10		1.3		0	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1349	-	-	682	862	736	1511	-	-
HCM Lane V/C Ratio	0.006	-	-	0.017	0.055	0.024	-	-	-
HCM Control Delay (s)	7.7	-	-	10.4	9.4	10	0	-	-
HCM Lane LOS	A	-	-	B	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0.1	0	-	-

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	0	0	0	7	5	77	50	47	162	5
Future Vol, veh/h	5	0	0	0	0	7	5	77	50	47	162	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	100	-	100	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	6	0	0	0	0	8	6	92	60	56	193	6
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	446	472	196	412	415	92	199	0	0	152	0	0
Stage 1	308	308	-	104	104	-	-	-	-	-	-	-
Stage 2	138	164	-	308	311	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	507	477	823	535	514	941	1321	-	-	1376	-	-
Stage 1	683	644	-	880	792	-	-	-	-	-	-	-
Stage 2	844	746	-	683	642	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	485	455	823	517	490	941	1321	-	-	1376	-	-
Mov Cap-2 Maneuver	485	455	-	517	490	-	-	-	-	-	-	-
Stage 1	680	618	-	876	788	-	-	-	-	-	-	-
Stage 2	833	742	-	655	616	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	12.5		8.9		0.3		1.7					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1321	-	-	485	-	941	1376	-	-			
HCM Lane V/C Ratio	0.005	-	-	0.012	-	0.009	0.041	-	-			
HCM Control Delay (s)	7.7	-	-	12.5	0	8.9	7.7	-	-			
HCM Lane LOS	A	-	-	B	A	A	A	-	-			
HCM 95th %tile Q(veh)	0	-	-	0	-	0	0.1	-	-			










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	5	0	0	0	0	5	5	78	50	30	167	5
Future Vol, veh/h	5	0	0	0	0	5	5	78	50	30	167	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	6	0	0	0	0	6	6	93	60	36	199	6




Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	412	439	202	409	412	123	205	0	0	153	0	0
Stage 1	274	274	-	135	135	-	-	-	-	-	-	-
Stage 2	138	165	-	274	277	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	535	498	816	537	516	904	1315	-	-	1374	-	-
Stage 1	713	667	-	847	768	-	-	-	-	-	-	-
Stage 2	844	745	-	713	665	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	519	483	816	525	500	904	1315	-	-	1374	-	-
Mov Cap-2 Maneuver	519	483	-	525	500	-	-	-	-	-	-	-
Stage 1	709	650	-	843	764	-	-	-	-	-	-	-
Stage 2	835	741	-	694	648	-	-	-	-	-	-	-






Approach	EB	WB	NB	SB
HCM Control Delay, s	12	9	0.3	1.1
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1315	-	-	519 904	1374	-	-
HCM Lane V/C Ratio	0.005	-	-	0.011 0.007	0.026	-	-
HCM Control Delay (s)	7.8	-	-	12 9	7.7	-	-
HCM Lane LOS	A	-	-	B A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0 0	0.1	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	2	130	0	17	145
Future Vol, veh/h	0	2	130	0	17	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	75	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	2	141	0	18	158
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	335	141	0	0	141	0
Stage 1	141	-	-	-	-	-
Stage 2	194	-	-	-	-	-
Critical Hdwy	6.6	6.4	-	-	4.3	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	-	-	2.38	-
Pot Cap-1 Maneuver	625	861	-	-	1339	-
Stage 1	844	-	-	-	-	-
Stage 2	798	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	616	861	-	-	1339	-
Mov Cap-2 Maneuver	616	-	-	-	-	-
Stage 1	844	-	-	-	-	-
Stage 2	786	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.2	0		0.8		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	861	1339	-	
HCM Lane V/C Ratio	-	-	0.003	0.014	-	
HCM Control Delay (s)	-	-	9.2	7.7	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0	0	-	





Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	80	23	0	5	3	0
Future Vol, veh/h	80	23	0	5	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	87	25	0	5	3	0
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	112	0	105	100
Stage 1	-	-	-	-	100	-
Stage 2	-	-	-	-	5	-
Critical Hdwy	-	-	4.3	-	6.6	6.4
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	3.48
Pot Cap-1 Maneuver	-	-	1373	-	851	909
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	973	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1373	-	851	909
Mov Cap-2 Maneuver	-	-	-	-	851	-
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	973	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		9.2		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	851	-	-	1373	-	
HCM Lane V/C Ratio	0.004	-	-	-	-	
HCM Control Delay (s)	9.2	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	16	1	3	2	0	1
Future Vol, veh/h	16	1	3	2	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	17	1	3	2	0	1
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	18	0	26	18
Stage 1	-	-	-	-	18	-
Stage 2	-	-	-	-	8	-
Critical Hdwy	-	-	4.3	-	6.6	6.4
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	3.48
Pot Cap-1 Maneuver	-	-	1489	-	945	1011
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	970	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1489	-	943	1011
Mov Cap-2 Maneuver	-	-	-	-	943	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	968	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.5		8.6	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1011	-	-	1489	-	
HCM Lane V/C Ratio	0.001	-	-	0.002	-	
HCM Control Delay (s)	8.6	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	17	0	0	5	0	0
Future Vol, veh/h	17	0	0	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	18	0	0	5	0	0
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	18	0	23	18
Stage 1	-	-	-	-	18	-
Stage 2	-	-	-	-	5	-
Critical Hdwy	-	-	4.3	-	6.6	6.4
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	3.48
Pot Cap-1 Maneuver	-	-	1489	-	949	1011
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	973	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1489	-	949	1011
Mov Cap-2 Maneuver	-	-	-	-	949	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	973	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	1489	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Intersection

Int Delay, s/veh 3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	7	10	14	3	2	3
Future Vol, veh/h	7	10	14	3	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	8	11	15	3	2	3





Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	19
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.3
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.38
Pot Cap-1 Maneuver	-	-	1488
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1488
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.1	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	971	-	-	1488	-
HCM Lane V/C Ratio	0.006	-	-	0.01	-
HCM Control Delay (s)	8.7	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection





Int Delay, s/veh 4.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	7	3	42	17	0	7
Future Vol, veh/h	7	3	42	17	0	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	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	8	3	46	18	0	8







Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	11
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.3
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.38
Pot Cap-1 Maneuver	-	-	1498
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1498
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.3	8.6
HCM LOS			A






Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1021	-	-	1498	-
HCM Lane V/C Ratio	0.007	-	-	0.03	-
HCM Control Delay (s)	8.6	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-





Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	11	3	14	59	0	0
Future Vol, veh/h	11	3	14	59	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	12	3	15	64	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	15	0	108	-
Stage 1	-	-	-	-	14	-
Stage 2	-	-	-	-	94	-
Critical Hdwy	-	-	4.3	-	6.6	-
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	-
Pot Cap-1 Maneuver	-	-	1493	-	848	0
Stage 1	-	-	-	-	964	0
Stage 2	-	-	-	-	886	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1493	-	840	-
Mov Cap-2 Maneuver	-	-	-	-	840	-
Stage 1	-	-	-	-	964	-
Stage 2	-	-	-	-	877	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.4		0	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	1493	-	
HCM Lane V/C Ratio	-	-	-	0.01	-	
HCM Control Delay (s)	0	-	-	7.4	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	



Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	11	73	35	15	0
Future Vol, veh/h	0	11	73	35	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	12	79	38	16	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	212	16	16	0	-	0
Stage 1	16	-	-	-	-	-
Stage 2	196	-	-	-	-	-
Critical Hdwy	6.6	6.4	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	2.38	-	-	-
Pot Cap-1 Maneuver	738	1013	1492	-	-	-
Stage 1	962	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	699	1013	1492	-	-	-
Mov Cap-2 Maneuver	699	-	-	-	-	-
Stage 1	911	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.6	5.1		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1492	-	-	1013	-	-
HCM Lane V/C Ratio	0.053	-	-	0.012	-	-
HCM Control Delay (s)	7.5	-	0	8.6	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-	-

Intersection												
Int Delay, s/veh	9.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Vol, veh/h	7	95	5	100	105	12	15	89	335	5	16	5
Future Vol, veh/h	7	95	5	100	105	12	15	89	335	5	16	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	500	-	-	-	-	500	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	8	110	6	116	122	14	17	103	390	6	19	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	136	0	0	116	0	0	503	497	113	737	493	129
Stage 1	-	-	-	-	-	-	129	129	-	361	361	-
Stage 2	-	-	-	-	-	-	374	368	-	376	132	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.3	6.7	6.4	7.3	6.7	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Follow-up Hdwy	2.38	-	-	2.38	-	-	3.68	4.18	3.48	3.68	4.18	3.48
Pot Cap-1 Maneuver	1344	-	-	1368	-	-	451	449	893	312	452	875
Stage 1	-	-	-	-	-	-	833	756	-	622	595	-
Stage 2	-	-	-	-	-	-	612	591	-	610	754	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1344	-	-	1368	-	-	403	409	893	132	411	875
Mov Cap-2 Maneuver	-	-	-	-	-	-	403	409	-	132	411	-
Stage 1	-	-	-	-	-	-	828	751	-	618	544	-
Stage 2	-	-	-	-	-	-	537	541	-	295	749	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			3.6			13.4			17.6		
HCM LOS							B			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	408	893	1344	-	-	1368	-	-	315			
HCM Lane V/C Ratio	0.296	0.436	0.006	-	-	0.085	-	-	0.096			
HCM Control Delay (s)	17.5	12.1	7.7	0	-	7.9	-	-	17.6			
HCM Lane LOS	C	B	A	A	-	A	-	-	C			
HCM 95th %tile Q(veh)	1.2	2.2	0	-	-	0.3	-	-	0.3			








Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	30	5	103	165	331	0	0	43	88
Future Vol, veh/h	0	0	0	30	5	103	165	331	0	0	43	88
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	0	0	0	36	6	123	196	394	0	0	51	105
Major/Minor				Minor1		Major1		Major2				
Conflicting Flow All				890	942	394	156	0	-	-	-	0
Stage 1				786	786	-	-	-	-	-	-	-
Stage 2				104	156	-	-	-	-	-	-	-
Critical Hdwy				6.6	6.7	6.4	4.3	-	-	-	-	-
Critical Hdwy Stg 1				5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy				3.68	4.18	3.48	2.38	-	-	-	-	-
Pot Cap-1 Maneuver				291	245	617	1321	-	0	0	-	-
Stage 1				419	378	-	-	-	0	0	-	-
Stage 2				877	736	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				236	0	617	1321	-	-	-	-	-
Mov Cap-2 Maneuver				236	0	-	-	-	-	-	-	-
Stage 1				339	0	-	-	-	-	-	-	-
Stage 2				877	0	-	-	-	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				14.7		2.7		0				
HCM LOS				B								
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT	SBR						
Capacity (veh/h)	1321	-	236	617	-	-						
HCM Lane V/C Ratio	0.149	-	0.151	0.208	-	-						
HCM Control Delay (s)	8.2	0	23	12.4	-	-						
HCM Lane LOS	A	A	C	B	-	-						
HCM 95th %tile Q(veh)	0.5	-	0.5	0.8	-	-						

Intersection												
Int Delay, s/veh	10.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	317	0	45	0	0	0	0	179	50	22	51	0
Future Vol, veh/h	317	0	45	0	0	0	0	179	50	22	51	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	369	0	52	0	0	0	0	208	58	26	59	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	348	377	59	-	0	0	266	0	0
Stage 1	111	111	-	-	-	-	-	-	-
Stage 2	237	266	-	-	-	-	-	-	-
Critical Hdwy	6.6	6.7	6.4	-	-	-	4.3	-	-
Critical Hdwy Stg 1	5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4.18	3.48	-	-	-	2.38	-	-
Pot Cap-1 Maneuver	614	527	958	0	-	-	1201	-	0
Stage 1	871	770	-	0	-	-	-	-	0
Stage 2	762	657	-	0	-	-	-	-	0
Platoon blocked, %				-	-	-	-	-	-
Mov Cap-1 Maneuver	600	0	958	-	-	-	1201	-	-
Mov Cap-2 Maneuver	600	0	-	-	-	-	-	-	-
Stage 1	871	0	-	-	-	-	-	-	-
Stage 2	745	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.7	0	2.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	600	958	1201	-
HCM Lane V/C Ratio	-	-	0.614	0.055	0.021	-
HCM Control Delay (s)	-	-	20.1	9	8.1	0
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	4.2	0.2	0.1	-

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	0	37	5	0	0	26	107	0	0	60	15
Future Vol, veh/h	25	0	37	5	0	0	26	107	0	0	60	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	75	-	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	30	0	44	6	0	0	31	127	0	0	71	18
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	269	269	80	291	278	127	89	0	0	127	0	0
Stage 1	80	80	-	189	189	-	-	-	-	-	-	-
Stage 2	189	189	-	102	89	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	666	622	956	644	615	900	1452	-	-	1405	-	-
Stage 1	907	811	-	792	727	-	-	-	-	-	-	-
Stage 2	792	727	-	882	804	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	655	609	956	604	602	900	1452	-	-	1405	-	-
Mov Cap-2 Maneuver	655	609	-	604	602	-	-	-	-	-	-	-
Stage 1	888	811	-	775	712	-	-	-	-	-	-	-
Stage 2	775	712	-	841	804	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.7		11		1.5		0					
HCM LOS	A		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1452	-	-	655	956	604	1405	-	-			
HCM Lane V/C Ratio	0.021	-	-	0.045	0.046	0.01	-	-	-			
HCM Control Delay (s)	7.5	-	-	10.8	8.9	11	0	-	-			
HCM Lane LOS	A	-	-	B	A	B	A	-	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.1	0	0	-	-			

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	
Traffic Vol, veh/h	5	0	5	40	0	43	0	143	15	7	122	5
Future Vol, veh/h	5	0	5	40	0	43	0	143	15	7	122	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	100	-	100	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	6	0	6	48	0	51	0	170	18	8	145	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	369	352	148	337	337	170	151	0	0	188	0	0
Stage 1	164	164	-	170	170	-	-	-	-	-	-	-
Stage 2	205	188	-	167	167	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	571	559	876	600	570	851	1377	-	-	1334	-	-
Stage 1	817	746	-	811	741	-	-	-	-	-	-	-
Stage 2	777	728	-	814	743	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	534	556	876	593	567	851	1377	-	-	1334	-	-
Mov Cap-2 Maneuver	534	556	-	593	567	-	-	-	-	-	-	-
Stage 1	817	742	-	811	741	-	-	-	-	-	-	-
Stage 2	730	728	-	804	739	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.5		10.5		0		0.4	
HCM LOS	B		B					





Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1377	-	-	664 593 851 1334	-	-	-
HCM Lane V/C Ratio	-	-	-	0.018 0.08 0.06 0.006	-	-	-
HCM Control Delay (s)	0	-	-	10.5 11.6 9.5 7.7	-	-	-
HCM Lane LOS	A	-	-	B B A A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1 0.3 0.2 0	-	-	-

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	5	0	0	0	0	5	5	78	50	30	167	5
Future Vol, veh/h	5	0	0	0	0	5	5	78	50	30	167	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	6	0	0	0	0	6	6	93	60	36	199	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	412	439	202	409	412	123	205	0	0	153	0	0
Stage 1	274	274	-	135	135	-	-	-	-	-	-	-
Stage 2	138	165	-	274	277	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	535	498	816	537	516	904	1315	-	-	1374	-	-
Stage 1	713	667	-	847	768	-	-	-	-	-	-	-
Stage 2	844	745	-	713	665	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	519	483	816	525	500	904	1315	-	-	1374	-	-
Mov Cap-2 Maneuver	519	483	-	525	500	-	-	-	-	-	-	-
Stage 1	709	650	-	843	764	-	-	-	-	-	-	-
Stage 2	835	741	-	694	648	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	9	0.3	1.1
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1315	-	-	519 904	1374	-	-
HCM Lane V/C Ratio	0.005	-	-	0.011 0.007	0.026	-	-
HCM Control Delay (s)	7.8	-	-	12 9	7.7	-	-
HCM Lane LOS	A	-	-	B A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0 0	0.1	-	-




Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	13	130	0	2	145
Future Vol, veh/h	0	13	130	0	2	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	14	141	0	2	158




Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	303	141	0	0	141
Stage 1	141	-	-	-	-
Stage 2	162	-	-	-	-
Critical Hdwy	6.6	6.4	-	-	4.3
Critical Hdwy Stg 1	5.6	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-
Follow-up Hdwy	3.68	3.48	-	-	2.38
Pot Cap-1 Maneuver	653	861	-	-	1339
Stage 1	844	-	-	-	-
Stage 2	825	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	652	861	-	-	1339
Mov Cap-2 Maneuver	652	-	-	-	-
Stage 1	844	-	-	-	-
Stage 2	823	-	-	-	-






Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	0.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	861	1339
HCM Lane V/C Ratio	-	-	0.016	0.002
HCM Control Delay (s)	-	-	9.3	7.7
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0







Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	80	23	0	5	3	0
Future Vol, veh/h	80	23	0	5	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	87	25	0	5	3	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	112	0	105	100
Stage 1	-	-	-	-	100	-
Stage 2	-	-	-	-	5	-
Critical Hdwy	-	-	4.3	-	6.6	6.4
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	3.48
Pot Cap-1 Maneuver	-	-	1373	-	851	909
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	973	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1373	-	851	909
Mov Cap-2 Maneuver	-	-	-	-	851	-
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	973	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		9.2	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	851	-	-	1373	-	
HCM Lane V/C Ratio	0.004	-	-	-	-	
HCM Control Delay (s)	9.2	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Intersection						
Int Delay, s/veh	2.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2	0	1	12	1	3
Future Vol, veh/h	2	0	1	12	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	2	0	1	13	1	3
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2	0	17	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	15	-
Critical Hdwy	-	-	4.3	-	6.6	6.4
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	3.48
Pot Cap-1 Maneuver	-	-	1510	-	957	1032
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	963	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1510	-	956	1032
Mov Cap-2 Maneuver	-	-	-	-	956	-
Stage 1	-	-	-	-	976	-
Stage 2	-	-	-	-	962	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.6		8.6	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1012	-	-	1510	-	
HCM Lane V/C Ratio	0.004	-	-	0.001	-	
HCM Control Delay (s)	8.6	-	-	7.4	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Intersection						
Int Delay, s/veh	3.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	5	0	0	11	2	11
Future Vol, veh/h	5	0	0	11	2	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	5	0	0	12	2	12
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	5	0	17	5
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	-	12	-
Critical Hdwy	-	-	4.3	-	6.6	6.4
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	3.48
Pot Cap-1 Maneuver	-	-	1506	-	957	1028
Stage 1	-	-	-	-	973	-
Stage 2	-	-	-	-	966	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1506	-	957	1028
Mov Cap-2 Maneuver	-	-	-	-	957	-
Stage 1	-	-	-	-	973	-
Stage 2	-	-	-	-	966	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		8.6	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1016	-	-	1506	-	
HCM Lane V/C Ratio	0.014	-	-	-	-	
HCM Control Delay (s)	8.6	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Intersection

Int Delay, s/veh 4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	14	2	1	4	7	11
Future Vol, veh/h	14	2	1	4	7	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	15	2	1	4	8	12






Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	17
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.3
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.38
Pot Cap-1 Maneuver	-	-	1491
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1491
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	987	-	-	1491	-
HCM Lane V/C Ratio	0.02	-	-	0.001	-
HCM Control Delay (s)	8.7	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection





Int Delay, s/veh 5.2







Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	25	0	4	2	3	33
Future Vol, veh/h	25	0	4	2	3	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	27	0	4	2	3	36

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	27
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.3
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.38
Pot Cap-1 Maneuver	-	-	1478
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1478
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5	8.8
HCM LOS			A






Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	993	-	-	1478	-
HCM Lane V/C Ratio	0.039	-	-	0.003	-
HCM Control Delay (s)	8.8	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-





Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	58	0	2	6	0	0
Future Vol, veh/h	58	0	2	6	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	63	0	2	7	0	0
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	63	0	74	-
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	11	-
Critical Hdwy	-	-	4.3	-	6.6	-
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	-
Pot Cap-1 Maneuver	-	-	1432	-	887	0
Stage 1	-	-	-	-	916	0
Stage 2	-	-	-	-	967	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1432	-	886	-
Mov Cap-2 Maneuver	-	-	-	-	886	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	966	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	1.9		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	1432	-	
HCM Lane V/C Ratio	-	-	-	0.002	-	
HCM Control Delay (s)	0	-	-	7.5	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Intersection						
Int Delay, s/veh	5.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	58	8	15	25	0
Future Vol, veh/h	0	58	8	15	25	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	63	9	16	27	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	61	27	27	0	-	0
Stage 1	27	-	-	-	-	-
Stage 2	34	-	-	-	-	-
Critical Hdwy	6.6	6.4	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	2.38	-	-	-
Pot Cap-1 Maneuver	902	999	1478	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	897	999	1478	-	-	-
Mov Cap-2 Maneuver	897	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.8	2.6		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1478	-	-	999	-	-
HCM Lane V/C Ratio	0.006	-	-	0.063	-	-
HCM Control Delay (s)	7.5	-	0	8.8	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	-	-

Intersection												
Int Delay, s/veh	13.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔	↔		↔	
Traffic Vol, veh/h	5	160	30	310	105	5	15	13	130	11	66	6
Future Vol, veh/h	5	160	30	310	105	5	15	13	130	11	66	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	500	-	-	-	-	500	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	6	186	35	360	122	6	17	15	151	13	77	7
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	128	0	0	221	0	0	1103	1064	204	1144	1078	125
Stage 1	-	-	-	-	-	-	216	216	-	845	845	-
Stage 2	-	-	-	-	-	-	887	848	-	299	233	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.3	6.7	6.4	7.3	6.7	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Follow-up Hdwy	2.38	-	-	2.38	-	-	3.68	4.18	3.48	3.68	4.18	3.48
Pot Cap-1 Maneuver	1354	-	-	1249	-	-	174	207	793	163	203	879
Stage 1	-	-	-	-	-	-	747	692	-	333	355	-
Stage 2	-	-	-	-	-	-	315	354	-	673	680	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1354	-	-	1249	-	-	80	147	793	95	144	879
Mov Cap-2 Maneuver	-	-	-	-	-	-	80	147	-	95	144	-
Stage 1	-	-	-	-	-	-	743	689	-	331	253	-
Stage 2	-	-	-	-	-	-	155	252	-	530	677	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			6.7			18.8			71		
HCM LOS							C			F		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	101 793		1354	-	-	1249	-	-	143			
HCM Lane V/C Ratio	0.322 0.191		0.004	-	-	0.289	-	-	0.675			
HCM Control Delay (s)	56.7 10.6		7.7	0	-	9	-	-	71			
HCM Lane LOS	F B		A	A	-	A	-	-	F			
HCM 95th %tile Q(veh)	1.2 0.7		0	-	-	1.2	-	-	3.8			



Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	45	5	32	55	136	0	0	134	272
Future Vol, veh/h	0	0	0	45	5	32	55	136	0	0	134	272
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	0	0	0	54	6	38	65	162	0	0	160	324
Major/Minor				Minor1		Major1		Major2				
Conflicting Flow All				614	776	162	484	0	-	-	-	0
Stage 1				292	292	-	-	-	-	-	-	-
Stage 2				322	484	-	-	-	-	-	-	-
Critical Hdwy				6.6	6.7	6.4	4.3	-	-	-	-	-
Critical Hdwy Stg 1				5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy				3.68	4.18	3.48	2.38	-	-	-	-	-
Pot Cap-1 Maneuver				427	308	838	991	-	0	0	-	-
Stage 1				718	640	-	-	-	0	0	-	-
Stage 2				696	523	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				396	0	838	991	-	-	-	-	-
Mov Cap-2 Maneuver				396	0	-	-	-	-	-	-	-
Stage 1				666	0	-	-	-	-	-	-	-
Stage 2				696	0	-	-	-	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				12.8		2.6		0				
HCM LOS				B								
Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT	SBR						
Capacity (veh/h)	991	-	396	838	-	-						
HCM Lane V/C Ratio	0.066	-	0.135	0.053	-	-						
HCM Control Delay (s)	8.9	0	15.5	9.5	-	-						
HCM Lane LOS	A	A	C	A	-	-						
HCM 95th %tile Q(veh)	0.2	-	0.5	0.2	-	-						

Intersection												
Int Delay, s/veh	7.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	121	5	160	0	0	0	0	65	55	96	78	0
Future Vol, veh/h	121	5	160	0	0	0	0	65	55	96	78	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	141	6	186	0	0	0	0	76	64	112	91	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	423	455	91	-	0	0	140	0	0
Stage 1	315	315	-	-	-	-	-	-	-
Stage 2	108	140	-	-	-	-	-	-	-
Critical Hdwy	6.6	6.7	6.4	-	-	-	4.3	-	-
Critical Hdwy Stg 1	5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy	3.68	4.18	3.48	-	-	-	2.38	-	-
Pot Cap-1 Maneuver	555	475	919	0	-	-	1340	-	0
Stage 1	701	624	-	0	-	-	-	-	0
Stage 2	873	748	-	0	-	-	-	-	0
Platoon blocked, %				-	-	-	-	-	-
Mov Cap-1 Maneuver	506	0	919	-	-	-	1340	-	-
Mov Cap-2 Maneuver	506	0	-	-	-	-	-	-	-
Stage 1	701	0	-	-	-	-	-	-	-
Stage 2	796	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	0	4.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	EBLn2	SBL	SBT
Capacity (veh/h)	-	-	506	919	1340	-
HCM Lane V/C Ratio	-	-	0.278	0.209	0.083	-
HCM Control Delay (s)	-	-	14.8	9.9	7.9	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.8	0.3	-

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱		↰	↱	↱
Traffic Vol, veh/h	15	5	90	5	5	5	18	80	15	0	302	60
Future Vol, veh/h	15	5	90	5	5	5	18	80	15	0	302	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	75	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	18	6	107	6	6	6	21	95	18	0	360	71

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	512	515	360	598	577	104	431	0	0	113	0	0
Stage 1	360	360	-	146	146	-	-	-	-	-	-	-
Stage 2	152	155	-	452	431	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	458	451	665	401	415	927	1082	-	-	1422	-	-
Stage 1	640	611	-	836	759	-	-	-	-	-	-	-
Stage 2	830	752	-	570	568	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	443	442	665	328	407	927	1082	-	-	1422	-	-
Mov Cap-2 Maneuver	443	442	-	328	407	-	-	-	-	-	-	-
Stage 1	628	611	-	820	745	-	-	-	-	-	-	-
Stage 2	802	738	-	474	568	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.9		13.2		1.3		0	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1082	-	-	443	665	456	1422	-	-
HCM Lane V/C Ratio	0.02	-	-	0.054	0.161	0.039	-	-	-
HCM Control Delay (s)	8.4	-	-	13.6	11.5	13.2	0	-	-
HCM Lane LOS	A	-	-	B	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.6	0.1	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	10	0	0	0	0	10	5	188	135	70	387	10
Future Vol, veh/h	10	0	0	0	0	10	5	188	135	70	387	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	100	-	100	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	12	0	0	0	0	12	6	224	161	83	461	12

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	956	1030	467	869	875	224	473	0	0	385	0	0
Stage 1	633	633	-	236	236	-	-	-	-	-	-	-
Stage 2	323	397	-	633	639	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	229	225	578	263	278	794	1043	-	-	1126	-	-
Stage 1	453	460	-	747	693	-	-	-	-	-	-	-
Stage 2	670	588	-	453	457	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	212	207	578	247	256	794	1043	-	-	1126	-	-
Mov Cap-2 Maneuver	212	207	-	247	256	-	-	-	-	-	-	-
Stage 1	450	426	-	743	689	-	-	-	-	-	-	-
Stage 2	656	584	-	420	423	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23	9.6	0.1	1.3
HCM LOS	C	A		





Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1043	-	-	212	-	794	1126
HCM Lane V/C Ratio	0.006	-	-	0.056	-	0.015	0.074
HCM Control Delay (s)	8.5	-	-	23	0	9.6	8.5
HCM Lane LOS	A	-	-	C	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0.2	-	0	0.2




Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	
Traffic Vol, veh/h	10	0	0	0	0	13	5	185	135	92	365	10
Future Vol, veh/h	10	0	0	0	0	13	5	185	135	92	365	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	100	-	100	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	12	0	0	0	0	15	6	220	161	110	435	12

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	981	1054	441	893	899	220	447	0	0	381	0	0
Stage 1	661	661	-	232	232	-	-	-	-	-	-	-
Stage 2	320	393	-	661	667	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	220	218	598	253	269	798	1067	-	-	1130	-	-
Stage 1	437	446	-	751	696	-	-	-	-	-	-	-
Stage 2	673	590	-	437	443	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	199	196	598	233	242	798	1067	-	-	1130	-	-
Mov Cap-2 Maneuver	199	196	-	233	242	-	-	-	-	-	-	-
Stage 1	434	403	-	746	692	-	-	-	-	-	-	-
Stage 2	656	586	-	394	400	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	24.2		9.6		0.1		1.7	
HCM LOS	C		A					






Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1067	-	-	199	-	798	1130
HCM Lane V/C Ratio	0.006	-	-	0.06	-	0.019	0.097
HCM Control Delay (s)	8.4	-	-	24.2	0	9.6	8.5
HCM Lane LOS	A	-	-	C	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0.2	-	0.1	0.3

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	325	0	22	365
Future Vol, veh/h	0	3	325	0	22	365
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	75	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	3	353	0	24	397
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	798	353	0	0	353	0
Stage 1	353	-	-	-	-	-
Stage 2	445	-	-	-	-	-
Critical Hdwy	6.6	6.4	-	-	4.3	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	-	-	2.38	-
Pot Cap-1 Maneuver	331	652	-	-	1113	-
Stage 1	673	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	322	652	-	-	1113	-
Mov Cap-2 Maneuver	322	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.5	0		0.5		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	652		1113	-	
HCM Lane V/C Ratio	-	0.005		0.021	-	
HCM Control Delay (s)	-	10.5		8.3	0	
HCM Lane LOS	-	B		A	A	
HCM 95th %tile Q(veh)	-	0		0.1	-	

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	205	22	0	10	3	0
Future Vol, veh/h	205	22	0	10	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	223	24	0	11	3	0
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	247	0	246	235
Stage 1	-	-	-	-	235	-
Stage 2	-	-	-	-	11	-
Critical Hdwy	-	-	4.3	-	6.6	6.4
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	3.48
Pot Cap-1 Maneuver	-	-	1221	-	705	762
Stage 1	-	-	-	-	764	-
Stage 2	-	-	-	-	967	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1221	-	705	762
Mov Cap-2 Maneuver	-	-	-	-	705	-
Stage 1	-	-	-	-	764	-
Stage 2	-	-	-	-	967	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		10.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	705	-	-	1221	-	
HCM Lane V/C Ratio	0.005	-	-	-	-	
HCM Control Delay (s)	10.1	-	-	0	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	-	

Intersection

Int Delay, s/veh 1.1





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	21	1	3	3	0	1
Future Vol, veh/h	21	1	3	3	0	1
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	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	23	1	3	3	0	1





Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	24
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.3
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.38
Pot Cap-1 Maneuver	-	-	1482
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1482
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-






Approach	EB	WB	NB
HCM Control Delay, s	0	3.7	8.6
HCM LOS			A





Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1003	-	-	1482	-
HCM Lane V/C Ratio	0.001	-	-	0.002	-
HCM Control Delay (s)	8.6	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-









Intersection						
Int Delay, s/veh	7.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	3	13
Future Vol, veh/h	0	0	0	0	3	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	0	0	0	3	14
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.3	-	6.6	6.4
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	3.48
Pot Cap-1 Maneuver	-	-	1511	-	976	1033
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1511	-	976	1033
Mov Cap-2 Maneuver	-	-	-	-	976	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	977	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		8.6		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1022	-	-	1511	-	
HCM Lane V/C Ratio	0.017	-	-	-	-	
HCM Control Delay (s)	8.6	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	






Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	0	0	0	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.3	-	6.6	6.4
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	3.48
Pot Cap-1 Maneuver	-	-	1511	-	976	1033
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1511	-	976	1033
Mov Cap-2 Maneuver	-	-	-	-	976	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	977	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	1511	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	0	0	0	0	0
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.3	-	6.6	6.4
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	3.48
Pot Cap-1 Maneuver	-	-	1511	-	976	1033
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1511	-	976	1033
Mov Cap-2 Maneuver	-	-	-	-	976	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	977	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	1511	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	10	10	10	0	0
Future Vol, veh/h	10	10	10	10	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	11	11	11	11	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	22	0	50	-
Stage 1	-	-	-	-	17	-
Stage 2	-	-	-	-	33	-
Critical Hdwy	-	-	4.3	-	6.6	-
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	-
Pot Cap-1 Maneuver	-	-	1484	-	916	0
Stage 1	-	-	-	-	961	0
Stage 2	-	-	-	-	945	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1484	-	910	-
Mov Cap-2 Maneuver	-	-	-	-	910	-
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	938	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3.7		0	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	1484	-	
HCM Lane V/C Ratio	-	-	-	0.007	-	
HCM Control Delay (s)	0	-	-	7.4	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	14	94	80	20	0
Future Vol, veh/h	0	14	94	80	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	15	102	87	22	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	313	22	22	0	-	0
Stage 1	22	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Critical Hdwy	6.6	6.4	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	2.38	-	-	-
Pot Cap-1 Maneuver	644	1005	1484	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	600	1005	1484	-	-	-
Mov Cap-2 Maneuver	600	-	-	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.6	4.1		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1484	-	-	1005	-	-
HCM Lane V/C Ratio	0.069	-	-	0.015	-	-
HCM Control Delay (s)	7.6	-	0	8.6	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-	-

Intersection												
Int Delay, s/veh	26											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱	↰	↱	↱		↰	↱	↰	↱	
Traffic Vol, veh/h	7	180	15	170	255	33	40	134	360	10	19	5
Future Vol, veh/h	7	180	15	170	255	33	40	134	360	10	19	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	250	500	-	150	-	-	500	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	8	209	17	198	297	38	47	156	419	12	22	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	335	0	0	226	0	0	951	956	209	1214	935	297
Stage 1	-	-	-	-	-	-	225	225	-	693	693	-
Stage 2	-	-	-	-	-	-	726	731	-	521	242	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.3	6.7	6.4	7.3	6.7	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Follow-up Hdwy	2.38	-	-	2.38	-	-	3.68	4.18	3.48	3.68	4.18	3.48
Pot Cap-1 Maneuver	1130	-	-	1243	-	-	222	241	788	146	248	702
Stage 1	-	-	-	-	-	-	739	685	-	406	418	-
Stage 2	-	-	-	-	-	-	389	402	-	507	673	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1130	-	-	1243	-	-	177	201	788	22	207	702
Mov Cap-2 Maneuver	-	-	-	-	-	-	177	201	-	22	207	-
Stage 1	-	-	-	-	-	-	733	680	-	403	352	-
Stage 2	-	-	-	-	-	-	304	338	-	182	668	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			3.1			50.6			99.6		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	195	788	1130	-	-	1243	-	-	22	243		
HCM Lane V/C Ratio	1.038	0.531	0.007	-	-	0.159	-	-	0.529	0.115		
HCM Control Delay (s)	125.1	14.6	8.2	0	-	8.4	-	-	286.6	21.7		
HCM Lane LOS	F	B	A	A	-	A	-	-	F	C		
HCM 95th %tile Q(veh)	9.2	3.2	0	-	-	0.6	-	-	1.5	0.4		

Intersection												
Int Delay, s/veh	44.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	70	10	122	425	402	0	0	78	151
Future Vol, veh/h	0	0	0	70	10	122	425	402	0	0	78	151
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	0	0	0	83	12	145	506	479	0	0	93	180
Major/Minor				Minor1		Major1		Major2				
Conflicting Flow All				1674	1764	479	273	0	-	-	-	0
Stage 1				1491	1491	-	-	-	-	-	-	-
Stage 2				183	273	-	-	-	-	-	-	-
Critical Hdwy				6.6	6.7	6.4	4.3	-	-	-	-	-
Critical Hdwy Stg 1				5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy				3.68	4.18	3.48	2.38	-	-	-	-	-
Pot Cap-1 Maneuver				95	76	552	1193	-	0	0	-	-
Stage 1				187	171	-	-	-	0	0	-	-
Stage 2				807	652	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				~ 40	0	552	1193	-	-	-	-	-
Mov Cap-2 Maneuver				~ 40	0	-	-	-	-	-	-	-
Stage 1				~ 79	0	-	-	-	-	-	-	-
Stage 2				807	0	-	-	-	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				258		5.3		0				
HCM LOS				F								
Minor Lane/Major Mvmt		NBL	NBT	WBLn1	WBLn2	SBT	SBR					
Capacity (veh/h)		1193	-	40	552	-	-					
HCM Lane V/C Ratio		0.424	-	2.083	0.285	-	-					
HCM Control Delay (s)		10.2	0	717.9	14.1	-	-					
HCM Lane LOS		B	A	F	B	-	-					
HCM 95th %tile Q(veh)		2.2	-	8.9	1.2	-	-					
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

# Timings 13: Manila Rd & I-70 EB Ramp

TransPort  
11/05/2020



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	368	0	454	27	121
Future Volume (vph)	368	0	454	27	121
Turn Type	Perm	NA	NA	Perm	NA
Protected Phases		4	2		6
Permitted Phases	4			6	
Detector Phase	4	4	2	6	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5
Total Split (s)	37.0	37.0	53.0	53.0	53.0
Total Split (%)	41.1%	41.1%	58.9%	58.9%	58.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	Min	Min	Min
Act Effect Green (s)	25.6	25.6	37.1		37.1
Actuated g/C Ratio	0.35	0.35	0.51		0.51
v/c Ratio	0.81	0.14	0.86		0.26
Control Delay	36.6	0.3	28.1		11.8
Queue Delay	0.0	0.0	0.0		0.0
Total Delay	36.6	0.3	28.1		11.8
LOS	D	A	C		B
Approach Delay		28.0	28.1		11.8
Approach LOS		C	C		B

## Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 72.4

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 26.1

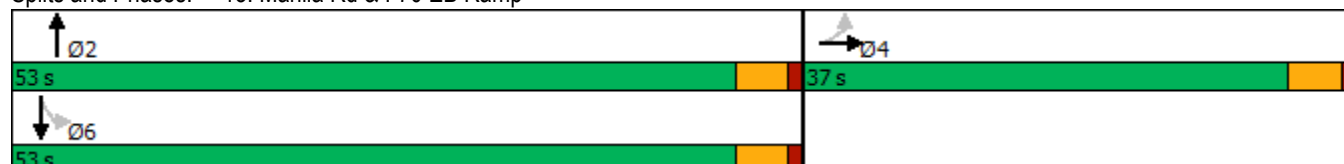
Intersection LOS: C

Intersection Capacity Utilization 60.0%

ICU Level of Service B

Analysis Period (min) 15

















Splits and Phases: 13: Manila Rd & I-70 EB Ramp





# HCM 6th Signalized Intersection Summary 13: Manila Rd & I-70 EB Ramp

TransPort  
11/05/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	368	0	115	0	0	0	0	454	135	27	121	0
Future Volume (veh/h)	368	0	115	0	0	0	0	454	135	27	121	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1604	1604	1604				0	1604	1604	1604	1604	0
Adj Flow Rate, veh/h	428	0	134				0	528	157	31	141	0
Peak Hour Factor	0.86	0.86	0.86				0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	20	20	20				0	20	20	20	20	0
Cap, veh/h	507	0	451				0	603	179	102	362	0
Arrive On Green	0.33	0.00	0.33				0.00	0.51	0.51	0.51	0.51	0.00
Sat Flow, veh/h	1527	0	1359				0	1187	353	51	714	0
Grp Volume(v), veh/h	428	0	134				0	0	685	172	0	0
Grp Sat Flow(s),veh/h/ln	1527	0	1359				0	0	1540	765	0	0
Q Serve(g_s), s	14.6	0.0	4.1				0.0	0.0	22.1	2.1	0.0	0.0
Cycle Q Clear(g_c), s	14.6	0.0	4.1				0.0	0.0	22.1	24.3	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.23	0.18		0.00
Lane Grp Cap(c), veh/h	507	0	451				0	0	782	464	0	0
V/C Ratio(X)	0.84	0.00	0.30				0.00	0.00	0.88	0.37	0.00	0.00
Avail Cap(c_a), veh/h	884	0	787				0	0	1331	916	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.4	0.0	13.9				0.0	0.0	12.2	9.5	0.0	0.0
Incr Delay (d2), s/veh	3.9	0.0	0.4				0.0	0.0	3.6	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.5	0.0	2.0				0.0	0.0	9.1	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.3	0.0	14.3				0.0	0.0	15.9	10.0	0.0	0.0
LnGrp LOS	C	A	B				A	A	B	B	A	A
Approach Vol, veh/h	562						685			172		
Approach Delay, s/veh	19.7						15.9			10.0		
Approach LOS	B						B			B		
Timer - Assigned Phs	2			4			6					
Phs Duration (G+Y+Rc), s	33.0			23.1			33.0					
Change Period (Y+Rc), s	4.5			4.5			4.5					
Max Green Setting (Gmax), s	48.5			32.5			48.5					
Max Q Clear Time (g_c+I1), s	24.1			16.6			26.3					
Green Ext Time (p_c), s	4.4			2.0			0.9					
Intersection Summary												
HCM 6th Ctrl Delay	16.7											
HCM 6th LOS	B											

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱		↰	↱	↱
Traffic Vol, veh/h	15	5	90	5	5	5	18	80	15	0	302	60
Future Vol, veh/h	15	5	90	5	5	5	18	80	15	0	302	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	75	-	-	-	150	-	-	150	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	18	6	107	6	6	6	21	95	18	0	360	71

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	512	515	360	598	577	104	431	0	0	113	0	0
Stage 1	360	360	-	146	146	-	-	-	-	-	-	-
Stage 2	152	155	-	452	431	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	458	451	665	401	415	927	1082	-	-	1422	-	-
Stage 1	640	611	-	836	759	-	-	-	-	-	-	-
Stage 2	830	752	-	570	568	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	443	442	665	328	407	927	1082	-	-	1422	-	-
Mov Cap-2 Maneuver	443	442	-	328	407	-	-	-	-	-	-	-
Stage 1	628	611	-	820	745	-	-	-	-	-	-	-
Stage 2	802	738	-	474	568	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.9		13.2		1.3		0	
HCM LOS	B		B					









Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1082	-	-	443	665	456	1422	-	-
HCM Lane V/C Ratio	0.02	-	-	0.054	0.161	0.039	-	-	-
HCM Control Delay (s)	8.4	-	-	13.6	11.5	13.2	0	-	-
HCM Lane LOS	A	-	-	B	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.6	0.1	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	10	0	0	0	0	10	5	188	135	70	387	10
Future Vol, veh/h	10	0	0	0	0	10	5	188	135	70	387	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	100	-	100	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	12	0	0	0	0	12	6	224	161	83	461	12




Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	956	1030	467	869	875	224	473	0	0	385	0	0
Stage 1	633	633	-	236	236	-	-	-	-	-	-	-
Stage 2	323	397	-	633	639	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	229	225	578	263	278	794	1043	-	-	1126	-	-
Stage 1	453	460	-	747	693	-	-	-	-	-	-	-
Stage 2	670	588	-	453	457	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	212	207	578	247	256	794	1043	-	-	1126	-	-
Mov Cap-2 Maneuver	212	207	-	247	256	-	-	-	-	-	-	-
Stage 1	450	426	-	743	689	-	-	-	-	-	-	-
Stage 2	656	584	-	420	423	-	-	-	-	-	-	-






Approach	EB	WB	NB	SB
HCM Control Delay, s	23	9.6	0.1	1.3
HCM LOS	C	A		





Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1043	-	-	212	-	794	1126
HCM Lane V/C Ratio	0.006	-	-	0.056	-	0.015	0.074
HCM Control Delay (s)	8.5	-	-	23	0	9.6	8.5
HCM Lane LOS	A	-	-	C	A	A	A
HCM 95th %tile Q(veh)	0	-	-	0.2	-	0	0.2

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	5	100	0	93	0	330	30	12	305	10
Future Vol, veh/h	5	0	5	100	0	93	0	330	30	12	305	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	150	-	-	100	-	100	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	6	0	6	119	0	111	0	393	36	14	363	12
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	864	826	369	793	796	393	375	0	0	429	0	0
Stage 1	397	397	-	393	393	-	-	-	-	-	-	-
Stage 2	467	429	-	400	403	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.21	6.61	6.31	4.21	-	-	4.21	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.21	5.61	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.599	4.099	3.399	2.299	-	-	2.299	-	-
Pot Cap-1 Maneuver	265	297	657	296	310	637	1136	-	-	1084	-	-
Stage 1	611	588	-	614	590	-	-	-	-	-	-	-
Stage 2	559	569	-	609	584	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	217	293	657	290	306	637	1136	-	-	1084	-	-
Mov Cap-2 Maneuver	217	293	-	290	306	-	-	-	-	-	-	-
Stage 1	611	580	-	614	590	-	-	-	-	-	-	-
Stage 2	462	569	-	596	576	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	16.5		19.1		0		0.3					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1136	-	-	326 290 637	1084	-	-					
HCM Lane V/C Ratio	-	-	-	0.037 0.411 0.174	0.013	-	-					
HCM Control Delay (s)	0	-	-	16.5 25.8 11.8	8.4	-	-					
HCM Lane LOS	A	-	-	C D B	A	-	-					
HCM 95th %tile Q(veh)	0	-	-	0.1 1.9 0.6	0	-	-					

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	325	0	22	365
Future Vol, veh/h	0	3	325	0	22	365
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	75	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	3	353	0	24	397
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	798	353	0	0	353	0
Stage 1	353	-	-	-	-	-
Stage 2	445	-	-	-	-	-
Critical Hdwy	6.6	6.4	-	-	4.3	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	-	-	2.38	-
Pot Cap-1 Maneuver	331	652	-	-	1113	-
Stage 1	673	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	322	652	-	-	1113	-
Mov Cap-2 Maneuver	322	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.5	0		0.5		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	652	1113	-	
HCM Lane V/C Ratio	-	-	0.005	0.021	-	
HCM Control Delay (s)	-	-	10.5	8.3	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0	0.1	-	

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	2	0	175	18	0
Future Vol, veh/h	40	2	0	175	18	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	43	2	0	190	20	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	45	0	234	44
Stage 1	-	-	-	-	44	-
Stage 2	-	-	-	-	190	-
Critical Hdwy	-	-	4.3	-	6.6	6.4
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	3.48
Pot Cap-1 Maneuver	-	-	1455	-	716	977
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	801	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1455	-	716	977
Mov Cap-2 Maneuver	-	-	-	-	716	-
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	801	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		10.2	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	716	-	-	1455	-	
HCM Lane V/C Ratio	0.027	-	-	-	-	
HCM Control Delay (s)	10.2	-	-	0	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

Intersection						
Int Delay, s/veh	1.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	21	1	3	3	0	1
Future Vol, veh/h	21	1	3	3	0	1
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	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	23	1	3	3	0	1
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	24	0	33	24
Stage 1	-	-	-	-	24	-
Stage 2	-	-	-	-	9	-
Critical Hdwy	-	-	4.3	-	6.6	6.4
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	3.48
Pot Cap-1 Maneuver	-	-	1482	-	936	1003
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	969	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1482	-	934	1003
Mov Cap-2 Maneuver	-	-	-	-	934	-
Stage 1	-	-	-	-	954	-
Stage 2	-	-	-	-	967	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	3.7		8.6		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	1003	-	-	1482	-	
HCM Lane V/C Ratio	0.001	-	-	0.002	-	
HCM Control Delay (s)	8.6	-	-	7.4	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	-	






Intersection						
Int Delay, s/veh	7.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	3	13
Future Vol, veh/h	0	0	0	0	3	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	0	0	0	3	14

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.3	-	6.6
Critical Hdwy Stg 1	-	-	-	-	5.6
Critical Hdwy Stg 2	-	-	-	-	5.6
Follow-up Hdwy	-	-	2.38	-	3.68
Pot Cap-1 Maneuver	-	-	1511	-	976
Stage 1	-	-	-	-	977
Stage 2	-	-	-	-	977
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1511	-	976
Mov Cap-2 Maneuver	-	-	-	-	976
Stage 1	-	-	-	-	977
Stage 2	-	-	-	-	977

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





Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1022	-	-	1511	-
HCM Lane V/C Ratio	0.017	-	-	-	-
HCM Control Delay (s)	8.6	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-



Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	0	0	0	0	0
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.3	-	6.6	6.4
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	3.48
Pot Cap-1 Maneuver	-	-	1511	-	976	1033
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1511	-	976	1033
Mov Cap-2 Maneuver	-	-	-	-	976	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	977	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	1511	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Intersection





Int Delay, s/veh 0







Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	4.3	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.38	-
Pot Cap-1 Maneuver	-	1511	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1511	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1511	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	10	10	10	10	0	0
Future Vol, veh/h	10	10	10	10	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	11	11	11	11	0	0
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	22	0	50	-
Stage 1	-	-	-	-	17	-
Stage 2	-	-	-	-	33	-
Critical Hdwy	-	-	4.3	-	6.6	-
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	-	-	2.38	-	3.68	-
Pot Cap-1 Maneuver	-	-	1484	-	916	0
Stage 1	-	-	-	-	961	0
Stage 2	-	-	-	-	945	0
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1484	-	910	-
Mov Cap-2 Maneuver	-	-	-	-	910	-
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	938	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	3.7		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	1484	-	
HCM Lane V/C Ratio	-	-	-	0.007	-	
HCM Control Delay (s)	0	-	-	7.4	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	






Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	14	94	80	20	0
Future Vol, veh/h	0	14	94	80	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	150	0	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	20	20	20	20	20	20
Mvmt Flow	0	15	102	87	22	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	313	22	22	0	-	0
Stage 1	22	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Critical Hdwy	6.6	6.4	4.3	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.48	2.38	-	-	-
Pot Cap-1 Maneuver	644	1005	1484	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	600	1005	1484	-	-	-
Mov Cap-2 Maneuver	600	-	-	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.6	4.1		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1484	-	-	1005	-	-
HCM Lane V/C Ratio	0.069	-	-	0.015	-	-
HCM Control Delay (s)	7.6	-	0	8.6	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-	-

Intersection												
Int Delay, s/veh	26											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱	↰	↱	↱		↰	↱	↰	↱	
Traffic Vol, veh/h	7	180	15	170	255	33	40	134	360	10	19	5
Future Vol, veh/h	7	180	15	170	255	33	40	134	360	10	19	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	250	500	-	150	-	-	500	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	8	209	17	198	297	38	47	156	419	12	22	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	335	0	0	226	0	0	951	956	209	1214	935	297
Stage 1	-	-	-	-	-	-	225	225	-	693	693	-
Stage 2	-	-	-	-	-	-	726	731	-	521	242	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.3	6.7	6.4	7.3	6.7	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.7	-	6.3	5.7	-
Follow-up Hdwy	2.38	-	-	2.38	-	-	3.68	4.18	3.48	3.68	4.18	3.48
Pot Cap-1 Maneuver	1130	-	-	1243	-	-	222	241	788	146	248	702
Stage 1	-	-	-	-	-	-	739	685	-	406	418	-
Stage 2	-	-	-	-	-	-	389	402	-	507	673	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1130	-	-	1243	-	-	177	201	788	22	207	702
Mov Cap-2 Maneuver	-	-	-	-	-	-	177	201	-	22	207	-
Stage 1	-	-	-	-	-	-	733	680	-	403	352	-
Stage 2	-	-	-	-	-	-	304	338	-	182	668	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	3.1	50.6	99.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	195	788	1130	-	-	1243	-	-	22	243
HCM Lane V/C Ratio	1.038	0.531	0.007	-	-	0.159	-	-	0.529	0.115
HCM Control Delay (s)	125.1	14.6	8.2	0	-	8.4	-	-	286.6	21.7
HCM Lane LOS	F	B	A	A	-	A	-	-	F	C
HCM 95th %tile Q(veh)	9.2	3.2	0	-	-	0.6	-	-	1.5	0.4

Intersection												
Int Delay, s/veh	44.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	70	10	122	425	402	0	0	78	151
Future Vol, veh/h	0	0	0	70	10	122	425	402	0	0	78	151
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	20	20	20	20	20	20	20	20	20	20	20	20
Mvmt Flow	0	0	0	83	12	145	506	479	0	0	93	180
Major/Minor				Minor1		Major1		Major2				
Conflicting Flow All				1674	1764	479	273	0	-	-	-	0
Stage 1				1491	1491	-	-	-	-	-	-	-
Stage 2				183	273	-	-	-	-	-	-	-
Critical Hdwy				6.6	6.7	6.4	4.3	-	-	-	-	-
Critical Hdwy Stg 1				5.6	5.7	-	-	-	-	-	-	-
Critical Hdwy Stg 2				5.6	5.7	-	-	-	-	-	-	-
Follow-up Hdwy				3.68	4.18	3.48	2.38	-	-	-	-	-
Pot Cap-1 Maneuver				95	76	552	1193	-	0	0	-	-
Stage 1				187	171	-	-	-	0	0	-	-
Stage 2				807	652	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver				~ 40	0	552	1193	-	-	-	-	-
Mov Cap-2 Maneuver				~ 40	0	-	-	-	-	-	-	-
Stage 1				~ 79	0	-	-	-	-	-	-	-
Stage 2				807	0	-	-	-	-	-	-	-
Approach				WB		NB		SB				
HCM Control Delay, s				258		5.3		0				
HCM LOS				F								
Minor Lane/Major Mvmt		NBL	NBT	WBLn1	WBLn2	SBT	SBR					
Capacity (veh/h)		1193	-	40	552	-	-					
HCM Lane V/C Ratio		0.424	-	2.083	0.285	-	-					
HCM Control Delay (s)		10.2	0	717.9	14.1	-	-					
HCM Lane LOS		B	A	F	B	-	-					
HCM 95th %tile Q(veh)		2.2	-	8.9	1.2	-	-					
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined			*: All major volume in platoon				

# Timings 13: Manila Rd & I-70 EB Ramp

TransPort  
11/05/2020



Lane Group	EBL	EBT	NBT	SBL	SBT
Lane Configurations					
Traffic Volume (vph)	368	0	454	27	121
Future Volume (vph)	368	0	454	27	121
Turn Type	Perm	NA	NA	Perm	NA
Protected Phases		4	2		6
Permitted Phases	4			6	
Detector Phase	4	4	2	6	6
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5
Total Split (s)	37.0	37.0	53.0	53.0	53.0
Total Split (%)	41.1%	41.1%	58.9%	58.9%	58.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	Min	Min	Min
Act Effect Green (s)	25.6	25.6	37.1		37.1
Actuated g/C Ratio	0.35	0.35	0.51		0.51
v/c Ratio	0.81	0.14	0.86		0.26
Control Delay	36.6	0.3	28.1		11.8
Queue Delay	0.0	0.0	0.0		0.0
Total Delay	36.6	0.3	28.1		11.8
LOS	D	A	C		B
Approach Delay		28.0	28.1		11.8
Approach LOS		C	C		B

## Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 72.4

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 26.1

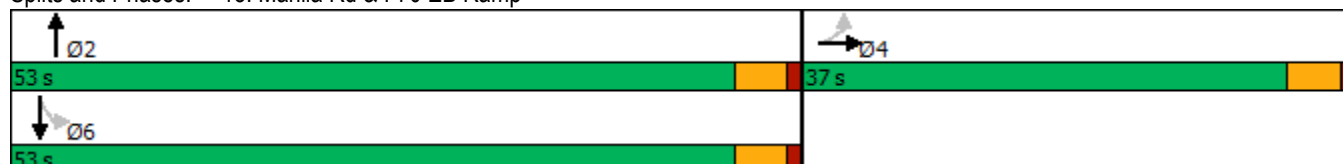
Intersection LOS: C

Intersection Capacity Utilization 60.0%

ICU Level of Service B

















Analysis Period (min) 15

Splits and Phases: 13: Manila Rd & I-70 EB Ramp



# HCM 6th Signalized Intersection Summary 13: Manila Rd & I-70 EB Ramp

TransPort  
11/05/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	368	0	115	0	0	0	0	454	135	27	121	0
Future Volume (veh/h)	368	0	115	0	0	0	0	454	135	27	121	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1604	1604	1604				0	1604	1604	1604	1604	0
Adj Flow Rate, veh/h	428	0	134				0	528	157	31	141	0
Peak Hour Factor	0.86	0.86	0.86				0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	20	20	20				0	20	20	20	20	0
Cap, veh/h	507	0	451				0	603	179	102	362	0
Arrive On Green	0.33	0.00	0.33				0.00	0.51	0.51	0.51	0.51	0.00
Sat Flow, veh/h	1527	0	1359				0	1187	353	51	714	0
Grp Volume(v), veh/h	428	0	134				0	0	685	172	0	0
Grp Sat Flow(s),veh/h/ln	1527	0	1359				0	0	1540	765	0	0
Q Serve(g_s), s	14.6	0.0	4.1				0.0	0.0	22.1	2.1	0.0	0.0
Cycle Q Clear(g_c), s	14.6	0.0	4.1				0.0	0.0	22.1	24.3	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.23	0.18		0.00
Lane Grp Cap(c), veh/h	507	0	451				0	0	782	464	0	0
V/C Ratio(X)	0.84	0.00	0.30				0.00	0.00	0.88	0.37	0.00	0.00
Avail Cap(c_a), veh/h	884	0	787				0	0	1331	916	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	17.4	0.0	13.9				0.0	0.0	12.2	9.5	0.0	0.0
Incr Delay (d2), s/veh	3.9	0.0	0.4				0.0	0.0	3.6	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.5	0.0	2.0				0.0	0.0	9.1	1.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.3	0.0	14.3				0.0	0.0	15.9	10.0	0.0	0.0
LnGrp LOS	C	A	B				A	A	B	B	A	A
Approach Vol, veh/h	562						685			172		
Approach Delay, s/veh	19.7						15.9			10.0		
Approach LOS	B						B			B		
Timer - Assigned Phs	2			4			6					
Phs Duration (G+Y+Rc), s	33.0			23.1			33.0					
Change Period (Y+Rc), s	4.5			4.5			4.5					
Max Green Setting (Gmax), s	48.5			32.5			48.5					
Max Q Clear Time (g_c+I1), s	24.1			16.6			26.3					
Green Ext Time (p_c), s	4.4			2.0			0.9					
Intersection Summary												
HCM 6th Ctrl Delay	16.7											
HCM 6th LOS	B											