CORRIDOR STUDY
POR – Tallmadge Road

Portage County, Ohio

Prepared For:

Portage County Engineer's Office
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March 2014

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March 28, 2014
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I. Purpose:

GPD Group was retained by the Portage County Engineer to complete a Corridor Study for the Tallmadge Road corridor. The purpose of this Corridor Study is to analyze vehicular operating conditions along the study route to determine what roadway improvements are necessary to achieve acceptable operations for the projected design year conditions. In addition to mitigating any existing deficiencies, the project will provide additional roadway capacity to accommodate the future growth that is anticipated along this corridor.

II. Project Setting:

Study Area

The limits of the corridor which are under consideration as a part of this study encompass Tallmadge Road from the Summit County/Portage County line to the west to Sunnybrook Road to the east. The study length along Tallmadge Road is approximately 1.1 miles. Mogadore Road, to the north and south of Tallmadge Road, is also included in the study area. Tallmadge Road and Mogadore Road initially formed a typical, four (4) legged intersection. When Interstate 76 (I-76) was constructed, Mogadore Road was realigned and both the north and south legs were integrated into the newly constructed interchange, resulting in areas where Mogadore Road overlaps the I-76 exit ramps resulting in two way ramps and dangerous crossover points. The land uses surrounding the study corridor are a mix of residential and commercial uses. There is commercial development (Cascades of Brimfield shopping center) along the south side of Tallmadge Road that draws a significant amount of traffic from I-76. In addition to the existing operational deficiencies, there is also the potential for much of the vacant land (and the existing Maplecrest golf course) north of Tallmadge Road to be developed in the future, as this area is a JEDD (joint economic development district) which would result in additional traffic on the study roadways. See **Figure 1** for the study location area map and **Figure 2** for an aerial photograph of the study area.

Area Roadway System

Tallmadge Road currently exists as a two (2) to four (4) lane asphalt roadway throughout the study area. The current posted speed limit on Tallmadge Road is 40 miles per hour (mph). According to information obtained from the Ohio Department of Transportation's (ODOT) website, Tallmadge Road is classified as an urban minor arterial from the western project terminus near Parliament Drive to I-76 and an urban collector from I-76 to the eastern project terminus of Sunnybrook Road.

Mogadore Road currently exists as a two (2) lane asphalt roadway throughout the study area both north and south of Tallmadge Road. The current posted speed limit on Mogadore Road is 25 mph south of Tallmadge Road and 35 mph north of Tallmadge Road. According to information obtained from ODOT's website, Tallmadge Road is classified as an urban local roadway south of Tallmadge Road and an urban collector north of Tallmadge Road.

There are five (5) existing signalized intersections and six (6) unsignalized intersections that were included within the study area. See **Figure 3** for the existing laneage and traffic control at each intersection included in this study. See **Appendix A** for a site photo log of the existing roadway and intersection conditions. The eleven (11) intersections included within the study area are as follows:

Tallmadge Road / Parliament Drive Intersection:

This intersection is unsignalized with the Parliament Drive approach operating under stop control. The intersection consists of three (3) legs with the following lane configurations: EB Tallmadge Road – one (1) lane (left-thru), WB Tallmadge Road – one (1) lane (thru-right) and SB Parliament Drive – one (1) lane (left-right).

Tallmadge Road / Cascades Boulevard Intersection:

This intersection is currently signalized using a typical mast arm configuration with signal poles located on the northwest and southeast corners of the intersection. The intersection consists of three (3) approaches with the following lane configurations: EB Tallmadge Road – two (2) lanes (thru, right), WB Tallmadge Road – two (2) lanes (left, thru) and NB Cascades Boulevard – two (2) lanes (left, right).

Tallmadge Road / Plaza Drive / Golf Course Drive Intersection:

This intersection is currently signalized using a span wire signal installation with signal poles located on the northwest and southeast corners of the intersection. The intersection consists of four (4) legs with the following lane configurations: EB Tallmadge Road – three (3) lanes (left, thru, right), WB Tallmadge Road – two (2) lanes (left, thru-right), NB Plaza Drive – two (2) lanes (left-thru, right) and SB Golf Course Drive – one (1) lane (left-thru-right).

Tallmadge Road / Highway View Drive Intersection:

This intersection is currently unsignalized with the Highway View Drive approach operating under stop control. The intersection consists of three (3) legs with the following lane configurations: EB Tallmadge Road – two (2) lanes (thru, thru-right), WB Tallmadge Road – two (2) lanes (left, thru) and NB Highway View Drive – one (1) lane (left-right). It should be noted that the left turn lane provided for the westbound approach at this intersection consists of a center two-way left turn lane.

Tallmadge Road / East End Welding Drive Intersection:

This intersection is currently unsignalized with the East End Welding Drive approach operating under stop control. The intersection consists of three (3) legs with the following lane configurations: EB Tallmadge Road – three (3) lanes (left, thru, thru), WB Tallmadge Road – one (1) lane (thru-right) and SB East End Welding Drive – one (1) lane (left-right). It should be noted that the left turn lane provided for the eastbound approach at this intersection consists of a center two-way left turn. This is also the point to which Mogadore Road is proposed to be relocated.

Tallmadge Road / I-76 WB Entrance Ramp / Mogadore Road Intersection:

This intersection is currently signalized utilizing a span wire signal installation with signal poles located on all four (4) corners of the intersection. The intersection consists of three (3) approaches with the following lane configurations: EB Tallmadge Road – three (3) lanes (left, thru, thru-right), WB Tallmadge Road – three (3) lanes (left, thru, right) and SB Mogadore Road – one (1) lane (left-thru-right). The signal at this intersection operates with a protected/permissive left turn phase for the eastbound and westbound approaches. A fourth leg to this intersection exists as the one-way, outbound I-76 WB entrance ramp to the south. It should be noted that the signal at this intersection operates as a cluster signal with the Mogadore Road / I-76 WB exit ramp intersection located approximately 100 feet north of this intersection.

Mogadore Road / I-76 WB Exit Ramp Intersection:

This intersection is currently signalized utilizing a span wire signal installation with signal poles located on the northeast and southwest corners of the intersection. The intersection consists of three (3) approaches with the following lane configurations: WB I-76 exit ramp – one (1) lane (left-thru-right), NB Mogadore Road – one (1) lane (thru), SB Mogadore Road – one (1) lane (thru-right). As previously noted, the signal at this intersection operates as a cluster signal with the Tallmadge Road / I-76 WB entrance ramp / Mogadore Road intersection located approximately 100 feet south of this intersection. There is a fourth leg to this intersection that operates as a one-way westbound link to a merge with westbound Tallmadge Road located approximately 500 feet to the west.

Tallmadge Road / I-76 EB Ramps / Mogadore Road Intersection:

This intersection is currently signalized utilizing a span wire signal installation with signal poles located on all four (4) corners of the intersection. The intersection consists of three (3) approaches with the following lane configurations: EB Tallmadge Road – three (3) lanes (left, thru, thru-right), WB Tallmadge Road – two (2) lanes (left-thru, thru-right) and NB I-76 EB Exit Ramp – one (1) lane (left-thru-right). A fourth leg to this intersection exists as a one-way, outbound I-76 EB entrance ramp to the north. This section of Mogadore Road to the south of Tallmadge Road is incorporated into this exit ramp as well, resulting in two-way operation on this ramp for approximately 600 feet before Mogadore Road departs separately to the south.

Tallmadge Road / Sunnybrook Road Intersection:

This intersection is currently unsignalized with the Sunnybrook Road approaches operating under stop control. The intersection consists of four (4) approaches with the following lane configurations: EB and WB Tallmadge Road – one (1) lane (left-thru-right) and NB and SB Sunnybrook Road – one (1) lane (left-thru-right).

Mogadore Road / Sunnybrook Road Intersection (1/3 mile north of Tallmadge Road):

This intersection is currently unsignalized with the Sunnybrook Road approach operating under stop control. The intersection consists of three (3) approaches with the following lane configurations: WB Sunnybrook Road – one (1) lane (left-right), NB Mogadore Road – one (1) lane (thru-right) and SB Mogadore Road – one (1) lane (left-thru).

III. Traffic Volumes:

Certified Traffic Volumes

For this study, GPD Group personnel took manual turning movement traffic counts at all eleven (11) study intersections between Wednesday, September 11th, 2013 and Thursday, September 26th, 2013. Based on the turning movement counts and due to the unique traffic patterns in the study area, it was determined that the evaluation of two (2) AM peak hours was necessary. The first AM peak, occurring from 7:30 AM – 8:30 AM, is a result of commuter traffic while the second AM peak, occurring from 9:00 AM – 10:00 AM is a result of commercial traffic generated by the Cascades of Brimfield shopping center. It should be noted that while the magnitudes are similar, the directional traffic patterns shift between these two (2) AM peak periods. The PM peak hour was found to occur from 4:45 PM – 5:45 PM. The Existing Year 2013 peak hour traffic volumes are shown in **Figure 4**.

The Existing Year 2013 and Opening Year 2019 'No-Build' traffic volumes along Tallmadge Road were developed by GPD Group and submitted to ODOT on October 25th, 2013. The submitted volumes were approved and certified for use in this study on January 14th, 2014. These certified traffic volumes include all eleven (11) intersections within the study area. See **Appendix B** for the certified traffic plates and approval e-mail from the ODOT Office of Statewide Planning and Research. The certified traffic data includes the design designations, the Average Daily Traffic (ADT), the AM Commuter Peak Design Hourly Volume (DHV), the AM Commercial Peak DHV and the PM DHV.

Historic Growth Trends

Developing the future traffic volumes on a corridor involves calculating a proposed growth rate based on historic traffic counts collected along the roadway. Since the corridor is a county roadway, no historic ODOT traffic counts were available. Akron Metropolitan Area Transportation Study (AMATS) was contacted, but because this corridor is not located on their congestion management list, a growth model for this roadway does not exist. However, historic traffic counts located at both ends of the study area were obtained from AMATS and used to calculate historic growth rates. As shown in **Appendix C**, the traffic count on Tallmadge Road at the Summit County / Portage County line (the west end of the study area) shows an annual growth rate of 0.73%. It should be noted that the general trend on the roadway has been negative with the exception of a spike in 2007. This increase is believed to be due to the opening of the Cascades of Brimfield shopping center. The traffic count on Tallmadge Road east of Sunnybrook Road shows an overall growth rate of -0.36%

per year from 1995-2007. Based upon the overall negative growth trends and the fact that traffic volumes have only been observed to increase due to specific new development along the corridor, a 0% growth rate for background traffic volumes will be used for this study. This 0% growth rate was utilized in the certified traffic submittal and approved as noted above.

'No-Build' Traffic Volumes

The proposed corridor improvements are anticipated to be completed in 2019 which will serve as the 'Opening Year' for the study while the 'Design Year' will be 2039. Since no background growth was added to the current traffic volumes, the Existing Year 2013 peak hour traffic volumes will also represent the Opening Year 2019 'No-Build' peak hour traffic volumes and are shown in **Figure 5**.

While the Design Year 2039 'No-Build' traffic volumes will continue to use a 0% growth rate, they will also incorporate the trip generation of several properties that are expected be either developed or redeveloped over the next twenty-five (25) years. The development traffic incorporated into the Design Year scenario is discussed in detail in the subsequent section. The Design Year 2039 'No-Build' peak hour traffic volumes are shown in **Figure 6**.

'Build' Traffic Volumes

The proposed roadway configuration, as discussed in greater detail later in this report, requires a redistribution of the 'No-Build' traffic volumes to represent the revised roadway network and new traffic patterns. It was concluded that the existing interchange should be reconfigured to remove Mogadore Road from the existing I-76 exit ramps. This would ultimately create an interchange without two-way ramps or intersections within the interchange. The Opening Year 2019 and Design Year 2039 'Build' scenarios incorporate this proposed reconfiguration of the roadway network with the Opening Year 2019 'Build' traffic volumes shown in **Figure 7** and the Design Year 2039 'Build' traffic volumes shown in **Figure 8**.

IV. Trip Generation:

Trip generation calculations were performed for several properties that are expected to be developed or redeveloped over the next twenty-five (25) years utilizing the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition. This manual includes data from numerous trip generation studies of different land uses that have been performed by public agencies, developers, consulting firms and associations and submitted to ITE. The selected parcels were grouped into developments A through D based upon location and anticipated land uses. See **Figure 9** for the location of each development that was included within this study. The trip generation for each of these developments is discussed below.

Development A

While not currently vacant, the first development evaluated is the existing Maplecrest Golf Club. Discussions with Portage County and the City of Tallmadge indicate that the owners have engaged in preliminary discussions to redevelop the property. For purposes of this study, it was assumed that the Maplecrest Golf Club would likely be re-zoned from Residential / Office to Integrated Commercial to allow for future redevelopment as a shopping center, similar to the Cascades of Brimfield on the other side of Tallmadge Road.

Due to the uncertainty with the specific type and density of this future commercial development, the ITE Trip Generation Manual was not used for calculating the future trip generation of this site. With the Maplecrest Golf Club being similar in size to the Cascades of Brimfield shopping center and expected to be utilized for the same purpose, it is assumed that the potential shopping center will generate the same amount of traffic as the Cascades of Brimfield Shopping Center during the peak hours.

As such, the potential trip generation of the Maplecrest site was based on the trip generation of the existing shopping center and was calculated using the turning movement counts by isolating the current peak hour trip generation of the existing site. The Cascades of Brimfield shopping center is currently generating the following trip ends based on actual counts taken at the Tallmadge Road / Cascades Boulevard and Tallmadge Road / Plaza Drive / Golf Course Drive intersections:

i. Weekday AM Commuter Peak Hour:
   = 448 trip ends (268 enter and 180 exit)
ii. Weekday AM Commercial Peak Hour:
   = 610 trip ends (346 enter and 264 exit)
iii. Weekday PM Peak Hour:
   = 1389 trip ends (753 enter and 636 exit)

See **Appendix D** for the turning movement counts that were used to develop the trip generation for the anticipated Maplecrest redevelopment.

Development B

The second development evaluated is two (2) vacant parcels located on the north side of Mogadore Road to the west of I-76. See **Figure 9** for the location of the Development B parcels. Plans to build a Klaben car dealership on these parcels were provided by the Portage County Engineer with the initial stages of construction now occurring on the site. A car dealership corresponds to Land Use Code 841 (Automobile Sales). According to information contained in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, the proposed car dealership would be expected to generate the following trip ends based on its building size:

LAND USE 841 – Automobile Sales

i. Weekday AM Commuter Peak Hour:
= 30 trip ends (23 enter and 7 exit)
ii. Weekday AM Commercial Peak Hour:
= 34 trip ends (19 enter and 15 exit)
iii. Weekday PM Peak Hour:
= 54 trip ends (22 enter and 32 exit)

Note that the variable utilized in the trip generation calculations was '1000 Square Feet of Gross Floor Space', which in this particular case is 15,500 square feet. See **Appendix D** for the detailed trip generation calculations for the proposed Klaben car dealership.

Development C

The third development evaluated is the existing Insite industrial park located on the west side of Mogadore Road to the north of the study area. As the development of the industrial park has been ongoing, **Figure 9** identifies the location of the remaining parcels that have yet to develop. The trip generation calculated for this development is for the build-out of remaining vacant parcels. An industrial park corresponds to Land Use Code 130 (Industrial Park). According to information contained in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, the remaining build-out of the Insite industrial park would be expected to generate the following trip ends based on its building size:

LAND USE 130 – Industrial Park

i. Weekday AM Commuter Peak Hour:
= 344 trip ends (286 enter and 58 exit)
ii. Weekday AM Commercial Peak Hour:
= 329 trip ends (286 enter and 43 exit)
iii. Weekday PM Peak Hour:
= 347 trip ends (73 enter and 274 exit)

Note that the variable utilized in the trip generation calculations was acres of development, which in this particular case is the remaining 48 undeveloped acres. See **Appendix D** for the detailed trip generation calculations for the full build-out of the Insite industrial park.

Development D

The final development evaluated is the existing Karg industrial park located on the north side of Tallmadge Road to the east of the study area. Similar to the Insite industrial park, the development of the Karg industrial park has also been ongoing with plans to ultimately develop the remainder of the property. See **Figure 9** for the location of the remaining undeveloped parcels. Once again, the trip generation calculated for this development is for the build-out of remaining vacant parcels. An industrial park corresponds to Land Use Code 130 (Industrial Park). According to information contained in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, the remaining build-out

of the Karg industrial park would be expected to generate the following trip ends based on its building size:

LAND USE 130 – Industrial Park

i. Weekday AM Commuter Peak Hour:
   = 472 trip ends (392 enter and 80 exit)
ii. Weekday AM Commercial Peak Hour:
   = 431 trip ends (375 enter and 56 exit)
iii. Weekday PM Peak Hour:
   = 464 trip ends (97 enter and 367 exit)

Note that the variable utilized in the trip generation calculations was acres of development, which in this particular case is the remaining 72 undeveloped acres. See **Appendix D** for the detailed trip generation calculations for the full build-out of the Karg industrial park.

It is important to note that while the traffic from these four (4) developments has been incorporated into this study, a number of additional large parcels of undeveloped land can still be found within the vicinity of this project. The point of including these specific developments was due to the fact that they are either currently developing (the industrial parks), under construction (Klaben dealership) or expected to redevelop soon based on discussions with County and City officials (Maplecrest Golf Course). This is not to say that other development is not also imminent and add additional traffic to the Tallmadge Road corridor, but these properties are further along in the process than the others.

V. Discussion of Analysis Scenarios:

The Existing Year 2013, Opening Year 2019 and Design Year 2039 'No-Build' scenarios represent the existing roadway conditions as they are today. While it is understood that minor signal timing adjustments would likely occur in the future, the existing signal timings were maintained throughout each of the 'No-Build' scenarios.

This study analyzed three (3) 'Build' options for the Tallmadge Road corridor. 'Build Option 1', which represents the medium term improvements, primarily involves the separation of Mogadore Road from the I-76 exit ramps. 'Build Option 2', considered the long term improvements, incorporates a further reconfiguration of the I-76/Tallmadge Road interchange in addition to the improvements recommended under 'Build Option 1'. Lastly, 'Build Option 3' utilizes roundabouts along the corridor even though the analysis will ultimately determine that this is not a feasible option at this location.

'Build Option 1' (Medium Term Improvements):

In order to address the existing capacity and safety issues currently occurring along the Tallmadge Road corridor, the following improvements are recommended as part of the 'Build Option 1' scenario:

1. Eliminate both Mogadore Road junctions with the I-76 Exit Ramps to create a traditional diamond interchange at Tallmadge Road and eliminate the non-traditional operation which exists today.

2. Relocate / Reconstruct Mogadore Road (West) to tie into Tallmadge Road at the existing location of East End Welding Drive and signalize the new intersection.

3. Cul-de-sac Mogadore Road (East) and reroute all traffic to Sunnybrook Drive.

4. Reconstruct the traffic signal at the reconfigured Tallmadge Road / I-76 WB Ramps intersection.

5. Interconnect the traffic signals along Tallmadge Road to form a coordinated closed-loop signal system.

Removing Mogadore Road (West) from its junction with the I-76 westbound exit ramp will allow the interchange on the west side of I-76 to be reconfigured with the exit ramp and the entrance ramp creating a traditional four-legged signalized intersection. This will allow for the elimination of the cluster traffic signal that currently operates at the Tallmadge Road / Mogadore Road (West) and Mogadore Road / I-76 WB Ramps intersections. The removal of this cluster traffic signal will necessitate the reconstruction of the traffic signal at the reconfigured Tallmadge Road / I-76 WB Ramps intersection.

Reconstructing Mogadore Road (West) and realigning the roadway to tie into Tallmadge Road at the existing location of East End Welding Drive is necessary to separate Mogadore Road (West) from the I-76 WB exit ramp. This reconstructed roadway will be routed in front of the existing East End Welding building with the driveway that served East End Welding being realigned to tie into this newly constructed segment of Mogadore Road. Based on the traffic volumes, a traffic signal will be warranted and will need to be constructed at the new Tallmadge Road / Mogadore Road intersection.

Mogadore Road (East) is proposed to be cul-de-saced just south of the I-76 eastbound exit ramp. This will require that access to Tallmadge Road for all properties between the new cul-de-sac and Old Forge Road be gained via Old Forge Road and Sunnybrook Road. This improvement will remove the two-way operation on the I-76 EB exit ramp and allow the east side of the interchange to also operate as a traditional interchange with one-way ramps. See **Figure 10** for the proposed improvement rendering of 'Build Option 1.'

<u>'Build Option 2' (Long Term Improvements):</u>

In order to address the future traffic demand that is anticipated along the Tallmadge Road corridor while further improving the safety aspects of the traffic operation, the following improvements are recommended as part of the 'Build Option 2' scenario:

1. In addition to the medium term improvements listed above, convert the I-76 / Tallmadge Road interchange from a traditional diamond interchange to a diverging diamond interchange (DDI).

As previously discussed, the medium term improvements would separate Mogadore Road from its junctions with both I-76 exit ramps and create a traditional diamond interchange capable of handling the existing traffic demand. These improvements, however, would not serve as a long term solution if the development potential in the immediate area of the interchange is realized. Furthermore, the existing bridge piers supporting the I-76 bridges over Tallmadge Road limit the existing left turn lane storage lengths from eastbound Tallmadge Road to the I-76 eastbound entrance ramp to less than what is required to meet the current turning demand, often resulting in blocking of the preferred thru lane for eastbound Tallmadge Road motorists. A similar situation exists in the westbound direction, but to a lesser extent. To address these issues, the recommended long term improvement is to convert the I-76 / Tallmadge Road interchange to a diverging diamond interchange (DDI). See **Figure 11** for the proposed improvement rendering of 'Build Option 2.'

A DDI, although not commonly used, was opened in the State of Ohio at the I-270 / Roberts Road interchange in the City of Columbus in the fall of 2013. Similarly, a traditional urban diamond interchange in the City of Lexington, Kentucky (U.S. 68 / S.R. 4) was also converted to a DDI. According to information obtained from the Kentucky Transportation Cabinet, the implementation of the DDI has resulted in "a major reduction" in crashes since it opened. The benefits of converting an existing diamond interchange to a DDI are as follows:

- Fewer Conflict Points (14 for DDI vs. 26 for conventional interchange)
- Better Sight Distance at Turns
- Wrong Way Entry onto Ramps is Extremely Difficult
- Two (2) Phase Signal Operations, Shorter Cycle Lengths and Increased Capacity
- Left Turning Traffic has No Opposing Traffic Movements
- No Additional Right-of-Way Typically Necessary
- Can be Accommodated by Existing Bridge Geometry

<u>'Build Option 3' (Roundabout Option):</u>

The final build option, referred to as 'Build Option 3,' once again incorporates the medium term improvements, but instead of converting the interchange to a DDI, constructs a roundabout at each of the two (2) Tallmadge Road / I-76 ramp terminal intersections. The capacity analysis results, which are detailed later in this report, indicate that the Tallmadge Road / I-76 WB Ramps roundabout would require two (2) circulating lanes while the Tallmadge Road / I-76 EB Ramps roundabout would require three (3) circulating lanes. Due to the large footprint needed to construct both roundabouts, the constraints of the I-76 bridge structure and the additional right-of-way impacts, this option is not considered a feasible alternative for this project.

Based upon the combined safety and capacity benefits, the construction of the medium and long term improvements as depicted in the 'Build Option 2' concept is recommended as the preferred alternative for the Tallmadge Road Corridor.

VI. Traffic Analysis:

Safety Analysis

Crash data was obtained from the Ohio Department of Public Safety for the calendar years of 2010 to 2012. A total of 80 crashes occurred within the study corridor and have been analyzed as part of this study. These crashes include forty-three (43) rear-end, ten (10) angle, eight (8) left turn, seven (7) sideswipe-passing, five (5) fixed object, four (4) other non-collision and three (3) sideswipe-meeting crashes. 61% of all crashes occurred in daylight and 70% occurred on dry pavement. 76% of the crashes were property damage only and 24% of the crashes were injury crashes. No fatal crashes were reported in the study area over the study period. See **Appendix E** for collision diagrams of the study corridor.

The majority of the crashes (54%) are rear-end related crashes, which is typically a sign of congestion. Looking at the individual crash diagrams, the majority of the crashes occurred near the intersections that are currently experiencing congestion issues. The congestion stems from the fact that Mogadore Road is crossing the I-76 Ramps and causing the traffic signals at the Tallmadge Road / Mogadore Road / I-76 WB entrance ramp and the Mogadore Road / I-76 WB exit ramp to operate as a cluster, which reduces capacity and increases delay time. This affects the operation of the entire interchange and is the largest contributing factor to the crashes on this corridor. Refer to the Tallmadge Road Corridor Safety Study published by GPD Group in March 2014, for a more in depth detailed crash analysis.

Traffic Signal Warrants

Utilizing the existing and proposed traffic volumes, traffic signal warrant analyses were performed for the eleven (11) study intersections located within the project limits. The nine (9) traffic signal warrants provided in the 2012 Ohio Manual of Uniform Traffic Control Devices (OMUTCD) define the minimum conditions under which installing traffic control signals is justified. Due to the availability of eleven (11) hour turning movement traffic count data, OMUTCD Warrant #'s 1-3 were deemed applicable for the Existing Year 2013 warrant analyses. For the Opening Year 2019 'Build' condition analysis, only Warrant #3 (peak hour vehicular volume) was evaluated based on the available traffic data provided from the Certified Traffic Volumes. The warrants are described as follows:

Warrant #1 Eight Hour Vehicular Volume

The Eight Hour Vehicular Volume warrant is intended for application where the volume of intersection traffic is the principal reason for consideration of the signal installation. Three (3) conditions are possible to satisfy this particular warrant. Condition A applies to specifically minimum vehicular volume requirements. Condition B deals with the interruption of continuous traffic flow. Condition C represents a combination of Conditions A and B being met at reduced volume requirements. When the 85th percentile speed of the major street traffic exceeds 40 mph in either an urban or rural area, or when the intersection lies within a built-up area of an isolated community having a population less than 10,000, the Eight Hour Vehicular Volume Warrant is seventy percent (70%) of the base requirements.

Warrant #2 Four Hour Vehicular Volume

The Four Hour Vehicular Volume warrant is satisfied when for four (4) hours of an average day, minimum volumes are reached on both the major street (total of both approaches) and the highest volume minor street approach (one direction only). When the 85th percentile speed of the major street traffic exceeds 40 mph or when the intersection lies within a built-up area of an isolated community having a population less than 10,000, the Four Hour Vehicular Volume requirements are reduced to seventy percent (70%) of the base values.

Warrant #3 Peak Hour Vehicular Volume

The Peak Hour Vehicular Volume warrant is intended for application when traffic conditions are such that for one hour of the day, minor street traffic suffers undue delay in entering or crossing the major street. The Peak Hour Vehicular Volume warrant is satisfied when the minimum required volumes on the major and highest volume minor approach are met for any one hour period (any four consecutive 15-minute periods) on an average day. When the 85th percentile speed of the major street traffic exceeds 40 mph or when the intersection lies within a built up area of an isolated community having a population less than 10,000, the Peak Hour Vehicular Volume warrants are reduced.

In order to determine whether the existing intersections meet a warrant based on the current traffic conditions, the existing traffic data and intersection configuration were compared to the volume thresholds and criteria for each of the above warrants. The results of the Existing Year 2013 signal warrant analysis are shown in **Table 1**. See **Appendix F** for the traffic signal warrant analysis.

Table 1: Traffic Signal Warrant Analysis Summary – Existing Year 2013 Conditions

Intersection	Signal Warrants		
	Warrant #1 (Eight Hour Vehicular Volume)	Warrant #2 (Four Hour Vehicular Volume)	Warrant #3 (Peak Hour Vehicular Volume)
Tallmadge Road / Parliament Drive	Not Satisfied	Not Satisfied	Not Satisfied
Tallmadge Road / Cascades Boulevard*	**Satisfied**	**Satisfied**	**Satisfied**
Tallmadge Road / Plaza Drive / Golf Course Drive*	**Satisfied**	**Satisfied**	**Satisfied**
Tallmadge Road / Highway View Drive	Not Satisfied	Not Satisfied	Not Satisfied
Tallmadge Road / East End Welding Drive	Not Satisfied	Not Satisfied	Not Satisfied
Tallmadge Road / Mogadore Road / I-76 WB Ramp*	**Satisfied**	**Satisfied**	**Satisfied**
Mogadore Road / I-76 WB Ramp*	Not Satisfied	Not Satisfied	Not Satisfied
Tallmadge Road / I-76 EB Ramp*	**Satisfied**	**Satisfied**	**Satisfied**
Tallmadge Road / Sunnybrook Road	Not Satisfied	Not Satisfied	Not Satisfied
Mogadore Road / I-76 EB Ramp	Not Satisfied	Not Satisfied	Not Satisfied
Mogadore Road / Sunnybrook Road	Not Satisfied	Not Satisfied	Not Satisfied

*Intersection is currently signalized

As shown in **Table 1** on the previous page, four (4) of the five (5) existing traffic signals within the project limits were found to continue to be warranted. The Mogadore Road / I-76 WB Ramp intersection, which is currently signalized, did not meet a warrant for a traffic signal based on the current traffic volumes. However, this intersection is currently signalized because of its close proximity with an existing traffic signal located approximately 125 feet to the south at the Tallmadge Road / Mogadore Road intersection and would be unlikely to operate without such signalization based on its current location. As such, the Mogadore Road / I-76 WB Ramp intersection will continue to be evaluated as a signalized intersection for purposes of this study under the 'No-Build' conditions.

Signal warrants were then reevaluated for the Opening Year 2019 'Build Option 1' conditions to account for the proposed changes along the corridor. The projected Opening Year 2019 'Build Option 1' traffic volumes at the study intersections were compared to the volume thresholds for the peak hour warrant (Warrant #3). Traffic signal warrants were once again evaluated for all study intersections. The results of the Opening Year 2019 'Build Option 1' traffic signal warrant analysis are shown in **Table 2**. See **Appendix F** for the traffic signal warrant analysis.

Table 2: Traffic Signal Warrant Analysis Summary – Opening Year 2019 'Build Option 1' Conditions

Intersection	Signal Warrants Warrant #3 (Peak Hour Vehicular Volume)
Tallmadge Road / Parliament Drive	Not Satisfied
Tallmadge Road / Cascades Boulevard*	**Satisfied**
Tallmadge Road / Plaza Drive / Golf Course Drive*	**Satisfied**
Tallmadge Road / Highway View Drive	Not Satisfied
Tallmadge Road / Mogadore Road	**Satisfied**
Tallmadge Road / I-76 WB Ramp*	**Satisfied**
Tallmadge Road / I-76 EB Ramp*	**Satisfied**
Tallmadge Road / Sunnybrook Road	Not Satisfied
Mogadore Road / East End Welding Drive	Not Satisfied
Mogadore Road / Sunnybrook Road	Not Satisfied

*Intersection is currently signalized

As shown in **Table 2**, all signalized intersections remaining under this scenario are anticipated to continue to meet Warrant #3 (Peak Hour Vehicular Volume) under the Opening Year 2019 'Build' conditions. The new Tallmadge Road / Mogadore Road intersection created by the relocation of Mogadore Road will also meet the requirements of Warrant #3 and thus justifying an additional traffic signal along the corridor. Traffic signal warrants were not evaluated for the Opening Year 'Build Option 2' because it reflects similar conditions and traffic volumes as 'Build Option 1' with only the additional modification to the I-76 / Tallmadge Road interchange. The proposed DDI will require the I-76 / Tallmadge Road ramp terminal intersections to be signalized to operate the interchange properly.

Auxiliary Turning Lane Warrants

Utilizing the projected Design Year 2039 traffic volumes, auxiliary turn lane warrant analyses were performed for each unsignalized intersection within the study area under the Design Year 2039 'No-Build' traffic conditions. ODOT publishes the State Highway Access Management Manual which includes warrant charts for auxiliary turn lanes. These warrant charts were utilized to determine if auxiliary turn lanes will be required at the unsignalized intersections. The results of the auxiliary turn lane analyses for the Design Year 2039 'No-Build' traffic scenario are summarized in **Table 3**. See **Appendix G** for the auxiliary turn lane warrant analysis.

Table 3: Auxiliary Turn Lane Warrant Analysis Summary – Design Year 2039 'No-Build' Conditions

Intersection	Auxiliary Turn Lane Warrants					
	Eastbound Left Turn Lane Warrant	Eastbound Right Turn Lane Warrant	Westbound Left Turn Lane Warrant	Westbound Right Turn Lane Warrant	Northbound Right Turn Lane Warrant	Southbound Left Turn Lane Warrant
Tallmadge Road / Parliament Drive	**Satisfied**	N/A	N/A	Not Satisfied	N/A	N/A
Tallmadge Road / Highway View Drive	N/A	Not Satisfied	**Satisfied**	N/A	N/A	N/A
Tallmadge Road / East End Welding Drive	Not Satisfied	N/A	N/A	Not Satisfied	N/A	N/A
Tallmadge Road / Sunnybrook Road	**Satisfied**	**Satisfied**	**Satisfied**	Not Satisfied	N/A	N/A
Mogadore Road / Sunnybrook Road	N/A	N/A	N/A	N/A	Not Satisfied	**Satisfied**

As shown in **Table 3**, multiple turn lane warrants are expected to be satisfied at the unsignalized intersections within the study area should the Design Year traffic volumes be realized. Auxiliary turn lane warrants were not performed for the Design Year 2039 'Build' conditions because the lane configurations will remain unchanged and thus represent the same conditions. It should be noted that while some turn lanes are shown to be warranted, they are not being included in the project as the primarily fall outside of the area of concern (I-76/Tallmadge Road interchange area) and are not needed for capacity requirements (as detailed in the following section). This information is being shown more for informational purposes to help assist Portage County with identifying potential locations for future intersection improvement projects once the initial capacity and safety concerns have been addressed and the traffic volumes are observed to have reached the Design Year levels. The absence of these warranted turn lanes was not shown to be contributing to any existing operational issues along the Tallmadge Road corridor.

HCM Intersection Capacity Analysis

Intersection capacity analyses were performed for the Existing Year 2013, Opening Year 2019 and Design Year 2039 conditions in order to determine the operating conditions experienced by each intersection. The quality of the operating conditions experienced by an intersection is measured in terms of Level-of-Service (LOS). Levels-of-Service can range from LOS A to LOS F. Level-of-Service ratings of A, B, and C are considered to be in the acceptable range. Level-of-Service D is typically considered acceptable in urban areas (which the study area utilized for this project have been determined to be within). Levels-of-Service E and F are considered below average with significant levels of delay experienced by vehicles. The Level-of-Service thresholds vary for signalized and unsignalized intersections. The thresholds related to average control delay for both signalized and unsignalized intersections are as follows:

Level-of-Service	Delay Threshold – Signalized (Sec)	Delay Threshold – Unsignalized (Sec)
A	< 10	< 10
B	> 10 - 20	> 10 – 15
C	> 20 - 35	> 15 – 25
D	> 35 - 55	> 25 - 35
E	> 55 - 80	> 35 - 50
F	> 80	> 50

The capacity analysis was performed for the AM and PM peak hours utilizing the computer program Synchro (Version 8) which was developed by Trafficware. Synchro can provide a macroscopic analysis on an entire roadway system and take into account the interactions and impact of traffic which travels from one intersection to the next. Analysis results reported in the following tables are based on the Highway Capacity Manual (HCM) 2010 calculation outputs from the Synchro software which are comparable to Highway Capacity Software (HCS) outputs (with the exception of the Tallmadge Road / Mogadore Road (West) and Mogadore Road / I-76 WB Ramps intersections as the current HCM 2010 methodology is unable to analyze cluster signals). The results reported for this cluster signal were based on the Synchro HCM 2000 outputs.

Existing traffic signal timings, including cycle lengths and splits, were obtained from Portage County and the Ohio Department of Transportation for the signalized intersections within the study area. These signal timings were incorporated into the capacity analysis to assess the existing operating conditions currently experienced along the Tallmadge Road Corridor. While it is understood the signal timing adjustments would likely be made in the future as traffic volumes change, the existing signal timings were maintained for all 'No-Build' scenarios in order to maintain consistency within this study. See **Appendix H** for the existing signal timing printouts.

Existing Year 2013 Conditions

Table 4 summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Existing Year 2013 conditions for the signalized intersections within the study area. See **Appendix I** for the Synchro HCM analysis printouts.

Table 4: HCM Intersection Capacity Analysis Summary – Existing Year 2013 Conditions Signalized Intersections

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Cascades Boulevard						
Eastbound Thru	B	11.2	B	11.3	B	16.0
Eastbound Right	A	9.0	B	10.9	B	15.1
Eastbound Approach	*B*	*10.9*	*B*	*11.1*	*B*	*15.7*
Westbound Left	A	5.5	A	5.6	A	8.5
Westbound Thru	A	0.5	A	0.4	A	0.5
Westbound Approach	*A*	*1.5*	*A*	*2.4*	*A*	*4.2*
Northbound Left	C	21.8	C	22.2	C	27.0
Northbound Right	C	23.5	C	24.2	D	36.8
Northbound Approach	*C*	*23.0*	*C*	*23.5*	*C*	*32.7*
Intersection Total	***A***	***8.9***	***B***	***10.3***	***B***	***16.7***
Tallmadge Road / Plaza Drive / Golf Course Drive						
Eastbound Left	A	0.5	A	1.5	A	0.1
Eastbound Thru	A	1.8	A	2.6	A	2.4
Eastbound Right	A	0.5	A	1.5	A	0.0
Eastbound Approach	*A*	*1.7*	*A*	*2.5*	*A*	*2.4*
Westbound Left	A	4.6	A	5.4	A	6.3
Westbound Thru-Right	A	4.2	A	4.8	A	6.1
Westbound Approach	*A*	*4.2*	*A*	*5.0*	*A*	*6.2*
Northbound Left-Thru	C	22.2	C	21.5	C	28.0
Northbound Right	C	23.9	C	23.6	D	46.1
Northbound Approach	*C*	*23.6*	*C*	*23.3*	*D*	*43.6*
Southbound Left-Thru-Right	A	0.0	C	21.7	C	27.8
Southbound Approach	*A*	*0.0*	*C*	*21.7*	*C*	*27.8*
Intersection Total	***A***	***4.7***	***A***	***6.4***	***B***	***10.3***

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

Table 4: HCM Intersection Capacity Analysis Summary – Existing Year 2013 Conditions Signalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / I-76 WB Ramp / Mogadore Road						
Eastbound Left	C	28.9	C	20.3	D	39.2
Eastbound Thru-Right	D	38.4	C	27.4	E	59.4
Eastbound Approach	*D*	*36.7*	*C*	*26.1*	*E*	*56.6*
Westbound Left	C	28.8	C	22.4	D	35.7
Westbound Thru	D	40.4	C	33.4	F	82.9
Westbound Right	B	17.6	B	13.7	B	14.5
Westbound Approach	*C*	*27.0*	*C*	*26.1*	*D*	*52.4*
Southbound Left-Thru	A	0.4	A	0.9	A	0.8
Southbound Approach	*A*	*0.4*	*A*	*0.9*	*A*	*0.8*
Intersection Total	***C***	***23.1***	***C***	***21.0***	***D***	***43.5***
Mogadore Road / I-76 WB Ramp						
Westbound Left-Thru-Right	E	58.7	D	42.0	F	84.6
Westbound Approach	*E*	*58.7*	*D*	*42.0*	*F*	*84.6*
Northbound Thru	A	1.1	A	0.9	A	0.9
Northbound Approach	*A*	*1.1*	*A*	*0.9*	*A*	*0.9*
Southbound Thru-Right	D	42.3	D	38.4	F	113.9
Southbound Approach	*D*	*42.3*	*D*	*38.4*	*F*	*113.9*
Intersection Total	***C***	***29.9***	***C***	***27.0***	***E***	***70.6***
Tallmadge Road / I-76 EB Ramp						
Eastbound Left	B	11.3	A	8.4	B	17.2
Eastbound Thru-Right	A	8.5	A	6.0	B	13.3
Eastbound Approach	*A*	*9.7*	*A*	*7.1*	*B*	*14.6*
Westbound Left-Thru	C	20.1	B	15.8	C	26.3
Westbound Thru-Right	C	20.8	B	16.1	C	27.9
Westbound Approach	*C*	*20.4*	*B*	*16.0*	*C*	*27.0*
Northbound Left-Thru-Right	C	25.8	B	19.5	D	39.4
Northbound Approach	*C*	*25.8*	*B*	*19.5*	*D*	*39.4*
Intersection Total	***B***	***20.0***	***B***	***14.3***	***C***	***26.7***

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

As shown in **Table 4** on the previous pages, all signalized intersections throughout the study area are currently operating at an acceptable LOS D or better during the peak hours with the exception of the two (2) intersections that operate as a cluster signal (Tallmadge Road / Mogadore Road / I-76 WB Ramps and Mogadore Road / I-76 WB Exit Ramp) under the Existing Year 2013 conditions. Due to the inefficient operation of the cluster traffic signal, these intersections are unable to provide adequate capacity that accommodates the current traffic demand and would require geometric improvements in order to achieve acceptable Levels-of-Service.

Furthermore, while not reflected in the capacity analysis, it is important to note that the existing signals along Tallmadge Road are not interconnected as a closed-loop signal system. ODOT maintains and operates the signals at the interchange ramps while Portage County maintains and operates the two (2) signals to the west at the Cascades of Brimfield shopping center. This further contributes to the congestion and poor progression along the corridor in addition to the capacity constraints highlighted above.

Table 5 summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Existing Year 2013 traffic conditions for the unsignalized intersections within the study area. See **Appendix I** for the Synchro HCM analysis printouts.

Table 5: HCM Intersection Capacity Analysis Summary – Existing Year 2013 Conditions Unsignalized Intersections

Intersection / Movement	**AM Commuter Peak**		**AM Commercial Peak**		**PM Peak**	
	LOS	**Delay** (sec)	**LOS**	**Delay** (sec)	**LOS**	**Delay** (sec)
Tallmadge Road / Parliament Drive						
Eastbound Left	A	0.0	A	7.9	A	8.5
Eastbound Approach	*A*	*0.0*	*A*	*0.3*	*A*	*0.2*
Southbound Left-Right	B	12.0	B	11.7	C	16.4
Southbound Approach	*B*	*12.0*	*B*	*11.7*	*C*	*16.4*
Tallmadge Road / Highway View Drive						
Westbound Left	A	8.3	A	8.2	A	9.5
Westbound Approach	*A*	*0.4*	*A*	*0.2*	*A*	*0.1*
Northbound Left-Thru	B	13.9	B	14.1	D	25.2
Northbound Approach	*B*	*13.9*	*B*	*14.1*	*D*	*25.2*

Table 5: HCM Intersection Capacity Analysis Summary – Existing Year 2013 Conditions Unsignalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / East End Welding Drive						
Eastbound Left	A	8.4	A	8.5	A	0.0
Eastbound Approach	*A*	*0.2*	*A*	*0.2*	*A*	*0.0*
Southbound Left-Right	B	12.5	B	12.3	C	20.6
Southbound Approach	*B*	*12.5*	*B*	*12.3*	*C*	*20.6*
Tallmadge Road / Sunnybrook Road						
Eastbound Left	A	8.1	A	7.8	A	7.9
Eastbound Approach	*A*	*1.9*	*A*	*0.4*	*A*	*0.2*
Westbound Left	A	7.8	A	7.7	A	8.7
Westbound Approach	*A*	*0.7*	*A*	*0.3*	*A*	*0.8*
Northbound Left-Thru-Right	C	16.9	B	12.8	D	27.0
Northbound Approach	*C*	*16.9*	*B*	*12.8*	*D*	*27.0*
Southbound Left-Thru-Right	C	15.4	B	12.1	B	14.2
Southbound Approach	*C*	*15.4*	*B*	*12.1*	*B*	*14.2*
Mogadore Road / Interstate 76 EB Ramp						
Westbound Right	B	11.7	B	10.2	B	13.2
Westbound Approach	*B*	*11.7*	*B*	*10.2*	*B*	*13.2*
Southbound Left	B	12.1	B	10.4	B	14.5
Southbound Approach	*B*	*12.1*	*B*	*10.4*	*B*	*14.5*
Mogadore Road / Sunnybrook Road						
Westbound Left-Right	C	16.3	B	11.7	C	18.3
Westbound Approach	*C*	*16.3*	*B*	*11.7*	*C*	*18.3*
Southbound Left	A	8.4	A	7.7	A	8.3
Southbound Approach	*A*	*0.2*	*A*	*0.3*	*A*	*0.1*

As shown on **Table 5**, all unsignalized intersections throughout the study area are currently operating at an acceptable LOS D or better during the peak hours under the Existing Year 2013 conditions.

Opening Year 2019 'No-Build' Conditions

Table 6 summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Opening Year 2019 'No-Build' traffic conditions for the signalized intersections throughout the study area. See **Appendix I** for the Synchro HCM analysis printouts.

Table 6: HCM Intersection Capacity Analysis Summary – Opening Year 2019 'No-Build' Conditions Signalized Intersections

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Cascades Boulevard						
Eastbound Thru	B	11.2	B	11.3	B	16.0
Eastbound Right	A	9.0	B	10.9	B	15.1
Eastbound Approach	*B*	*10.9*	*B*	*11.1*	*B*	*15.7*
Westbound Left	A	5.5	A	5.6	A	8.5
Westbound Thru	A	0.5	A	0.4	A	0.5
Westbound Approach	*A*	*1.5*	*A*	*2.4*	*A*	*4.2*
Northbound Left	C	21.8	C	22.2	C	27.0
Northbound Right	C	23.5	C	24.2	D	36.8
Northbound Approach	*C*	*23.0*	*C*	*23.5*	*C*	*32.7*
Intersection Total	***A***	***8.9***	***B***	***10.3***	***B***	***16.7***
Tallmadge Road / Plaza Drive / Golf Course Drive						
Eastbound Left	A	0.5	A	1.5	A	0.1
Eastbound Thru	A	1.8	A	2.6	A	2.4
Eastbound Right	A	0.5	A	1.5	A	0.0
Eastbound Approach	A	1.7	A	2.5	A	2.4
Westbound Left	A	4.6	A	5.4	A	6.3
Westbound Thru-Right	A	4.2	A	4.8	A	6.1
Westbound Approach	*A*	*4.2*	*A*	*5.0*	*A*	*6.2*
Northbound Left-Thru	C	22.2	C	21.5	C	28.0
Northbound Right	C	23.9	C	23.6	D	46.1
Northbound Approach	*C*	*23.6*	*C*	*23.3*	*D*	*43.6*
Southbound Left-Thru-Right	A	0.0	C	21.7	C	27.8
Southbound Approach	*A*	*0.0*	*C*	*21.7*	*C*	*27.8*
Intersection Total	***A***	***4.7***	***A***	***6.4***	***B***	***10.3***

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

Table 6: HCM Intersection Capacity Analysis Summary –
Opening Year 2019 'No-Build' Conditions
Signalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Mogadore Road / I-76 Westbound Ramp						
Eastbound Left	C	28.9	C	20.3	D	39.2
Eastbound Right	D	38.4	C	27.4	E	59.4
Eastbound Approach	*D*	*36.7*	*C*	*26.1*	*E*	*56.6*
Westbound Left	C	28.8	C	22.4	D	35.7
Westbound Thru	D	40.4	C	33.4	F	82.9
Westbound Right	B	17.6	B	13.7	B	14.5
Westbound Approach	*C*	*27.0*	*C*	*26.1*	*D*	*52.4*
Southbound Left-Thru	A	0.4	A	0.9	A	0.8
Southbound Approach	*A*	*0.4*	*A*	*0.9*	*A*	*0.8*
Intersection Total	***C***	***23.1***	***C***	***21.0***	***D***	***43.5***
Mogadore Road / I-76 Westbound Ramp						
Westbound Left-Thru-Right	E	58.7	D	42.0	F	84.6
Westbound Approach	*E*	*58.7*	*D*	*42.0*	*F*	*84.6*
Northbound Thru	A	1.1	A	0.9	A	0.9
Northbound Approach	*A*	*1.1*	*A*	*0.9*	*A*	*0.9*
Southbound Thru-Right	D	42.3	D	38.4	F	113.9
Southbound Approach	*D*	*42.3*	*D*	*38.4*	*F*	*113.9*
Intersection Total	***C***	***29.9***	***C***	***27.0***	***E***	***70.6***
Tallmadge Road / I-76 Eastbound Ramp						
Eastbound Left	B	11.3	A	8.4	B	17.2
Eastbound Right	A	8.5	A	6.0	B	13.3
Eastbound Approach	*A*	*9.7*	*A*	*7.1*	*B*	*14.6*
Westbound Left-Thru	C	20.1	B	15.8	C	26.3
Westbound Thru-Right	C	20.8	B	16.1	C	27.9
Westbound Approach	*C*	*20.4*	*B*	*16.0*	*C*	*27.0*
Northbound Left-Thru-Right	C	25.8	B	19.5	D	39.4
Northbound Approach	*C*	*25.8*	*B*	*19.5*	*D*	*39.4*
Intersection Total	***B***	***20.0***	***B***	***14.3***	***C***	***26.7***

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

As shown in **Table 6** on the previous pages, the Opening Year 2019 'No-Build' traffic scenario is expected to maintain the previously identified deficiencies as the certified traffic projections anticipate no increase in traffic volumes under this scenario. As such, the capacity analysis results for the Existing Year 2013 and Opening Year 2019 'No-Build' scenarios remain unchanged.

Table 7 summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Opening Year 2019 'No-Build' traffic conditions for the unsignalized intersections throughout the study area. See **Appendix I** for the Synchro HCM analysis printouts.

Table 7: HCM Intersection Capacity Analysis Summary – Opening Year 2019 'No-Build' Conditions Unsignalized Intersections

Intersection / Movement	**AM Commuter Peak**		**AM Commercial Peak**		**PM Peak**	
	LOS	**Delay** (sec)	**LOS**	**Delay** (sec)	**LOS**	**Delay** (sec)
Tallmadge Road / Parliament Drive						
Eastbound Left	A	0.0	A	7.9	A	8.5
Eastbound Approach	*A*	*0.0*	*A*	*0.3*	*A*	*0.2*
Southbound Left-Right	B	12.0	B	11.7	C	16.4
Southbound Approach	*B*	*12.0*	*B*	*11.7*	*C*	*16.4*
Tallmadge Road / Highway View Drive						
Westbound Left	A	8.3	A	8.2	A	9.5
Westbound Approach	*A*	*0.4*	*A*	*0.2*	*A*	*0.1*
Northbound Left-Right	B	13.9	B	14.1	D	25.2
Northbound Approach	*B*	*13.9*	*B*	*14.1*	*D*	*25.2*
Tallmadge Road / East End Welding Drive						
Eastbound Left	A	8.4	A	8.5	A	0.0
Eastbound Approach	*A*	*0.2*	*A*	*0.2*	*A*	*0.0*
Southbound Left-Right	B	12.5	B	12.3	C	20.6
Southbound Approach	*B*	*12.5*	*B*	*12.3*	*C*	*20.6*

Table 7: HCM Intersection Capacity Analysis Summary –
Opening Year 2019 'No-Build' Conditions
Unsignalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Sunnybrook Road						
Eastbound Left	A	8.1	A	7.8	A	7.9
Eastbound Approach	*A*	*1.9*	*A*	*0.4*	*A*	*0.2*
Westbound Left	A	7.8	A	7.7	A	8.7
Westbound Approach	*A*	*0.7*	*A*	*0.3*	*A*	*0.8*
Northbound Left-Thru-Right	C	16.9	B	12.8	D	27.0
Northbound Approach	*C*	*16.9*	*B*	*12.8*	*D*	*27.0*
Southbound Left-Thru-Right	C	15.4	B	12.1	B	14.2
Southbound Approach	*C*	*15.4*	*B*	*12.1*	*B*	*14.2*
Mogadore Road / I-76 Eastbound Ramp						
Westbound Right	B	11.7	B	10.2	B	13.2
Westbound Approach	*B*	*11.7*	*B*	*10.2*	*B*	*13.2*
Southbound Left	B	12.1	B	10.4	B	14.5
Southbound Approach	*B*	*12.1*	*B*	*10.4*	*B*	*14.5*
Mogadore Road / Sunnybrook Road						
Westbound Left-Right	C	16.3	B	11.7	C	18.3
Westbound Approach	*C*	*16.3*	*B*	*11.7*	*C*	*18.3*
Southbound Left	A	8.4	A	7.7	A	8.3
Southbound Approach	*A*	*0.2*	*A*	*0.3*	*A*	*0.1*

As shown in **Table 7**, the Opening Year 2019 'No-Build' traffic scenario shows that the unsignalized intersections are expected to continue to operate with a LOS D or better. Once again, the capacity analysis results for the Existing Year 2013 and Opening Year 2019 'No-Build' scenarios remain unchanged

Opening Year 2019 'Build Option 1' Conditions

In order to address the deficiencies identified under the Opening Year 2019 'No-Build' conditions, this study developed the Opening Year 2019 'Build Option 1' scenario which eliminates both Mogadore Road junctions with the I-76 exit ramps to create a traditional diamond interchange at Tallmadge Road while removing the non-traditional operation which exists today. Additionally, this scenario relocates and reconstructs Mogadore Road (West) to tie into Tallmadge Road at the existing location of East End Welding Drive. The capacity analysis has identified the following improvements that will be necessary to accommodate the projected Opening Year 2019 traffic conditions and provide acceptable Levels-of-Service throughout the corridor:

Tallmadge Road / Relocated Mogadore Road (West) Intersection:

- Realign Mogadore Road (West) and construct the southbound approach to provide dual left turn lanes and a dedicated right turn lane.
- Provide a dedicated eastbound left turn lane along Tallmadge Road.
- Extend the existing outside westbound lane along Tallmadge Road from the interchange and drop as a dedicated right turn lane at this intersection.
- Install a traffic signal and interconnect as part of a Tallmadge Road signal system.

Tallmadge Road / I-76 WB Ramps Intersection:

- Realign the I-76 westbound exit ramp to intersect Tallmadge Road opposite of the existing I-76 westbound entrance ramp.
- Convert the existing westbound right turn lane to a thru lane that will now extend west to the relocated Mogadore Road.
- Reconstruct the traffic signal and interconnect as part of a Tallmadge Road signal system.

Tallmadge Road / I-76 EB Ramps Intersection:

- Convert the I-76 eastbound exit ramp from two-way traffic to one-way traffic and reconstruct the northbound approach to provide a shared left-thru lane and dedicated right turn lane.
- Reconstruct the traffic signal and interconnect as part of a Tallmadge Road signal system.

Mogadore Road / East End Welding Drive Intersection:

- Reconstruct the East End Welding Drive to intersect with the relocated Mogadore Road (West).

These recommended improvements are considered as the medium term improvements for the corridor and are reflected in the 'Build Option 1' scenario. **Table 8** on the following pages summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Opening Year 2019 'Build Option 1' conditions for the signalized intersections throughout the study area. See **Appendix J** for the Synchro HCM analysis printouts.

Table 8: HCM Intersection Capacity Analysis Summary –
Opening Year 2019 'Build Option 1' Conditions
Signalized Intersections

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Cascades Boulevard						
Eastbound Thru	A	9.4	A	9.5	B	15.7
Eastbound Right	A	7.7	A	9.2	B	14.7
Eastbound Approach	*A*	*9.1*	*A*	*9.4*	*B*	*15.3*
Westbound Left	A	3.7	A	3.7	A	7.0
Westbound Thru	A	0.4	A	0.3	A	0.5
Westbound Approach	*A*	*1.1*	*A*	*1.6*	*A*	*3.5*
Northbound Left	C	28.0	C	28.7	C	25.2
Northbound Right	C	30.3	C	31.8	C	34.0
Northbound Approach	*C*	*29.6*	*C*	*30.6*	*C*	*30.3*
Intersection Total	***A***	***9.1***	***B***	***11.1***	***B***	***15.6***
Tallmadge Road / Plaza Drive / Golf Course Drive						
Eastbound Left	A	3.2	B	12.8	B	10.8
Eastbound Thru	A	4.4	B	17.2	B	18.8
Eastbound Right	A	3.2	B	12.7	B	10.7
Eastbound Approach	*A*	*4.3*	*B*	*16.9*	*B*	*18.5*
Westbound Left	A	3.6	A	5.1	B	10.9
Westbound Thru-Right	A	3.2	A	3.7	A	5.0
Westbound Approach	*A*	*3.3*	*A*	*4.1*	*A*	*7.2*
Northbound Left-Thru	C	27.9	C	27.3	C	28.2
Northbound Right	C	23.8	C	23.1	C	25.5
Northbound Approach	*C*	*24.4*	*C*	*23.6*	*C*	*25.9*
Southbound Left-Thru-Right	A	0.0	C	27.5	C	28.0
Southbound Approach	*A*	*0.0*	*C*	*27.5*	*C*	*28.0*
Intersection Total	***A***	***5.5***	***B***	***10.8***	***B***	***13.9***

Table 8: HCM Intersection Capacity Analysis Summary –
Opening Year 2019 'Build Option 1' Conditions
Signalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Mogadore Road						
Eastbound Left	A	4.4	A	4.0	A	5.5
Eastbound Thru	A	3.4	A	3.1	A	5.2
Eastbound Approach	*A*	*3.6*	*A*	*3.3*	*A*	*5.2*
Westbound Thru	A	2.7	A	1.2	A	4.8
Westbound Right	A	3.4	A	0.5	A	1.5
Westbound Approach	*A*	*3.0*	*A*	*1.0*	*A*	*3.8*
Southbound Left	C	30.0	C	29.5	C	32.3
Southbound Right	C	25.8	C	29.6	C	30.6
Southbound Approach	*C*	*29.6*	*C*	*29.5*	*C*	*31.8*
Intersection Total	***A***	***9.8***	***A***	***8.5***	***B***	***12.0***
Tallmadge Road / I-76 Westbound Ramps						
Eastbound Thru	A	4.7	A	0.8	A	5.0
Eastbound Thru-Right	A	6.6	A	0.9	A	5.5
Eastbound Approach	*A*	*5.8*	*A*	*0.8*	*A*	*5.3*
Westbound Left	A	6.9	A	3.8	A	5.0
Westbound Thru	B	13.0	A	0.2	A	0.4
Westbound Approach	*B*	*11.7*	*A*	*0.7*	*A*	*1.0*
Southbound Left-Thru-Right	D	37.0	C	32.0	D	35.7
Southbound Approach	*D*	*37.0*	*C*	*32.0*	*D*	*35.7*
Intersection Total	***B***	***13.1***	***A***	***5.2***	***A***	***6.9***
Tallmadge Road / I-76 Eastbound Ramps						
Eastbound Left	A	8.1	A	4.9	B	11.3
Eastbound Thru	B	11.1	A	1.2	B	15.3
Eastbound Approach	*A*	*9.8*	*A*	*2.9*	*B*	*14.0*
Westbound Thru	B	13.1	A	9.4	B	16.8
Westbound Thru-Right	B	13.1	A	9.5	B	16.8
Westbound Approach	*B*	*13.1*	*A*	*9.4*	*B*	*16.8*
Northbound Left-Thru	C	28.5	C	29.8	C	33.4
Northbound Right	B	19.0	C	22.6	B	18.0
Northbound Approach	*C*	*26.2*	*C*	*28.0*	*C*	*29.6*
Intersection Total	***B***	***17.6***	***B***	***13.4***	***C***	***20.1***

As shown in **Table 8** on the previous pages, the Opening Year 2019 'Build Option 1' traffic scenario shows that all movements and approaches of the signalized intersections are anticipated to operate at LOS D or better during the peak hours. The overall intersections will each be expected to operate at LOS A or LOS B with the lone exception being the Tallmadge Road / I-76 Eastbound Ramps intersection which will operate at LOS C during the PM peak hour (with an average delay of 20.1 seconds which barely exceeds the LOS B threshold). The recommended improvements have shown to improve operations along the corridor while mitigating the existing deficiencies that will continue to persist into the future without further action.

Table 9 summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Opening Year 2019 'Build Option 1' conditions for the unsignalized intersections throughout the study area. See **Appendix J** for the Synchro HCM analysis printouts.

Table 9: HCM Intersection Capacity Analysis Summary – Opening Year 2019 'Build Option 1' Conditions Unsignalized Intersections

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Parliament Drive						
Eastbound Left	A	0.0	A	7.9	A	8.5
Eastbound Approach	*A*	*0.0*	*A*	*0.3*	*A*	*0.2*
Southbound Left-Right	B	12.0	B	11.7	C	16.4
Southbound Approach	*B*	*12.0*	*B*	*11.7*	*C*	*16.4*
Tallmadge Road / Highway View Drive						
Westbound Left	A	8.3	A	8.2	A	9.5
Westbound Approach	*A*	*0.4*	*A*	*0.2*	*A*	*0.1*
Northbound Left-Right	B	13.9	B	14.1	D	25.2
Northbound Approach	*B*	*13.9*	*B*	*14.1*	*D*	*25.2*
Tallmadge Road / Sunnybrook Road						
Eastbound Left	A	8.1	A	7.8	A	7.9
Eastbound Approach	*A*	*1.7*	*A*	*0.4*	*A*	*0.1*
Westbound Left	A	7.8	A	7.8	A	9.0
Westbound Approach	*A*	*0.9*	*A*	*0.6*	*A*	*1.1*
Northbound Left-Thru-Right	C	19.8	B	14.6	E	44.3
Northbound Approach	*C*	*19.8*	*B*	*14.6*	*E*	*44.3*
Southbound Left-Thru-Right	C	15.9	B	12.3	B	14.9
Southbound Approach	*C*	*15.9*	*B*	*12.3*	*B*	*14.9*

Note: Orange highlighted cells indicate a Level of Service E.

Table 9: HCM Intersection Capacity Analysis Summary –
Opening Year 2019 'Build Option 1' Conditions
Unsignalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Mogadore Road / East End Welding Drive						
Eastbound Left-Right	B	10.7	B	10.0	B	13.7
Eastbound Approach	*B*	*10.7*	*B*	*10.0*	*B*	*13.7*
Northbound Left	A	8.2	A	7.9	A	0.0
Northbound Approach	*A*	*0.4*	*A*	*0.7*	*A*	*0.0*
Mogadore Road / Sunnybrook Road						
Westbound Left-Right	C	16.3	B	11.7	C	18.3
Westbound Approach	*C*	*16.3*	*B*	*11.7*	*C*	*18.3*
Southbound Left	A	8.4	A	7.7	A	8.3
Southbound Approach	*A*	*0.2*	*A*	*0.3*	*A*	*0.1*

As shown in **Table 9**, the proposed medium term improvements will continue to maintain an acceptable LOS D or better for nearly all movements and approaches at the unsignalized intersections throughout the study area with the exception of the Tallmadge Road / Sunnybrook Road intersection. The northbound approach of the Tallmadge Road / Sunnybrook Road intersection is anticipated to operate at LOS E during the PM peak hour due to the additional traffic that is expected to divert to Sunnybrook Road once the connection to Mogadore Road (East) is eliminated. While this is not desired, this intersection does not warrant a traffic signal and no turn lane improvements will mitigate this deficiency due to average delay that will persist for the northbound left turn movement.

Although the 'Build Option 1' traffic scenario provides satisfactory operations and mitigates the deficiencies occurring under the 'No-Build' traffic scenario from a Level-of-Service standpoint, additional issues are expected to remain within the study area which the medium term improvement option does not address. Traffic simulations reveal that the eastbound left turn lane of the Tallmadge Road / I-76 EB Ramps intersection will continue to experience queuing that cannot be accommodated by the existing turn lane length resulting in traffic routinely queuing out of the left turn lane and into the inside thru lane along Tallmadge Road. With the eastbound left turning traffic blocking the inside thru lane, Tallmadge Road essentially operates as a one (1) lane road in the eastbound direction during peak hours. This situation is further complicated as the right-most thru lane ends just beyond the interchange, making the often-blocked inside thru lane the preferred lane for thru motorists. This results in an increased potential for rear-end and sideswipe crashes in this area.

Storage length calculations performed per the ODOT methodology have verified that this left turn lane does not have sufficient storage capacity to meet the existing vehicular demand, an issue that cannot be addressed by providing additional storage length required due to the existing I-76 bridges over Tallmadge Road having center bridge piers within the median. These I-76 mainline bridges were reconstructed approximately ten (10) years ago as a part of the East Freeway Reconstruction project. While the mainline pavement was only reconstructed for the existing two (2) lane freeway, the bridges over Tallmadge Road were constructed to accommodate a future third lane along this section of I-76. With an anticipated service life of 75 years, it is unlikely that these bridges will be reconstructed anytime soon to remove the center piers (which would require a complete reconstruction of the bridges on MSE walls in order to clear span Tallmadge Road). Even if the bridges could be reconstructed, the cost to do so would be approximately $6,500,000 (the structure alone and not including approach work) which would only reconstruct the bridges and would not address any other capacity or safety concerns on Tallmadge Road or within the I-76 / Tallmadge Road interchange.

And while the 'Build Option 1' recommendations will accommodate the certified traffic projections, the medium term improvement scenario does not address the potential future capacity needs along the corridor. As previously discussed, the area surrounding the Tallmadge Road Corridor study area is expected to continue to develop. If only the medium term improvements were completed and if all potential development were to occur, acceptable Levels-of-Service could be accommodated by the interchange from a pure analysis perspective, however there would be large vehicle queues on both exit ramps (with vehicles potentially backing out onto the I-76 mainline) and the problems with the eastbound Tallmadge Road traffic queues as they attempt to turn left onto I-76 would only be increased.

Opening Year 2019 'Build Option 2' Conditions

When taking into account the significant development potential of this area and the previously discussed issues with the I-76 bridges over Tallmadge Road, a second improvement scenario, referred to as 'Build Option 2', was developed that would eliminate the issues caused by the eastbound left turning traffic, reduce the vehicle queues on the exit ramps, not require the bridge to be modified and provide acceptable Levels-of-Service (and in fact excess capacity) should the potential development in the area become a reality. In addition to incorporating the improvements previously identified for 'Build Option 1', this scenario includes the following additional modifications:

Tallmadge Road / I-76 WB Ramps Intersection:

- Reconfigure the intersection as the western component of the proposed Diverging Diamond Interchange (DDI).

Tallmadge Road / I-76 EB Ramps Intersection:

- Reconfigure the intersection as the eastern component of the proposed Diverging Diamond Interchange (DDI).

No further modifications, including any at the proposed Tallmadge Road / Relocated Mogadore Road intersection, are included in this scenario that would be needed outside of the I-76 / Tallmadge Road interchange.

Table 10 summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Opening Year 2019 'Build Option 2' conditions for the signalized intersections throughout the study area. See **Appendix K** for the Synchro HCM analysis printouts.

Table 10: HCM Intersection Capacity Analysis Summary – Opening Year 2019 'Build Option 2' Conditions Signalized Intersections

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Cascades Boulevard						
Eastbound Thru	A	9.6	A	9.9	B	15.7
Eastbound Right	A	7.8	A	9.6	B	14.7
Eastbound Approach	*A*	*9.3*	*A*	*9.8*	*B*	*15.3*
Westbound Left	A	3.8	A	3.8	A	7.0
Westbound Thru	A	0.4	A	0.3	A	0.5
Westbound Approach	*A*	*1.1*	*A*	*1.6*	*A*	*3.5*
Northbound Left	C	27.0	C	27.1	C	25.2
Northbound Right	C	29.2	C	29.9	C	34.0
Northbound Approach	*C*	*28.5*	*C*	*28.8*	*C*	*30.3*
Intersection Total	***A***	***9.0***	***B***	***10.8***	***B***	***15.6***
Tallmadge Road / Plaza Drive / Golf Course Drive						
Eastbound Left	B	11.8	B	12.8	A	0.1
Eastbound Thru	B	17.2	B	17.2	A	2.1
Eastbound Right	B	11.9	B	12.7	A	0.0
Eastbound Approach	*B*	*16.7*	*B*	*16.9*	*A*	*2.0*
Westbound Left	A	4.9	A	5.1	A	4.8
Westbound Thru-Right	A	3.2	A	3.6	A	4.8
Westbound Approach	*A*	*3.6*	*A*	*4.1*	*A*	*4.8*
Northbound Left-Thru	C	28.3	C	27.7	C	28.9
Northbound Right	C	24.3	C	23.6	C	26.7
Northbound Approach	*C*	*24.9*	*C*	*24.1*	*C*	*27.0*
Southbound Left-Thru-Right	A	0.0	C	28.0	C	28.7
Southbound Approach	*A*	*0.0*	*C*	*28.0*	*C*	*28.7*
Intersection Total	***B***	***11.0***	***B***	***10.9***	***A***	***7.2***

Table 10: HCM Intersection Capacity Analysis Summary – Opening Year 2019 'Build Option 2' Conditions Signalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Mogadore Road						
Eastbound Left	A	5.3	A	5.0	B	10.3
Eastbound Thru	A	3.4	A	3.1	A	5.1
Eastbound Approach	*A*	*3.8*	*A*	*3.6*	*A*	*5.8*
Westbound Thru	B	10.3	A	9.8	B	18.2
Westbound Right	B	11.5	A	7.9	B	12.1
Westbound Approach	*B*	*10.9*	*A*	*9.3*	*B*	*16.2*
Southbound Left	C	30.0	C	29.5	C	34.2
Southbound Right	C	25.8	C	29.6	C	32.3
Southbound Approach	*C*	*29.6*	*C*	*29.5*	*C*	*33.7*
Intersection Total	***B***	***13.7***	***B***	***12.4***	***B***	***17.7***
Eastbound Tallmadge Road / Westbound Tallmadge Road (West Crossover)						
Eastbound Thru	B	11.3	B	12.1	B	13.7
Eastbound Approach	*B*	*11.3*	*B*	*12.1*	*B*	*13.7*
Westbound Thru	B	10.6	A	5.9	B	12.4
Westbound Approach	*B*	*10.6*	*A*	*5.9*	*B*	*12.4*
Intersection Total	***B***	***10.8***	***A***	***8.4***	***B***	***13.0***
Eastbound Tallmadge Road / I-76 WB Ramps						
Eastbound Thru	A	1.0	A	2.8	A	2.7
Eastbound Approach	*A*	*1.0*	*A*	*2.8*	*A*	*2.7*
Southbound Left	B	11.9	B	11.8	B	11.8
Southbound Approach	*B*	*11.9*	*B*	*11.8*	*B*	*11.8*
Intersection Total	***A***	***1.8***	***A***	***3.1***	***A***	***2.8***
Westbound Tallmadge Road / I-76 WB Ramps						
Westbound Thru	A	1.4	A	0.9	A	1.7
Westbound Approach	*A*	*1.4*	*A*	*0.9*	*A*	*1.7*
Southbound Right	B	14.1	B	13.2	B	15.0
Southbound Approach	*B*	*14.1*	*B*	*13.2*	*B*	*15.0*
Intersection Total	***A***	***5.1***	***A***	***4.2***	***A***	***4.8***

Table 10: HCM Intersection Capacity Analysis Summary – Opening Year 2019 'Build Option 2' Conditions Signalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Eastbound Tallmadge Road / Westbound Tallmadge Road (East Crossover)						
Eastbound Thru	A	4.2	A	9.3	A	4.5
Eastbound Approach	*A*	*4.2*	*A*	*9.3*	*A*	*4.5*
Westbound Thru	B	19.4	B	17.2	B	19.0
Westbound Approach	*B*	*19.4*	*B*	*17.2*	*B*	*19.0*
Intersection Total	***B***	***14.3***	***B***	***14.4***	***B***	***11.3***
Eastbound Tallmadge Road / I-76 EB Ramps						
Westbound Thru	A	2.1	A	1.8	A	2.2
Westbound Approach	*A*	*2.1*	*A*	*1.8*	*A*	*2.2*
Northbound Left	B	10.4	B	10.1	B	12.4
Northbound Approach	*B*	*10.4*	*B*	*10.1*	*B*	*12.4*
Intersection Total	***A***	***6.3***	***A***	***5.5***	***A***	***7.6***
Westbound Tallmadge Road / I-76 EB Ramps						
Eastbound Thru	A	2.2	A	0.5	A	2.0
Eastbound Approach	*A*	*2.2*	*A*	*0.5*	*A*	*2.0*
Northbound Right	B	17.4	B	15.8	B	16.9
Northbound Approach	*B*	*17.4*	*B*	*15.8*	*B*	*16.9*
Intersection Total	***A***	***8.2***	***A***	***5.4***	***A***	***5.6***

As shown in **Table 10**, the Opening Year 2019 'Build Option 2' traffic scenario shows that all movements and approaches of the signalized intersections would now be anticipated to operate at LOS C or better during the peak hours. Furthermore, the overall intersections will each be expected to operate at LOS A or LOS B. The additional recommendation of implementing a Diverging Diamond Interchange at this location will further improve operations along the corridor while providing sufficient excess capacity that will be critical in accommodating the future development expecting to occur throughout the surrounding area. By providing adequate capacity and eliminating the eastbound left turn storage length issue, this interchange would not need to be improved again within the expected lifespan of the I-76 bridges over Tallmadge Road.

Table 11 summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Opening Year 2019 'Build Option 2' conditions for the unsignalized intersections throughout the study area. See **Appendix K** for the Synchro HCM analysis printouts.

Table 11: HCM Intersection Capacity Analysis Summary – Opening Year 2019 'Build Option 2' Conditions Unsignalized Intersections

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Parliament Drive						
Eastbound Left	A	0.0	A	7.9	A	8.5
Eastbound Approach	*A*	*0.0*	*A*	*0.3*	*A*	*0.2*
Southbound Left-Right	B	12.0	B	11.7	C	16.4
Southbound Approach	*B*	*12.0*	*B*	*11.7*	*C*	*16.4*
Tallmadge Road / Highway View Drive						
Westbound Left	A	8.3	A	8.2	A	9.5
Westbound Approach	*A*	*0.4*	*A*	*0.2*	*A*	*0.1*
Northbound Left-Right	B	13.9	B	14.1	D	25.2
Northbound Approach	*B*	*13.9*	*B*	*14.1*	*D*	*25.2*
Tallmadge Road / Sunnybrook Road						
Eastbound Left	A	8.1	A	7.8	A	7.9
Eastbound Approach	*A*	*1.7*	*A*	*0.4*	*A*	*0.1*
Westbound Left	A	7.8	A	7.8	A	9.0
Westbound Approach	*A*	*0.9*	*A*	*0.6*	*A*	*1.1*
Northbound Left	C	19.8	B	14.6	E	44.3
Northbound Approach	*C*	*19.8*	*B*	*14.6*	*E*	*44.3*
Southbound Left	C	15.9	B	12.3	B	14.9
Southbound Approach	*C*	*15.9*	*B*	*12.3*	*B*	*14.9*
Mogadore Road / East End Welding Drive						
Eastbound Left-Right	B	10.7	B	10.0	B	13.7
Eastbound Approach	*B*	*10.7*	*B*	*10.0*	*B*	*13.7*
Northbound Left	A	8.2	A	7.9	A	0.0
Northbound Approach	*A*	*0.4*	*A*	*0.7*	*A*	*0.0*

Note: Orange highlighted cells indicate a Level of Service E.

Table 11: HCM Intersection Capacity Analysis Summary – Opening Year 2019 'Build Option 2' Conditions Unsignalized Intersections (Cont.)						
Intersection / Movement	**AM Commuter Peak**		**AM Commercial Peak**		**PM Peak**	
	LOS	**Delay** (sec)	**LOS**	**Delay** (sec)	**LOS**	**Delay** (sec)
Mogadore Road / Sunnybrook Road						
Westbound Left-Right	C	16.3	B	11.7	C	18.3
Westbound Approach	*C*	*16.3*	*B*	*11.7*	*C*	*18.3*
Southbound Left	A	8.4	A	7.7	A	8.3
Southbound Approach	*A*	*0.2*	*A*	*0.3*	*A*	*0.1*

As shown in **Table 11**, the additional long term improvements will have no impact on the unsignalized intersections as the interchange modifications only apply to signalized intersection. As noted with 'Build Option 1', the northbound approach of the Tallmadge Road / Sunnybrook Road intersection is anticipated to operate at LOS E during the PM peak hour due to the additional traffic that is expected to divert to Sunnybrook Road once the connection to Mogadore Road (East) is eliminated. Once again, this intersection does not warrant a traffic signal and no turn lane improvements will mitigate this deficiency due to average delay that will persist for the northbound left turn movement.

Should this intersection continue to be a concern following the completion of the project and the redistribution of traffic, it is recommended that the Tallmadge Road / Sunnybrook Road intersection be studied further to determine if any improvements would be required based upon actual operating conditions. If the deficient operation for the northbound occurs and results in unacceptable delay times, a possible mitigative solution could be the installation of a single lane roundabout, provided that a traffic signal still isn't warranted at that time.

Design Year 2039 'No-Build' Conditions

As detailed earlier in this report, the Design Year 2039 conditions account for the additional traffic expected to be generated by the four (4) identified developments on top of the certified traffic projections. For purposes of the Design Year 2039 'No-Build' analysis, it was assumed that the redevelopment of the Maplecrest Golf Course (referred to as Development A) will utilize two (2) access points along Tallmadge Road located opposite of Cascades Boulevard and Plaza Drive. The 'No-Build' conditions will only account for single-lane approaches without the addition of any new turn lanes beyond what can be accommodated within the existing pavement in order to evaluate the base condition. **Table 12** on the following pages summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Design Year 2039 'No-Build' traffic conditions for the signalized intersections throughout the study area. See **Appendix I** for the Synchro HCM analysis printouts.

Table 12: HCM Intersection Capacity Analysis Summary –
Design Year 2039 'No-Build' Conditions
Signalized Intersections

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Cascades Boulevard						
Eastbound Left	A	6.0	A	6.9	B	14.1
Eastbound Thru	B	11.7	B	12.2	C	26.2
Eastbound Right	A	7.9	A	10.0	C	20.8
Eastbound Approach	*B*	*10.9*	*B*	*11.1*	*C*	*22.8*
Westbound Left	A	6.0	A	6.6	B	13.7
Westbound Thru	A	0.8	A	0.6	A	6.7
Westbound Right	A	0.2	A	0.3	A	5.5
Westbound Approach	*A*	*1.5*	*A*	*2.2*	*A*	*8.3*
Northbound Left	C	29.2	C	30.2	C	28.4
Northbound Thru-Right	C	30.1	C	30.4	C	26.3
Northbound Approach	*C*	*29.8*	*C*	*30.3*	*C*	*27.2*
Southbound Left	C	32.0	C	34.6	D	44.2
Southbound Thru-Right	C	27.7	C	27.5	C	21.4
Southbound Approach	*C*	*30.2*	*C*	*32.0*	*C*	*34.9*
Intersection Total	***B***	***10.6***	***B***	***12.5***	***B***	***19.4***
Tallmadge Road / Plaza Drive						
Eastbound Left	A	6.1	A	7.4	B	18.0
Eastbound Thru	A	2.1	A	2.1	F	49.8
Eastbound Right	A	0.1	A	0.0	A	9.8
Eastbound Approach	A	2.2	A	2.5	D	46.6
Westbound Left	A	5.3	A	6.7	F	107.2
Westbound Thru	A	9.6	B	11.9	F	57.8
Westbound Right	A	7.2	A	9.5	B	18.7
Westbound Approach	*A*	*8.5*	*B*	*10.3*	*E*	*57.2*
Northbound Left-Thru	C	27.5	C	27.4	C	24.7
Northbound Right	C	28.8	C	28.2	C	27.9
Northbound Approach	*C*	*28.6*	*C*	*28.1*	*C*	*27.4*
Southbound Left	C	30.8	C	33.6	F	146.9
Southbound Thru-Right	C	27.2	C	26.8	C	24.3
Southbound Approach	*C*	*30.4*	*C*	*32.4*	*F*	*126.0*
Intersection Total	***A***	***8.6***	***B***	***11.3***	***E***	***61.5***

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

Table 12: HCM Intersection Capacity Analysis Summary – Design Year 2039 'No-Build' Conditions Signalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Mogadore Road / I-76 Westbound Ramp						
Eastbound Left	E	61.1	F	104.4	F	267.7
Eastbound Right	D	47.1	D	38.8	F	274.7
Eastbound Approach	*D*	*50.7*	*E*	*56.6*	*F*	*273.3*
Westbound Left	D	36.3	C	29.6	E	63.5
Westbound Thru	E	61.0	E	78.0	F	469.1
Westbound Right	B	18.7	B	14.6	B	16.2
Westbound Approach	*D*	*36.4*	*D*	*51.0*	*F*	*291.4*
Southbound Left-Thru	A	0.9	A	0.8	A	4.8
Southbound Approach	*A*	*0.9*	*A*	*0.8*	*A*	*4.8*
Intersection Total	***C***	***33.4***	***D***	***45.1***	***F***	***232.2***
Mogadore Road / I-76 Westbound Ramp						
Westbound Left-Thru-Right	F	163.5	F	81.0	F	204.0
Westbound Approach	*F*	*163.5*	*F*	*81.0*	*F*	*204.0*
Northbound Thru	A	1.9	A	1.7	A	3.0
Northbound Approach	*A*	*1.9*	*A*	*1.7*	*A*	*3.0*
Southbound Thru-Right	F	80.9	E	58.8	F	464.4
Southbound Approach	*F*	*80.9*	*E*	*58.8*	*F*	*464.4*
Intersection Total	***E***	***64.0***	***D***	***39.5***	***F***	***267.8***
Tallmadge Road / I-76 Eastbound Ramp						
Eastbound Left	B	17.5	B	13.7	D	39.2
Eastbound Right	B	13.7	B	10.4	B	14.0
Eastbound Approach	*B*	*14.9*	*B*	*11.5*	*C*	*22.3*
Westbound Left-Thru	C	29.1	C	23.5	D	53.2
Westbound Thru-Right	C	33.4	C	25.0	F	81.0
Westbound Approach	*C*	*31.1*	*C*	*24.2*	*E*	*66.4*
Northbound Left-Thru-Right	F	66.0	C	32.7	F	218.2
Northbound Approach	*E*	*66.0*	*C*	*32.7*	*F*	*218.2*
Intersection Total	***D***	***40.4***	***C***	***22.9***	***F***	***98.1***

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

As shown in **Table 12**, the Design Year 2039 'No-Build' traffic scenario shows all signalized intersections throughout the study area, with the exception of the Tallmadge Road / Cascades Boulevard intersection, will be expected to operate with significant amounts of delay and experience multiple movements and approaches operating at LOS E and LOS F during the peak hours. The current geometry of the Tallmadge Road corridor does not provide enough capacity to accommodate the additional development traffic expected to utilize the roadway, particularly when taking into account the existing capacity deficiencies that occur today.

Table 13 summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Design Year 2039 'No-Build' traffic conditions for the unsignalized intersections throughout the study area. See **Appendix I** for the Synchro HCM analysis printouts.

Table 13: HCM Intersection Capacity Analysis Summary – Design Year 2039 'No-Build' Conditions Unsignalized Intersections

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Parliament Drive						
Eastbound Left-Thru	A	0.0	A	8.1	A	9.6
Eastbound Approach	*A*	*0.0*	*A*	*0.2*	*A*	*0.1*
Southbound Left-Right	B	14.6	B	14.4	D	28.5
Southbound Approach	*B*	*14.6*	*B*	*14.4*	*D*	*28.5*
Tallmadge Road / Highway View Drive						
Westbound Left	A	9.3	A	9.4	B	12.6
Westbound Approach	*A*	*0.3*	*A*	*0.1*	*A*	*0.1*
Northbound Left-Right	C	23.4	D	27.7	F	315.6
Northbound Approach	*C*	*23.4*	*D*	*27.7*	*F*	*315.6*
Tallmadge Road / East End Welding Drive						
Eastbound Left	A	9.2	A	9.6	A	0.0
Eastbound Approach	*A*	*0.1*	*A*	*0.1*	*A*	*0.0*
Southbound Left-Right	C	15.6	C	16.4	F	69.8
Southbound Approach	*C*	*15.6*	*C*	*16.4*	*F*	*69.8*

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

Table 13: HCM Intersection Capacity Analysis Summary – Design Year 2039 'No-Build' Conditions Unsignalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Sunnybrook Road						
Eastbound Left	A	8.7	A	8.3	A	9.1
Eastbound Approach	*A*	*1.0*	*A*	*0.2*	*A*	*0.1*
Westbound Left	A	8.5	A	8.4	A	9.7
Westbound Approach	*A*	*0.5*	*A*	*0.2*	*A*	*0.4*
Northbound Left	E	36.6	C	22.6	F	207.9
Northbound Approach	*E*	*36.6*	*C*	*22.6*	*F*	*207.9*
Southbound Left	D	26.3	C	18.7	D	34.2
Southbound Approach	*D*	*26.3*	*C*	*18.7*	*D*	*34.2*
Mogadore Road / I-76 Eastbound Ramp						
Westbound Right	B	14.1	B	12.2	C	16.8
Westbound Approach	*B*	*14.1*	*B*	*12.2*	*C*	*16.8*
Southbound Left	B	14.7	B	12.5	C	19.1
Southbound Approach	*B*	*14.7*	*B*	*12.5*	*C*	*19.1*
Mogadore Road / Sunnybrook Road						
Westbound Left-Right	D	28.5	C	18.1	E	43.7
Westbound Approach	*D*	*28.5*	*C*	*18.1*	*E*	*43.7*
Southbound Left	A	9.3	A	8.6	A	9.1
Southbound Approach	*A*	*0.2*	*A*	*0.2*	*A*	*0.1*

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

As shown in **Table 13**, the Design Year 2039 'No-Build' traffic scenario shows that several approaches will be expected to operate at unacceptable Levels-of-Service due to the increased volumes that would be expected along Tallmadge Road and Mogadore Road should all of the identified development occur. While side street vehicles could experience longer delays when turning out onto the mainline roadway, none of these intersections are expected to warrant signalization and no turn lane improvements will mitigate these deficiencies.

Design Year 2039 'Build Option 1' Conditions

Due to the additional development traffic that is expected to occur once the identified developments have been completed, the capacity analysis has identified the following additional improvements that will be necessary to accommodate the projected Design Year 2039 traffic conditions and provide acceptable Levels-of-Service throughout the corridor:

Tallmadge Road / Cascades Boulevard (Development A Responsibility):

- Widen Tallmadge Road to provide a five (5) lane section from the relocated Mogadore Road to Cascades Boulevard and drop the outside westbound lane as a dedicated right turn lane at this intersection.
- Construct a dedicated eastbound left turn lane along Tallmadge Road.
- Construct the southbound approach serving the development to provide a dedicated left turn lane and a shared thru-right turn lane.
- Modify the traffic signal to accommodate the additional intersection leg while providing a protected eastbound left turn phase.

Tallmadge Road / Plaza Drive (Development A Responsibility):

- Widen Tallmadge Road to provide a five (5) lane section from Mogadore Road to Cascades Boulevard with the additional eastbound and westbound lanes operating as shared thru-right turn lanes at this intersection.
- Construct the southbound approach serving the development to provide a dedicated left turn lane and a shared thru-right turn lane.
- Modify the traffic signal provide a protected eastbound left turn phase.

Tallmadge Road / Relocated Mogadore Road Intersection (Development A Responsibility):

- Convert the previously proposed westbound right turn lane to a thru lane that will now extend west to Cascades Boulevard.
- Reconstruct a dedicated westbound right turn lane along Tallmadge Road.

Tallmadge Road / I-76 WB Ramps Intersection:

- Reconstruct the southbound approach of the I-76 westbound exit ramp to provide a shared left-thru lane and dedicated right turn lane.
- Construct a dedicated eastbound right turn lane along Tallmadge Road.

Tallmadge Road / I-76 EB Ramps Intersection:

- Construct a dedicated westbound right turn lane along Tallmadge Road.

As noted, these additional improvements are needed to accommodate the full traffic demand generated by the four (4) identified developments with all improvements located at the Tallmadge Road / Cascades Boulevard intersection, Tallmadge Road / Plaza Drive intersection and Tallmadge Road / Mogadore Road intersection being specifically associated with the redevelopment of the Maplecrest Golf Course. Without the redevelopment of that particular property, only the additional improvements at the I-76 / Tallmadge Road interchange intersections would be needed in order to accommodate the development traffic. **Table 14** on the following pages summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Design Year 2039 'Build Option 1' conditions for the signalized intersections throughout the study area. See **Appendix J** for the Synchro HCM analysis printouts.

Table 14: HCM Intersection Capacity Analysis Summary –
Design Year 2039 'Build Option 1' Conditions
Signalized Intersections

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Cascades Boulevard						
Eastbound Left	A	5.1	A	5.9	B	14.0
Eastbound Thru	B	10.2	B	10.6	C	26.7
Eastbound Right	A	6.9	A	8.7	C	21.0
Eastbound Approach	*A*	*9.5*	*A*	*9.7*	*C*	*23.1*
Westbound Left	A	5.4	A	5.5	B	13.8
Westbound Thru	A	4.2	A	0.6	A	7.9
Westbound Right	A	3.4	A	0.2	A	5.5
Westbound Approach	*A*	*4.3*	*A*	*1.9*	*A*	*9.0*
Northbound Left-Thru	C	28.2	C	29.3	C	26.2
Northbound Right	C	29.1	C	29.5	C	23.1
Northbound Approach	*C*	*28.8*	*C*	*29.4*	*C*	*24.5*
Southbound Left	C	30.3	C	33.5	D	51.2
Southbound Thru-Right	C	26.8	C	26.8	B	19.7
Southbound Approach	*C*	*28.8*	*C*	*31.1*	*D*	*38.4*
Intersection Total	***B***	***10.8***	***B***	***11.6***	***B***	***19.7***
Tallmadge Road / Plaza Drive / Golf Course Drive						
Eastbound Left	A	6.0	A	6.9	B	18.3
Eastbound Thru-Right	A	0.8	A	0.8	C	22.1
Eastbound Approach	*A*	*1.1*	*A*	*1.2*	*C*	*21.7*
Westbound Left	A	5.3	A	6.4	B	17.4
Westbound Thru-Right	B	16.0	B	14.3	D	36.7
Westbound Approach	*B*	*14.5*	*B*	*12.8*	*C*	*34.1*
Northbound Left-Thru	C	24.4	C	24.4	B	19.6
Northbound Right	C	25.5	C	25.1	C	21.6
Northbound Approach	*C*	*25.3*	*C*	*25.1*	*C*	*21.2*
Southbound Left	C	27.1	C	29.5	D	53.9
Southbound Thru-Right	C	24.0	C	23.9	B	19.3
Southbound Approach	*C*	*26.8*	*C*	*28.6*	*D*	*48.0*
Intersection Total	***B***	***10.5***	***B***	***11.5***	***C***	***31.6***

Table 14: HCM Intersection Capacity Analysis Summary –
Design Year 2039 'Build Option 1' Conditions
Signalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Mogadore Road						
Eastbound Left	A	6.9	A	5.1	D	39.3
Eastbound Thru	B	12.7	A	3.9	C	24.6
Eastbound Approach	*B*	*11.1*	*A*	*4.3*	*C*	*27.6*
Westbound Thru	A	6.6	A	0.5	B	15.0
Westbound Right	B	13.9	A	1.5	B	11.9
Westbound Approach	*B*	*10.3*	*A*	*0.9*	*B*	*14.2*
Southbound Left	C	31.1	C	29.2	C	25.9
Southbound Right	C	27.7	C	33.0	D	50.5
Southbound Approach	*C*	*30.4*	*C*	*30.5*	*D*	*35.3*
Intersection Total	***B***	***15.3***	***A***	***8.4***	***C***	***24.4***
Tallmadge Road / I-76 Westbound Ramps						
Eastbound Thru	A	3.4	A	0.4	A	2.9
Eastbound Right	A	8.7	A	1.4	C	30.2
Eastbound Approach	*A*	*5.9*	*A*	*0.8*	*B*	*13.9*
Westbound Left	A	8.2	A	5.2	A	9.3
Westbound Thru	B	16.8	A	1.9	B	15.7
Westbound Approach	*B*	*15.4*	*A*	*2.2*	*B*	*14.8*
Southbound Left-Thru	B	19.2	C	22.5	C	22.2
Southbound Right	C	29.9	C	33.0	D	53.3
Southbound Approach	*C*	*29.2*	*C*	*32.5*	*D*	*52.4*
Intersection Total	***B***	***13.4***	***A***	***5.4***	***B***	***18.1***
Tallmadge Road / I-76 Eastbound Ramps						
Eastbound Left	B	12.1	A	9.1	D	54.5
Eastbound Thru	B	15.7	B	13.4	C	25.3
Eastbound Approach	*B*	*14.6*	*B*	*12.0*	*C*	*34.9*
Westbound Thru	B	17.9	B	13.6	D	53.1
Westbound Right	B	14.4	B	11.5	C	23.8
Westbound Approach	*B*	*17.7*	*B*	*13.6*	*D*	*52.0*
Northbound Left-Thru	C	31.2	C	32.6	D	53.6
Northbound Right	B	17.6	C	21.4	B	15.9
Northbound Approach	*C*	*27.4*	*C*	*29.4*	*D*	*45.9*
Intersection Total	***C***	***20.6***	***B***	***18.4***	***D***	***43.5***

As shown in **Table 14** on the previous pages, the Design Year 2039 'Build Option 1' traffic scenario shows that all movements and approaches of the signalized intersections are anticipated to maintain a LOS D or better during the peak hours. The additional recommended improvements have shown to accommodate the development traffic without resulting in any further deficiencies at the signalized intersections along the corridor from a Level-of-Service perspective. However, as discussed previously, the development traffic does add to the queues along both the ramps and existing turn lane bays having deficient storage length.

Table 15 summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Design Year 2039 'Build Option 1' conditions for the unsignalized intersections throughout the study area. See **Appendix J** for the Synchro HCM analysis printouts.

Table 15: HCM Intersection Capacity Analysis Summary – Design Year 2039 'Build Option 1' Conditions Unsignalized Intersections

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Parliament Drive						
Eastbound Left-Thru	A	0.0	A	8.1	A	9.6
Eastbound Approach	*A*	*0.0*	*A*	*0.2*	*A*	*0.1*
Southbound Left-Right	B	14.6	B	14.4	D	28.5
Southbound Approach	*B*	*14.6*	*B*	*14.4*	*D*	*28.5*
Tallmadge Road / Highway View Drive						
Westbound Left	A	9.3	A	9.4	B	12.6
Westbound Approach	*A*	*0.3*	*A*	*0.1*	*A*	*0.1*
Northbound Left-Right	C	17.6	C	19.2	F	65.2
Northbound Approach	*C*	*17.6*	*C*	*19.2*	*F*	*65.2*
Tallmadge Road / Sunnybrook Road						
Eastbound Left	A	8.6	A	8.2	A	9.1
Eastbound Approach	*A*	*1.0*	*A*	*0.2*	*A*	*0.1*
Westbound Left	A	8.6	A	8.5	B	10.1
Westbound Approach	*A*	*0.7*	*A*	*0.4*	*A*	*0.6*
Northbound Left	F	58.9	D	31.6	F	586.8
Northbound Approach	*F*	*58.9*	*D*	*31.6*	*F*	*586.8*
Southbound Left	D	27.8	C	19.3	E	39.0
Southbound Approach	*D*	*27.8*	*C*	*19.3*	*E*	*39.0*

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

Table 15: HCM Intersection Capacity Analysis Summary – Design Year 2039 'Build Option 1' Conditions Unsignalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Mogadore Road / East End Welding Drive						
Eastbound Left-Right	B	12.1	B	11.3	C	23.0
Eastbound Approach	*B*	*12.1*	*B*	*11.3*	*C*	*23.0*
Northbound Left-Thru	A	8.8	A	8.4	A	0.0
Northbound Approach	*A*	*0.2*	*A*	*0.3*	*A*	*0.0*
Mogadore Road / Sunnybrook Road						
Westbound Left-Right	D	28.5	C	18.1	E	43.7
Westbound Approach	*D*	*28.5*	*C*	*18.1*	*E*	*43.7*
Southbound Left-Thru	A	9.3	A	8.6	A	9.1
Southbound Approach	*A*	*0.2*	*A*	*0.2*	*A*	*0.1*

Note: Orange highlighted cells indicate a Level of Service E.

As shown in **Table 15**, the Design Year 2039 'Build Option 1' traffic scenario shows that several approaches will be expected to continue to operate at unacceptable Levels-of-Service similar to the deficiencies identified under the 'No-Build' conditions. Since none of the recommended 'Build Option 1' improvements are able to address the increases in delay experienced by the unsignalized side streets, these deficiencies will likely continue to persist with or without the project. Of note, the 'Build Option 1' scenario was found to mitigate the unacceptable Levels-of-Service that would be expected at the East End Welding Drive by reconstructing the driveway to tie into the relocated Mogadore Road instead of utilizing the existing connection to Tallmadge Road. The lower traffic volumes along Mogadore Road will make it easier to exit East End Welding and thus reduce the delay which will now result in acceptable Levels-of-Service. Furthermore, these vehicles will now be able to utilize the proposed traffic signal at Mogadore Road when turning out onto Tallmadge Road.

Design Year 2039 'Build Option 2' Conditions

In addition to converting the interchange to a DDI and incorporating the additional improvements identified for 'Build Option 1', the only additional modification to accommodate the additional development traffic is to provide dual left turn lanes off of the I-76 eastbound exit ramp. It is important to note that this improvement is not even required for capacity, but to simply reduce the delay on the ramp and improve the progression along Tallmadge Road through the interchange. **Table 16** on the following pages summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Design Year 2039 'Build Option 2' conditions for the signalized intersections throughout the study area. See **Appendix K** for the Synchro HCM analysis printouts.

Table 16: HCM Intersection Capacity Analysis Summary – Design Year 2039 'Build Option 2' Conditions Signalized Intersections

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Cascades Boulevard						
Eastbound Left	A	5.1	A	5.9	B	14.0
Eastbound Thru	B	10.2	B	10.6	C	26.7
Eastbound Right	A	6.9	A	8.7	C	21.0
Eastbound Approach	*A*	*9.5*	*A*	*9.7*	*C*	*23.1*
Westbound Left	A	5.4	A	5.5	B	13.8
Westbound Thru	A	4.2	A	0.6	A	7.9
Westbound Right	A	3.4	A	0.2	A	5.5
Westbound Approach	*A*	*4.3*	*A*	*1.9*	*A*	*9.0*
Northbound Left-Thru	C	28.2	C	29.3	C	26.2
Northbound Right	C	29.1	C	29.5	C	23.1
Northbound Approach	*C*	*28.8*	*C*	*29.4*	*C*	*24.5*
Southbound Left	C	30.3	C	33.5	D	51.2
Southbound Thru-Right	C	26.8	C	26.8	B	19.7
Southbound Approach	*C*	*28.8*	*C*	*31.1*	*D*	*38.4*
Intersection Total	***B***	***10.8***	***B***	***11.6***	***B***	***19.7***
Tallmadge Road / Plaza Drive / Golf Course Drive						
Eastbound Left	A	6.0	A	6.9	B	18.3
Eastbound Thru	A	0.8	A	0.8	C	22.1
Eastbound Thru-Right	A	0.8	A	0.8	C	21.9
Eastbound Approach	*A*	*1.1*	*A*	*1.2*	*C*	*21.7*
Westbound Left	A	5.3	A	6.4	B	17.4
Westbound Thru	B	16.0	B	14.3	D	36.7
Westbound Thru-Right	B	16.1	B	14.4	D	39.8
Westbound Approach	*B*	*14.5*	*B*	*12.8*	*C*	*34.1*
Northbound Left-Thru	C	24.4	C	24.4	B	19.6
Northbound Right	C	25.5	C	25.1	C	21.6
Northbound Approach	*C*	*25.3*	*C*	*25.1*	*C*	*21.2*
Southbound Left	C	27.1	C	29.5	D	53.9
Southbound Thru-Right	C	24.0	C	23.9	B	19.3
Southbound Approach	*C*	*26.8*	*C*	*28.6*	*D*	*48.0*
Intersection Total	***B***	***10.5***	***B***	***11.5***	***C***	***31.6***

Table 16: HCM Intersection Capacity Analysis Summary – Design Year 2039 'Build Option 2' Conditions Signalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Mogadore Road						
Eastbound Left	A	7.5	A	6.4	D	54.8
Eastbound Thru	B	12.7	A	3.9	C	24.6
Eastbound Approach	*B*	*11.3*	*A*	*4.6*	*C*	*30.7*
Westbound Thru	B	10.6	A	10.0	C	32.6
Westbound Right	C	20.3	B	11.6	C	27.7
Westbound Approach	*B*	*15.6*	*B*	*10.5*	*C*	*31.3*
Southbound Left	C	31.1	C	29.2	C	25.9
Southbound Right	C	27.7	C	33.0	D	50.5
Southbound Approach	*C*	*30.4*	*C*	*30.5*	*D*	*35.3*
Intersection Total	***B***	***17.8***	***B***	***12.9***	***C***	***32.2***
Eastbound Tallmadge Road / Westbound Tallmadge Road (West Crossover)						
Eastbound Thru	B	16.0	B	11.3	C	25.2
Eastbound Approach	*B*	*16.0*	*B*	*11.3*	*C*	*25.2*
Westbound Thru	B	14.7	A	8.0	C	20.3
Westbound Approach	*B*	*14.7*	*A*	*8.0*	*C*	*20.3*
Intersection Total	***B***	***15.2***	***A***	***9.4***	***C***	***22.5***
Eastbound Tallmadge Road / I-76 WB Ramps						
Eastbound Thru	A	0.1	A	0.1	A	0.2
Eastbound Approach	*A*	*0.1*	*A*	*0.1*	*A*	*0.2*
Southbound Left	B	13.9	B	10.6	B	12.2
Southbound Approach	*B*	*13.9*	*B*	*10.6*	*B*	*12.2*
Intersection Total	***A***	***0.6***	***A***	***0.3***	***A***	***0.3***
Westbound Tallmadge Road / I-76 WB Ramps						
Westbound Thru	A	0.1	A	0.1	A	0.2
Westbound Approach	*A*	*0.1*	*A*	*0.1*	*A*	*0.2*
Southbound Right	B	13.4	B	16.5	B	17.1
Southbound Approach	*B*	*13.4*	*B*	*16.5*	*B*	*17.1*
Intersection Total	***A***	***3.6***	***A***	***4.0***	***A***	***3.7***

Table 16: HCM Intersection Capacity Analysis Summary – Design Year 2039 'Build Option 2' Conditions Signalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Eastbound Tallmadge Road / Westbound Tallmadge Road (East Crossover)						
Eastbound Thru	A	7.5	B	12.4	A	4.5
Eastbound Approach	*A*	*7.5*	*B*	*12.4*	*A*	*4.5*
Westbound Thru	B	15.7	B	13.9	B	17.1
Westbound Approach	*B*	*15.7*	*B*	*13.9*	*B*	*17.1*
Intersection Total	***B***	***12.3***	***B***	***13.3***	***B***	***11.1***
Eastbound Tallmadge Road / I-76 EB Ramps						
Westbound Thru	A	0.1	A	0.1	A	0.1
Westbound Approach	*A*	*0.1*	*A*	*0.1*	*A*	*0.1*
Northbound Left	B	13.8	B	14.7	B	14.9
Northbound Approach	*B*	*13.8*	*B*	*14.7*	*B*	*14.9*
Intersection Total	***A***	***6.7***	***A***	***6.7***	***A***	***6.9***
Westbound Tallmadge Road / I-76 EB Ramps						
Eastbound Thru	A	0.1	A	0.1	A	0.1
Eastbound Approach	*A*	*0.1*	*A*	*0.1*	*A*	*0.1*
Northbound Right	B	13.8	B	12.4	B	13.1
Northbound Approach	*B*	*13.8*	*B*	*12.4*	*B*	*13.1*
Intersection Total	***A***	***4.7***	***A***	***3.7***	***A***	***2.6***

As shown in **Table 16**, the Design Year 2039 'Build Option 2' traffic scenario shows that all movements and approaches of the signalized intersections would be anticipated to operate at LOS D or better during the peak hours. Furthermore, the overall intersections will each be expected to operate at LOS C or better which is further improvement over the 'Build Option 1' scenario. These results verify that the recommended improvements incorporated into the 'Build Option 2' scenario, including the implementation of a Diverging Diamond Interchange, will not only mitigate the existing deficiencies along the Tallmadge Road corridor, but accommodate a significant increase in traffic as development continues to occur throughout this area in the future.

Table 17 summarizes the HCM Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Design Year 2039 'Build Option 2' conditions for the unsignalized intersections throughout the study area. See **Appendix K** for the Synchro HCM analysis printouts.

Table 17: HCM Intersection Capacity Analysis Summary – Design Year 2039 'Build Option 2' Conditions Unsignalized Intersections

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / Parliament Drive						
Eastbound Left	A	0.0	A	8.1	A	9.6
Eastbound Approach	*A*	*0.0*	*A*	*0.2*	*A*	*0.1*
Southbound Left-Right	B	14.6	B	14.4	D	28.5
Southbound Approach	*B*	*14.6*	*B*	*14.4*	*D*	*28.5*
Tallmadge Road / Highway View Drive						
Westbound Left	A	9.3	A	9.4	B	12.6
Westbound Approach	*A*	*0.3*	*A*	*0.1*	*A*	*0.1*
Northbound Left-Right	C	17.6	C	19.2	F	65.2
Northbound Approach	*C*	*17.6*	*C*	*19.2*	*F*	*65.2*
Tallmadge Road / Sunnybrook Road						
Eastbound Left	A	8.6	A	8.2	A	9.1
Eastbound Approach	*A*	*1.0*	*A*	*0.2*	*A*	*0.1*
Westbound Left	A	8.6	A	8.5	B	10.1
Westbound Approach	*A*	*0.7*	*A*	*0.4*	*A*	*0.6*
Northbound Left	F	58.9	D	31.6	F	586.8
Northbound Approach	*F*	*58.9*	*D*	*31.6*	*F*	*586.8*
Southbound Left	D	27.8	C	19.3	E	39.0
Southbound Approach	*D*	*27.8*	*C*	*19.3*	*E*	*39.0*

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

Table 17: HCM Intersection Capacity Analysis Summary – Design Year 2039 'Build Option 2' Conditions Unsignalized Intersections (Cont.)

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Mogadore Road / East End Welding Drive						
Eastbound Left-Right	B	12.1	B	11.3	C	23.0
Eastbound Approach	*B*	*12.1*	*B*	*11.3*	*C*	*23.0*
Northbound Left	A	8.8	A	8.4	A	0.0
Northbound Approach	*A*	*0.2*	*A*	*0.3*	*A*	*0.0*
Mogadore Road / Sunnybrook Road						
Westbound Left-Right	D	28.5	C	18.1	E	43.7
Westbound Approach	*D*	*28.5*	*C*	*18.1*	*E*	*43.7*
Southbound Left	A	9.3	A	8.6	A	9.1
Southbound Approach	*A*	*0.2*	*A*	*0.2*	*A*	*0.1*

Note: Orange highlighted cells indicate a Level of Service E.

As shown in **Table 17**, the additional improvements will once again have no impact on the unsignalized intersections as the interchange modifications only apply to signalized intersections. Since none of the recommended 'Build Option 1' improvements are able to address the increases in delay experienced by the unsignalized side streets, these deficiencies will likely continue to persist with or without the project. These intersections should continue to be monitored following the completion of the project to determine if any further mitigative measures such as turn lanes, signalization, or alternative route choices are feasible.

Roundabout Capacity Analysis

The final build option, referred to as 'Build Option 3,' would continue to relocate Mogadore Road and implement the recommended improvements associated with the new Tallmadge Road / Mogadore Road intersection, but instead of implementing a Diverging Diamond Interchange, would construct roundabouts at both ramp terminal intersections instead.

The roundabout analysis was performed utilizing the computer program SIDRA Intersection 6.0 which is developed by Sidra Solutions and based on the 2010 Highway Capacity Manual. The capacity analysis has identified the following geometric layouts for the Tallmadge Road / I-76 WB Ramps intersection and Tallmadge Road / I-76 EB Ramps intersection:

Tallmadge Road / I-76 WB Ramps Intersection:

- Provide a roundabout with two (2) circulating lanes
- Construct the eastbound approach of Tallmadge Road to provide two (2) thru lanes and dedicated right turn slip lane (three (3) lanes total).
- Construct the westbound approach of Tallmadge Road to provide a shared left turn/thru lane and a thru-only lane (two (2) lanes total).
- Construct the southbound approach of the I-76 westbound exit ramp to provide a shared left turn/thru lane and a dedicated right turn slip lane (two (2) lanes total).
- Construct the northbound approach as a single, outbound lane for the I-76 westbound entrance ramp (one (1) lane total).

Tallmadge Road / I-76 EB Ramps Intersection:

- Provide a roundabout with three (3) circulating lanes.
- Construct the eastbound approach of Tallmadge Road to provide two (2) dedicated left turn lanes and a single thru lane (three (3) lanes total).
- Construct the westbound approach of Tallmadge Road to provide a two (2) thru-only lanes and a shared thru/right turn lane (three (3) lanes total).
- Construct the northbound approach of the I-76 eastbound exit ramp to provide a dedicated left turn lane, a shared left turn/thru lane and a dedicated right turn lane (three (3) lanes total).
- Construct the southbound approach as two (2) outbound lanes for the I-76 eastbound entrance ramp (two (2) lanes total).

Table 18 on the following page summarizes the SIDRA Intersection Capacity Analysis and details the Levels-of-Service and delay experienced under the Design Year 2039 'Build Option 3' conditions for these ramp terminal intersections. See **Appendix L** for the SIDRA roundabout capacity analysis printouts.

Table 18: Roundabout Capacity Analysis Summary – Design Year 2039 'Build Option 3' Conditions

Intersection / Movement	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Tallmadge Road / I-76 WB Ramps						
Eastbound Thru	A	6.6	A	6.1	B	11.7
Eastbound Right	A	9.6	A	6.6	C	18.7
Eastbound Approach	*A*	*8.0*	*A*	*6.3*	*B*	*14.5*
Westbound Left-Thru	A	8.9	A	7.6	B	13.5
Westbound Thru	A	8.6	A	7.4	B	13.5
Westbound Approach	*A*	*8.7*	*A*	*7.4*	*B*	*13.5*
Southbound Left-Thru	A	7.6	A	6.4	B	10.2
Southbound Right	A	0.0	A	0.0	A	0.0
Southbound Approach	*A*	*0.5*	*A*	*0.3*	*A*	*0.4*
Intersection Total	***A***	***7.2***	***A***	***6.0***	***B***	***12.7***
Tallmadge Road / I-76 EB Ramps						
Eastbound Left	A	3.9	A	4.0	A	4.7
Eastbound Thru	A	6.7	A	6.6	B	12.8
Eastbound Approach	*A*	*5.9*	*A*	*5.8*	*B*	*10.2*
Westbound Thru	A	9.1	A	7.8	C	19.1
Westbound Thru-Right	A	9.2	A	7.9	C	18.5
Westbound Approach	*A*	*9.1*	*A*	*7.8*	*C*	*19.1*
Northbound Left	A	9.3	A	8.1	D	26.6
Northbound Left-Thru	A	9.2	A	8.1	D	26.0
Northbound Right	A	8.2	A	7.5	B	13.8
Northbound Approach	*A*	*9.0*	*A*	*8.0*	*C*	*24.0*
Intersection Total	***A***	***8.1***	***A***	***7.1***	***C***	***17.1***

As shown in **Table 18**, all movements, approaches and the overall intersections are anticipated to operate at LOS D or better during the peak hours under the Design Year 2039 'Build Option 3' traffic conditions when incorporating the recommended roundabout geometry detailed above. While the implementation of roundabouts at the Tallmadge Road / I-76 ramp terminal intersections would be feasible from a traffic operations standpoint, it was determined that the right-of-way impacts would be too severe for the larger roundabouts that would be required at this location to accommodate the future traffic demand. As such, it is recommended that roundabouts are no longer pursued as a feasible alternative for this project.

HCM Arterial Level-of-Service

In addition to the intersection Level-of-Service, the Synchro arterial Level-of-Service analysis was also completed. The arterial Level-of-Service analysis is conducted to measure the LOS of a segment of road between two signalized intersections along a corridor. Similar to intersections, acceptable arterial Levels-of-Service range from LOS A to LOS D. Typically, arterial Levels-of-Service that range from LOS E to F are considered unacceptable or undesirable. **Table 19** summarizes the HCM Arterial LOS throughout the corridor under the Opening Year 2019 'No-Build' traffic conditions. See **Appendix M** for the HCM Arterial Capacity Analysis Printouts.

Table 19: HCM Arterial Level-of-Service Summary – Opening Year 2019 'No-Build' Conditions

Cross Streets	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Speed (mph)	LOS	Speed (mph)	LOS	Speed (mph)
Eastbound Tallmadge Road						
Cascades Boulevard	C	23.4	C	23.1	C	20.6
Plaza Drive	D	17.9	D	17.1	E	14.0
I-76 WB Ramps / Mogadore Road	D	16.1	D	16.8	E	11.5
I-76 EB Ramps	C	18.2	C	19.9	D	16.7
Arterial Total	***C***	***18.9***	***C***	***19.3***	***D***	***15.1***
Westbound Tallmadge Road						
I-76 EB Ramps	D	17.7	C	19.3	D	15.7
I-76 WB Ramps / Mogadore Road	F	8.0	F	8.8	F	5.1
Plaza Drive	B	27.0	B	27.0	B	26.2
Cascades Boulevard	C	21.3	C	21.3	C	20.5
Arterial Total	***D***	***16.7***	***D***	***17.7***	***E***	***13.3***

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

As shown in **Table 19**, the corridor has several segments that will be expected to operate at LOS E or LOS F under the Opening Year 2019 'No-Build' conditions. Of note, the westbound direction of Tallmadge Road will even operate at an overall LOS E during the PM peak hour. These poor Levels-of-Service and reduced travel speeds are a result of the congestion experienced along the corridor as well as the fact that the existing traffic signals do not provide coordinated progression which results in additional stops. The LOS F expected for the westbound segment at the I-76 WB Ramps / Mogadore Road section is a result of the limited green time that is available due to the inefficient operation of the existing cluster signal.

Table 20 summarizes the HCM Arterial LOS throughout the corridor under the Opening Year 2019 'Build Option 1' traffic conditions. See **Appendix M** for the HCM Arterial Capacity Analysis Printouts.

Table 20: HCM Arterial Level-of-Service Summary – Opening Year 2019 'Build Option 1' Conditions

Cross Streets	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Speed (mph)	LOS	Speed (mph)	LOS	Speed (mph)
Eastbound Tallmadge Road						
Cascades Boulevard	B	24.1	B	24.3	C	21.0
Plaza Drive	C	22.6	C	19.6	D	17.7
Mogadore Road	B	27.6	B	27.6	B	26.7
I-76 WB Ramps	C	22.3	C	23.7	D	17.7
I-76 EB Ramps	C	18.6	B	24.7	C	21.4
Arterial Total	***C***	***23.3***	***B***	***24.3***	***C***	***21.2***
Westbound Tallmadge Road						
I-76 EB Ramps	C	21.4	C	23.3	C	20.0
I-76 WB Ramps	B	26.4	B	25.4	C	23.1
Mogadore Road	E	13.6	D	15.4	E	12.4
Plaza Drive	B	26.6	B	28.8	B	29.0
Cascades Boulevard	B	25.5	B	24.5	C	22.6
Arterial Total	***C***	***22.0***	***C***	***23.3***	***C***	***20.7***

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

As shown in **Table 20**, the Tallmadge Road corridor will see a significant improvement under the 'Build Option 1' conditions with all segments expected to operate with acceptable Levels-of-Service with the exception of westbound traffic at Mogadore Road which will still operate at LOS E during the AM Commuter and PM peak hours. While not desirable, this is still an improvement for this section when compared to the 'No-Build' conditions.

Table 21 summarizes the HCM Arterial LOS throughout the corridor under the Opening Year 2019 'Build Option 2' traffic conditions. See **Appendix M** for the HCM Arterial Capacity Analysis Printouts.

Table 21: HCM Arterial Level-of-Service Summary – Opening Year 2019 'Build Option 2' Conditions

Cross Streets	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Speed (mph)	LOS	Speed (mph)	LOS	Speed (mph)
Eastbound Tallmadge Road						
Cascades Boulevard	B	23.7	B	23.9	B	20.7
Plaza Drive	C	18.9	C	16.7	C	15.7
Mogadore Road	A	25.8	A	26.0	A	25.2
I-76 WB Ramps	D	11.9	D	11.6	D	10.8
I-76 EB Ramps	D	10.6	C	17.7	D	10.8
Arterial Total	***B***	***20.7***	***B***	***20.5***	***C***	***18.6***
Westbound Tallmadge Road						
I-76 EB Ramps	C	13.4	C	14.4	C	13.4
I-76 WB Ramps	C	13.1	C	15.9	D	12.2
Mogadore Road	C	15.2	C	18.2	C	13.1
Plaza Drive	A	26.9	A	26.2	B	24.1
Cascades Boulevard	B	21.1	B	20.9	B	19.8
Arterial Total	***C***	***18.5***	***B***	***20.3***	***C***	***16.8***

As shown in **Table 21**, the Tallmadge Road corridor would be able to achieve acceptable arterial Levels-of-Service with the addition of the Diverging Diamond Interchange under 'Build Option 2'. Under this scenario, all segments will be anticipated to operate at LOS D or better with the overall arterial operating at LOS C or better in both directions.

Table 22 summarizes the HCM Arterial LOS throughout the corridor under the Design Year 2039 'No-Build' traffic conditions. See **Appendix M** for the HCM Arterial Capacity Analysis Printouts.

Table 22: HCM Arterial Level-of-Service Summary – Design Year 2039 'No-Build' Conditions

Cross Streets	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Speed (mph)	LOS	Speed (mph)	LOS	Speed (mph)
Eastbound Tallmadge Road						
Cascades Boulevard	C	23.6	C	23.2	C	18.8
Plaza Drive	D	17.3	D	14.5	F	5.1
I-76 WB Ramps / Mogadore Road	E	13.6	D	14.4	F	3.9
I-76 EB Ramps	D	16.8	D	17.0	D	16.0
Arterial Total	***D***	***17.2***	***D***	***17.3***	***F***	***7.0***
Westbound Tallmadge Road						
I-76 EB Ramps	D	15.2	D	16.0	F	8.3
I-76 WB Ramps / Mogadore Road	F	6.3	F	5.1	F	1.1
Plaza Drive	B	24.2	C	22.8	E	12.1
Cascades Boulevard	C	20.1	C	20.1	E	12.4
Arterial Total	***D***	***14.1***	***E***	***12.9***	***F***	***4.3***

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

As shown in **Table 22**, the corridor will continue to have more segments that will be expected to operate at LOS E or LOS F under the Design Year 2039 'No-Build' conditions following the addition of the development traffic. Both directions of Tallmadge Road will now operate at an overall LOS F during the PM peak hour.

Table 23 summarizes the HCM Arterial LOS throughout the corridor under the Design Year 2039 'Build Option 1' traffic conditions. See **Appendix M** for the HCM Arterial Capacity Analysis Printouts.

Table 23: HCM Arterial Level-of-Service Summary – Design Year 2039 'Build Option 1' Conditions

Cross Streets	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Speed (mph)	LOS	Speed (mph)	LOS	Speed (mph)
Eastbound Tallmadge Road						
Cascades Boulevard	B	24.4	C	23.9	C	19.4
Plaza Drive	D	17.4	D	15.2	F	8.9
Mogadore Road	C	22.5	C	23.5	C	20.9
I-76 WB Ramps	D	17.6	C	19.4	D	14.2
I-76 EB Ramps	C	19.1	D	17.8	C	22.1
Arterial Total	***C***	***21.1***	***C***	***20.8***	***D***	***17.0***
Westbound Tallmadge Road						
I-76 EB Ramps	C	18.7	C	20.5	E	12.8
I-76 WB Ramps	C	23.4	B	25.7	C	22.2
Mogadore Road	E	13.3	E	13.8	F	9.7
Plaza Drive	B	28.9	B	28.1	C	20.7
Cascades Boulevard	C	23.4	C	22.9	C	18.9
Arterial Total	***C***	***20.5***	***C***	***21.6***	***D***	***15.1***

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

As shown in **Table 23**, the Tallmadge Road corridor will once again see a significant improvement under the 'Build Option 1' conditions with all segments expected to operate with acceptable Levels-of-Service with the exception of a few. While not desirable, this is still an improvement for this section when compared to the 'No-Build' conditions. Most importantly, the overall arterial will be expected to operate with an acceptable LOS D or better in both directions for each of the peak hours.

Table 24 summarizes the HCM Arterial LOS throughout the corridor under the Design Year 2039 'Build Option 2' traffic conditions. See **Appendix M** for the HCM Arterial Capacity Analysis Printouts.

Table 24: HCM Arterial Level-of-Service Summary – Design Year 2039 'Build Option 2' Conditions

Cross Streets	AM Commuter Peak		AM Commercial Peak		PM Peak	
	LOS	Speed (mph)	LOS	Speed (mph)	LOS	Speed (mph)
Eastbound Tallmadge Road						
Cascades Boulevard	B	24.0	B	23.6	B	19.2
Plaza Drive	C	15.2	C	13.5	E	8.3
Mogadore Road	B	21.2	B	22.1	B	19.7
I-76 WB Ramps	D	10.0	D	11.9	E	7.6
I-76 EB Ramps	B	21.1	B	21.1	B	21.1
Arterial Total	***C***	***18.8***	***B***	***19.1***	***C***	***14.2***
Westbound Tallmadge Road						
I-76 EB Ramps	B	21.2	B	21.2	B	20.6
I-76 WB Ramps	D	11.3	C	14.4	D	9.5
Mogadore Road	C	15.0	C	13.7	D	10.8
Plaza Drive	A	26.7	A	25.9	B	19.6
Cascades Boulevard	B	19.7	B	19.3	C	16.4
Arterial Total	***C***	***17.9***	***C***	***18.3***	***C***	***13.9***

Note: Orange highlighted cells indicate a Level of Service E.
Red highlighted cells indicate a Level of Service F.

As shown in **Table 24**, the Tallmadge Road corridor would be able to achieve acceptable arterial Levels-of-Service with the addition of the Diverging Diamond Interchange under 'Build Option 2' with the only exception being two (2) segments that would still operate at LOS E. Under this scenario, the overall arterial would be expected to continue operating at LOS C or better in both directions.

Turn Lane Storage Length Recommendations

Storage length calculations are performed in order to determine the required length for each auxiliary turn lane based on the Opening Year and Design Year peak hour traffic volumes. The required storage length is a function of the signal cycle length (if a signalized intersection is being analyzed), lane assignments, and turning movement demand. The required storage length at a signalized intersection can be minimized by utilizing the shortest, most reasonable signal cycle length. The ODOT Location and Design Manual, Volume I specifies that a storage length must provide enough storage to contain the number of vehicles per lane group per signal cycle. The manual states that turn lane storage lengths

should be a minimum of 100 feet with a maximum of 600 feet for left turn lanes and 800 feet for right turn lanes.

The recommended lengths were determined based on these calculations, site conditions (i.e. the locations of existing private driveways), access management, and engineering judgment. See **Table 25** for a summary of the recommended storage lengths for the auxiliary turn lanes under the Opening Year 2019 'Build Option 1' conditions. All storage lengths shown in the table include the 50 feet diverging taper. See **Appendix N** for actual storage length calculations.

Table 25: Auxiliary Turn Lane Recommended Storage Lengths – Opening Year 2019 'Build Option 1' Conditions

Intersection	Storage Length (ft)		
	Turn Lane Calculated Length	Thru Back-Up	Recommended
Tallmadge Road / Mogadore Road EB Left Turn Lane	250′	443′	200′
Tallmadge Road / Mogadore Road WB Right Turn Lane	350′	775′	430′
Tallmadge Road / Mogadore Road SB Left Turn Lane	300′	325′	300′
Tallmadge Road / Mogadore Road SB Right Turn Lane	325′	325′	325′
Tallmadge Road / I-76 WB Ramps WB Left Turn Lane	250′	443′	250′
Tallmadge Road / I-76 EB Ramps EB Left Turn Lane	450′	275′	100′
Tallmadge Road / I-76 EB Ramps NB Right Turn Lane	250′	500′	250′

* - All storage length calculations include the 50′ diverging taper

As shown on **Table 25**, a majority of the turn lanes for the Opening Year 2019 are recommended to be constructed at the calculated storage length with a few exceptions. The eastbound left turn lane at the Tallmadge Road / Mogadore Road intersection is constrained due to close proximity of the Tallmadge Road / Highway View Drive intersection while the eastbound left turn lane at the Tallmadge Road / I-76 EB ramps intersection is constrained due to the existing I-76 bridges over Tallmadge Avenue having center bridge piers.

Table 26 on the following page provides a summary of the recommended storage lengths for the auxiliary turn lanes under the Design Year 2039 'Build Option 1' conditions. All storage lengths shown in the table include the 50 feet diverging taper. See **Appendix N** for actual storage length calculations.

Table 26: Auxiliary Turn Lane Recommended Storage Lengths – Design Year 2039 'Build Option 1' Conditions

Intersection	Storage Length (ft)		
	Turn Lane Calculated Length	Thru Back-Up	Recommended
Tallmadge Road / Mogadore Road EB Left Turn Lane	300′	388′	200′
Tallmadge Road / Mogadore Road WB Right Turn Lane	525′	413′	525′
Tallmadge Road / Mogadore Road SB Left Turn Lane	288′	288′	288′
Tallmadge Road / Mogadore Road SB Right Turn Lane	400′	400′	400′
Tallmadge Road / I-76 WB Ramps EB Right Turn Lane	575′	375′	300′
Tallmadge Road / I-76 WB Ramps WB Left Turn Lane	225′	443′	225′
Tallmadge Road / I-76 WB Ramps SB Right Turn Lane	375′	50′	375′
Tallmadge Road / I-76 EB Ramps EB Left Turn Lane	375′	263′	100′
Tallmadge Road / I-76 EB Ramps WB Right Turn Lane	100′	300′	100′
Tallmadge Road / I-76 EB Ramps NB Right Turn Lane	225′	500′	225′

* - All storage length calculations include the 50′ diverging taper

As shown on **Table 26**, a majority of the turn lanes are still recommended to be constructed at the calculated storage length with a few exceptions. In addition to the constraints discussed under the Opening Year 2019 'Build Option 1' conditions, the eastbound right turn lane at the Tallmadge Road / I-76 WB Ramps intersection was reduced to avoid interfering with an existing commercial driveway. The eastbound left turn lane at the Tallmadge Road / I-76 EB Ramps intersection is constrained due to the existing I-76 bridges over Tallmadge Avenue having center bridge piers.

Storage length calculations were not performed for the Opening Year 2019 and Design Year 2039 'Build Option 2' conditions because the results represent the same conditions as 'Build Option 1'. The Diverging Diamond Interchange does not provide any additional turn lanes with the exception at the Tallmadge Road / I-76 EB exit ramp intersection which requires the construction of an additional northbound left turn lane on the ramp. The storage length for this turn lane is calculated and recommended to be 325′ which includes the 50′ diverging taper.

VII. Summary and Recommendations:

GPD Group was retained by the Portage County Engineer to complete a Corridor Study for the Tallmadge Road corridor. The purpose of this Corridor Study is to analyze vehicular operating conditions along the study route to determine what roadway improvements are necessary to achieve acceptable operations for the projected design year conditions. In addition to mitigating any existing deficiencies, the project will provide additional roadway capacity to accommodate the future growth that is anticipated along this corridor.

In Summary,

1. The signal warrant evaluation for the Existing Year 2013 and Opening Year 2019 conditions found that four (4) of the five (5) existing traffic signals within the project limits were found to be warranted. The Mogadore Road / I-76 WB Ramp intersection, which is currently signalized, did not meet a warrant for a traffic signal based on the current traffic volumes, but requires signalization due to its close proximity with an existing traffic signal located approximately 125 feet to the south at the Tallmadge Road / Mogadore Road intersection. No additional traffic signals were found to be warranted within the project limits.

2. The Existing Year 2013 analyses indicate that all signalized intersections throughout the study area are currently operating at an acceptable LOS D or better during the peak hours with the exception of the two (2) intersections that operate as a cluster signal (Tallmadge Road / Mogadore Road / I-76 WB Ramps and Mogadore Road / I-76 WB Exit Ramp). Due to the inefficient operation of the cluster traffic signal, these intersections are unable to provide adequate capacity that accommodates the current traffic demand and would require geometric improvements in order to achieve acceptable Levels-of-Service. All unsignalized intersections within the study area are currently operating with acceptable Levels-of-Service under the Existing Year 2013 conditions.

3. The capacity analysis has identified the following improvements that will be necessary to accommodate the projected Opening Year 2019 traffic conditions and provide acceptable Levels-of-Service throughout the corridor:

   <u>Tallmadge Road / Relocated Mogadore Road (West) Intersection:</u>
   - Realign Mogadore Road (West) and construct the southbound approach to provide dual left turn lanes and a dedicated right turn lane.
   - Provide a dedicated eastbound left turn lane along Tallmadge Road.
   - Extend the existing outside westbound lane along Tallmadge Road from the interchange and drop as a dedicated right turn lane at this intersection.
   - Install a traffic signal and interconnect as part of a Tallmadge Road signal system.

   <u>Tallmadge Road / I-76 WB Ramps Intersection:</u>
   - Realign the I-76 westbound exit ramp to intersect Tallmadge Road opposite of the existing I-76 westbound entrance ramp.

- Convert the existing westbound right turn lane to a thru lane that will now extend west to the relocated Mogadore Road.
- Reconstruct the traffic signal and interconnect as part of a Tallmadge Road signal system.

Tallmadge Road / I-76 EB Ramps Intersection:
- Convert the I-76 eastbound exit ramp from two-way traffic to one-way traffic and reconstruct the northbound approach to provide a shared left-thru lane and dedicated right turn lane.
- Reconstruct the traffic signal and interconnect as part of a Tallmadge Road signal system.

Mogadore Road / East End Welding Drive Intersection:
- Reconstruct the East End Welding Drive to intersect with the relocated Mogadore Road (West).

4. The Opening Year 2019 'Build Option 1' traffic scenario shows that all movements and approaches of the signalized intersections are anticipated to operate at LOS D or better during the peak hours. The overall intersections will each be expected to operate at LOS A or LOS B with the lone exception being the Tallmadge Road / I-76 Eastbound Ramps intersection which will operate at LOS C during the PM peak hour (with an average delay of 20.1 seconds which barely exceeds the LOS B threshold). The recommended improvements have shown to improve operations along the corridor while mitigating the existing deficiencies that will continue to persist into the future without further action.

5. When taking into account the significant development potential of this area and the previously discussed issues with the I-76 bridges over Tallmadge Road, 'Build Option 2' was developed that would eliminate the issues caused by the eastbound left turning traffic, reduce the vehicle queues on the exit ramps, not require the bridge to be modified and provide acceptable Levels-of-Service (and in fact excess capacity) should the potential development in the area become a reality. In addition to incorporating the improvements previously identified for 'Build Option 1', this scenario includes the following additional modifications:

   Tallmadge Road / I-76 WB Ramps Intersection:
   - Reconfigure the intersection as the western component of the proposed Diverging Diamond Interchange (DDI).

   Tallmadge Road / I-76 EB Ramps Intersection:
   - Reconfigure the intersection as the eastern component of the proposed Diverging Diamond Interchange (DDI).

6. The 'Build Option 2' scenario shows that all movements and approaches of the signalized intersections would now be anticipated to operate at LOS C or better during the peak hours. Furthermore, the overall intersections will each be expected to operate at LOS A or LOS B. The additional recommendation of implementing a Diverging Diamond Interchange at this location will further improve operations along the corridor while providing sufficient excess capacity that will be critical in accommodating the future development expecting to occur throughout the

surrounding area. By providing adequate capacity and eliminating the eastbound left turn storage length issue, this interchange would not need to be improved again within the expected lifespan of the I-76 bridges over Tallmadge Road.

7. An evaluation of the Design Year 2039 traffic conditions that incorporates the additional development traffic discussed in this report indicated that the existing deficiencies at the Tallmadge Road / Mogadore Road / I-76 EB Ramps intersections would only be intensified with additional traffic growth. While the improvements identified for the 'Build Option 1' scenario can accommodate the additional traffic demand from a Level-of-Service standpoint, excessive queuing along Tallmadge Road and both I-76 ramps would expected during the peak hours. The implementation of the Diverging Diamond Interchange within 'Build Option 2' was found to provide both acceptable Levels-of-Service and address the queuing issues identified in the previous scenario for the Design Year 2039 conditions while still providing excess capacity for future traffic growth.

8. While the implementation of roundabouts at the Tallmadge Road / I-76 ramp terminal intersections would be feasible from a traffic operations standpoint, it was determined that the right-of-way impacts would be too severe for the larger roundabouts that would be required at this location to accommodate the future traffic demand. As such, it is recommended that roundabouts are no longer pursued as a feasible alternative for this project.

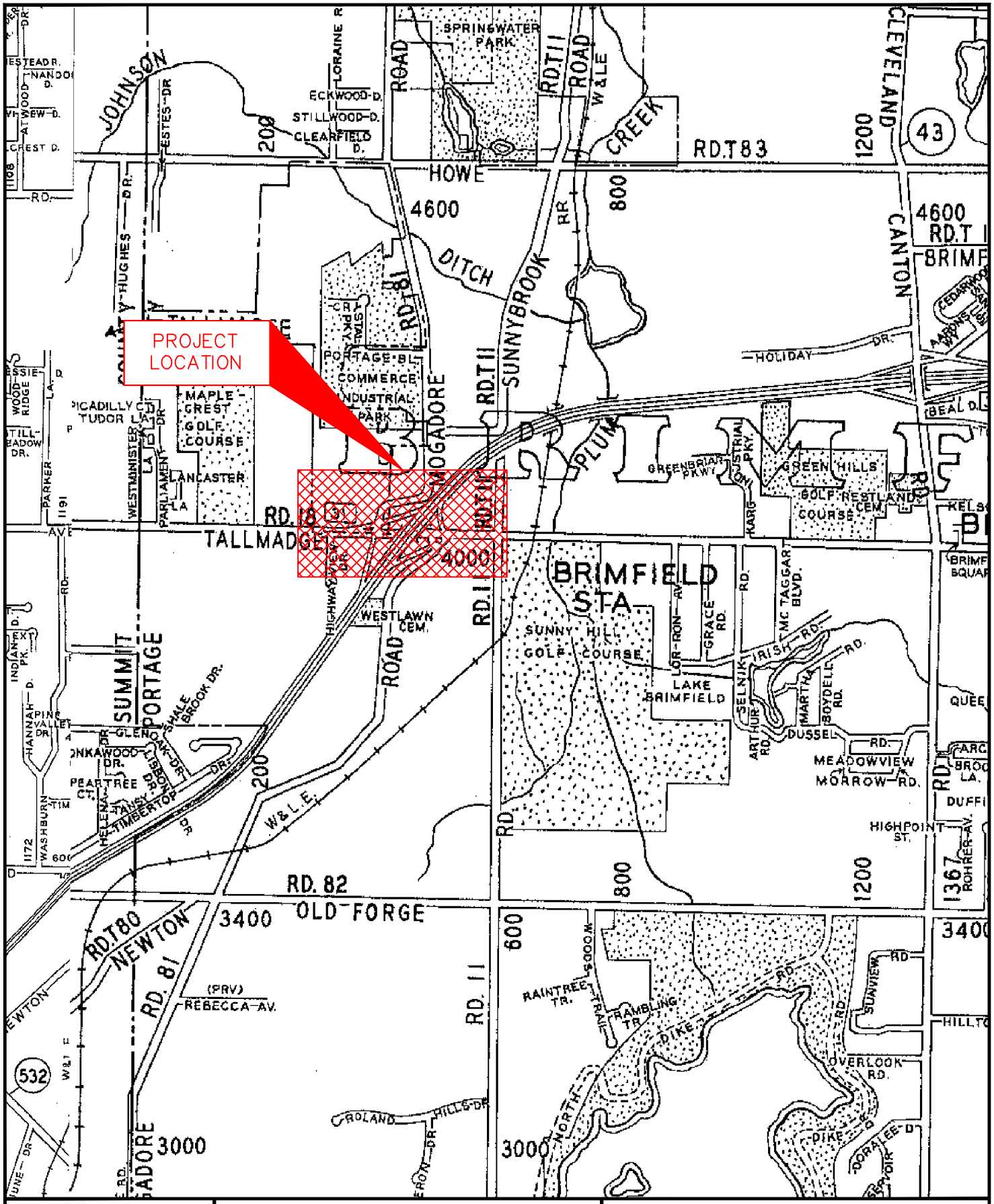
Based on the information and analyses in this study, GPD Group recommends the following:

1. The Tallmadge Road corridor project should be pursued while incorporating the recommended long term (Build Option 2) roadway improvements and modifications detailed in this study. This primary components of these recommendations are as follows:

   - Remove Mogadore Road (West) from the I-76 / Tallmadge Road interchange by providing a new connection to Tallmadge Road at the current location of East End Welding Drive.
   - Remove Mogadore Road (East) from the I-76 / Tallmadge Road interchange by constructing a cul-de-sac and rerouting traffic to Sunnybrook Drive.
   - Reconfigure the I-76 / Tallmadge Road interchange to provide a Diverging Diamond Interchange (DDI).
   - Interconnect the traffic signals along Tallmadge Road within the study area to provide a coordinated closed-loop signal system.

   Each individual improvement will contribute to the overall function of the Tallmadge Road corridor, allowing this transportation link to continue to provide for both the current needs and future demands expected by the traveling public while sustaining acceptable traffic operations.

FIGURES



N

N.T.S.

FIGURE 1

PROJECT LOCATION MAP

MARCH 2014

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330-572-2100 Fax 330-572-2101

CAD FILE: O:\2013\2013285\TRAFFIC\DOCS\STUDY\FIGURES\CORRIDOR STUDY\FIGURE 1_PROJECT LOCATION.DWG
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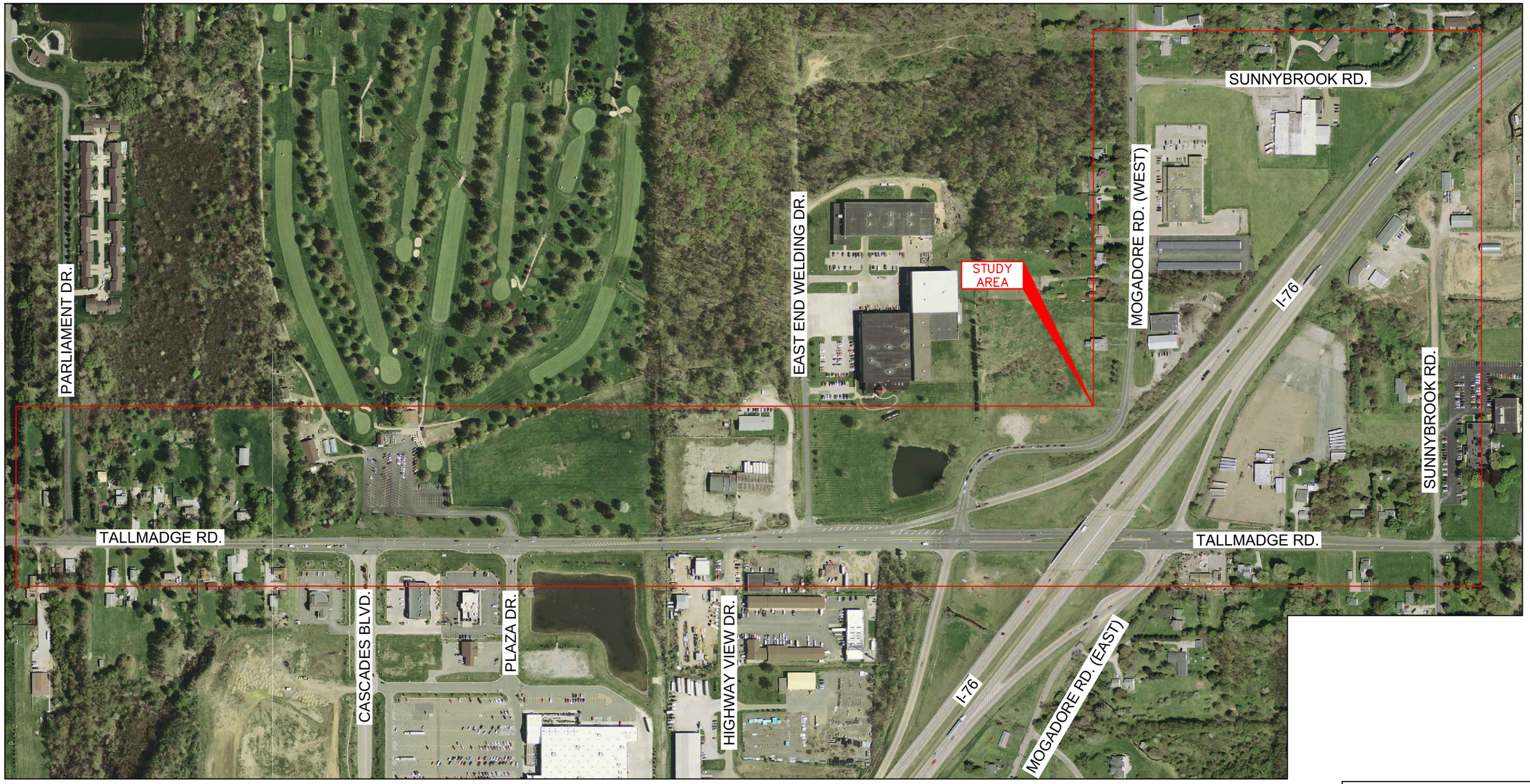

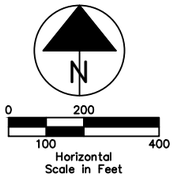

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330-572-2100 Fax 330-572-2101

FIGURE 2

AERIAL PHOTOGRAPH

MARCH 2014

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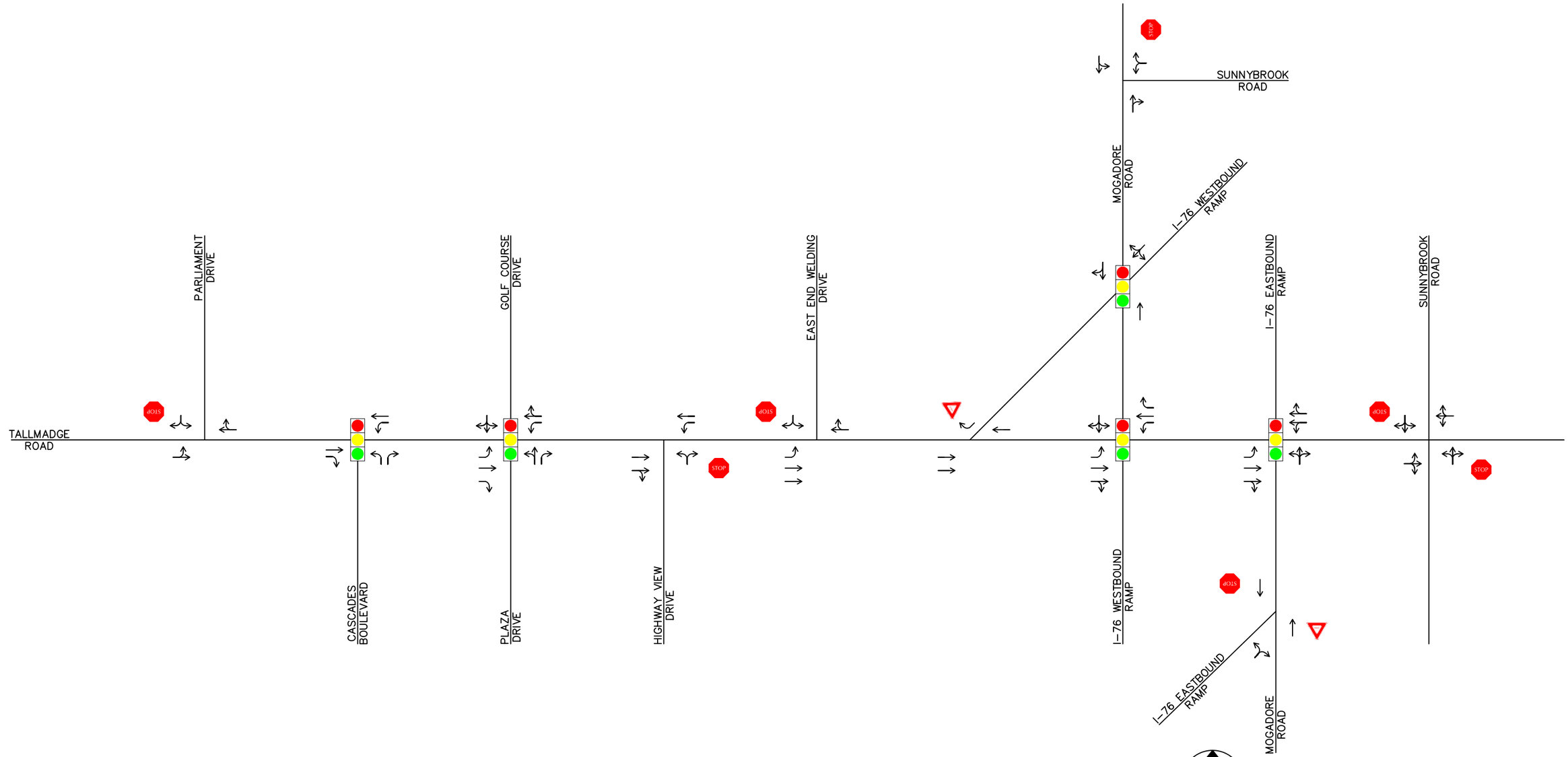

N

N.T.S.

LEGEND

EXISTING SIGNAL

EXISTING YIELD SIGN

EXISTING STOP SIGN

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FIGURE 3

EXISTING TRAFFIC CONTROL

MARCH 2014

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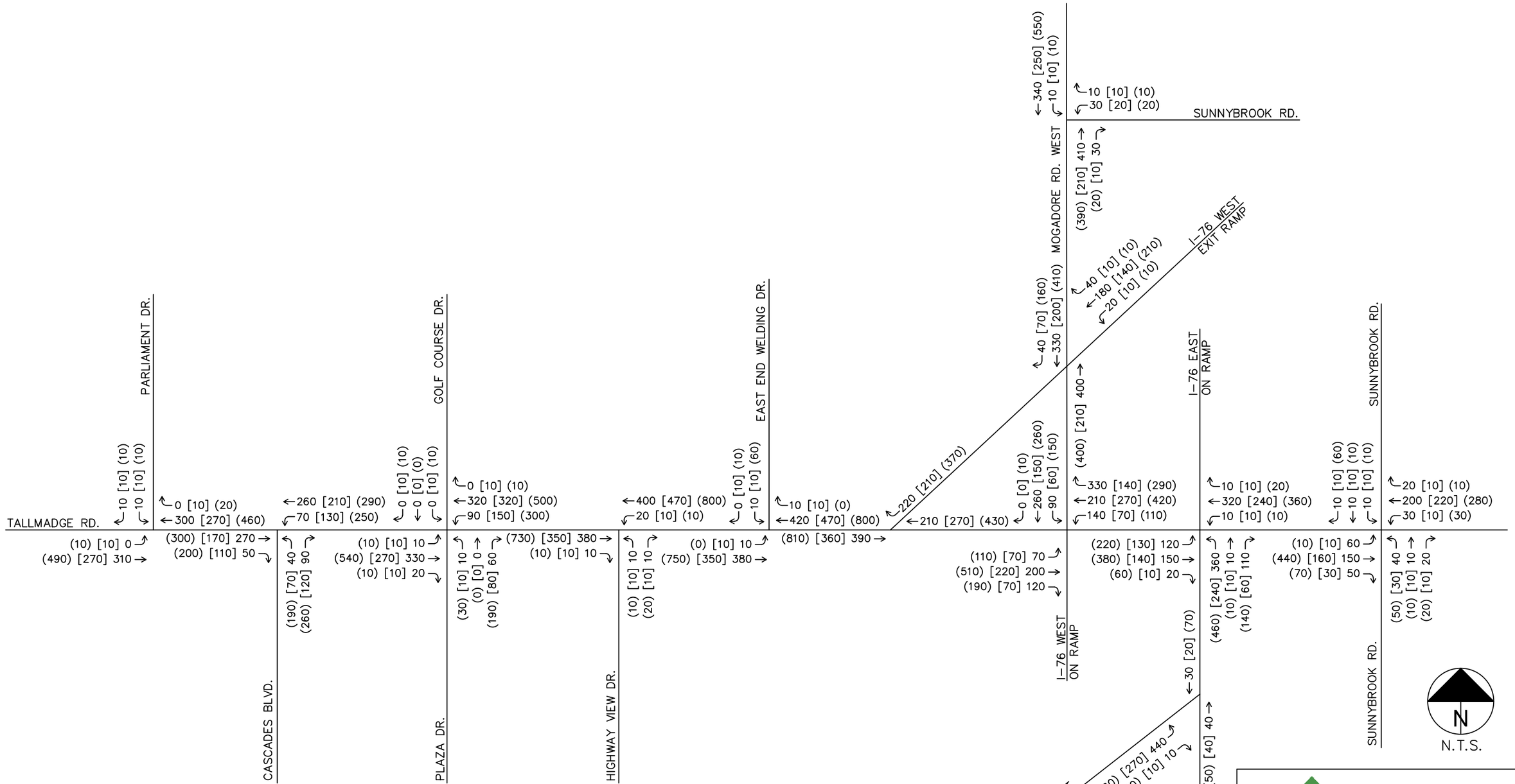

LEGEND
XX – AM COMMUTER PEAK
[XX] – AM COMMERCIAL PEAK
(XX) – PM PEAK

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FIGURE 4

EXISTING YEAR 2013
PEAK HOUR TRAFFIC VOLUMES

MARCH 2014

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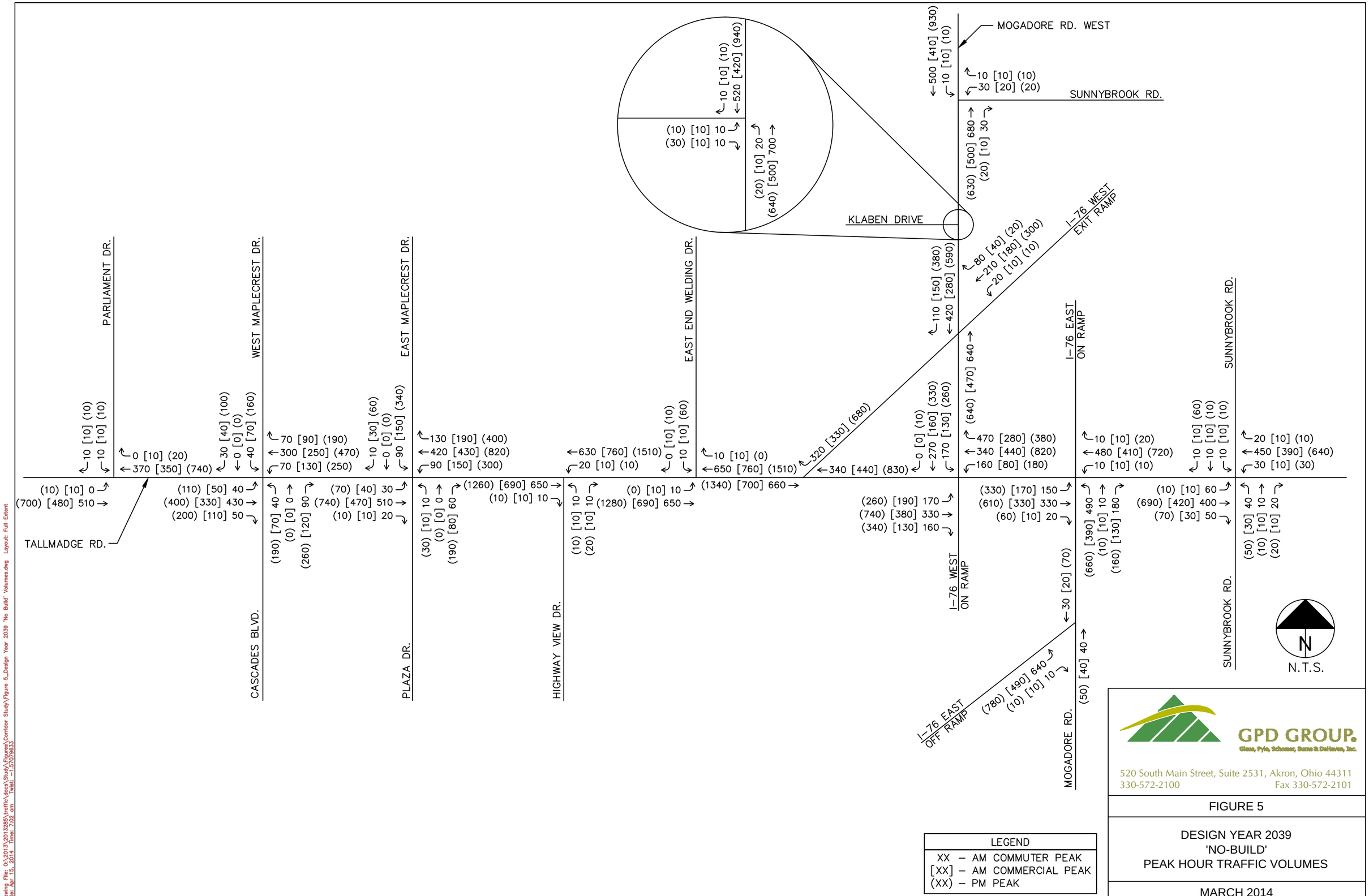

LEGEND
XX – AM COMMUTER PEAK
[XX] – AM COMMERCIAL PEAK
(XX) – PM PEAK

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FIGURE 5

DESIGN YEAR 2039
'NO-BUILD'
PEAK HOUR TRAFFIC VOLUMES

MARCH 2014

Drawing File: O:\2013\2013285\traffic\docs\Study\Figures\Corridor Study\Figure 5_Design Year 2039 'No Build' Volumes.dwg Layout: Full Extent
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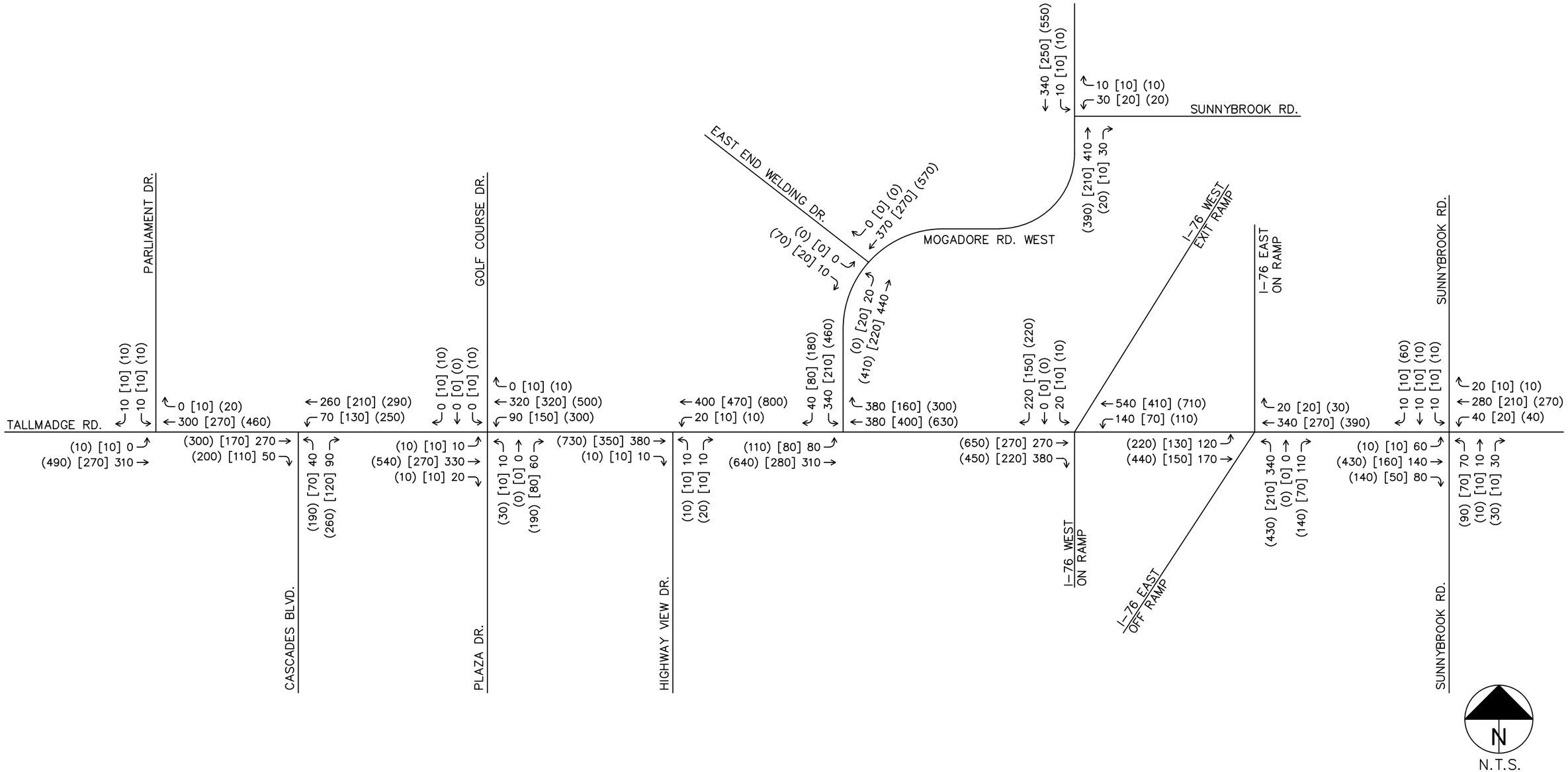

LEGEND
XX – AM COMMUTER PEAK
[XX] – AM COMMERCIAL PEAK
(XX) – PM PEAK

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FIGURE 6

OPENING YEAR 2019 'BUILD'
PEAK HOUR TRAFFIC VOLUMES

MARCH 2014

Drawing File: O:\2013\2013285\traffic\local\Study\Figures\Corridor Study\Figure 6_Opening Year 'Build' Volumes.dwg Layout: Full Extent
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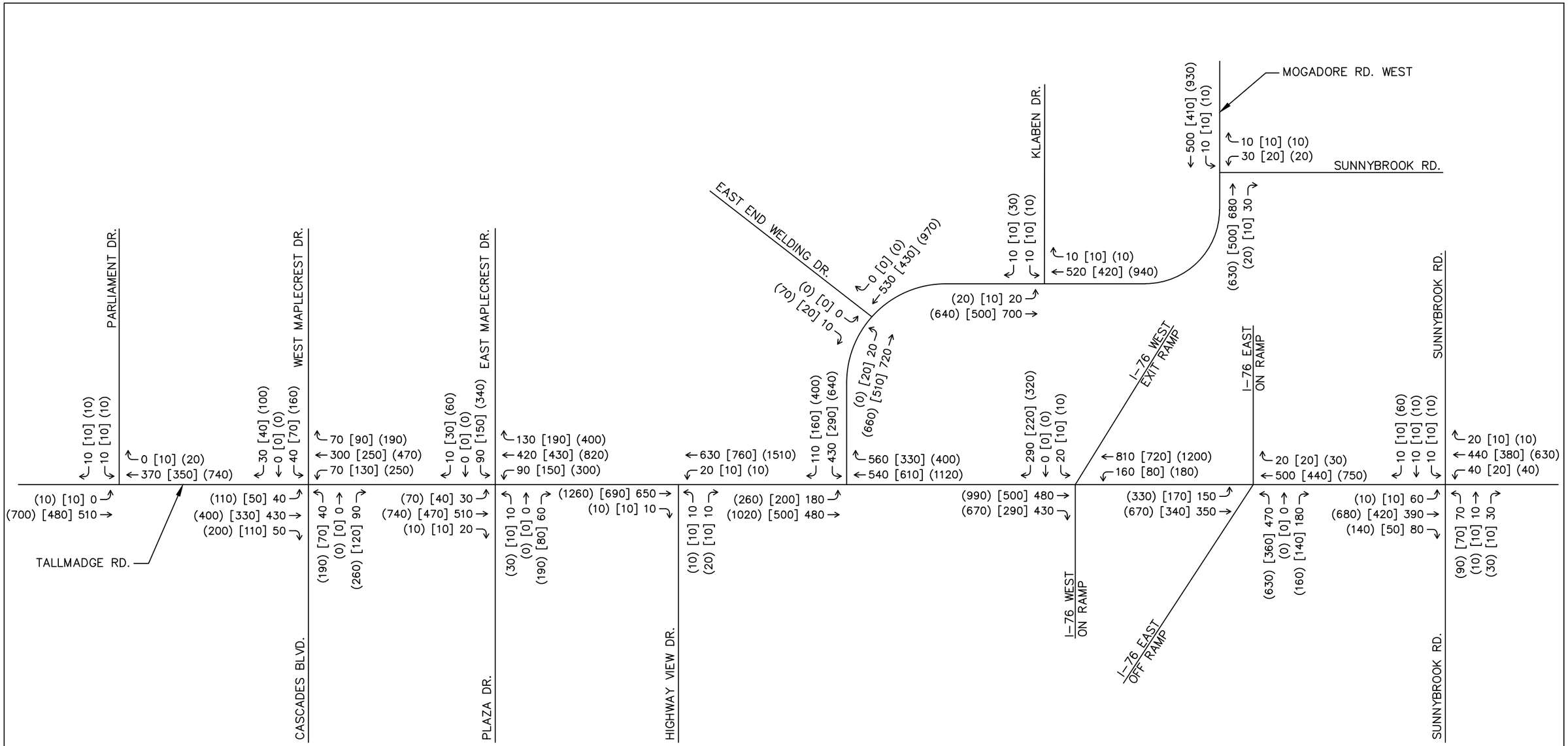

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FIGURE 7

DESIGN YEAR 2039
'BUILD'
PEAK HOUR TRAFFIC VOLUMES

MARCH 2014

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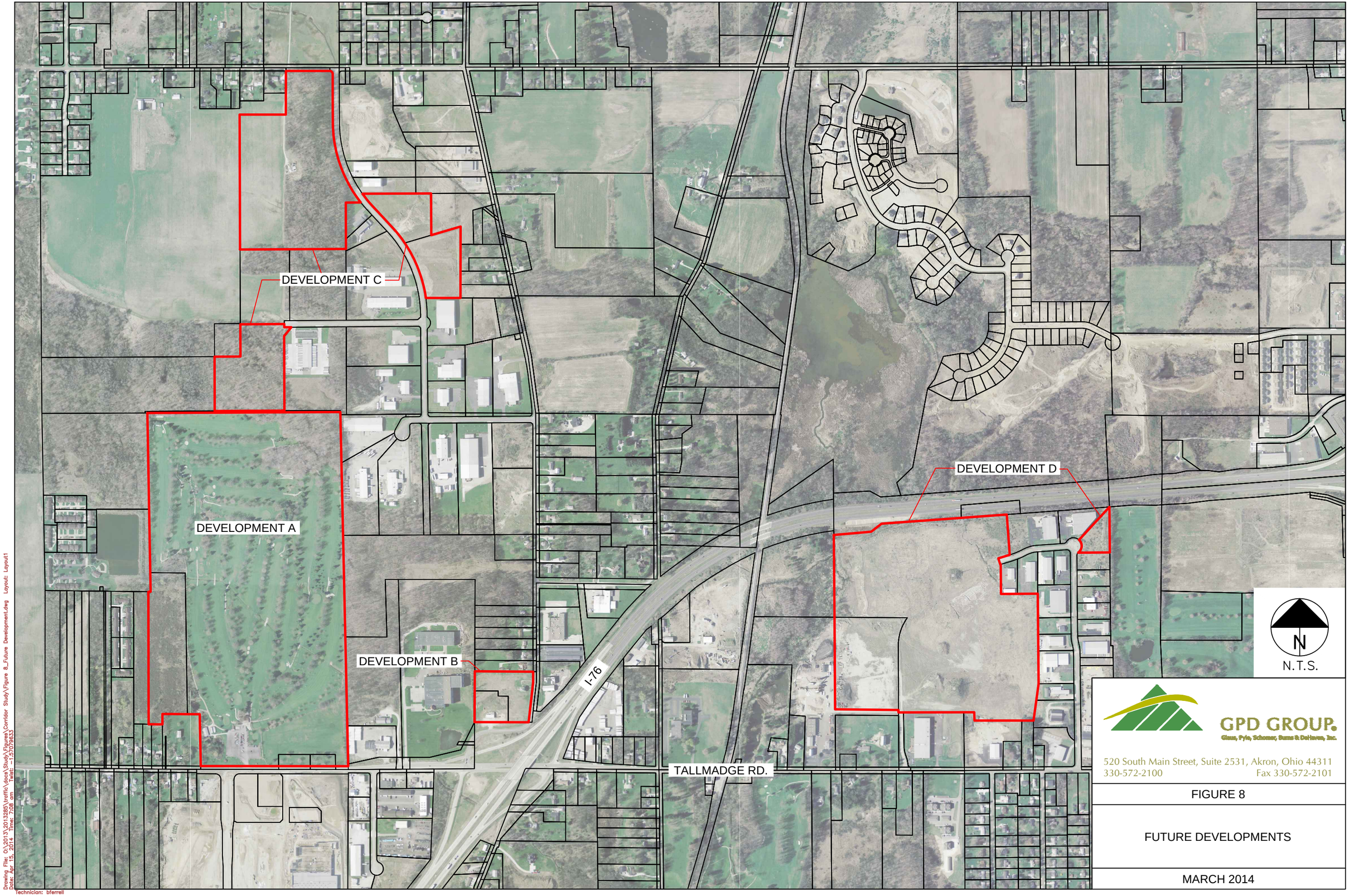

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FIGURE 8

FUTURE DEVELOPMENTS

MARCH 2014

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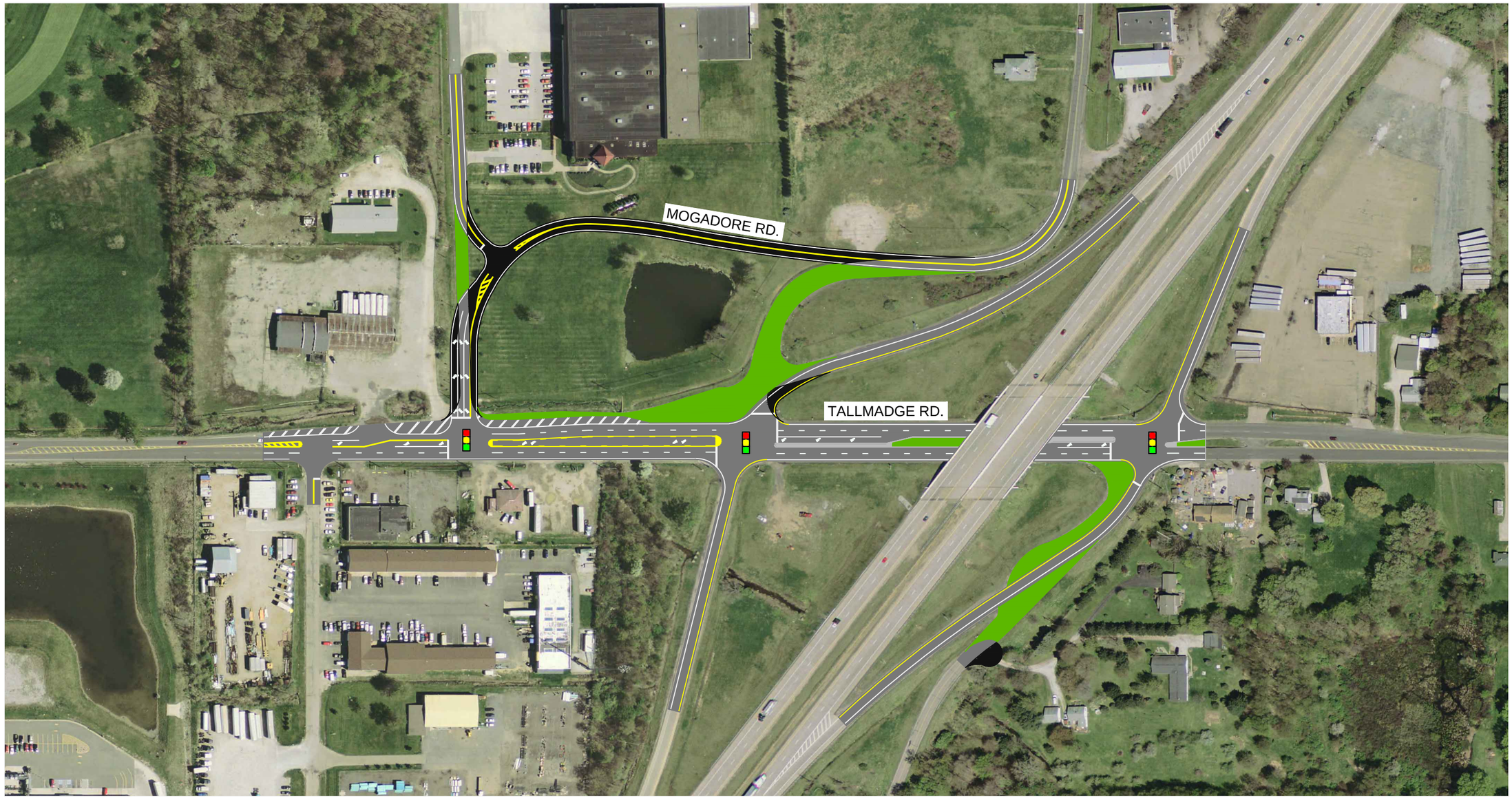

LEGEND

- EXISTING PAVEMENT
- MEDIAN
- PROPOSED PAVEMENT

N

0 100
50 200
Horizontal
Scale in Feet

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FIGURE 9

MEDIUM TERM
IMPROVEMENT OPTION

MARCH 2014

Drawing File: O:\2013\2013285\traffic\docs\Study\Figures\Corridor Study\Figure 9_Build Option 1' Rendering.dwg Layout: Layout 1
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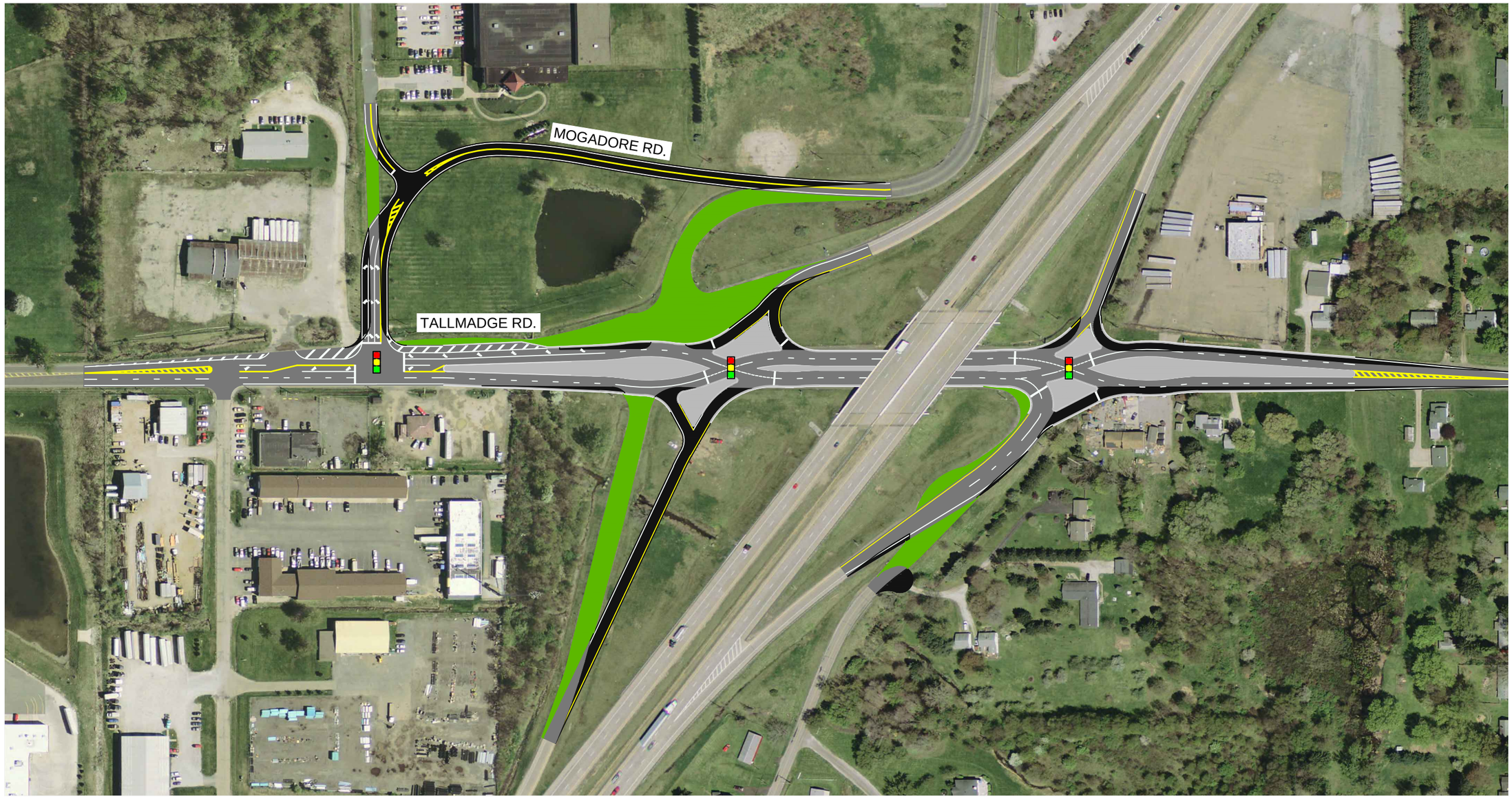

LEGEND

- EXISTING PAVEMENT
- MEDIAN
- PROPOSED PAVEMENT

N

0 100
50 200
Horizontal
Scale in Feet

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FIGURE 10

LONG TERM
IMPROVEMENT OPTION

MARCH 2014

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APPENDIX A
SITE PHOTO LOG

Looking west on Tallmadge Road toward
the Parliament Drive intersection

Looking east on Tallmadge Road toward
the Parliament Drive intersection

Looking south on Parliament Drive toward
the Tallmadge Road intersection

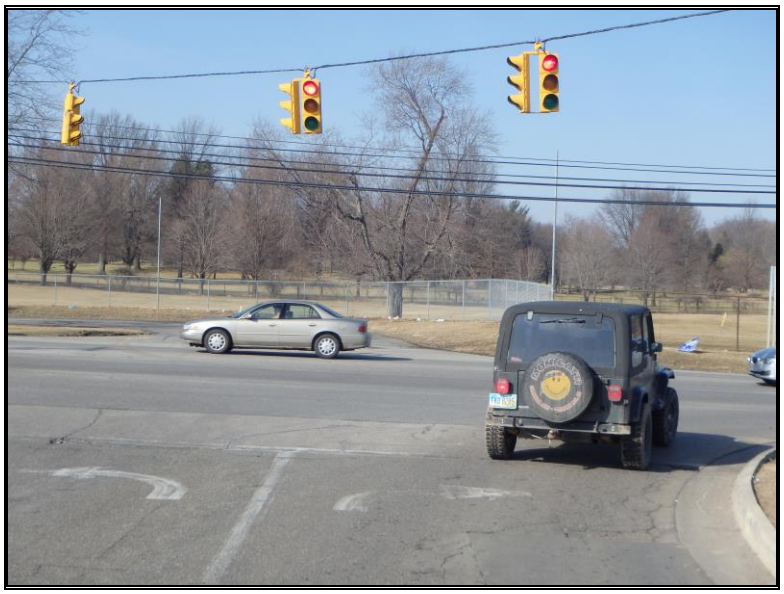
Looking east on Tallmadge Road toward
the Cascades Boulevard intersection

Looking west on Tallmadge Road toward
the Cascades Boulevard intersection

Looking north on Cascades Boulevard toward
the Tallmadge Road intersection

Looking east on Tallmadge Road toward
the Plaza Drive / Golf Course Drive intersection

Looking west on Tallmadge Road toward
the Plaza Drive / Golf Course Drive intersection



Looking north on Plaza Drive toward
the Tallmadge Road intersection

Looking south on Golf Course Drive toward
the Tallmadge Road intersection

Looking east on Tallmadge Road toward
the Highway View Drive intersection

Looking west on Tallmadge Road toward
the Highway View Drive intersection

Looking north on Highway View Drive toward
the Tallmadge Road intersection

Looking east on Tallmadge Road toward
the East End Welding Drive intersection

Looking west on Tallmadge Road toward
the East End Welding Drive intersection

Looking south on East End Welding Drive toward
the Tallmadge Road intersection

Looking east on Tallmadge Road toward
the Mogadore Road / I-76 Westbound Ramp intersection

Looking west on Tallmadge Road toward
the Mogadore Road / I-76 Westbound Ramp intersection

Looking south on Mogadore Road toward
the Tallmadge Road intersection

Looking east on Tallmadge Road toward
the I-76 Eastbound Ramp / Mogadore Road intersection

Looking west on Tallmadge Road toward
the I-76 Eastbound Ramp / Mogadore Road intersection

Looking north on the I-76 Eastbound Ramp / Mogadore Road toward the Tallmadge Road intersection

Looking east on Tallmadge Road toward
the Sunnybrook Road intersection

Looking west on Tallmadge Road toward
the Sunnybrook Road intersection

Looking north on Sunnybrook Road toward
the Tallmadge Road intersection

Looking south on Sunnybrook Road toward
the Tallmadge Road intersection

Looking south on Mogadore Road toward
the I-76 Eastbound Ramp intersection

Looking north on Mogadore Road toward
the I-76 Eastbound Ramp intersection

Looking northeast on the I-76 Eastbound Ramp toward the Mogadore Road intersection

Looking north on Mogadore Road toward
the I-76 Westbound Ramp intersection

Looking south on Mogadore Road toward
the I-76 Westbound Ramp intersection

Looking southwest on the I-76 Westbound Ramp toward the Mogadore Road intersection

Looking north on Mogadore Road toward
the Sunnybrook Road intersection

Looking south on Mogadore Road toward
the Sunnybrook Road intersection

Looking west on Sunnybrook Road toward
the Mogadore Road intersection

APPENDIX B
CERTIFIED TRAFFIC PLATES

INTER-OFFICE COMMUNICATION

TO: Lorie Feudner, District 4

FROM: Becky Salak, Transportation Planner, Office of Statewide Planning and Research

SUBJECT: **POR-Tallmadge Rd (CR-18)-0.10, No PID**

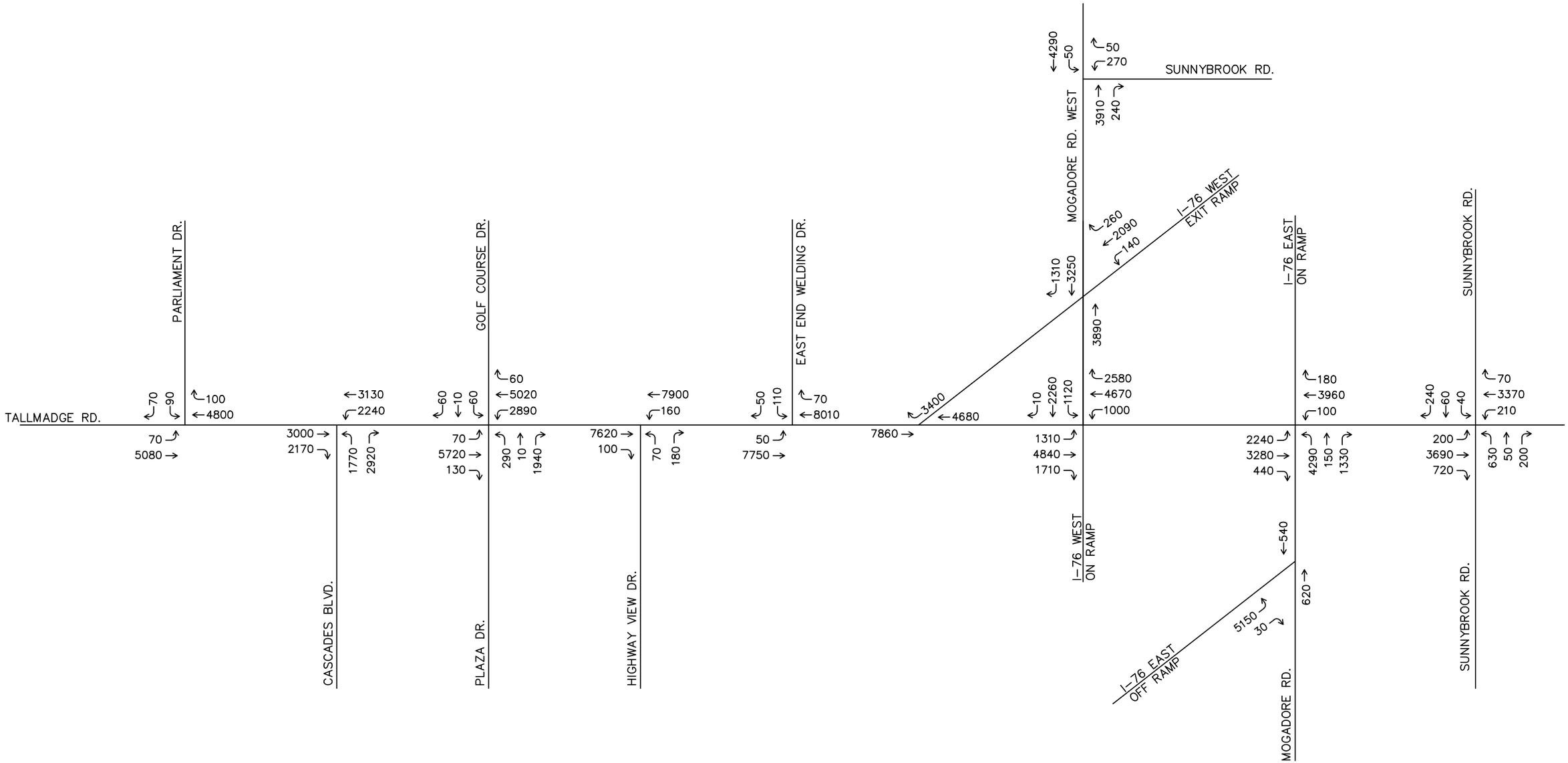
DATE: January 14, 2014

In reply to a request dated December 20, 2013, the Office of Statewide Planning and Research has reviewed the 2019/2039 traffic for the subject study and the volumes that were provided are reasonable.

The Design Designations shown on the attached pages provided by GPD Group are certified for use in the subject project.

If you have any questions, please contact me at (614) 644-8195.

c: M. Byram, OSPR – File



N.T.S.

GPD GROUP.
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
520 South Main Street, Suite 2531, Akron, Ohio 44311
330-572-2100 Fax 330-572-2101

POR- TALLMADGE ROAD

PLATE 1
2013 ADT

OCTOBER 2013

Drawing File: O:\2013\2013285\traffic\docs\Study\Figures\ADT-VOLUMES.dwg Layout: Full Extent
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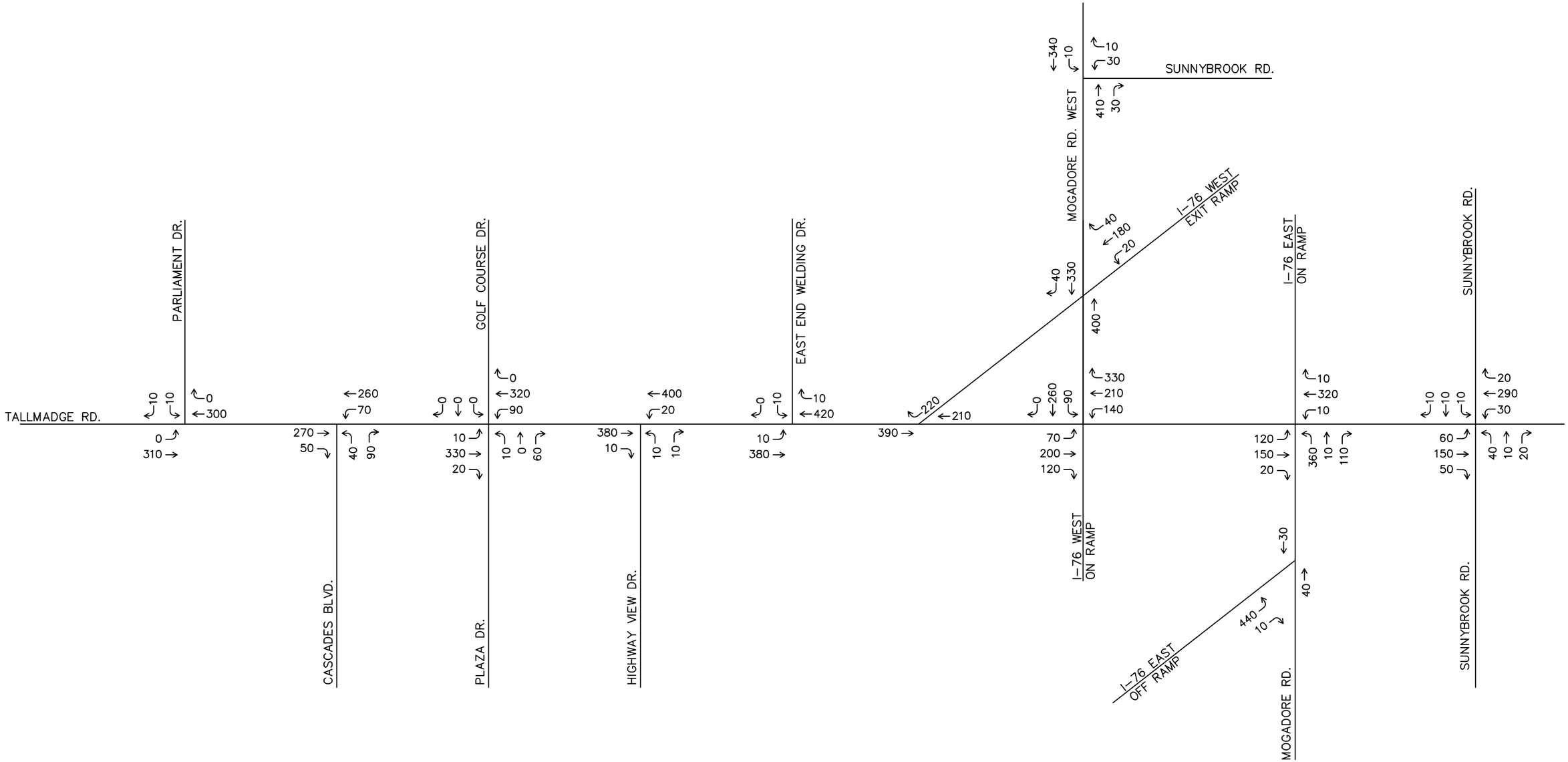
Technician: cdeibel



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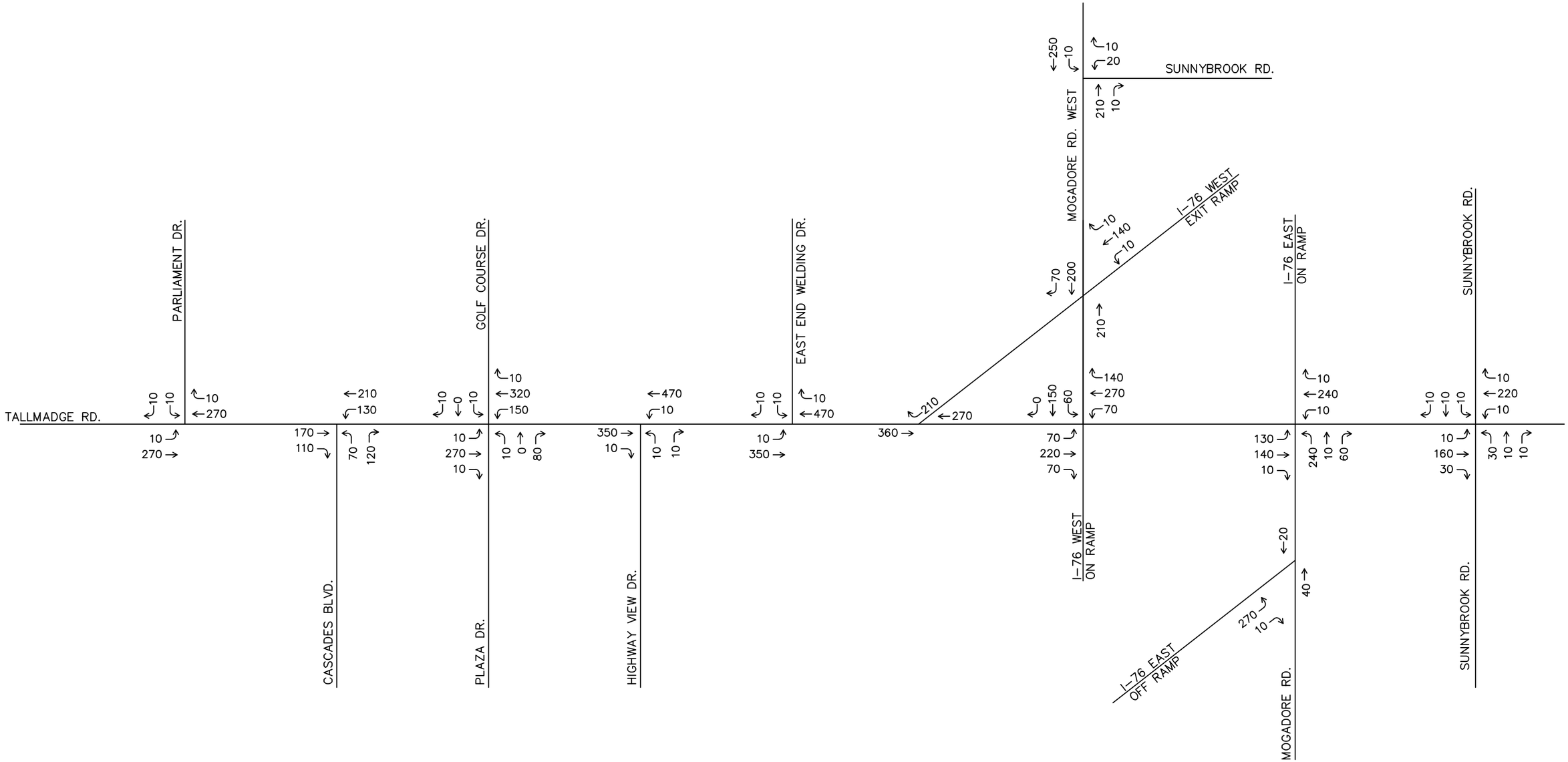
POR- TALLMADGE ROAD

PLATE 2
2013 AM DHV FOR COMMUTER TRAFFIC

OCTOBER 2013

Drawing File: O:\2013\2013285\traffic\docs\Study\Figures\AM-COMMUTER.dwg Layout: Full Extent
Date: Oct 21, 2013 Time: 8:18 am Twist: -1.57079633
Technician: cdeibel



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POR- TALLMADGE ROAD

PLATE 3
AM DHV FOR COMMERCIAL TRAFFIC

OCTOBER 2013

Drawing File: O:\2013\2013285\traffic\docs\Study\Figures\AM-COMMERCIAL.dwg Layout: Full Extent
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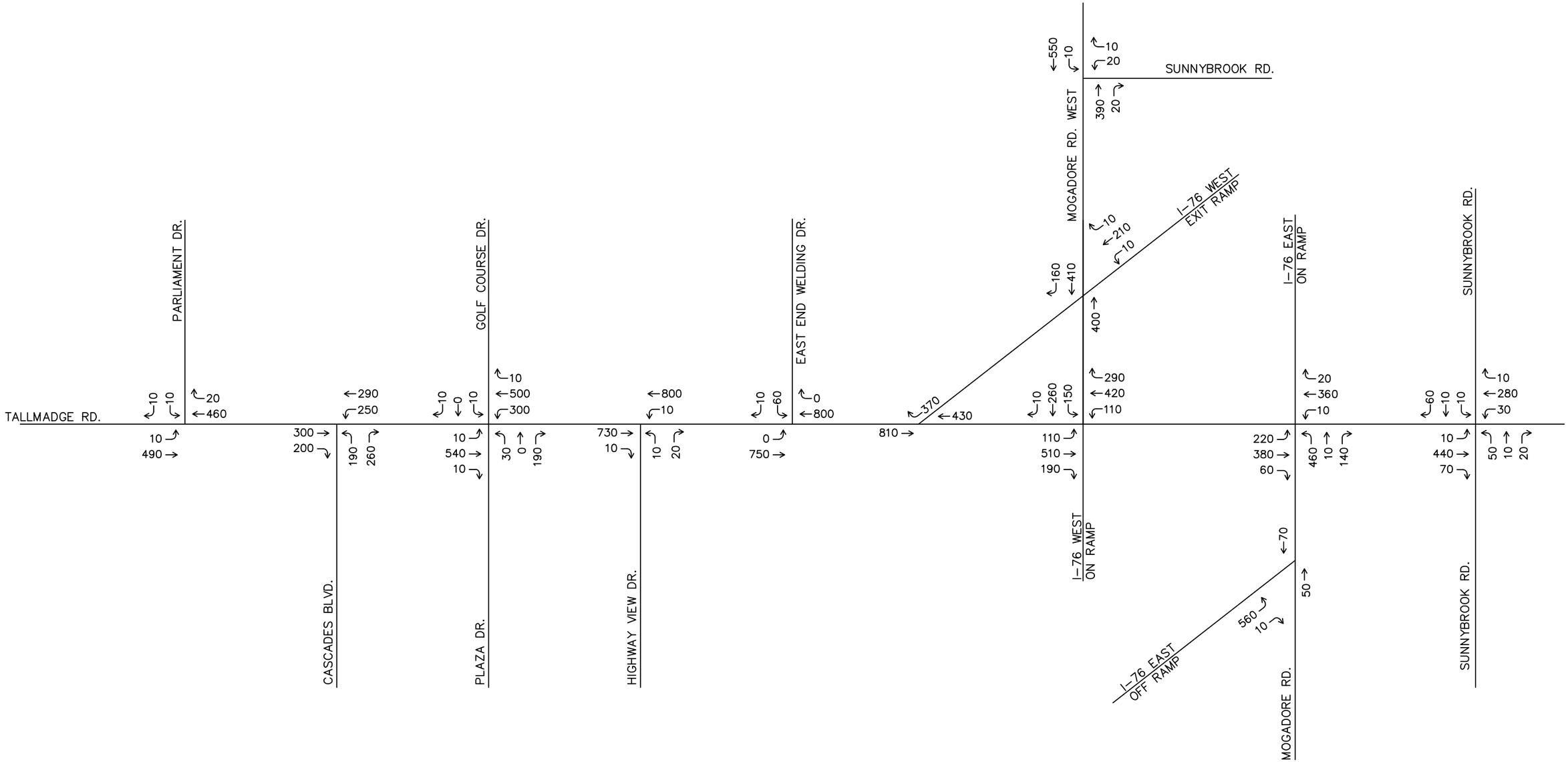
Technician: cdeibel



GPD GROUP.
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520 South Main Street, Suite 2531, Akron, Ohio 44311
330-572-2100 Fax 330-572-2101

POR- TALLMADGE ROAD

PLATE 4
2013 PM DHV

OCTOBER 2013

Drawing File: O:\2013\2013285\traffic\docs\Study\Figures\PM-PEAK.dwg Layout: Full Extent
Date: Oct 21, 2013 Time: 8:18 am Twist: -1.57079633
Technician: cdeibel

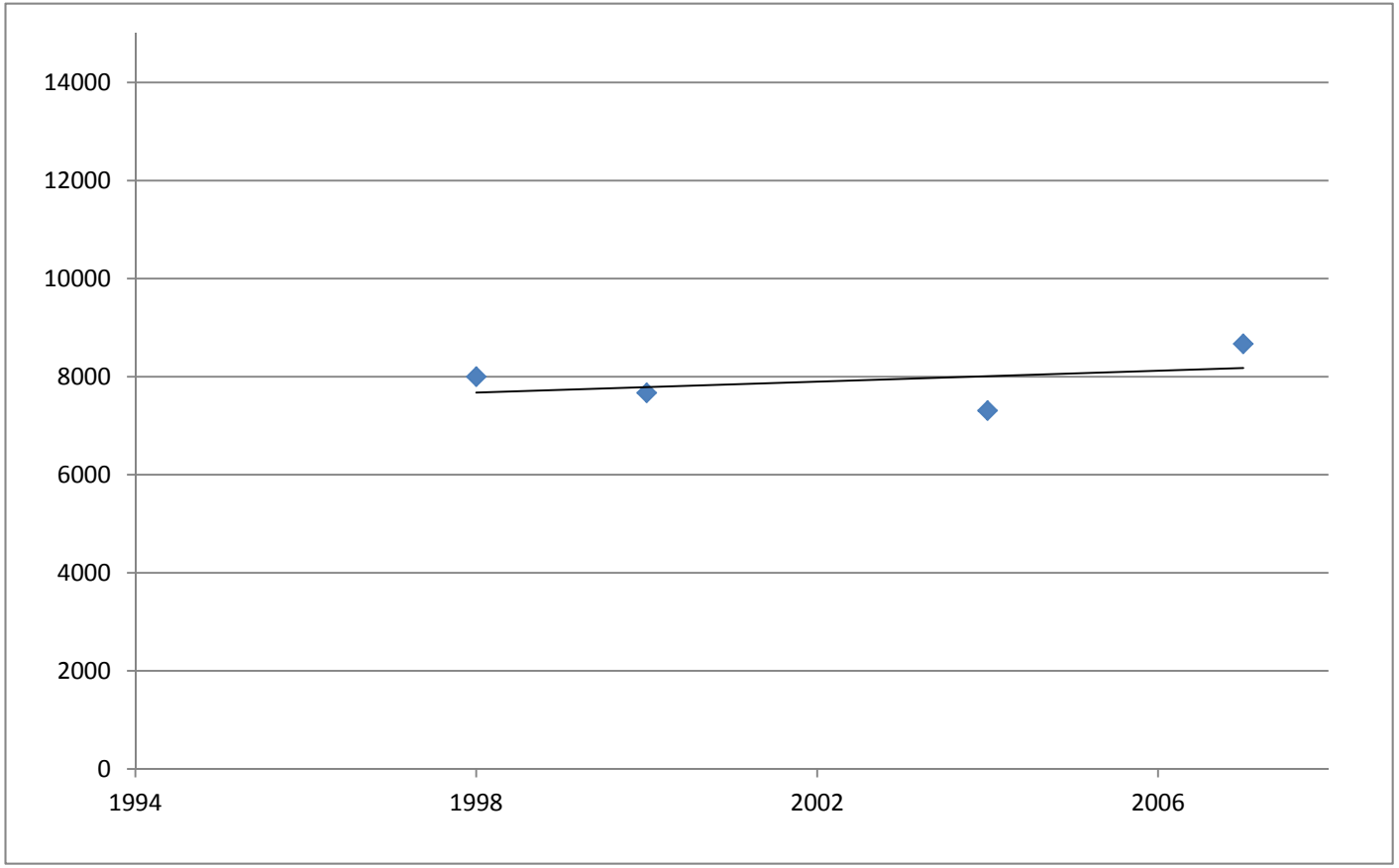
2013285.00

POR - Tallmadge Road Corridor Safety Study

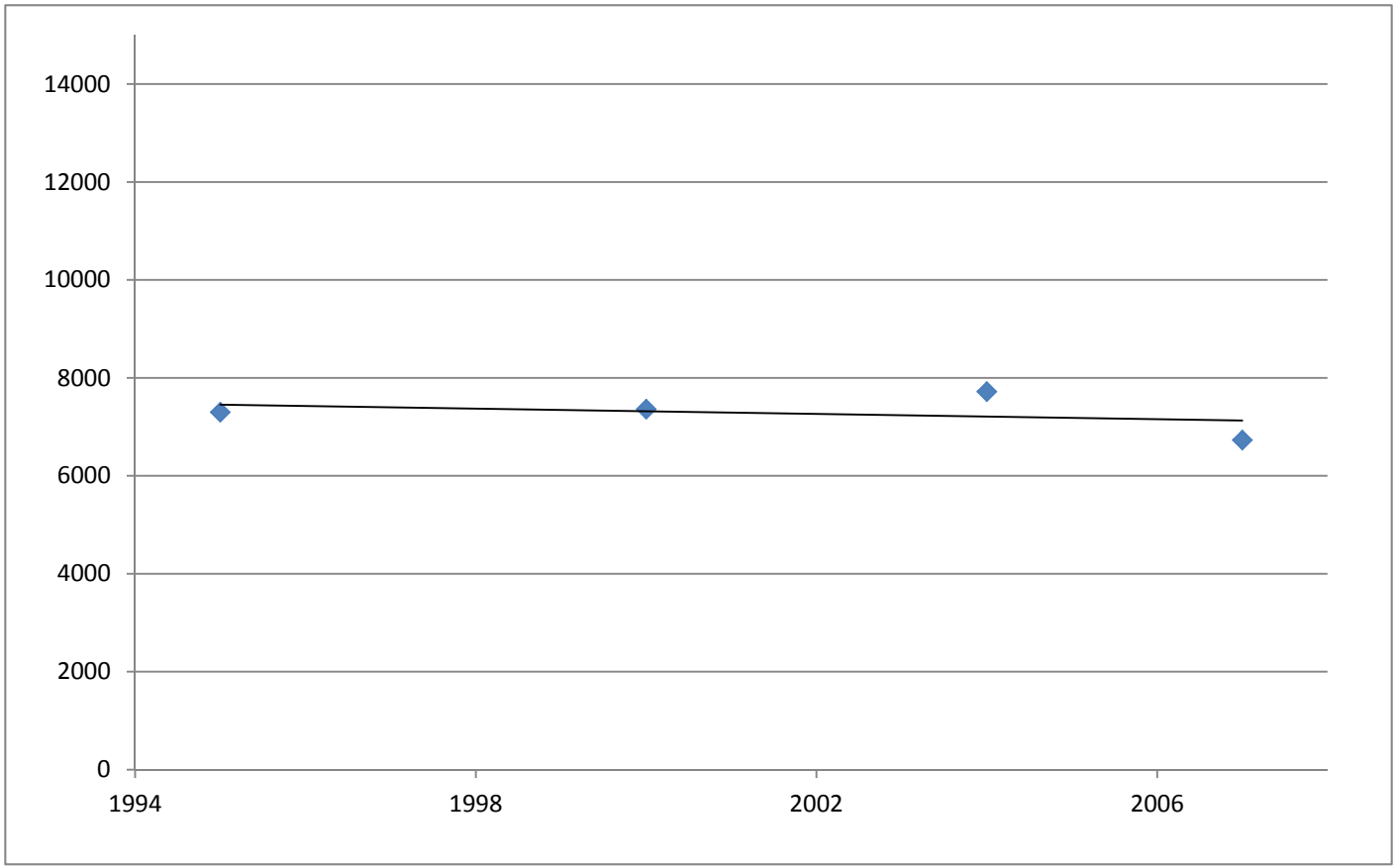
	Tallmadge Road	Mogadore Road	I-76 Ramps	All Other Roads
T24	0.04	0.08	0.08	0.03
TD	0.04	0.06	0.07	0.02

APPENDIX C
GROWTH RATE CALCULATIONS

Roadway Section	East Avenue - Historical Traffic Volumes				Growth Rate
	1998	2000	2004	2007	
East Avenue at Summit-Portage County Line	8000	7670	7310	8670	
Trendline	*7676*	*7787*	*8010*	*8177*	*0.73%*



Roadway Section	Tallmadge Road - Historical Traffic				Growth Rate
	1995	2000	2004	2007	
Tallmadge Road East of Sunnybrook	7300	7360	7720	6730	
Trendline	*7452*	*7318*	*7210*	*7130*	*-0.36%*



APPENDIX D
ITE TRIP GENERATION CALCULATIONS

Cascades of Brimfield Shopping Center Existing Trip Generation							
	Total In	Total Out	Combined Total	Hour Total	Peak Hour Total In	Peak Hour Total Out	
7:00 AM	23	30	53	312	159	153	
7:15 AM	42	44	86	351	181	170	
7:30 AM	33	45	78	371	205	166	
7:45 AM	61	34	95	413	247	166	
8:00 AM	45	47	92	448	268	180	AM COMMUTER PEAK HOUR
8:15 AM	66	40	106	472	283	189	
8:30 AM	75	45	120	518	310	208	
8:45 AM	82	48	130	556	320	236	
9:00 AM	60	56	116	610	346	264	AM COMMERCIAL PEAK HOUR
9:15 AM	93	59	152	680	401	279	
9:30 AM	85	73	158	719	417	302	
9:45 AM	108	76	184	747	442	305	
10:00 AM	115	71	186	773	446	327	
10:15 AM	109	82	191	770	433	337	
10:30 AM	110	76	186	826	462	364	
10:45 AM	112	98	210	912	513	399	
11:00 AM	102	81	183	981	554	427	
11:15 AM	138	109	247	1110	615	495	
11:30 AM	161	111	272	1105	605	500	
11:45 AM	153	126	279	1128	594	534	
12:00 PM	163	149	312	1154	589	565	
12:15 PM	128	114	242	1130	556	574	
12:30 PM	150	145	295	1194	571	623	
12:45 PM	148	157	305	1184	552	632	
1:00 PM	130	158	288	1138	543	595	
1:15 PM	143	163	306	1132	548	584	
1:30 PM	131	154	285	1076	538	538	
1:45 PM	139	120	259	1060	525	535	
2:00 PM	135	147	282	1066	529	537	
2:15 PM	133	117	250	1045	537	508	
2:30 PM	118	151	269	1055	549	506	
2:45 PM	143	122	265	1048	582	466	
3:00 PM	143	118	261	1083	599	484	
3:15 PM	145	115	260	1168	622	546	
3:30 PM	151	111	262	1209	634	575	
3:45 PM	160	140	300	1251	635	616	
4:00 PM	166	180	346	1270	652	618	
4:15 PM	157	144	301	1240	651	589	
4:30 PM	152	152	304	1290	674	616	
4:45 PM	177	142	319	1324	716	608	
5:00 PM	165	151	316	1378	749	629	
5:15 PM	180	171	351	1389	753	636	PM PEAK HOUR
5:30 PM	194	144	338	1356	736	620	
5:45 PM	210	163	373	1315	679	636	
6:00 PM	169	158	327	1222	608	614	
6:15 PM	163	155	318	1199	577	622	
6:30 PM	137	160	297	1187	551	636	
6:45 PM	139	141	280	1180	540	640	
7:00 PM	138	166	304	1211	518	693	
7:15 PM	137	169	306	907	380	527	
7:30 PM	126	164	290	601	243	358	
7:45 PM	117	194	311	311	117	194	

	TALLMADGE ROAD EB			TALLMADGE ROAD WB			CASCADES BOULEVARD NB		
	LEFT	THRU	RIGHT (IN)	LEFT (IN)	THRU	RIGHT	LEFT (OUT)	THRU	LEFT (OUT)
7:00 AM	0	57	9	3	46	0	5	0	13
7:15 AM	0	67	12	7	59	0	6	0	26
7:30 AM	0	70	6	10	59	0	8	0	20
7:45 AM	0	65	9	31	61	0	8	0	14
8:00 AM	0	55	15	14	49	0	12	0	20
8:15 AM	0	58	19	18	36	0	5	0	24
8:30 AM	0	52	24	14	47	0	9	0	26
8:45 AM	0	41	26	27	59	0	10	0	23
9:00 AM	0	44	18	20	39	0	13	0	22
9:15 AM	0	33	25	36	55	0	16	0	22
9:30 AM	0	40	26	28	50	0	17	0	37
9:45 AM	0	42	36	43	52	0	23	0	34
10:00 AM	0	40	38	42	48	0	22	0	35
10:15 AM	0	43	37	40	44	0	20	0	37
10:30 AM	0	42	37	39	40	0	19	0	36
10:45 AM	0	33	28	47	49	0	20	0	55
11:00 AM	0	18	37	25	53	0	23	0	39
11:15 AM	0	39	45	43	49	0	33	0	46
11:30 AM	0	44	48	53	48	0	32	0	45
11:45 AM	0	39	45	47	59	0	32	0	67
12:00 PM	0	37	43	51	49	0	39	0	70
12:15 PM	0	40	40	28	63	0	32	0	55
12:30 PM	0	48	40	56	65	0	46	0	62
12:45 PM	0	35	47	55	53	0	50	0	65
1:00 PM	0	44	40	37	40	0	44	0	62
1:15 PM	0	44	45	50	43	0	52	0	62
1:30 PM	0	42	44	27	44	0	40	0	61
1:45 PM	0	35	46	32	43	0	26	0	49
2:00 PM	0	35	45	35	46	0	44	0	64
2:15 PM	0	54	45	41	43	0	28	1	47
2:30 PM	0	61	35	29	53	0	48	0	64
2:45 PM	0	62	49	43	51	0	29	0	43
3:00 PM	0	60	48	42	56	0	27	0	44
3:15 PM	0	57	46	41	62	0	25	0	45
3:30 PM	0	55	47	40	67	0	23	0	46
3:45 PM	0	59	45	44	68	0	33	0	57
4:00 PM	0	55	41	50	68	0	42	0	71
4:15 PM	0	49	54	44	69	0	35	0	59
4:30 PM	0	68	39	39	74	0	30	0	60
4:45 PM	0	78	52	55	61	0	35	0	66
5:00 PM	0	75	57	37	62	0	47	0	53
5:15 PM	0	81	42	66	62	0	50	0	67
5:30 PM	0	53	46	67	80	0	42	0	54
5:45 PM	0	49	58	81	75	0	45	0	56
6:00 PM	0	44	53	39	59	0	35	0	69
6:15 PM	0	61	49	42	53	0	49	0	53
6:30 PM	0	44	40	42	56	0	47	0	49
6:45 PM	0	42	32	49	43	0	41	0	61
7:00 PM	0	53	40	41	41	0	47	0	58
7:15 PM	0	42	40	40	30	0	50	0	66
7:30 PM	0	33	35	42	45	0	49	0	65
7:45 PM	0	31	38	35	44	0	41	0	102

	TALLMADGE RD. EB			TALLMADGE RD. WB			PLAZA DR. NB			GOLF COURSE DR. SB		
	LEFT	THRU	RIGHT (IN)	LEFT (IN)	THRU	RIGHT	LEFT (OUT)	THRU (OUT)	RIGHT (OUT)	LEFT	THRU (IN)	RIGHT
7:00 AM	0	58	1	10	43	0	0	0	12	0	0	1
7:15 AM	0	74	0	23	74	0	1	0	11	0	0	0
7:30 AM	0	93	2	15	59	0	0	0	17	0	0	0
7:45 AM	1	67	1	20	90	0	0	0	12	0	0	0
8:00 AM	0	68	2	14	62	0	3	0	12	0	0	0
8:15 AM	2	67	1	28	64	0	2	0	9	0	0	0
8:30 AM	2	66	0	37	66	0	2	1	7	0	0	0
8:45 AM	0	63	1	28	62	0	3	0	12	1	0	1
9:00 AM	2	59	2	20	58	0	4	0	17	2	0	1
9:15 AM	4	57	0	32	63	1	1	0	20	3	0	1
9:30 AM	0	63	2	29	56	1	3	0	16	1	0	0
9:45 AM	0	54	3	26	69	0	4	0	15	3	0	0
10:00 AM	0	51	2	33	78	0	3	0	11	2	0	0
10:15 AM	0	57	1	31	55	0	4	0	21	0	0	1
10:30 AM	0	58	1	33	58	1	4	0	17	0	0	0
10:45 AM	0	60	1	36	62	2	4	0	19	0	0	0
11:00 AM	0	61	1	39	66	0	4	0	15	0	0	0
11:15 AM	0	72	0	50	79	3	6	0	24	0	0	0
11:30 AM	0	84	3	56	85	1	4	0	30	2	1	1
11:45 AM	0	87	5	56	66	0	8	1	18	1	0	0
12:00 PM	1	94	4	65	78	1	2	0	38	2	0	1
12:15 PM	0	102	6	54	101	0	4	0	23	0	0	0
12:30 PM	1	99	2	52	84	5	8	0	29	0	0	0
12:45 PM	0	106	2	44	98	0	7	0	35	1	0	0
1:00 PM	0	113	5	48	87	0	7	0	45	0	0	0
1:15 PM	0	99	1	46	79	1	9	1	39	1	1	0
1:30 PM	0	102	2	58	70	0	5	0	48	0	0	1
1:45 PM	1	126	1	60	73	1	6	0	39	0	0	0
2:00 PM	0	113	2	53	71	1	2	0	37	0	0	1
2:15 PM	0	105	2	45	90	2	6	0	36	1	0	3
2:30 PM	2	116	3	51	83	2	3	0	36	1	0	1
2:45 PM	2	111	3	48	106	0	7	0	43	1	0	0
3:00 PM	4	110	3	50	104	1	7	0	40	0	0	0
3:15 PM	6	109	2	56	103	2	8	0	37	0	0	0
3:30 PM	9	107	3	61	103	7	7	1	34	0	0	0
3:45 PM	14	108	3	68	101	5	4	0	46	0	0	0
4:00 PM	3	115	3	72	80	5	8	1	58	0	0	0
4:15 PM	3	120	2	57	95	2	5	1	44	3	0	0
4:30 PM	1	115	3	71	111	1	6	1	55	0	0	0
4:45 PM	2	102	5	65	116	0	9	0	32	0	0	2
5:00 PM	0	135	2	69	119	1	8	0	43	3	0	0
5:15 PM	0	149	3	69	135	3	6	0	48	0	0	1
5:30 PM	0	124	4	77	108	0	4	0	44	0	0	0
5:45 PM	1	123	3	68	108	1	10	0	52	1	0	0
6:00 PM	1	124	1	76	112	1	7	0	47	3	0	6
6:15 PM	0	114	4	68	106	0	5	0	48	1	0	5
6:30 PM	1	117	2	52	95	0	8	2	54	0	1	9
6:45 PM	0	98	1	56	96	1	5	0	34	5	1	5
7:00 PM	0	101	2	55	73	0	8	1	52	5	0	4
7:15 PM	0	88	1	55	72	0	6	0	47	6	1	4
7:30 PM	0	100	8	41	71	0	9	0	41	1	0	3
7:45 PM	0	89	2	42	62	0	5	0	46	3	0	0

ITE Trip Generation Procedure

Land Use 841 (Automobile Sales)

Trip Generations per 1000 Square Feet of Gross Floor Area

Weekday Trip Generation and Trip Distribution

Trip Generation Formula: T = AR x (X)
where: T = Number of Trips Generated
AR = Average Rate
X = 1000 Square Feet of Gross Leasable Area

Average Rate: 32.30

Proposed Square Feet of Leasable Area: 15,500

Total Trip Ends in the Average Weekday: 501

Distribution Percentages of Entering and Exiting Trips, From ITE Trip Generation Handbook, 9th Edition

Entering Trip Percentage: 50%
Exiting Trip Percentage: 50%
Number of Entering Trips: 251
Number of Exiting Trips: 250

AM Commuter Peak Trip Generation and Trip Distribution (Peak Hour of Adjacent Street)

Trip Generation Formula: T = AR x (X)
where: T = Number of Trips Generated
AR = Average Rate
X = 1000 Square Feet of Gross Leasable Area

Average Rate: 1.92

Proposed Square Feet of Leasable Area: 15,500

Total Trip Ends in the AM Commuter Peak Hour: 30

Distribution Percentages of Entering and Exiting Trips, From ITE Trip Generation Handbook, 9th Edition

Entering Trip Percentage: 75%
Exiting Trip Percentage: 25%

Entering Primary Trips: 23
Exiting Primary Trips: 7

AM Commercial Peak Trip Generation and Trip Distribution (Peak Hour of Generator)

Trip Generation Formula: T = 2.3(X) - 2.41
where: T = Number of Trips Generated
X = 1000 Square Feet of Gross Leasable Area

Average Rate: 2.22

Proposed Square Feet of Leasable Area: 15,500

Total Trip Ends in the AM Commercial Peak Hour: 34

Distribution Percentages of Entering and Exiting Trips, From ITE Trip Generation Handbook, 9th Edition

Entering Trip Percentage: 55%
Exiting Trip Percentage: 45%

Entering Primary Trips: 19
Exiting Primary Trips: 15

PM Peak Trip Generation and Trip Distribution (Peak Hour of Adjacent Street)

Trip Generation Formula: T = 1.91(X) + 23.74
where: T = Number of Trips Generated
X = 1000 Square Feet of Gross Leasable Area

Proposed Square Feet of Leasable Area: 15,500

Total Trip Ends in the PM Peak Hour: 54

Distribution Percentages of Entering and Exiting Trips, From ITE Trip Generation Handbook, 9th Edition

Entering Trip Percentage: 40%
Exiting Trip Percentage: 60%

Entering Primary Trips: 22
Exiting Primary Trips: 32

ITE Trip Generation Procedure - Insite

Land Use 130 (Industrial Park)

Trip Generations Per Acres of Development

Weekday Trip Generation and Trip Distribution

Trip Generation Formula: T = 47.82 (X) + 520.18
where: T = Number of Trips Generated
X = Number of Acres of Development

Proposed Number of Acres of Development: 48

Total Trip Ends in an Average Weekday: 2,816

Distribution Percentages of Entering and Exiting Trips, From ITE Trip Generation Manual, 9th Edition

Entering Trip Percentage: 50%
Exiting Trip Percentage: 50%
Number of Entering Trips: 1408
Number of Exiting Trips: 1408

AM Commuter Peak Trip Generation and Trip Distribution (Peak Hour of Adjacent Street)

Trip Generation Formula: Ln (T) = 0.78 Ln (X) + 2.82
where: T = Number of Trips Generated
X = Number of Acres of Development

Proposed Number of Acres of Development: 48

Total Trip Ends in the AM Commuter Peak Hour: 344

Distribution Percentages of Entering and Exiting Trips, From ITE Trip Generation Manual, 9th Edition

Entering Trip Percentage: 83%
Exiting Trip Percentage: 17%
Number of Entering Trips: 286
Number of Exiting Trips: 58

AM Commercial Peak Trip Generation and Trip Distribution (Peak Hour of Generator)

Trip Generation Formula: Ln (T) = 0.67 Ln (X) + 3.20
where: T = Number of Trips Generated
X = Number of Acres of Development

Proposed Number of Acres of Development: 48

Total Trip Ends in the AM Commercial Peak Hour: 329

Distribution Percentages of Entering and Exiting Trips, From ITE Trip Generation Manual, 9th Edition

Entering Trip Percentage: 87%
Exiting Trip Percentage: 13%
Number of Entering Trips: 286
Number of Exiting Trips: 43

PM Peak Trip Generation and Trip Distribution (Peak Hour of Adjacent Street)

Trip Generation Formula: Ln (T) = 0.72 Ln (X) + 3.06
where: T = Number of Trips Generated
X = Number of Acres of Development

Proposed Number of Acres of Development: 48

Total Trip Ends in the PM Peak Hour: 347

Distribution Percentages of Entering and Exiting Trips, From ITE Trip Generation Manual, 9th Edition

Entering Trip Percentage: 21%
Exiting Trip Percentage: 79%
Number of Entering Trips: 73
Number of Exiting Trips: 274

ITE Trip Generation Procedure - Karg

Land Use 130 (Industrial Park)

Trip Generations Per Acres of Development

Weekday Trip Generation and Trip Distribution

Trip Generation Formula: T = 47.82 (X) + 520.18
where: T = Number of Trips Generated
X = Number of Acres of Development

Proposed Number of Acres of Development: 72

Total Trip Ends in an Average Weekday: 3,964

Distribution Percentages of Entering and Exiting Trips, From ITE Trip Generation Manual, 9th Edition

Entering Trip Percentage: 50%
Exiting Trip Percentage: 50%
Number of Entering Trips: 1982
Number of Exiting Trips: 1982

AM Commuter Peak Trip Generation and Trip Distribution (Peak Hour of Adjacent Street)

Trip Generation Formula: Ln (T) = 0.78 Ln (X) + 2.82
where: T = Number of Trips Generated
X = Number of Acres of Development

Proposed Number of Acres of Development: 72

Total Trip Ends in the AM Commuter Peak Hour: 472

Distribution Percentages of Entering and Exiting Trips, From ITE Trip Generation Manual, 9th Edition

Entering Trip Percentage: 83%
Exiting Trip Percentage: 17%
Number of Entering Trips: 392
Number of Exiting Trips: 80

AM Commercial Peak Trip Generation and Trip Distribution (Peak Hour of Generator)

Trip Generation Formula: Ln (T) = 0.67 Ln (X) + 3.2
where: T = Number of Trips Generated
X = Number of Acres of Development

Proposed Number of Acres of Development: 72

Total Trip Ends in the AM Commercial Peak Hour: 431

Distribution Percentages of Entering and Exiting Trips, From ITE Trip Generation Manual, 9th Edition

Entering Trip Percentage: 87%
Exiting Trip Percentage: 13%
Number of Entering Trips: 375
Number of Exiting Trips: 56

PM Peak Trip Generation and Trip Distribution (Peak Hour of Adjacent Street)

Trip Generation Formula: Ln (T) = 0.72 Ln (X) + 3.06
where: T = Number of Trips Generated
X = Number of Acres of Development

Proposed Number of Acres of Development: 72

Total Trip Ends in the PM Peak Hour: 464

Distribution Percentages of Entering and Exiting Trips, From ITE Trip Generation Manual, 9th Edition

Entering Trip Percentage: 21%
Exiting Trip Percentage: 79%
Number of Entering Trips: 97
Number of Exiting Trips: 367

APPENDIX E
COLLISION DIAGRAMS

MATCH LINE A
SEE SHEET 2

N

N.T.S.

LEGEND

- MOVING VEHICLE
- BACKING VEHICLE
- NON CONTACT VEHICLE
- PEDESTRIANS
- PARKED VEHICLE
- FIXED OBJECT
- FATAL CRASH
- INJURY CRASH
- NO FAULT CRASH
- REAR END
- HEAD ON
- OUT OF CONTROL
- LEFT TURN
- SIDESWIPE
- ANGLE

GPD GROUP.
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
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330-572-2100 Fax 330-572-2101

APPENDIX E

CRASH DIAGRAM
SHEET 1 OF 8

MARCH 2014

Drawing File: O:\2013\2013285\traffic\docs\Study\Figures\Crash Diagram 1.dwg Layout: Layout1
Date: Apr 02, 2014 Time: 3:34 pm Twist: -1.57079633
Technician: bferrell

MATCH LINE A
SEE SHEET 1

MATCH LINE B
SEE SHEET 3

N

N.T.S.

LEGEND

- MOVING VEHICLE
- BACKING VEHICLE
- NON CONTACT VEHICLE
- PEDESTRIANS
- PARKED VEHICLE
- FIXED OBJECT
- FATAL CRASH
- INJURY CRASH
- NO FAULT CRASH
- REAR END
- HEAD ON
- OUT OF CONTROL
- LEFT TURN
- SIDESWIPE
- ANGLE

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APPENDIX E

CRASH DIAGRAM
SHEET 2 OF 8

MARCH 2014

Drawing File: C:\2013\2013285\traffic\docs\Study\Figures\Crash Diagram 2.dwg Layout: Layout1
Date: Apr 02, 2014 Time: 3:35 pm Twist: -1.57079633
Technician: bferrell

MATCH LINE B
SEE SHEET 2

MATCH LINE C
SEE SHEET 4

N

N.T.S.

LEGEND

- MOVING VEHICLE
- BACKING VEHICLE
- NON CONTACT VEHICLE
- PEDESTRIANS
- PARKED VEHICLE
- FIXED OBJECT
- FATAL CRASH
- INJURY CRASH
- NO FAULT CRASH
- REAR END
- HEAD ON
- OUT OF CONTROL
- LEFT TURN
- SIDESWIPE
- ANGLE

GPD GROUP.
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APPENDIX E

CRASH DIAGRAM
SHEET 3 OF 8

MARCH 2014

Drawing File: O:\2013\2013285\traffic\dcca\Study\Figures\Crash Diagram 3.dwg Layout: Layout1
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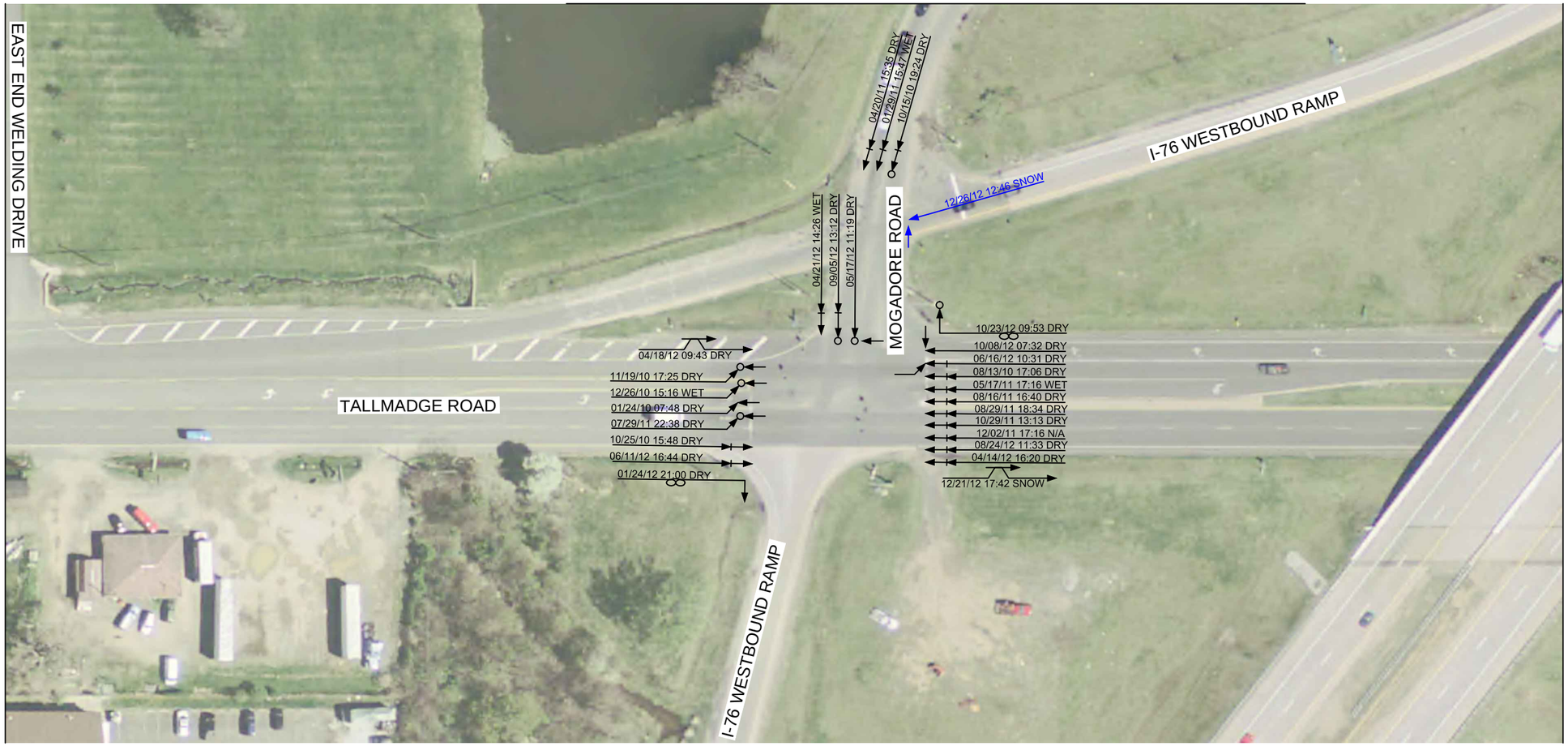
Technician: bferrell

MATCH LINE F
SEE SHEET 7

MATCH LINE C
SEE SHEET 3



MATCH LINE D
SEE SHEET 5

N

N.T.S.

LEGEND

MOVING VEHICLE	REAR END
BACKING VEHICLE	HEAD ON
NON CONTACT VEHICLE	OUT OF CONTROL
PEDESTRIANS	LEFT TURN
PARKED VEHICLE	SIDESWIPE
FIXED OBJECT	ANGLE
FATAL CRASH	
INJURY CRASH	
NO FAULT CRASH	

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APPENDIX E

CRASH DIAGRAM
SHEET 4 OF 8

MARCH 2014

Drawing File: O:\2013\2013285\traffic\docs\Study\Figures\Crash Diagram 4.dwg Layout: Layout1
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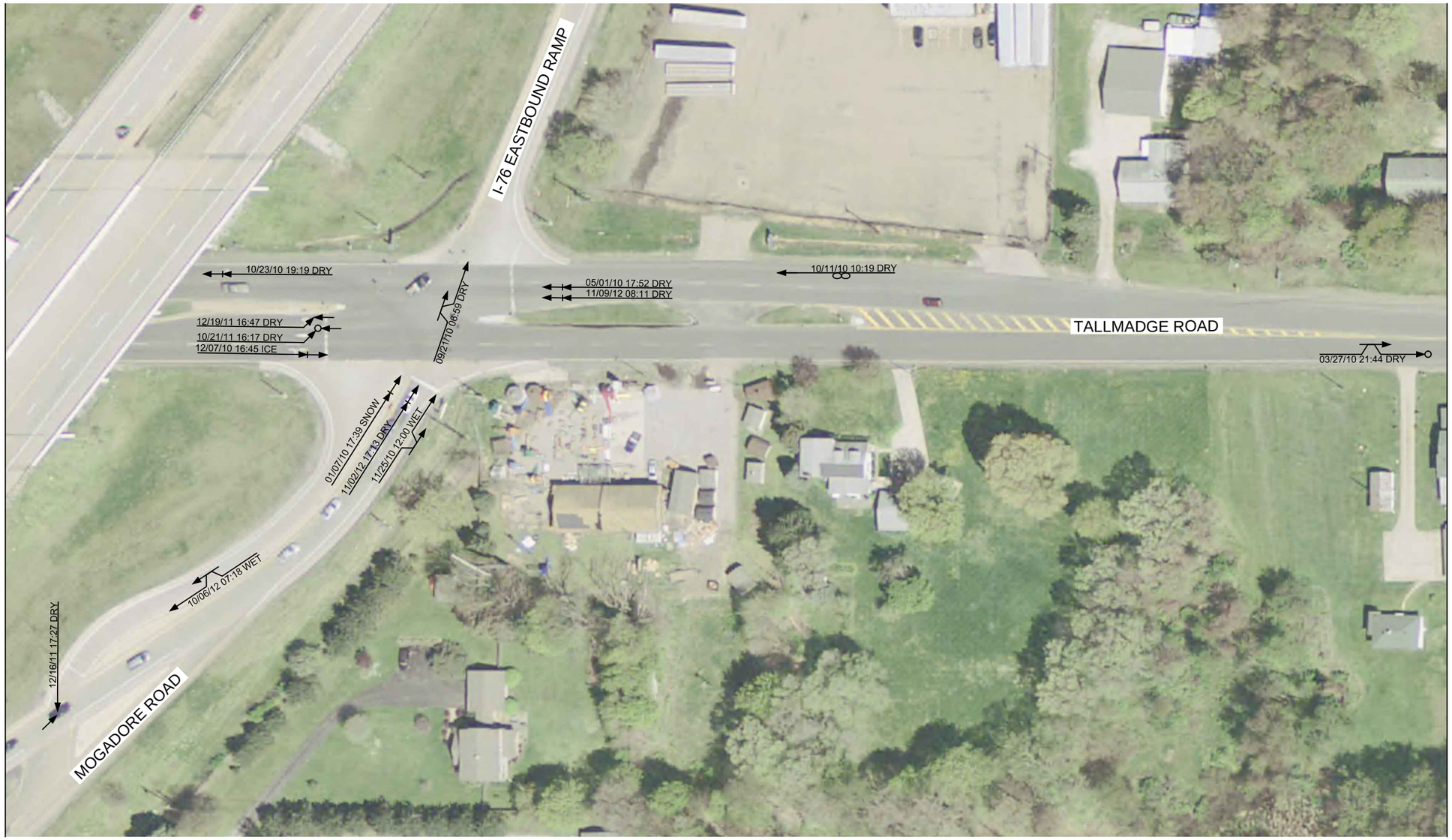
Technician: bferrell

MATCH LINE D
SEE SHEET 4



MATCH LINE E
SEE SHEET 6

N

N.T.S.

LEGEND

- MOVING VEHICLE
- BACKING VEHICLE
- NON CONTACT VEHICLE
- PEDESTRIANS
- PARKED VEHICLE
- FIXED OBJECT
- FATAL CRASH
- INJURY CRASH
- NO FAULT CRASH
- REAR END
- HEAD ON
- OUT OF CONTROL
- LEFT TURN
- SIDESWIPE
- ANGLE

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APPENDIX E

CRASH DIAGRAM
SHEET 5 OF 8

MARCH 2014

Drawing File: O:\2013\2013285\traffic\docs\Study\Figures\Crash Diagram 5.dwg Layout: Layout1
Date: Apr 02, 2014 Time: 3:36 pm Twist: -1.5707963
Technician: bferrell

N

N.T.S.

LEGEND

- MOVING VEHICLE
- BACKING VEHICLE
- NON CONTACT VEHICLE
- PEDESTRIANS
- PARKED VEHICLE
- FIXED OBJECT
- FATAL CRASH
- INJURY CRASH
- NO FAULT CRASH
- REAR END
- HEAD ON
- OUT OF CONTROL
- LEFT TURN
- SIDESWIPE
- ANGLE

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APPENDIX E

CRASH DIAGRAM
SHEET 6 OF 8

MARCH 2014

Drawing File: Q:\2013\2013285\traffic\docs\Study\Figures\Crash Diagram 6.dwg Layout: Layout1
Date: Apr 02, 2014 Time: 3:37 pm Twist: -1.5707963333
Technician: bferrell

N.T.S.

LEGEND

- MOVING VEHICLE
- BACKING VEHICLE
- NON CONTACT VEHICLE
- PEDESTRIANS
- PARKED VEHICLE
- FIXED OBJECT
- FATAL CRASH
- INJURY CRASH
- NO FAULT CRASH
- REAR END
- HEAD ON
- OUT OF CONTROL
- LEFT TURN
- SIDESWIPE
- ANGLE

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APPENDIX E

CRASH DIAGRAM
SHEET 7 OF 8

MARCH 2014

Drawing File: G:\2013\20132885\traffic\Local\Study\Figures\Crash Diagram 7.dwg Layout: Layout1
Date: Apr 02, 2014 Time: 3:38 pm Twist: -1.5707963333
Technician: bferrell

N.T.S.

LEGEND

- MOVING VEHICLE
- BACKING VEHICLE
- NON CONTACT VEHICLE
- PEDESTRIANS
- PARKED VEHICLE
- FIXED OBJECT
- FATAL CRASH
- INJURY CRASH
- NO FAULT CRASH
- REAR END
- HEAD ON
- OUT OF CONTROL
- LEFT TURN
- SIDESWIPE
- ANGLE

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APPENDIX E

CRASH DIAGRAM
SHEET 8 OF 8

MARCH 2014

Drawing File: O:\2013\2013285\traffic\docs\Study\Figures\Crash Diagram 8.dwg Layout: Layout1
Date: Apr 02, 2014 Time: 3:38 pm Twist: -1.5707963333
Technician: bferrell

APPENDIX F
TRAFFIC SIGNAL WARRANT ANALYSIS

GPD Group
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(330)572-2100

Signal Warrants - Summary

Major Street Approaches

Eastbound: **Tallmadge Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **4,483**

Westbound: **Tallmadge Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **4,358**

Minor Street Approaches

Northbound:
Number of Lanes: **1**

Total Approach Volume: **54**

Southbound: **Parliament Drive**
Number of Lanes: **1**

Total Approach Volume: **141**

Warrant Summary **(Urban values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Not Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Not Satisfied**
Number of hours (0) volumes exceed minimum < minimum required (4).

Warrant 3 - Peak Hour ..... **Not Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Approach volumes on minor street don't exceed minimums for any hour. Delay data not evaluated.

Warrant 3B - Peak Hour Volumes ..... **Not Satisfied**
Volumes do not exceed minimums for any hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

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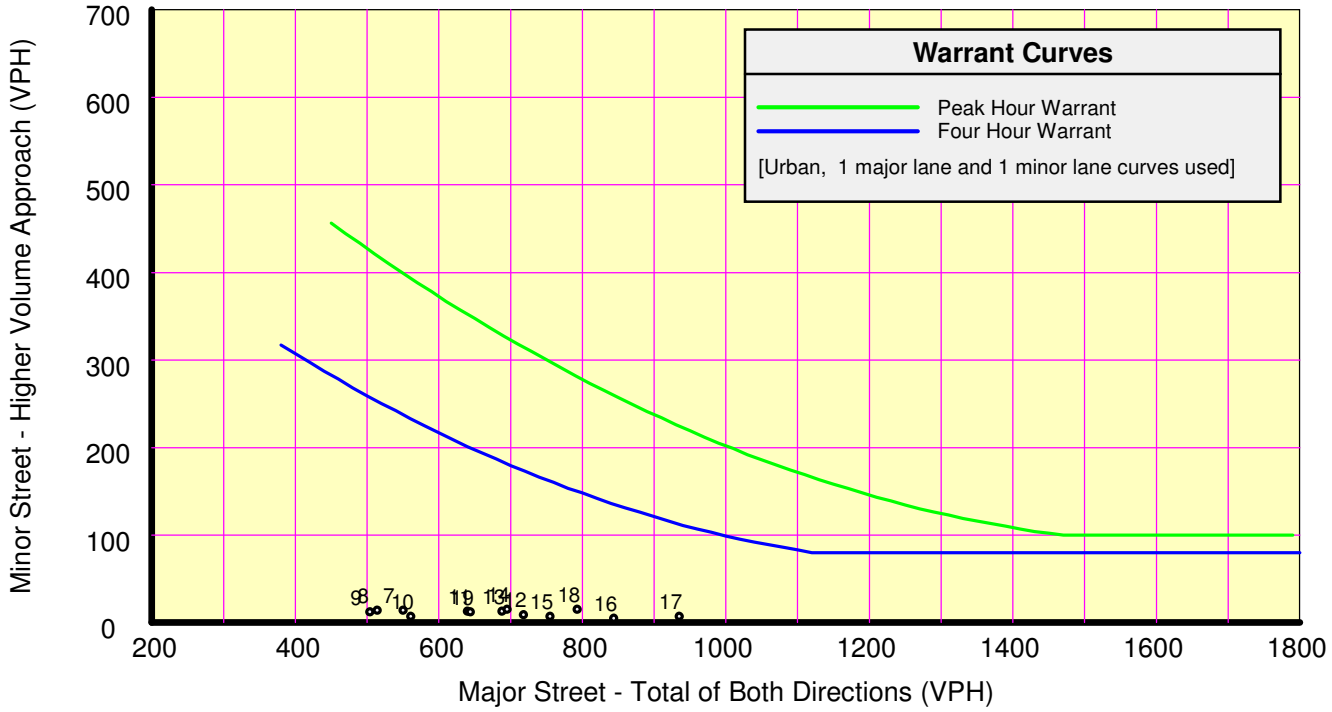
Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
01:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
02:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
03:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
04:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
05:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
06:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
07:00	550	14	SB	500-Yes	150-No	Major	750-No	75-No	---	600-No	120-No	---
08:00	514	14	SB	500-Yes	150-No	Major	750-No	75-No	---	600-No	120-No	---
09:00	504	12	SB	500-Yes	150-No	Major	750-No	75-No	---	600-No	120-No	---
10:00	561	7	SB	500-Yes	150-No	Major	750-No	75-No	---	600-No	120-No	---
11:00	640	13	SB	500-Yes	150-No	Major	750-No	75-No	---	600-Yes	120-No	Major
12:00	718	9	SB	500-Yes	150-No	Major	750-No	75-No	---	600-Yes	120-No	Major
13:00	688	13	SB	500-Yes	150-No	Major	750-No	75-No	---	600-Yes	120-No	Major
14:00	695	15	SB	500-Yes	150-No	Major	750-No	75-No	---	600-Yes	120-No	Major
15:00	755	7	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
16:00	844	5	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
17:00	935	7	SB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
18:00	793	15	SB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
19:00	644	12	SB	500-Yes	150-No	Major	750-No	75-No	---	600-Yes	120-No	Major
20:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
21:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
22:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
23:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---

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Signal Warrants - Summary

Major Street Approaches

Eastbound: **Tallmadge Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **4,605**

Westbound: **Tallmadge Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **4,888**

Minor Street Approaches

Northbound: **Cascades Boulevard**
Number of Lanes: **2**

Total Approach Volume: **4,198**

Southbound:
Number of Lanes: **1**

Total Approach Volume: **3**

Warrant Summary (Urban values apply.)

Warrant 1 - Eight Hour Vehicular Volumes ..... **Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Satisfied**
Required volumes reached for 11 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Not Satisfied**
Required volumes reached for 5 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Satisfied**
Required volumes reached for 11 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Satisfied**
Number of hours (10) volumes exceed minimum >= minimum required (4).

Warrant 3 - Peak Hour ..... **Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Approach volumes on minor street don't exceed minimums for any hour. Delay data not evaluated.

Warrant 3B - Peak Hour Volumes ..... **Satisfied**
Volumes exceed minimums for at least one hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

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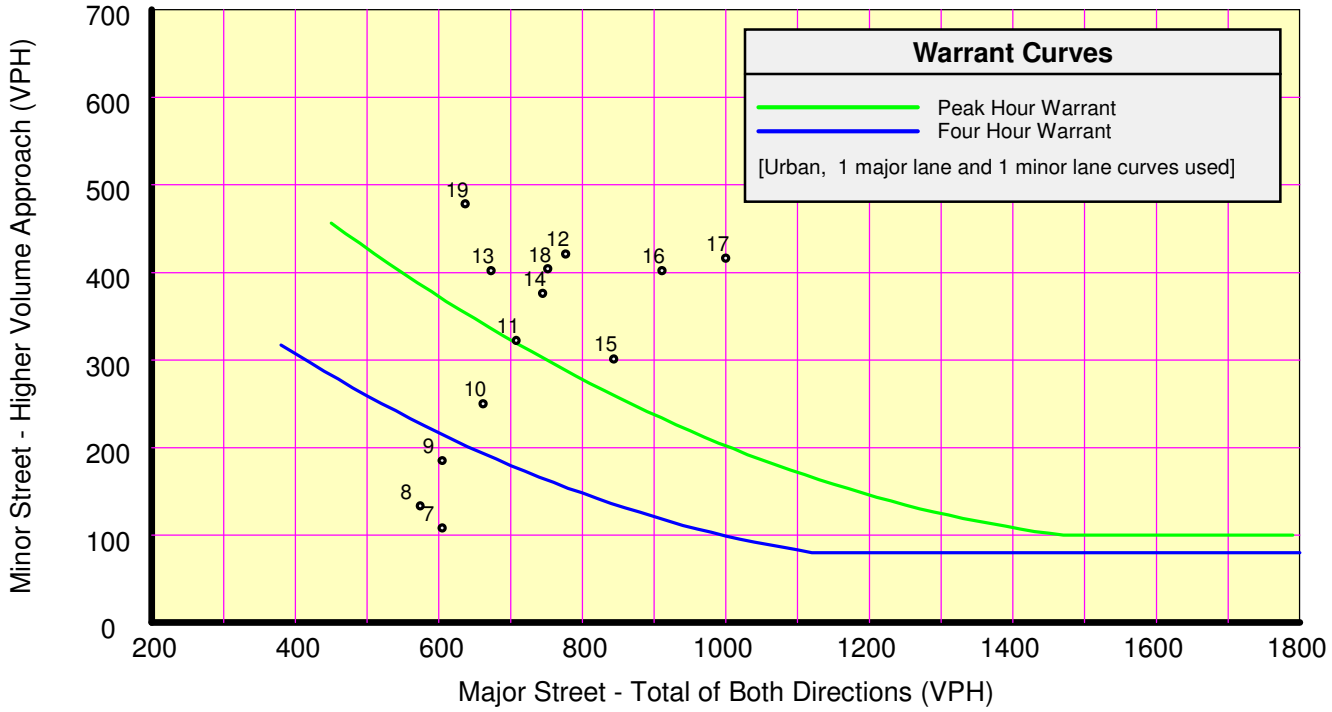
Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	NB	500-No	200-No	---	750-No	100-No	---	600-No	160-No	---
01:00	0	0	NB	500-No	200-No	---	750-No	100-No	---	600-No	160-No	---
02:00	0	0	NB	500-No	200-No	---	750-No	100-No	---	600-No	160-No	---
03:00	0	0	NB	500-No	200-No	---	750-No	100-No	---	600-No	160-No	---
04:00	0	0	NB	500-No	200-No	---	750-No	100-No	---	600-No	160-No	---
05:00	0	0	NB	500-No	200-No	---	750-No	100-No	---	600-No	160-No	---
06:00	0	0	NB	500-No	200-No	---	750-No	100-No	---	600-No	160-No	---
07:00	605	108	NB	500-Yes	150-No	Major	750-No	75-Yes	Minor	600-Yes	120-No	Major
08:00	574	133	NB	500-Yes	150-No	Major	750-No	75-Yes	Minor	600-No	120-Yes	Minor
09:00	605	185	NB	500-Yes	150-Yes	Both	750-No	75-Yes	Minor	600-Yes	120-Yes	Both
10:00	662	250	NB	500-Yes	150-Yes	Both	750-No	75-Yes	Minor	600-Yes	120-Yes	Both
11:00	708	322	NB	500-Yes	150-Yes	Both	750-No	75-Yes	Minor	600-Yes	120-Yes	Both
12:00	777	421	NB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
13:00	673	402	NB	500-Yes	150-Yes	Both	750-No	75-Yes	Minor	600-Yes	120-Yes	Both
14:00	745	376	NB	500-Yes	150-Yes	Both	750-No	75-Yes	Minor	600-Yes	120-Yes	Both
15:00	844	301	NB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
16:00	911	402	NB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
17:00	1,000	416	NB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
18:00	752	404	NB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
19:00	637	478	NB	500-Yes	150-Yes	Both	750-No	75-Yes	Minor	600-Yes	120-Yes	Both
20:00	0	0	NB	500-No	200-No	---	750-No	100-No	---	600-No	160-No	---
21:00	0	0	NB	500-No	200-No	---	750-No	100-No	---	600-No	160-No	---
22:00	0	0	NB	500-No	200-No	---	750-No	100-No	---	600-No	160-No	---
23:00	0	0	NB	500-No	200-No	---	750-No	100-No	---	600-No	160-No	---

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Signal Warrants - Summary

Major Street Approaches

Eastbound: **Tallmadge Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **5,155**

Westbound: **Tallmadge Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **6,969**

Minor Street Approaches

Northbound: **Plaza Drive**
Number of Lanes: **1**

Total Approach Volume: **1,978**

Southbound: **Golf Course Drive**
Number of Lanes: **1**

Total Approach Volume: **110**

Warrant Summary **(Urban values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Satisfied**
Required volumes reached for 8 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Satisfied**
Required volumes reached for 9 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Satisfied**
Required volumes reached for 8 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Satisfied**
Number of hours (8) volumes exceed minimum >= minimum required (4).

Warrant 3 - Peak Hour ..... **Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Approach volumes on minor street don't exceed minimums for any hour. Delay data not evaluated.

Warrant 3B - Peak Hour Volumes ..... **Satisfied**
Volumes exceed minimums for at least one hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

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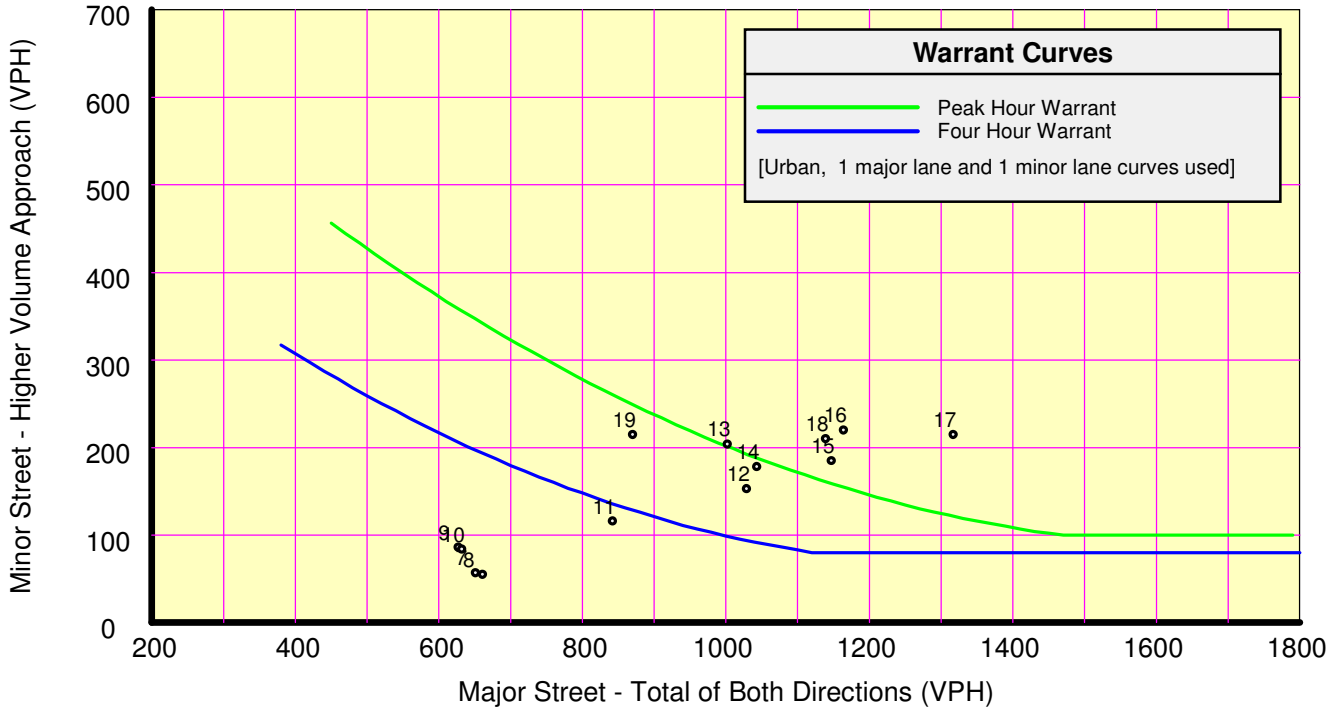
Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
01:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
02:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
03:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
04:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
05:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
06:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
07:00	651	57	NB	500-Yes	150-No	Major	750-No	75-No	---	600-Yes	120-No	Major
08:00	661	55	NB	500-Yes	150-No	Major	750-No	75-No	---	600-Yes	120-No	Major
09:00	627	86	NB	500-Yes	150-No	Major	750-No	75-Yes	Minor	600-Yes	120-No	Major
10:00	632	84	NB	500-Yes	150-No	Major	750-No	75-Yes	Minor	600-Yes	120-No	Major
11:00	842	116	NB	500-Yes	150-No	Major	750-Yes	75-Yes	Both	600-Yes	120-No	Major
12:00	1,029	153	NB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
13:00	1,002	204	NB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
14:00	1,043	178	NB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
15:00	1,147	185	NB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
16:00	1,164	220	NB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
17:00	1,317	215	NB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
18:00	1,139	210	NB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
19:00	870	215	NB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
20:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
21:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
22:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
23:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---

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Signal Warrants - Summary

Major Street Approaches

Eastbound: **Tallmadge Road**
Number of Lanes: **2**
Approach Speed: **35**
Total Approach Volume: **6,939**

Westbound: **Tallmadge Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **7,233**

Minor Street Approaches

Northbound: **Highway View Drive**
Number of Lanes: **1**

Total Approach Volume: **228**

Southbound:
Number of Lanes: **1**

Total Approach Volume: **0**

Warrant Summary **(Urban values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Not Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Not Satisfied**
Number of hours (0) volumes exceed minimum < minimum required (4).

Warrant 3 - Peak Hour ..... **Not Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Approach volumes on minor street don't exceed minimums for any hour. Delay data not evaluated.

Warrant 3B - Peak Hour Volumes ..... **Not Satisfied**
Volumes do not exceed minimums for any hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

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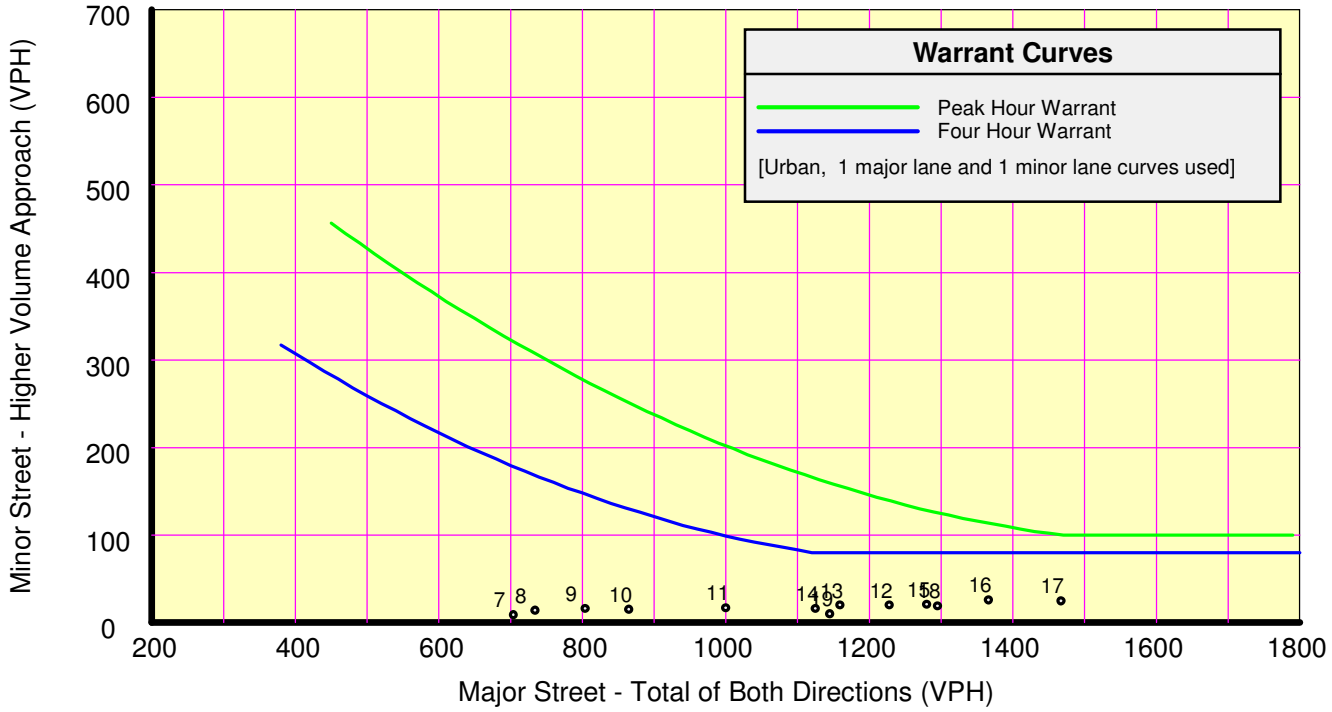
Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
01:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
02:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
03:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
04:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
05:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
06:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
07:00	704	9	NB	500-Yes	150-No	Major	750-No	75-No	---	600-Yes	120-No	Major
08:00	734	14	NB	500-Yes	150-No	Major	750-No	75-No	---	600-Yes	120-No	Major
09:00	804	16	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
10:00	865	15	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
11:00	1,000	17	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
12:00	1,228	20	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
13:00	1,159	20	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
14:00	1,125	16	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
15:00	1,280	21	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
16:00	1,366	26	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
17:00	1,467	25	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
18:00	1,295	19	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
19:00	1,145	10	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
20:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
21:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
22:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
23:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---

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Signal Warrants - Summary

Major Street Approaches

Eastbound: **Tallmadge Road**
Number of Lanes: **2**
Approach Speed: **35**
Total Approach Volume: **6,962**

Westbound: **Tallmadge Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **7,337**

Minor Street Approaches

Northbound:
Number of Lanes: **1**

Total Approach Volume: **0**

Southbound: **East End Welding Drive**
Number of Lanes: **1**

Total Approach Volume: **150**

Warrant Summary **(Urban values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Not Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Not Satisfied**
Number of hours (0) volumes exceed minimum < minimum required (4).

Warrant 3 - Peak Hour ..... **Not Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Approach volumes on minor street don't exceed minimums for any hour. Delay data not evaluated.

Warrant 3B - Peak Hour Volumes ..... **Not Satisfied**
Volumes do not exceed minimums for any hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

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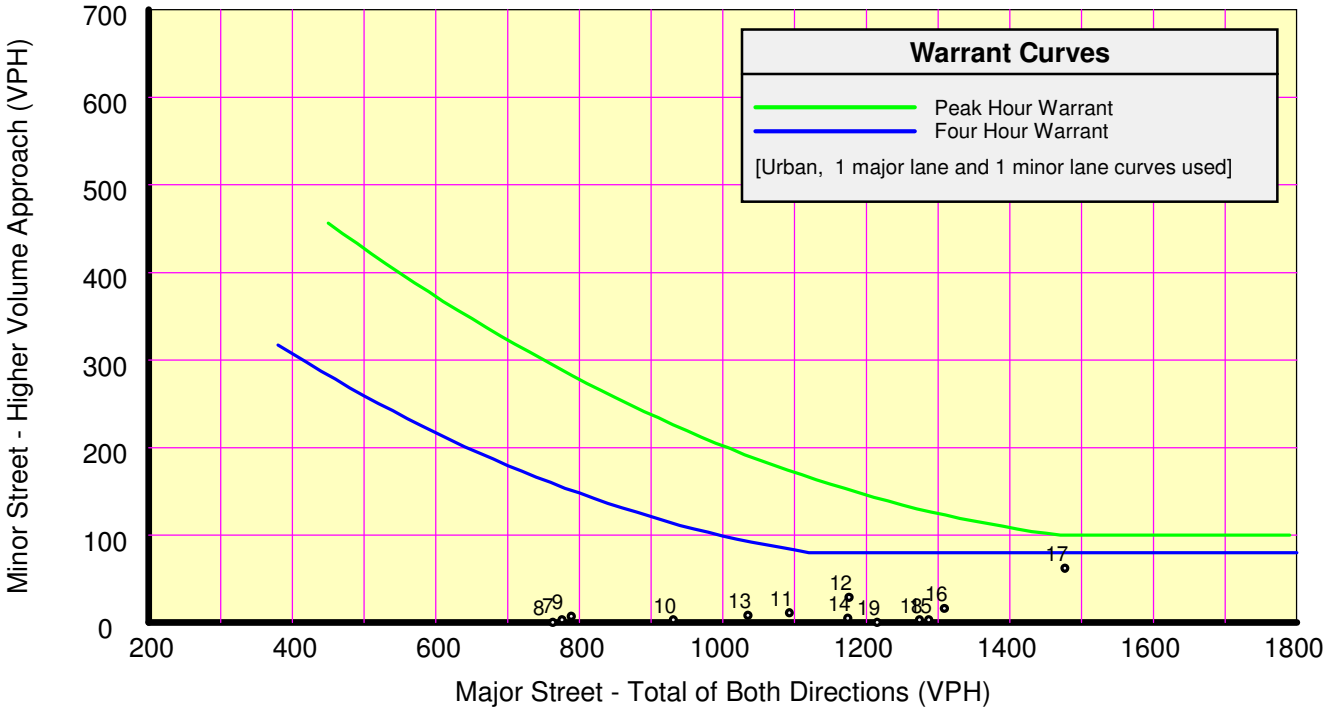
Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
01:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
02:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
03:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
04:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
05:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
06:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
07:00	776	3	SB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
08:00	763	0	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
09:00	789	7	SB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
10:00	931	3	SB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
11:00	1,093	11	SB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
12:00	1,176	29	SB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
13:00	1,035	8	SB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
14:00	1,174	5	SB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
15:00	1,287	3	SB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
16:00	1,309	16	SB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
17:00	1,477	62	SB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
18:00	1,274	3	SB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
19:00	1,215	0	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
20:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
21:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
22:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
23:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---

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Signal Warrants - Summary

Major Street Approaches

Eastbound: **Tallmadge Road**
Number of Lanes: **2**
Approach Speed: **35**
Total Approach Volume: **6,857**

Westbound: **Tallmadge Road**
Number of Lanes: **2**
Approach Speed: **35**
Total Approach Volume: **7,161**

Minor Street Approaches

Northbound:
Number of Lanes: **1**

Total Approach Volume: **0**

Southbound: **Mogadore Road**
Number of Lanes: **1**

Total Approach Volume: **2,995**

Warrant Summary **(Urban values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Satisfied**
Required volumes reached for 11 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Satisfied**
Required volumes reached for 11 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Satisfied**
Required volumes reached for 13 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Satisfied**
Number of hours (9) volumes exceed minimum >= minimum required (4).

Warrant 3 - Peak Hour ..... **Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Approach volumes on minor street don't exceed minimums for any hour. Delay data not evaluated.

Warrant 3B - Peak Hour Volumes ..... **Satisfied**
Volumes exceed minimums for at least one hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

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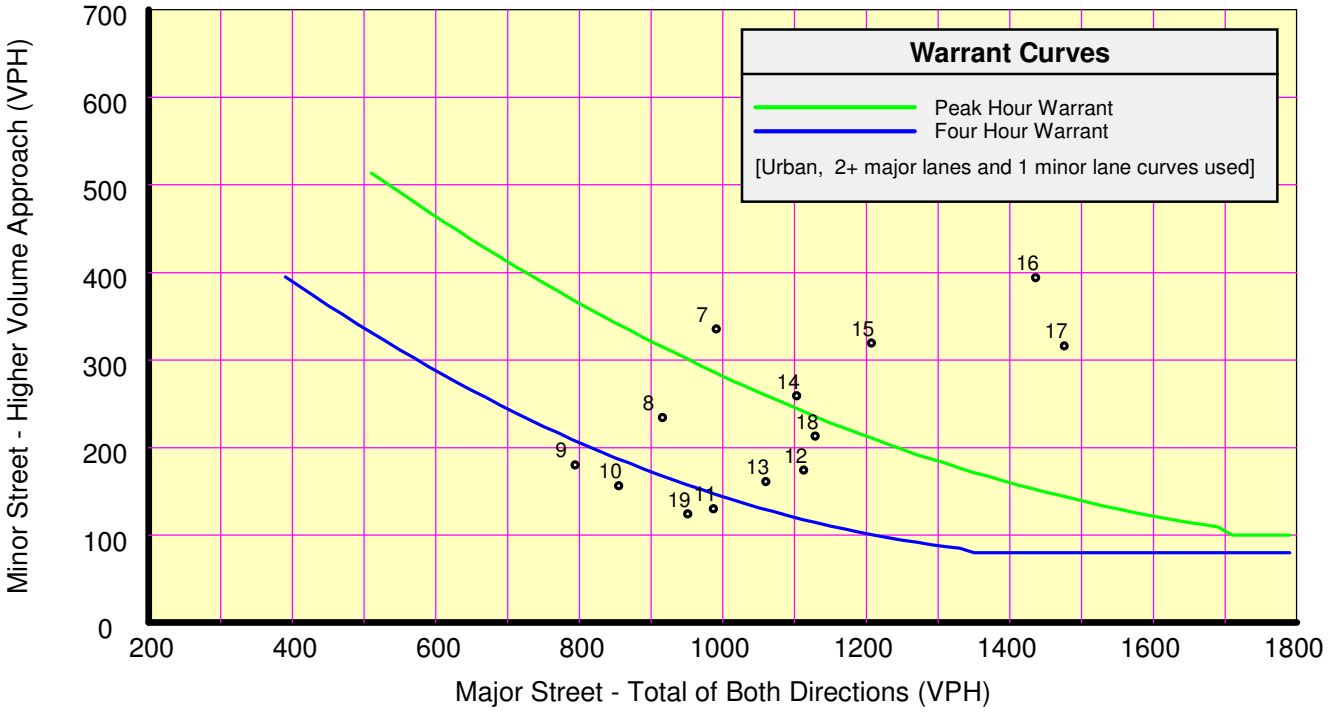
Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
01:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
02:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
03:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
04:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
05:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
06:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
07:00	991	335	SB	600-Yes	150-Yes	Both	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
08:00	916	234	SB	600-Yes	150-Yes	Both	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
09:00	794	180	SB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-Yes	120-Yes	Both
10:00	855	156	SB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-Yes	120-Yes	Both
11:00	987	130	SB	600-Yes	150-No	Major	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
12:00	1,113	174	SB	600-Yes	150-Yes	Both	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
13:00	1,060	161	SB	600-Yes	150-Yes	Both	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
14:00	1,103	259	SB	600-Yes	150-Yes	Both	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
15:00	1,207	319	SB	600-Yes	150-Yes	Both	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
16:00	1,436	394	SB	600-Yes	150-Yes	Both	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
17:00	1,476	316	SB	600-Yes	150-Yes	Both	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
18:00	1,129	213	SB	600-Yes	150-Yes	Both	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
19:00	951	124	SB	600-Yes	150-No	Major	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
20:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
21:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
22:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
23:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---

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Signal Warrants - Summary

Major Street Approaches

Northbound: **Mogadore Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **3,467**

Southbound: **Mogadore Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **3,963**

Minor Street Approaches

Eastbound:
Number of Lanes: **1**

Total Approach Volume: **0**

Westbound: **I-76 Westbound Ramp**
Number of Lanes: **1**

Total Approach Volume: **2,180**

Warrant Summary **(Urban values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Not Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Not Satisfied**
Required volumes reached for 7 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Not Satisfied**
Required volumes reached for 2 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Not Satisfied**
Required volumes reached for 5 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Not Satisfied**
Number of hours (3) volumes exceed minimum < minimum required (4).

Warrant 3 - Peak Hour ..... **Not Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Total approach volumes and delays on minor street do not exceed minimums for any hour.

Warrant 3B - Peak Hour Volumes ..... **Not Satisfied**
Volumes do not exceed minimums for any hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

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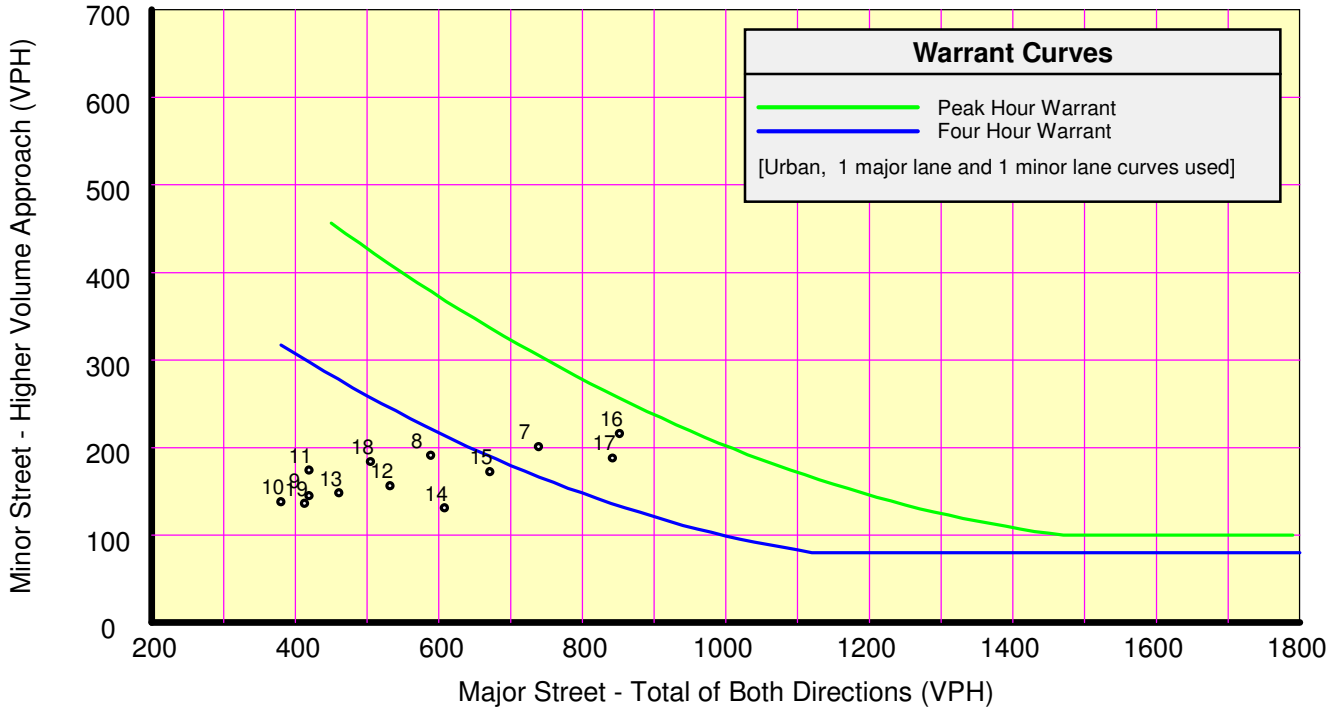
Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
01:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
02:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
03:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
04:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
05:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
06:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
07:00	739	201	WB	500-Yes	150-Yes	Both	750-No	75-Yes	Minor	600-Yes	120-Yes	Both
08:00	589	191	WB	500-Yes	150-Yes	Both	750-No	75-Yes	Minor	600-No	120-Yes	Minor
09:00	419	145	WB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-Yes	Minor
10:00	380	138	WB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-Yes	Minor
11:00	419	174	WB	500-No	150-Yes	Minor	750-No	75-Yes	Minor	600-No	120-Yes	Minor
12:00	532	156	WB	500-Yes	150-Yes	Both	750-No	75-Yes	Minor	600-No	120-Yes	Minor
13:00	461	148	WB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-Yes	Minor
14:00	608	131	WB	500-Yes	150-No	Major	750-No	75-Yes	Minor	600-Yes	120-Yes	Both
15:00	671	172	WB	500-Yes	150-Yes	Both	750-No	75-Yes	Minor	600-Yes	120-Yes	Both
16:00	852	216	WB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
17:00	842	188	WB	500-Yes	150-Yes	Both	750-Yes	75-Yes	Both	600-Yes	120-Yes	Both
18:00	505	184	WB	500-Yes	150-Yes	Both	750-No	75-Yes	Minor	600-No	120-Yes	Minor
19:00	413	136	WB	500-No	150-No	---	750-No	75-Yes	Minor	600-No	120-Yes	Minor
20:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
21:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
22:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
23:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---

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Signal Warrants - Summary

Major Street Approaches

Eastbound: **Tallmadge Road**
Number of Lanes: **2**
Approach Speed: **35**
Total Approach Volume: **5,149**

Westbound: **Tallmadge Road**
Number of Lanes: **2**
Approach Speed: **35**
Total Approach Volume: **3,664**

Minor Street Approaches

Northbound: **I-76 Eastbound Ramp**
Number of Lanes: **1**

Total Approach Volume: **5,006**

Southbound:
Number of Lanes: **1**

Total Approach Volume: **0**

Warrant Summary **(Urban values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Satisfied**
Required volumes reached for 10 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Not Satisfied**
Required volumes reached for 1 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Not Satisfied**
Required volumes reached for 6 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Satisfied**
Number of hours (11) volumes exceed minimum >= minimum required (4).

Warrant 3 - Peak Hour ..... **Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Approach volumes on minor street don't exceed minimums for any hour. Delay data not evaluated.

Warrant 3B - Peak Hour Volumes ..... **Satisfied**
Volumes exceed minimums for at least one hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

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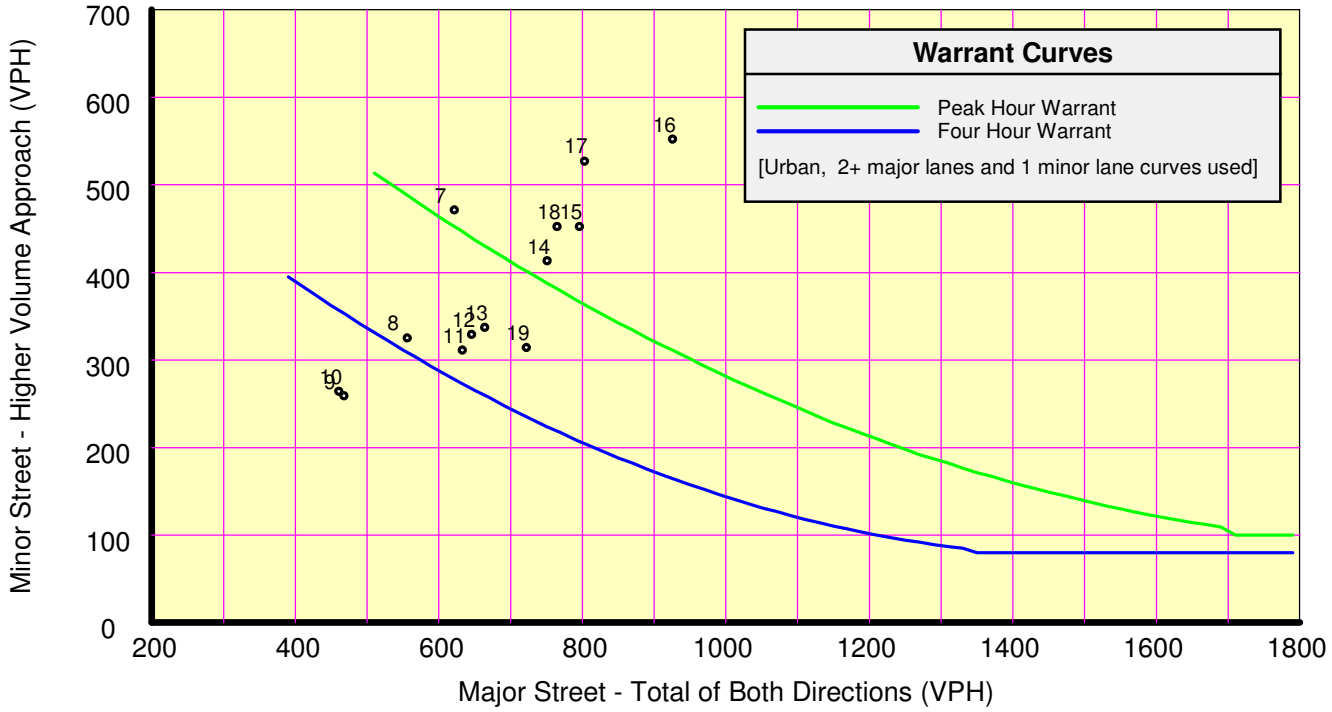
Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
01:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
02:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
03:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
04:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
05:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
06:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
07:00	622	471	NB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-No	120-Yes	Minor
08:00	556	325	NB	600-No	150-Yes	Minor	900-No	75-Yes	Minor	720-No	120-Yes	Minor
09:00	468	259	NB	600-No	150-Yes	Minor	900-No	75-Yes	Minor	720-No	120-Yes	Minor
10:00	461	264	NB	600-No	150-Yes	Minor	900-No	75-Yes	Minor	720-No	120-Yes	Minor
11:00	633	311	NB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-No	120-Yes	Minor
12:00	646	329	NB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-No	120-Yes	Minor
13:00	664	337	NB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-No	120-Yes	Minor
14:00	751	413	NB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-Yes	120-Yes	Both
15:00	796	452	NB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-Yes	120-Yes	Both
16:00	926	552	NB	600-Yes	150-Yes	Both	900-Yes	75-Yes	Both	720-Yes	120-Yes	Both
17:00	803	527	NB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-Yes	120-Yes	Both
18:00	765	452	NB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-Yes	120-Yes	Both
19:00	722	314	NB	600-Yes	150-Yes	Both	900-No	75-Yes	Minor	720-Yes	120-Yes	Both
20:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
21:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
22:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---
23:00	0	0	NB	600-No	150-No	---	900-No	75-No	---	720-No	120-No	---

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Signal Warrants - Summary

Major Street Approaches

Eastbound: **Tallmadge Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **4,285**

Westbound: **Tallmadge Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **3,289**

Minor Street Approaches

Northbound: **Sunnybrook Road**
Number of Lanes: **1**

Total Approach Volume: **792**

Southbound: **Sunnybrook Road**
Number of Lanes: **1**

Total Approach Volume: **303**

Warrant Summary **(Urban values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Not Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Not Satisfied**
Number of hours (0) volumes exceed minimum < minimum required (4).

Warrant 3 - Peak Hour ..... **Not Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Total approach volumes and delays on minor street do not exceed minimums for any hour.

Warrant 3B - Peak Hour Volumes ..... **Not Satisfied**
Volumes do not exceed minimums for any hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

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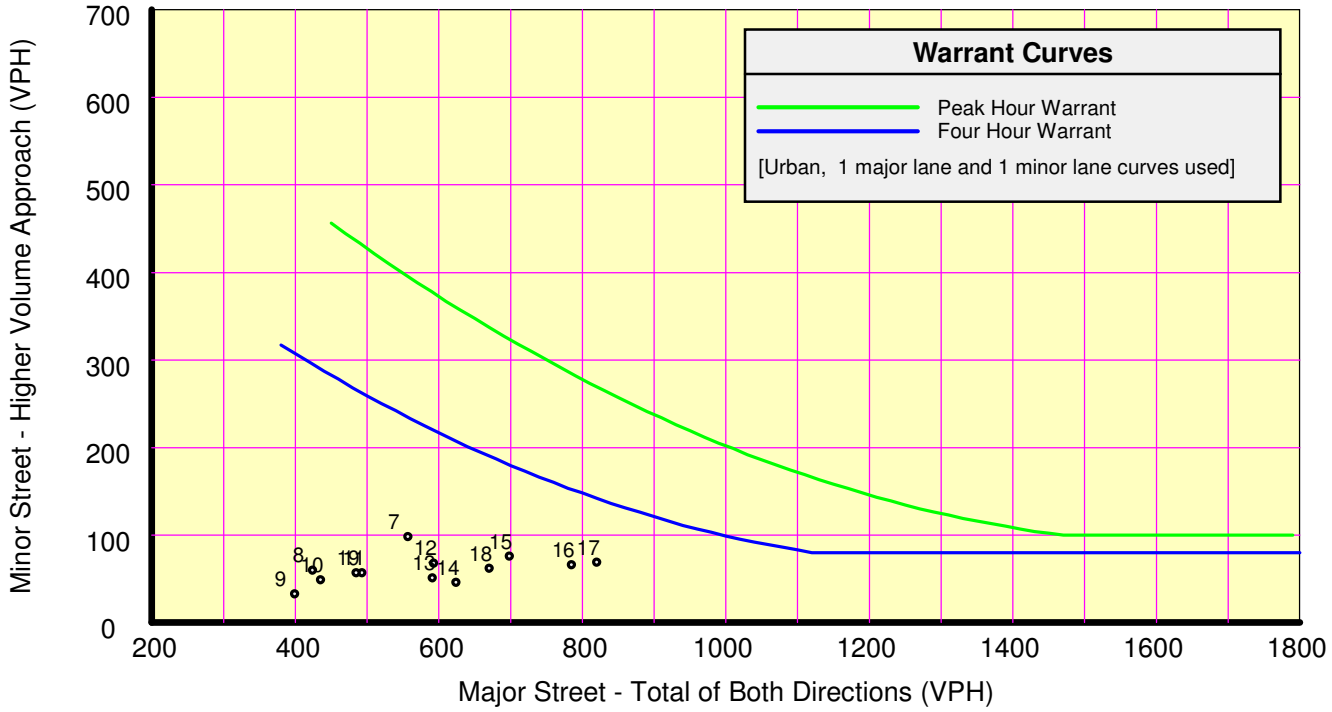
Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
01:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
02:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
03:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
04:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
05:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
06:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
07:00	557	98	NB	500-Yes	150-No	Major	750-No	75-Yes	Minor	600-No	120-No	---
08:00	424	60	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
09:00	399	33	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
10:00	435	49	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
11:00	493	57	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
12:00	593	68	NB	500-Yes	150-No	Major	750-No	75-No	---	600-No	120-No	---
13:00	591	51	NB	500-Yes	150-No	Major	750-No	75-No	---	600-No	120-No	---
14:00	624	46	NB	500-Yes	150-No	Major	750-No	75-No	---	600-Yes	120-No	Major
15:00	698	76	NB	500-Yes	150-No	Major	750-No	75-Yes	Minor	600-Yes	120-No	Major
16:00	785	66	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
17:00	820	69	NB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
18:00	670	62	NB	500-Yes	150-No	Major	750-No	75-No	---	600-Yes	120-No	Major
19:00	485	57	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
20:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
21:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
22:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
23:00	0	0	NB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---

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Signal Warrants - Summary

Major Street Approaches

Eastbound: **I-76 Eastbound Ramp**
Number of Lanes: **1**
Approach Speed: **55**
Total Approach Volume: **4,739**

Westbound:
Number of Lanes: **1**
Approach Speed: **0**
Total Approach Volume: **0**

Minor Street Approaches

Northbound: **Mogadore Road**
Number of Lanes: **1**

Total Approach Volume: **562**

Southbound: **Mogadore Road**
Number of Lanes: **1**

Total Approach Volume: **506**

Warrant Summary **(Rural values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Not Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Not Satisfied**
Required volumes reached for 1 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Not Satisfied**
Number of hours (0) volumes exceed minimum < minimum required (4).

Warrant 3 - Peak Hour ..... **Not Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Total approach volumes and delays on minor street do not exceed minimums for any hour.

Warrant 3B - Peak Hour Volumes ..... **Not Satisfied**
Volumes do not exceed minimums for any hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

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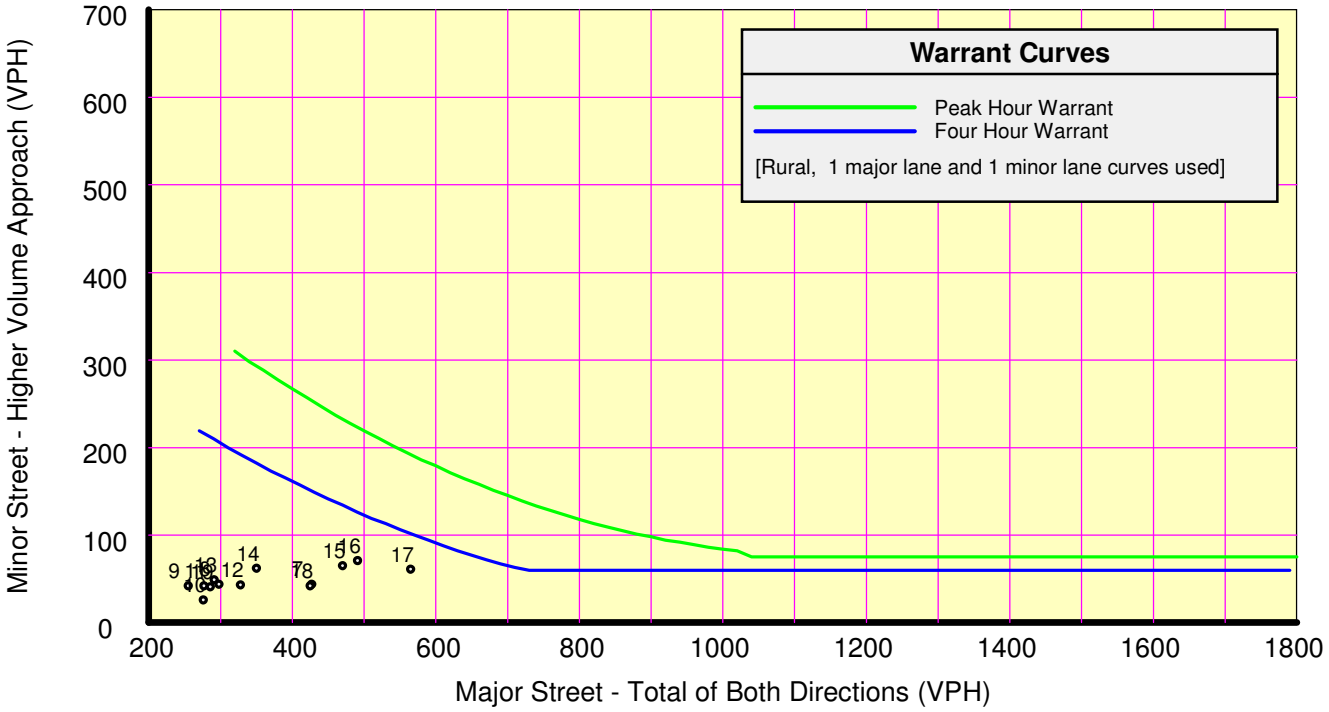
Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
01:00	0	0	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
02:00	0	0	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
03:00	0	0	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
04:00	0	0	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
05:00	0	0	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
06:00	0	0	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
07:00	427	44	NB	350-Yes	105-No	Major	525-No	53-No	---	420-Yes	84-No	Major
08:00	298	44	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
09:00	255	42	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
10:00	276	26	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
11:00	277	42	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
12:00	328	43	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
13:00	291	49	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
14:00	350	62	NB	350-Yes	105-No	Major	525-No	53-Yes	Minor	420-No	84-No	---
15:00	470	65	SB	350-Yes	105-No	Major	525-No	53-Yes	Minor	420-Yes	84-No	Major
16:00	491	71	SB	350-Yes	105-No	Major	525-No	53-Yes	Minor	420-Yes	84-No	Major
17:00	565	61	SB	350-Yes	105-No	Major	525-Yes	53-Yes	Both	420-Yes	84-No	Major
18:00	425	42	SB	350-Yes	105-No	Major	525-No	53-No	---	420-Yes	84-No	Major
19:00	286	41	SB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
20:00	0	0	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
21:00	0	0	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
22:00	0	0	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---
23:00	0	0	NB	350-No	105-No	---	525-No	53-No	---	420-No	84-No	---

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Signal Warrants - Summary

Major Street Approaches

Northbound: **Mogadore Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **3,735**

Southbound: **Mogadore Road**
Number of Lanes: **1**
Approach Speed: **35**
Total Approach Volume: **3,936**

Minor Street Approaches

Eastbound:
Number of Lanes: **1**

Total Approach Volume: **0**

Westbound: **Sunnybrook Road**
Number of Lanes: **1**

Total Approach Volume: **295**

Warrant Summary **(Urban values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Not Satisfied**

Warrant 1A - Minimum Vehicular Volume ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants ..... **Not Satisfied**
Required volumes reached for 0 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Not Satisfied**
Number of hours (0) volumes exceed minimum < minimum required (4).

Warrant 3 - Peak Hour ..... **Not Satisfied**

Warrant 3A - Peak Hour Delay ..... **Not Satisfied**
Total approach volumes and delays on minor street do not exceed minimums for any hour.

Warrant 3B - Peak Hour Volumes ..... **Not Satisfied**
Volumes do not exceed minimums for any hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

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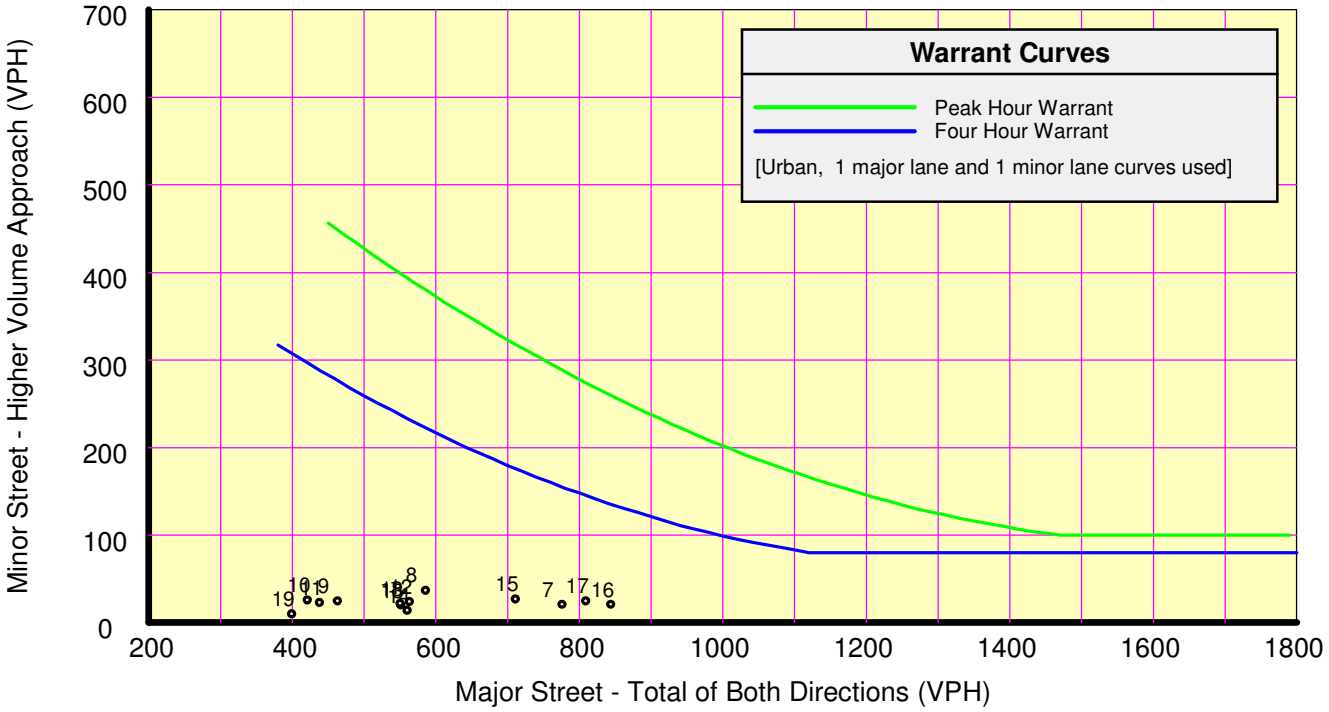
Signal Warrants - Summary

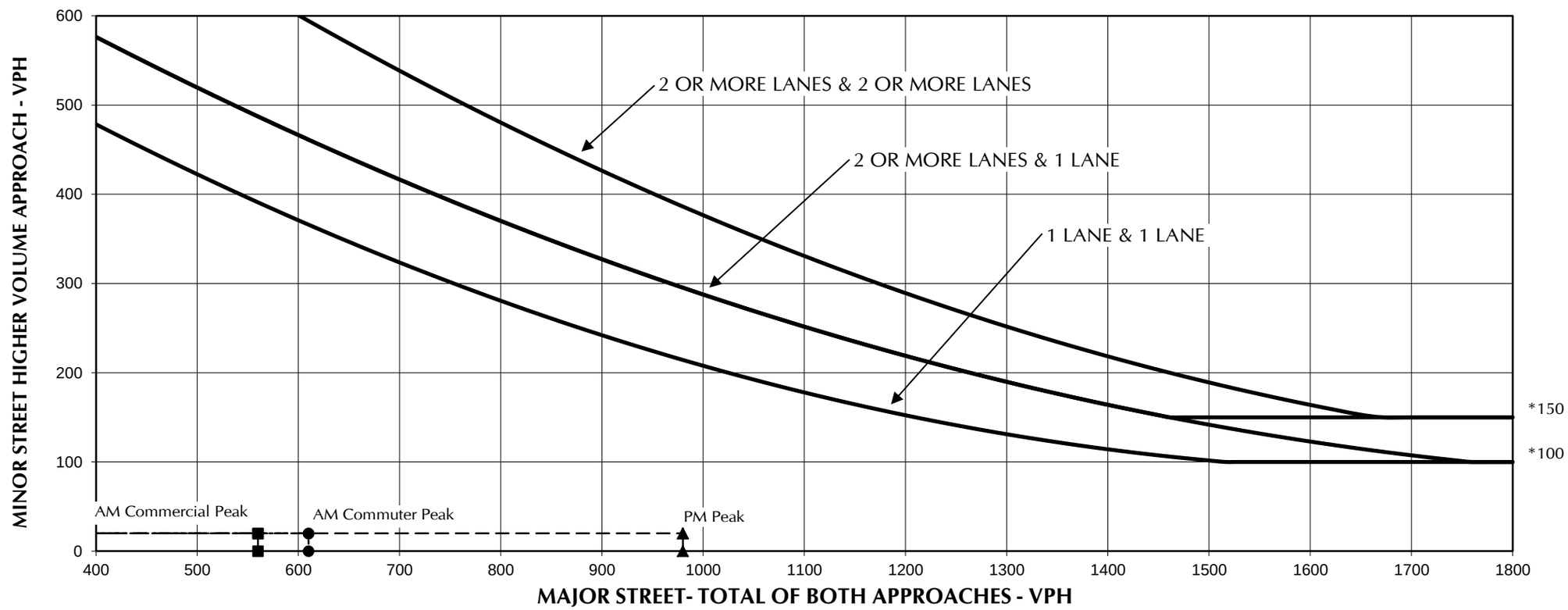


Analysis of 8-Hour Volume Warrants:

Hour	Major	Higher Minor		War-1A			War-1B			War-1A&B		
Begin	Total	Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
01:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
02:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
03:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
04:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
05:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
06:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
07:00	776	21	WB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
08:00	586	37	WB	500-Yes	150-No	Major	750-No	75-No	---	600-No	120-No	---
09:00	463	25	WB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
10:00	421	26	WB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
11:00	438	23	WB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
12:00	563	24	WB	500-Yes	150-No	Major	750-No	75-No	---	600-No	120-No	---
13:00	551	20	WB	500-Yes	150-No	Major	750-No	75-No	---	600-No	120-No	---
14:00	560	14	WB	500-Yes	150-No	Major	750-No	75-No	---	600-No	120-No	---
15:00	711	27	WB	500-Yes	150-No	Major	750-No	75-No	---	600-Yes	120-No	Major
16:00	844	21	WB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
17:00	809	25	WB	500-Yes	150-No	Major	750-Yes	75-No	Major	600-Yes	120-No	Major
18:00	550	22	WB	500-Yes	150-No	Major	750-No	75-No	---	600-No	120-No	---
19:00	399	10	WB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
20:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
21:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
22:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---
23:00	0	0	EB	500-No	150-No	---	750-No	75-No	---	600-No	120-No	---

Tallmadge Road / Parliament Drive Intersection

FIGURE 4C-3. Warrant 3, 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 a the lower threshold volume for a minor-street with one lane.

Roadway		Lanes
Major Road	Tallmadge Road	1
Minor Road	Parliament Drive	1

Traffic Volume Scenario:
Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour Volumes	
Major Street - Total of Both Approaches =	610
Minor Street - Higher Volume Approach =	20
AM Commercial Peak Hour Volumes	
Major Street - Total of Both Approaches =	560
Minor Street - Higher Volume Approach =	20
PM Peak Hour Volumes	
Major Street - Total of Both Approaches =	980
Minor Street - Higher Volume Approach =	20

Warrant #3 Met?	**No**

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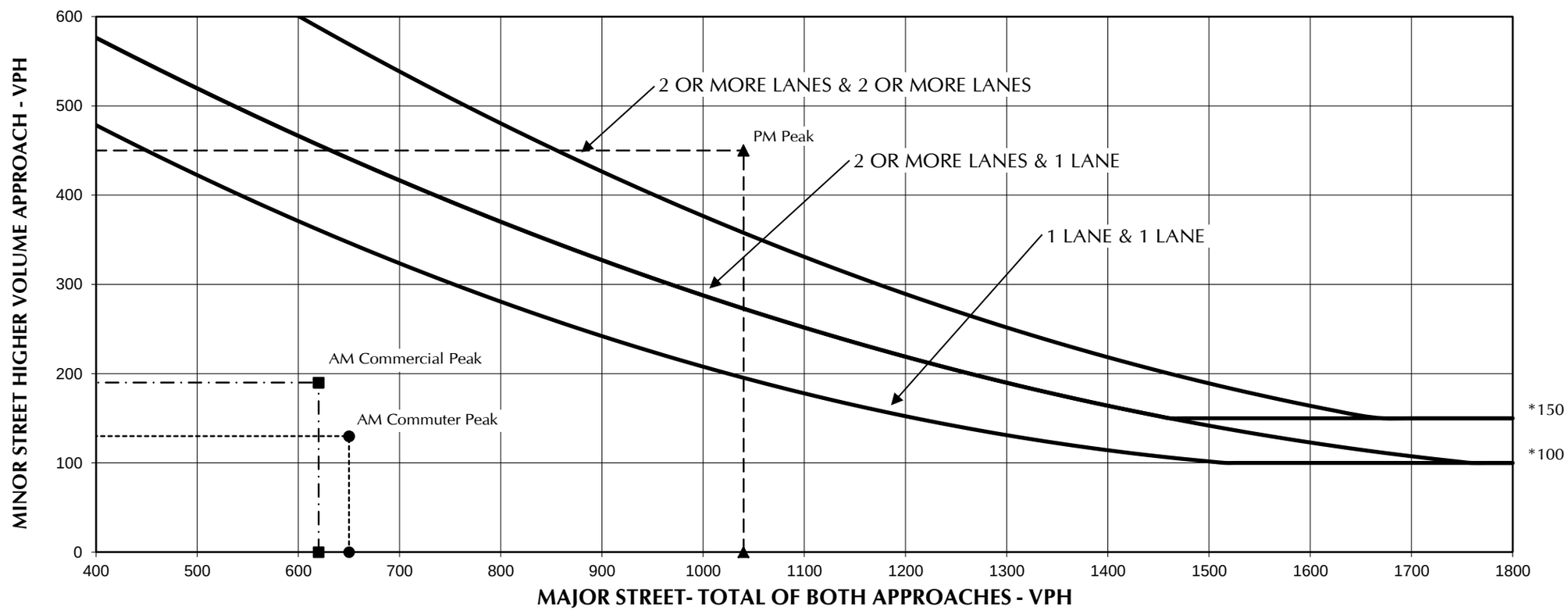
Tallmadge Road / Cascades Boulevard Intersection

FIGURE 4C-3. Warrant 3, 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 a the lower threshold volume for a minor-street with one lane.

Roadway		Lanes
Major Road	Tallmadge Road	1
Minor Road	Cascades Boulevard	2

Traffic Volume Scenario:
Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour Volumes	
Major Street - Total of Both Approaches =	650
Minor Street - Higher Volume Approach =	130
AM Commercial Peak Hour Volumes	
Major Street - Total of Both Approaches =	620
Minor Street - Higher Volume Approach =	190
PM Peak Hour Volumes	
Major Street - Total of Both Approaches =	1040
Minor Street - Higher Volume Approach =	450

Warrant #3 Met?	**Yes**

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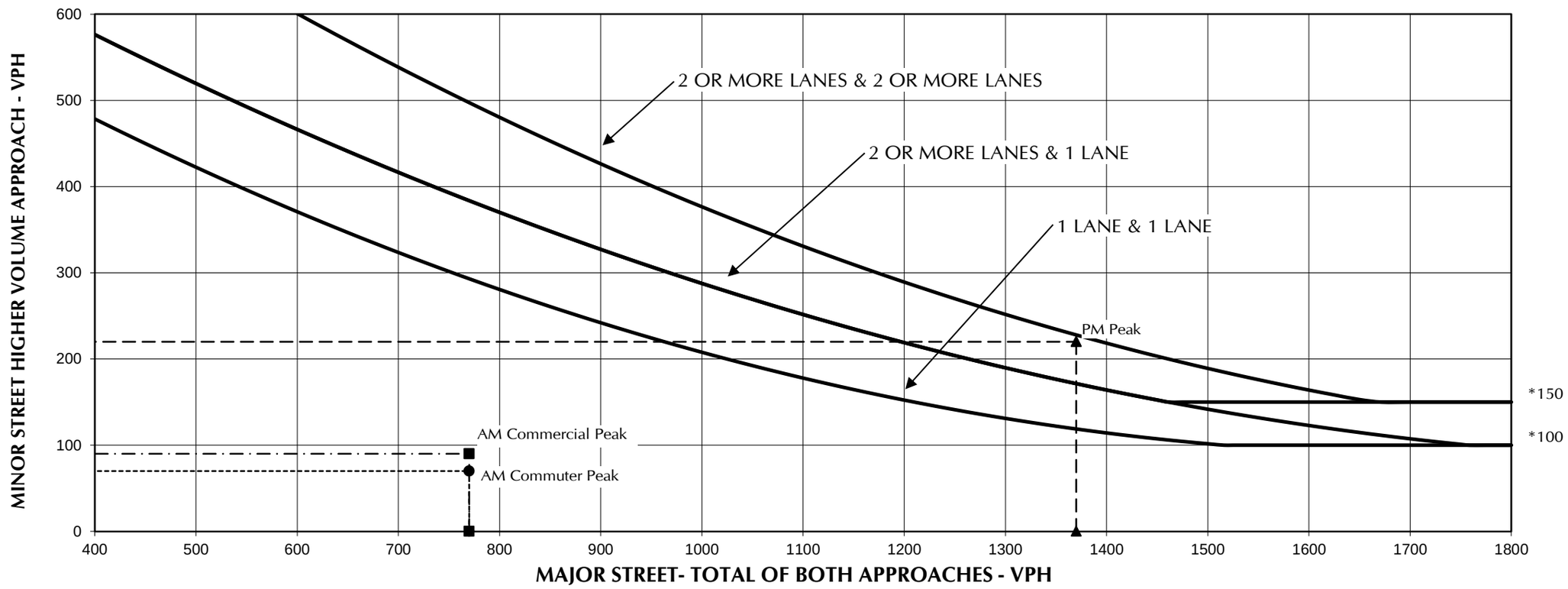
Tallmadge Road / Plaza Drive / Golf Course Drive Intersection

FIGURE 4C-3. Warrant 3, 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 a the lower threshold volume for a minor-street with one lane.

Roadway		Lanes
Major Road	Tallmadge Road	1
Minor Road	Plaza Dr. / Golf Course Dr.	1

Traffic Volume Scenario:
Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour Volumes	
Major Street - Total of Both Approaches =	770
Minor Street - Higher Volume Approach =	70
AM Commercial Peak Hour Volumes	
Major Street - Total of Both Approaches =	770
Minor Street - Higher Volume Approach =	90
PM Peak Hour Volumes	
Major Street - Total of Both Approaches =	1370
Minor Street - Higher Volume Approach =	220

Warrant #3 Met?	**Yes**

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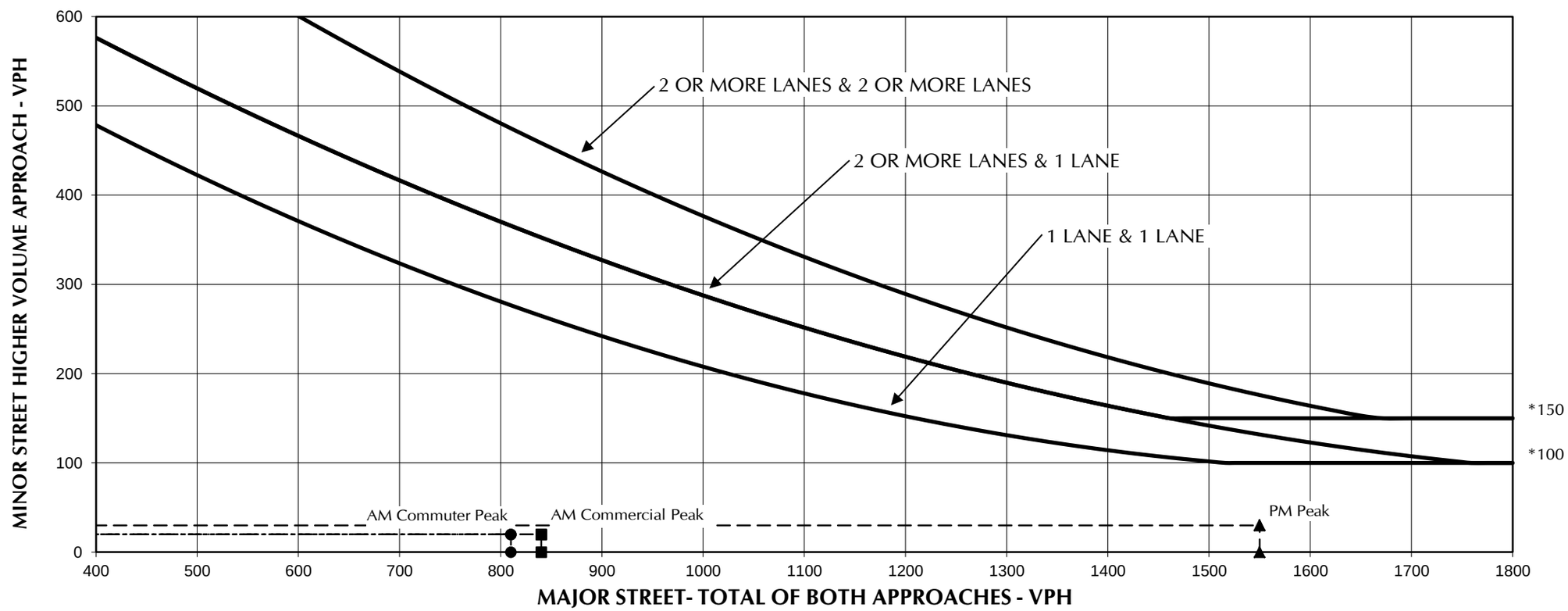
Tallmadge Road / Highway View Drive Intersection

FIGURE 4C-3. Warrant 3, 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 a the lower threshold volume for a minor-street with one lane.

Roadway		Lanes
Major Road	Tallmadge Road	2
Minor Road	Highway View Drive	1

Traffic Volume Scenario:
Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour Volumes	
Major Street - Total of Both Approaches =	810
Minor Street - Higher Volume Approach =	20
AM Commercial Peak Hour Volumes	
Major Street - Total of Both Approaches =	840
Minor Street - Higher Volume Approach =	20
PM Peak Hour Volumes	
Major Street - Total of Both Approaches =	1550
Minor Street - Higher Volume Approach =	30

Warrant #3 Met?	**No**

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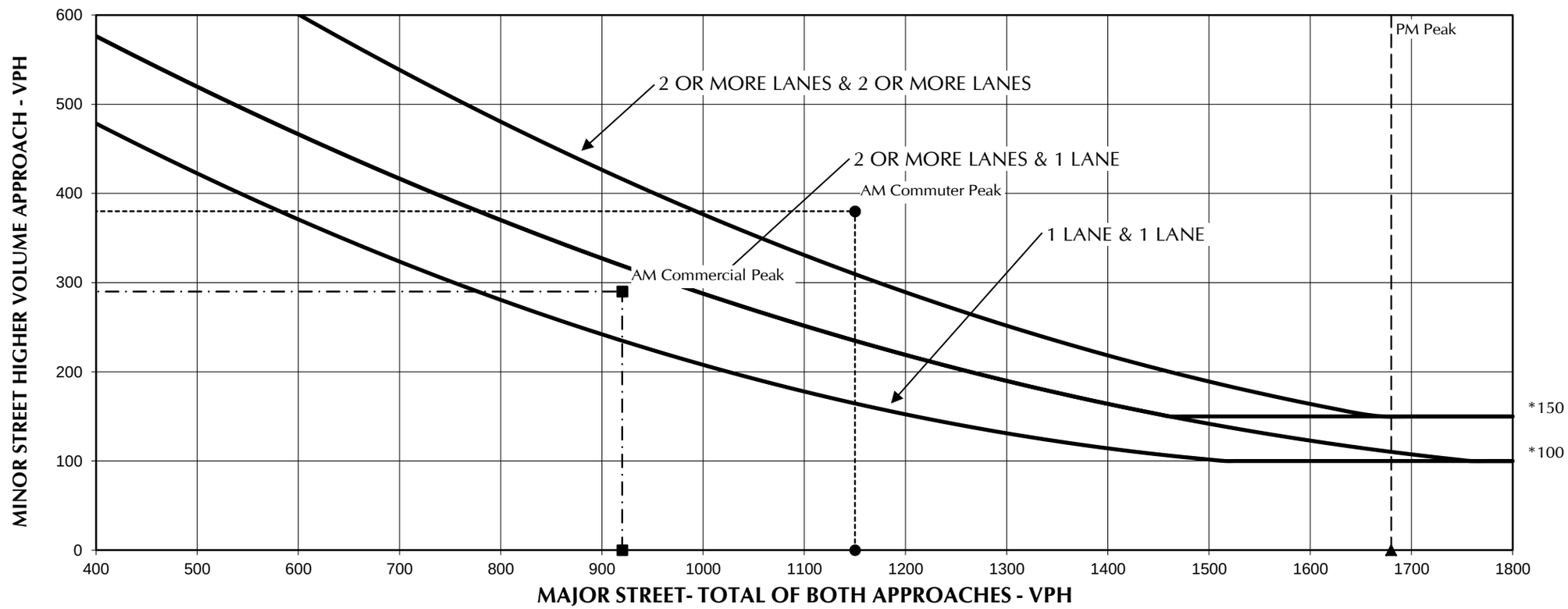
Tallmadge Road / Mogadore Road Intersection

FIGURE 4C-3. Warrant 3, 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 a the lower threshold volume for a minor-street with one lane.

Roadway		Lanes
Major Road	Tallmadge Road	2
Minor Road	Mogadore Road	2

Traffic Volume Scenario:
Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour Volumes	
Major Street - Total of Both Approaches =	1150
Minor Street - Higher Volume Approach =	380
AM Commercial Peak Hour Volumes	
Major Street - Total of Both Approaches =	920
Minor Street - Higher Volume Approach =	290
PM Peak Hour Volumes	
Major Street - Total of Both Approaches =	1680
Minor Street - Higher Volume Approach =	640

Warrant #3 Met?	**Yes**

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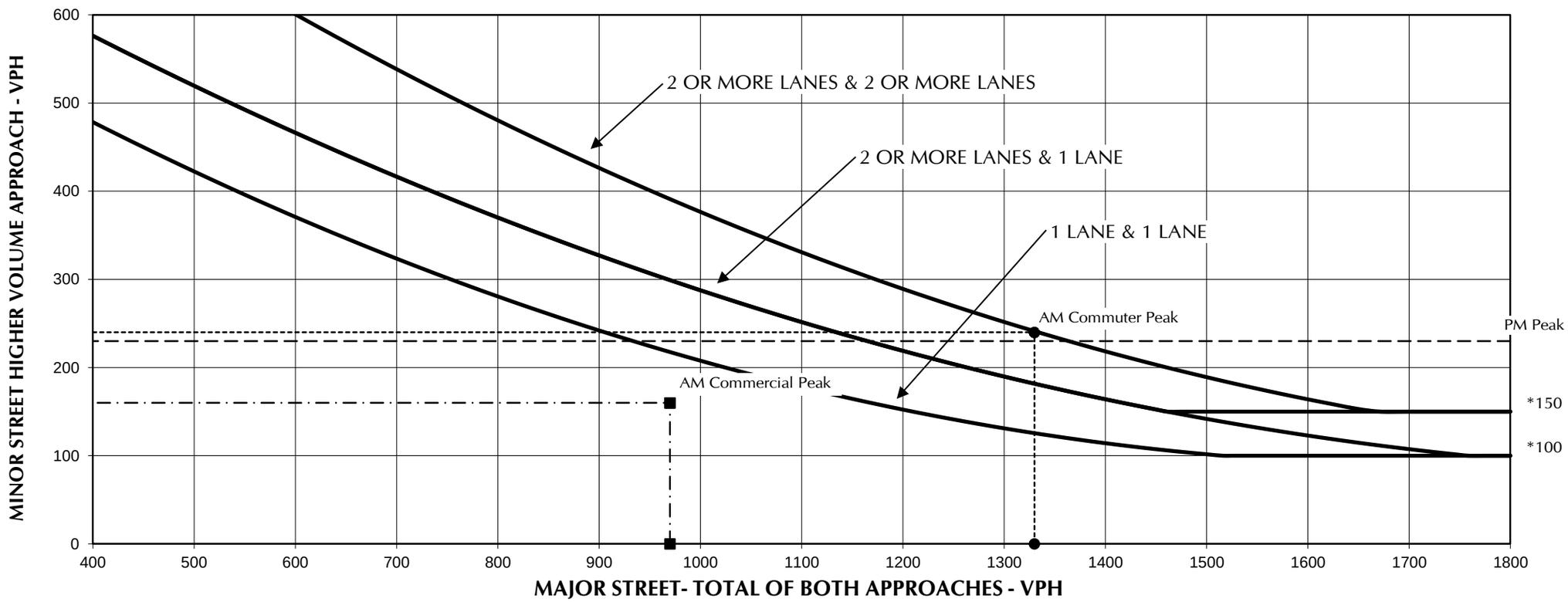
Tallmadge Road / I-76 Westbound Ramps Intersection

FIGURE 4C-3. Warrant 3, 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 a the lower threshold volume for a minor-street with one lane.

Roadway		Lanes
Major Road	Tallmadge Road	2
Minor Road	I-76 WB Ramps	1

Traffic Volume Scenario:
Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour Volumes	
Major Street - Total of Both Approaches =	1330
Minor Street - Higher Volume Approach =	240
AM Commercial Peak Hour Volumes	
Major Street - Total of Both Approaches =	970
Minor Street - Higher Volume Approach =	160
PM Peak Hour Volumes	
Major Street - Total of Both Approaches =	1920
Minor Street - Higher Volume Approach =	230

Warrant #3 Met?	**Yes**

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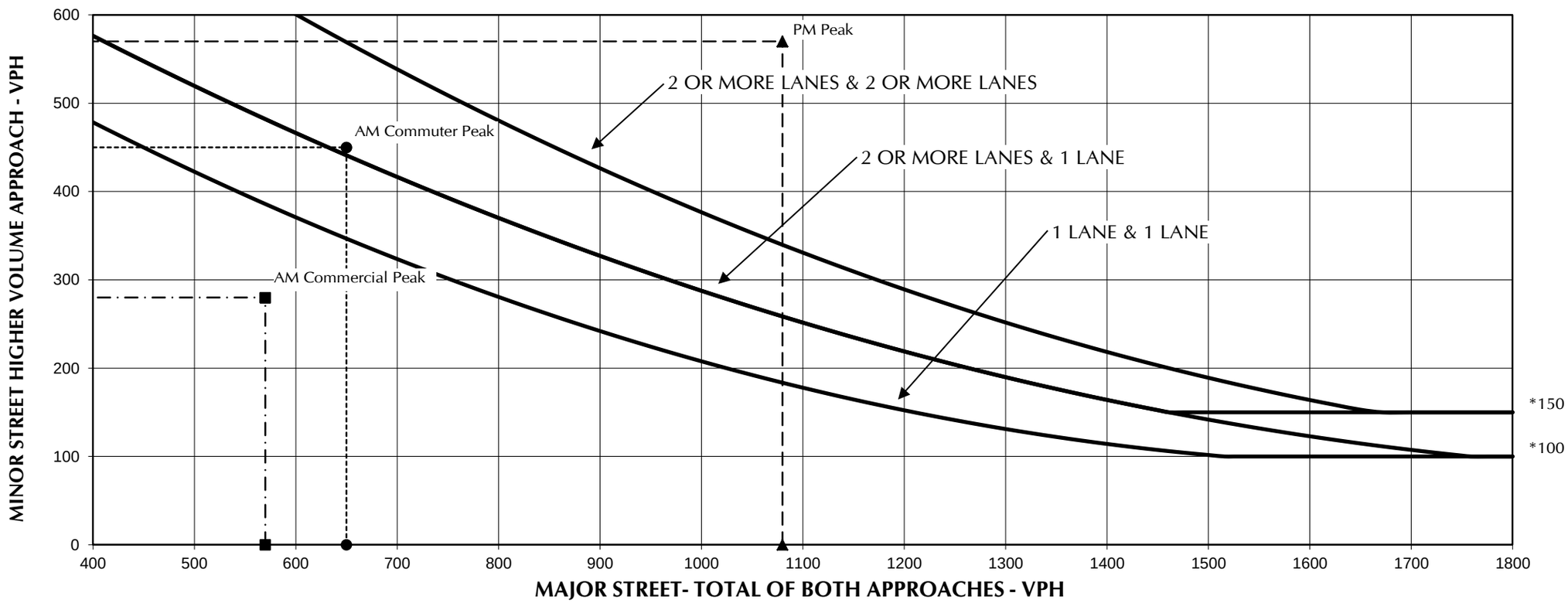
Tallmadge Road / I-76 Eastbound Ramps Intersection

FIGURE 4C-3. Warrant 3, 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 a the lower threshold volume for a minor-street with one lane.

Roadway		Lanes
Major Road	Tallmadge Road	2
Minor Road	I-76 EB Ramps	2

Traffic Volume Scenario:
Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour Volumes	
Major Street - Total of Both Approaches =	650
Minor Street - Higher Volume Approach =	450
AM Commercial Peak Hour Volumes	
Major Street - Total of Both Approaches =	570
Minor Street - Higher Volume Approach =	280
PM Peak Hour Volumes	
Major Street - Total of Both Approaches =	1080
Minor Street - Higher Volume Approach =	570

Warrant #3 Met?	**Yes**

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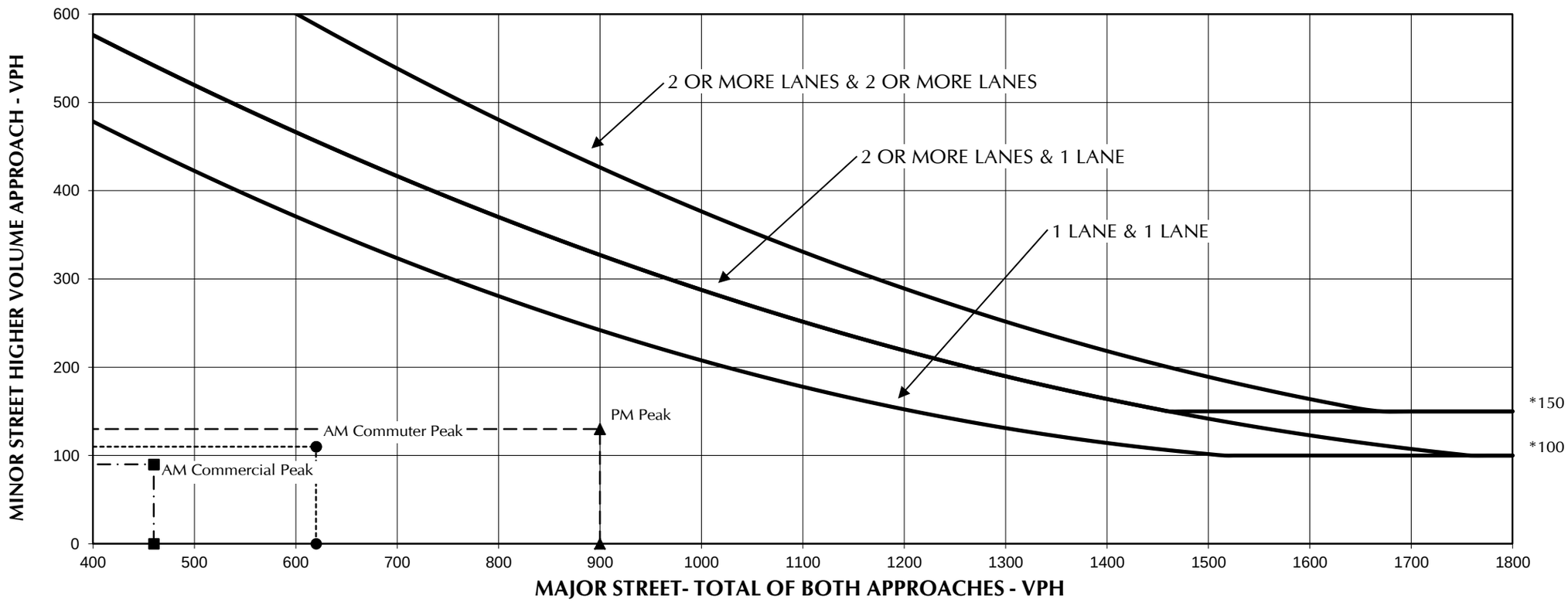
Tallmadge Road / Sunnybrook Road Intersection

FIGURE 4C-3. Warrant 3, 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 a the lower threshold volume for a minor-street with one lane.

Roadway		Lanes
Major Road	Tallmadge Road	1
Minor Road	Sunnybrook Road	1

Traffic Volume Scenario:
Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour Volumes	
Major Street - Total of Both Approaches =	620
Minor Street - Higher Volume Approach =	110
AM Commercial Peak Hour Volumes	
Major Street - Total of Both Approaches =	460
Minor Street - Higher Volume Approach =	90
PM Peak Hour Volumes	
Major Street - Total of Both Approaches =	900
Minor Street - Higher Volume Approach =	130

Warrant #3 Met?	**No**

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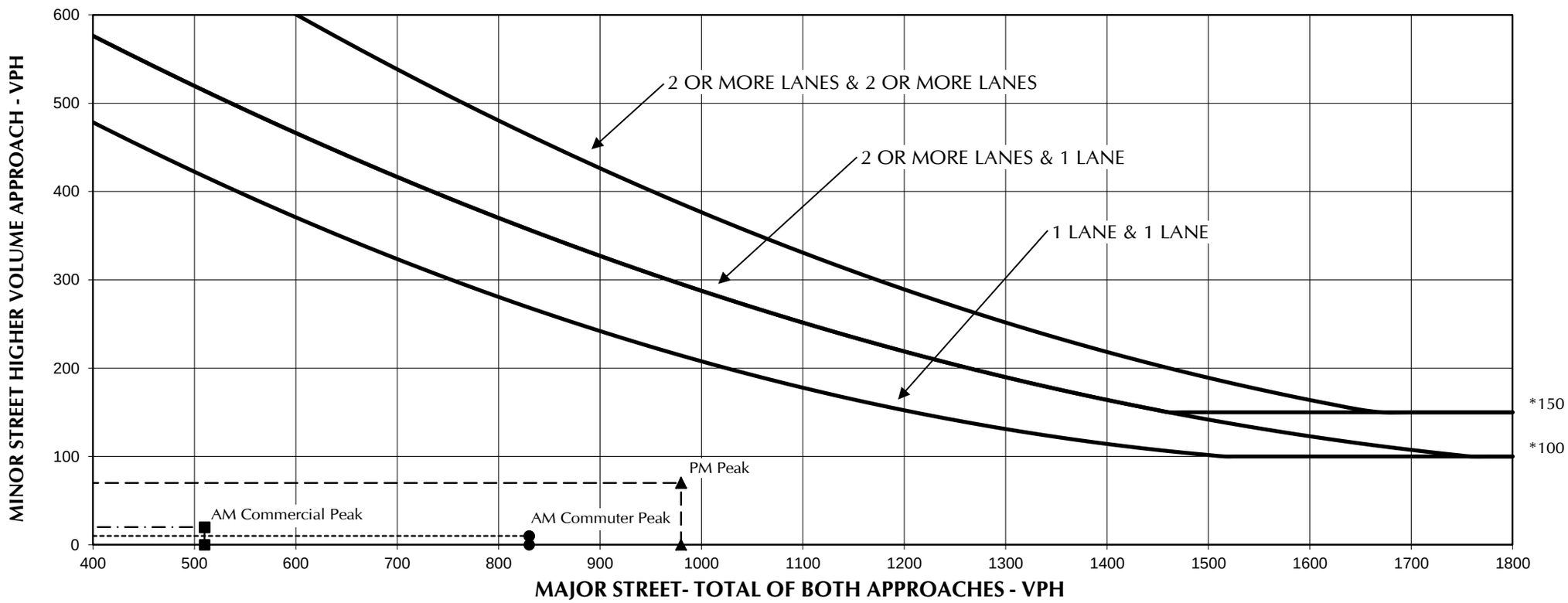
Mogadore Road / East End Welding Drive Intersection

FIGURE 4C-3. Warrant 3, 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 a the lower threshold volume for a minor-street with one lane.

Roadway		Lanes
Major Road	Mogadore Road	1
Minor Road	East End Welding Drive	1

Traffic Volume Scenario:
Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour Volumes	
Major Street - Total of Both Approaches =	830
Minor Street - Higher Volume Approach =	10
AM Commercial Peak Hour Volumes	
Major Street - Total of Both Approaches =	510
Minor Street - Higher Volume Approach =	20
PM Peak Hour Volumes	
Major Street - Total of Both Approaches =	980
Minor Street - Higher Volume Approach =	70

Warrant #3 Met?	**No**

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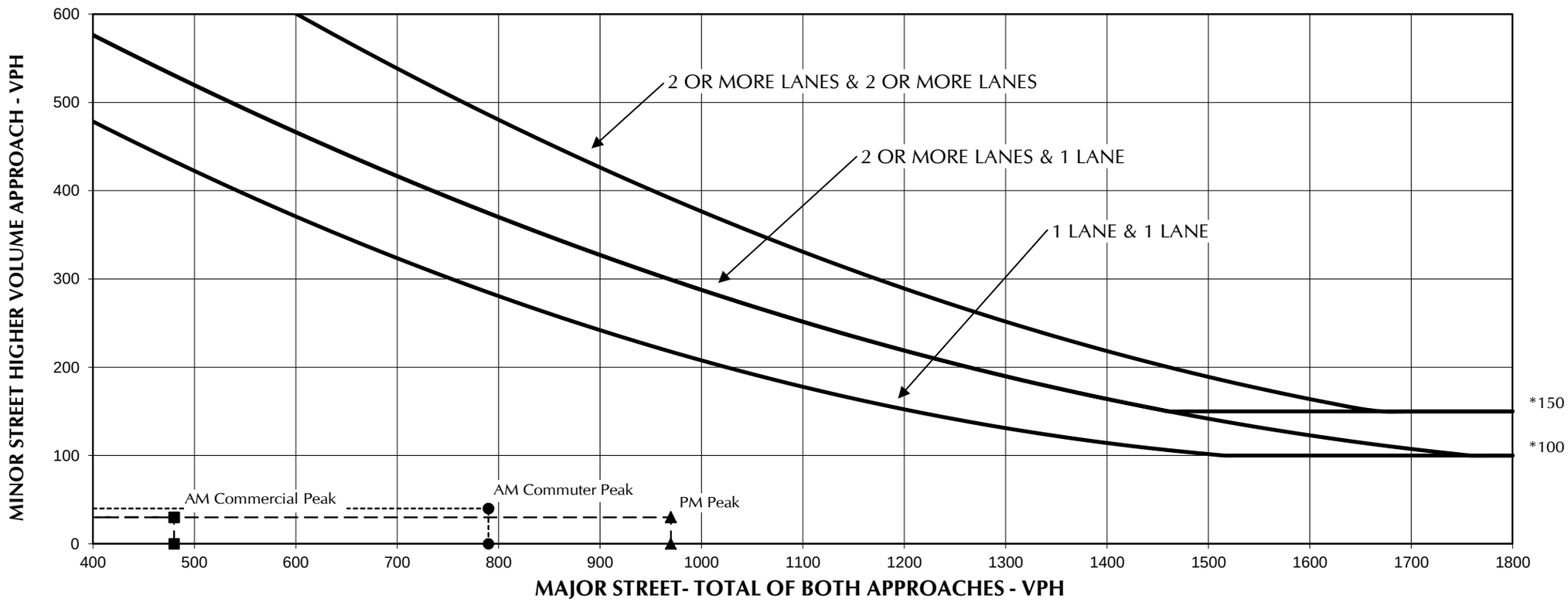
Mogadore Road / Sunnybrook Road Intersection

FIGURE 4C-3. Warrant 3, 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 a the lower threshold volume for a minor-street with one lane.

Roadway		Lanes
Major Road	Mogadore Road	1
Minor Road	Sunnybrook Road	1

Traffic Volume Scenario:
Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour Volumes	
Major Street - Total of Both Approaches =	790
Minor Street - Higher Volume Approach =	40
AM Commercial Peak Hour Volumes	
Major Street - Total of Both Approaches =	480
Minor Street - Higher Volume Approach =	30
PM Peak Hour Volumes	
Major Street - Total of Both Approaches =	970
Minor Street - Higher Volume Approach =	30

Warrant #3 Met?	**No**

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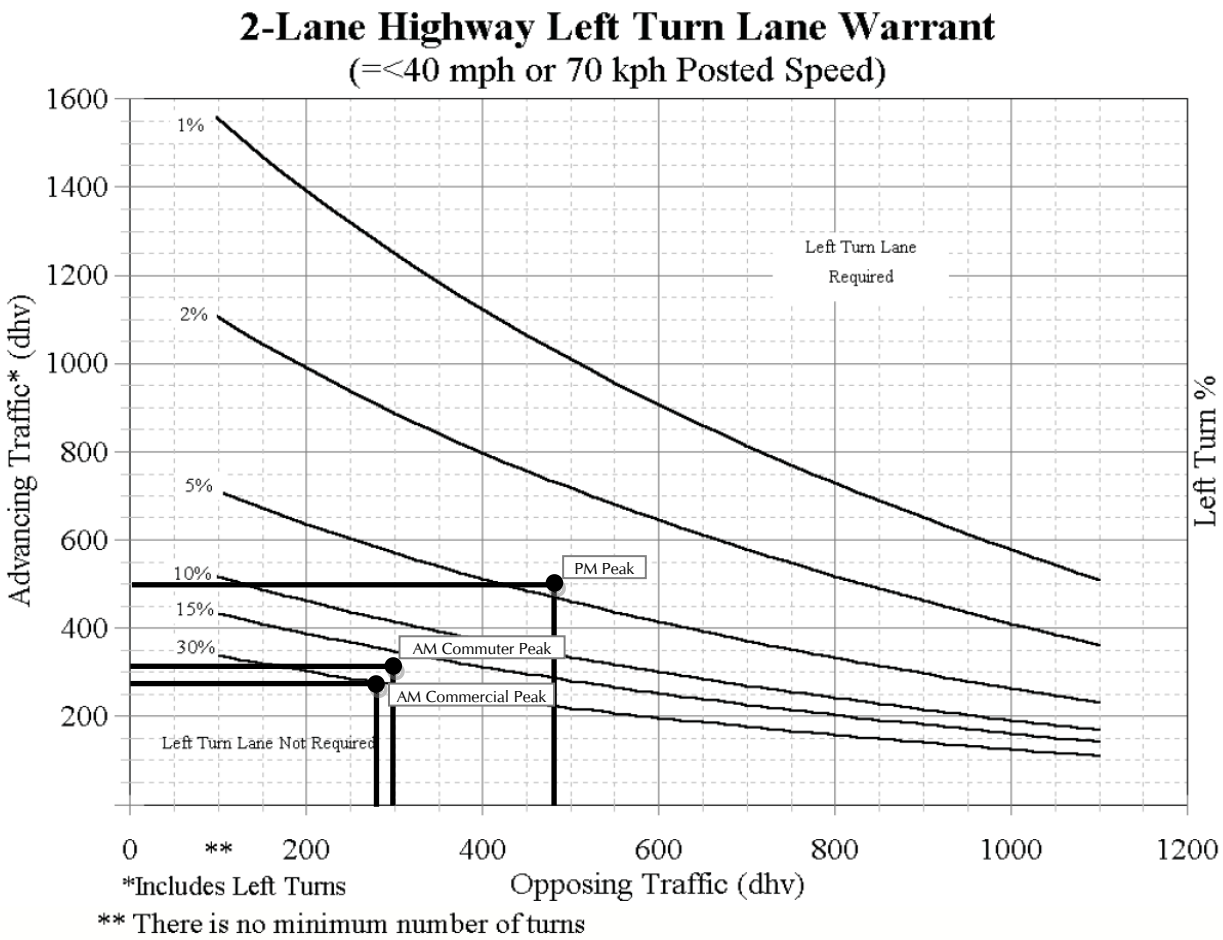
APPENDIX G
AUXILIARY TURN LANE WARRANT ANALYSIS

Tallmadge Road / Parliament Drive Intersection

Eastbound Left Turn



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Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 310 Veh
- Left Turn Traffic = 0 Veh
- Opposing Traffic = 300 Veh
- Left Turn % = 0.0%

AM Commercial Peak Hour:
- Advancing Traffic = 280 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 280 Veh
- Left Turn % = 3.6%

PM Peak Hour:
- Advancing Traffic = 500 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 480 Veh
- Left Turn % = 2.0%

Turn Lane Not Warranted

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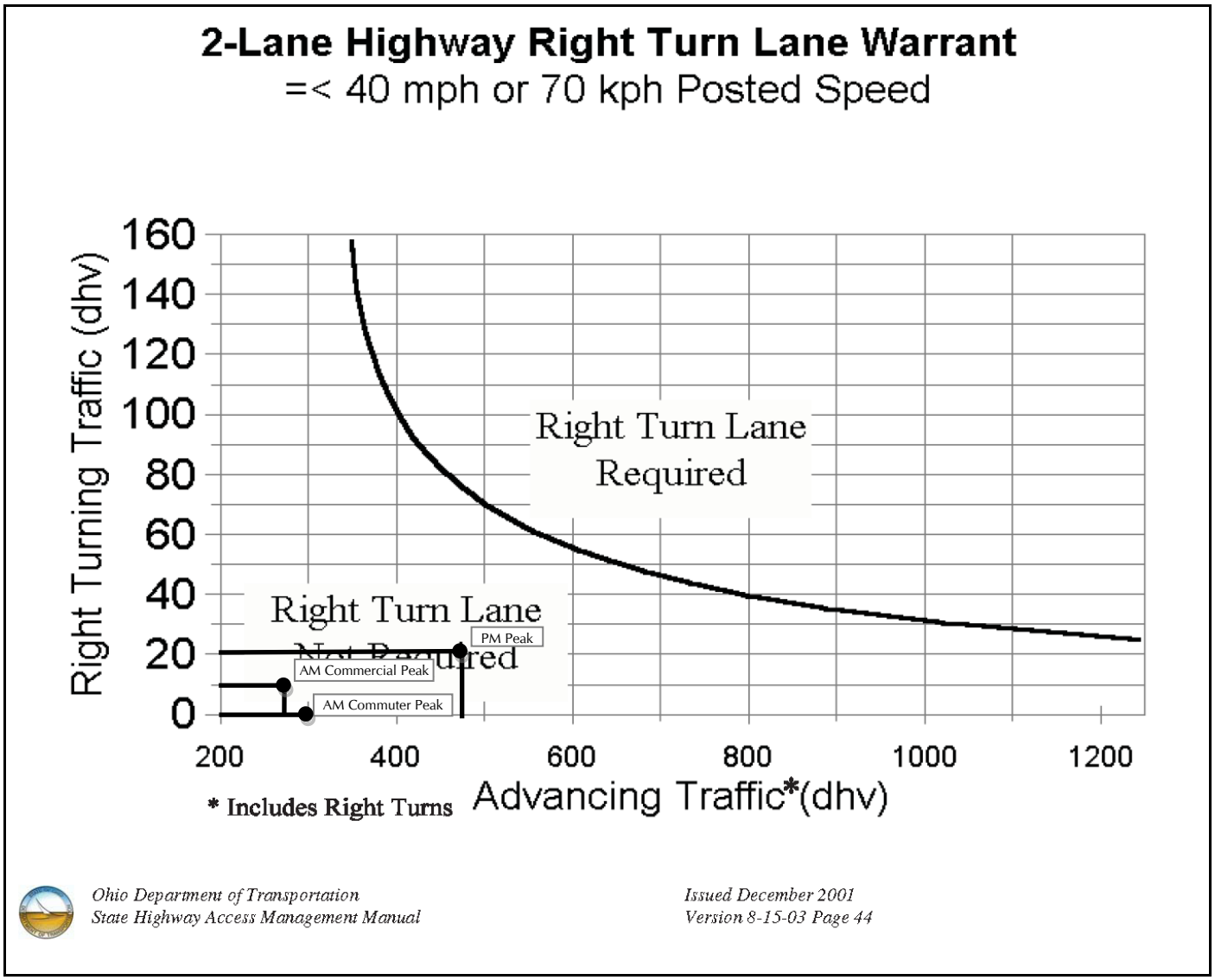
Tallmadge Road / Parliament Drive Intersection

Westbound Right Turn



Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour:
Advancing Traffic = 300 Veh
Right Turn Traffic = 0 Veh

AM Commercial Peak Hour:
Advancing Traffic = 280 Veh
Right Turn Traffic = 10 Veh

PM Peak Hour:
Advancing Traffic = 480 Veh
Right Turn Traffic = 20 Veh

Turn Lane Not Warranted

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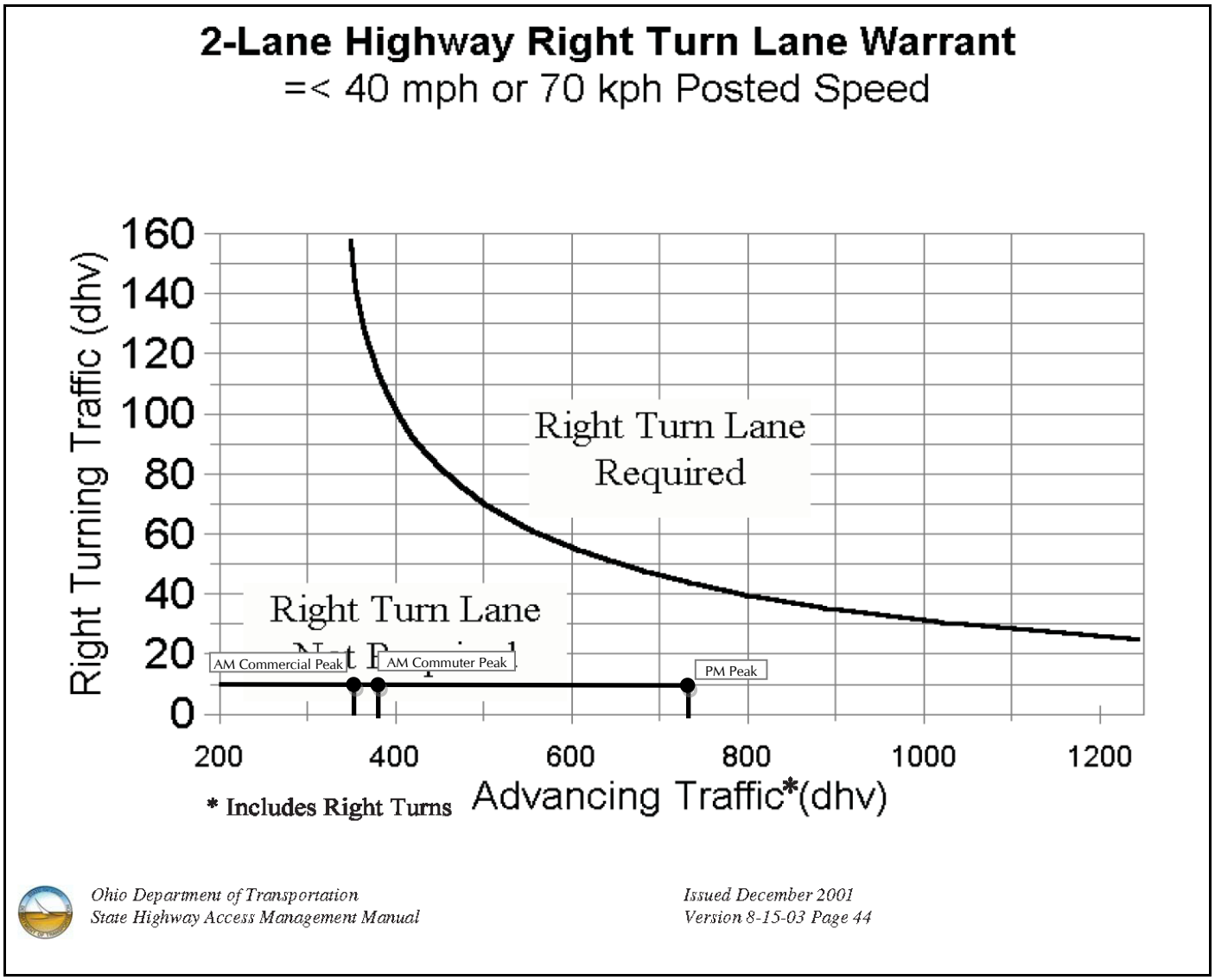
Tallmadge Road / Highway View Drive Intersection

Eastbound Right Turn



Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour:
Advancing Traffic = 380 Veh
Right Turn Traffic = 10 Veh

AM Commercial Peak Hour:
Advancing Traffic = 350 Veh
Right Turn Traffic = 10 Veh

PM Peak Hour:
Advancing Traffic = 730 Veh
Right Turn Traffic = 10 Veh

Turn Lane Not Warranted

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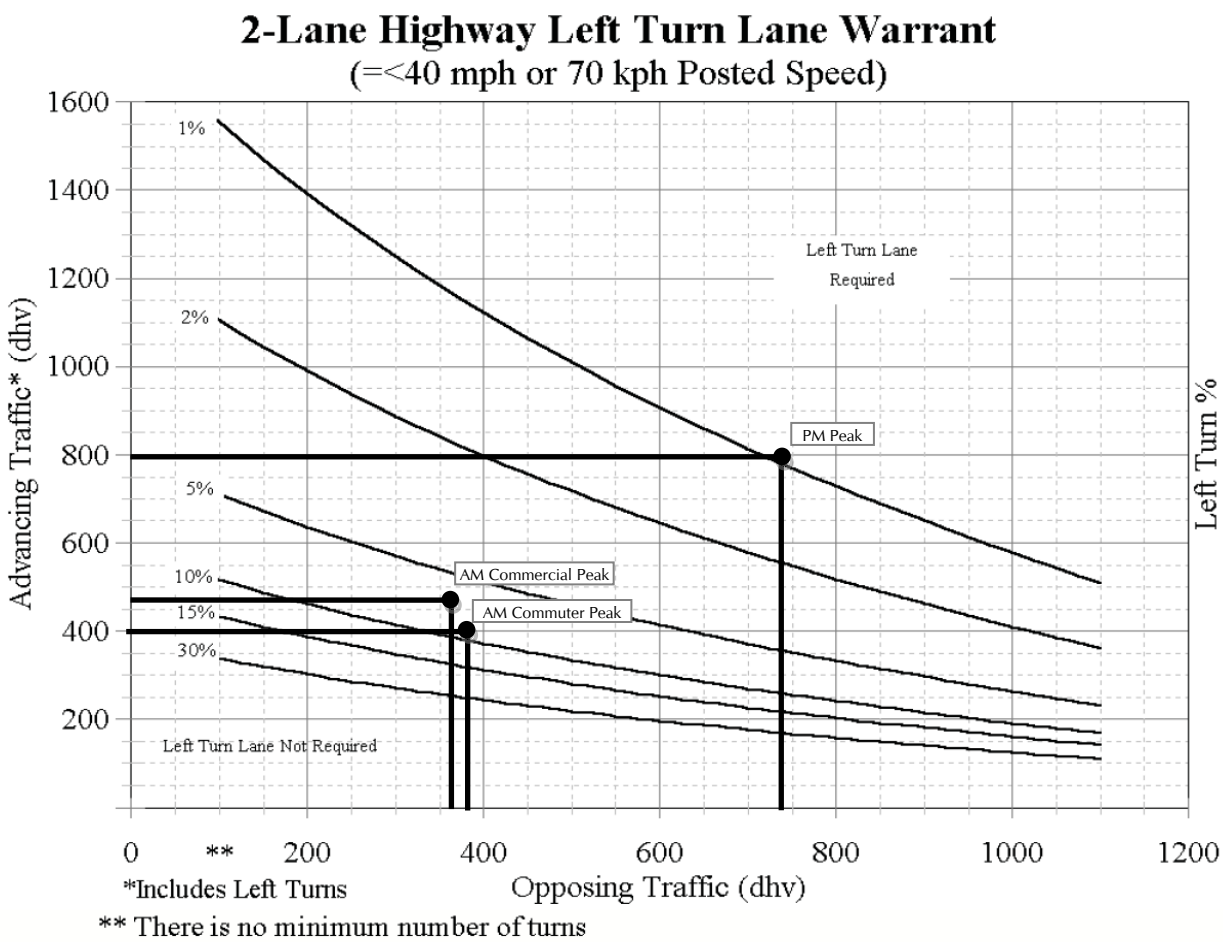
Tallmadge Road / Highway View Drive Intersection

Westbound Left Turn



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Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 420 Veh
- Left Turn Traffic = 20 Veh
- Opposing Traffic = 390 Veh
- Left Turn % = 4.8%

AM Commercial Peak Hour:
- Advancing Traffic = 480 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 360 Veh
- Left Turn % = 2.1%

PM Peak Hour:
- Advancing Traffic = 810 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 740 Veh
- Left Turn % = 1.2%

Turn Lane Warranted

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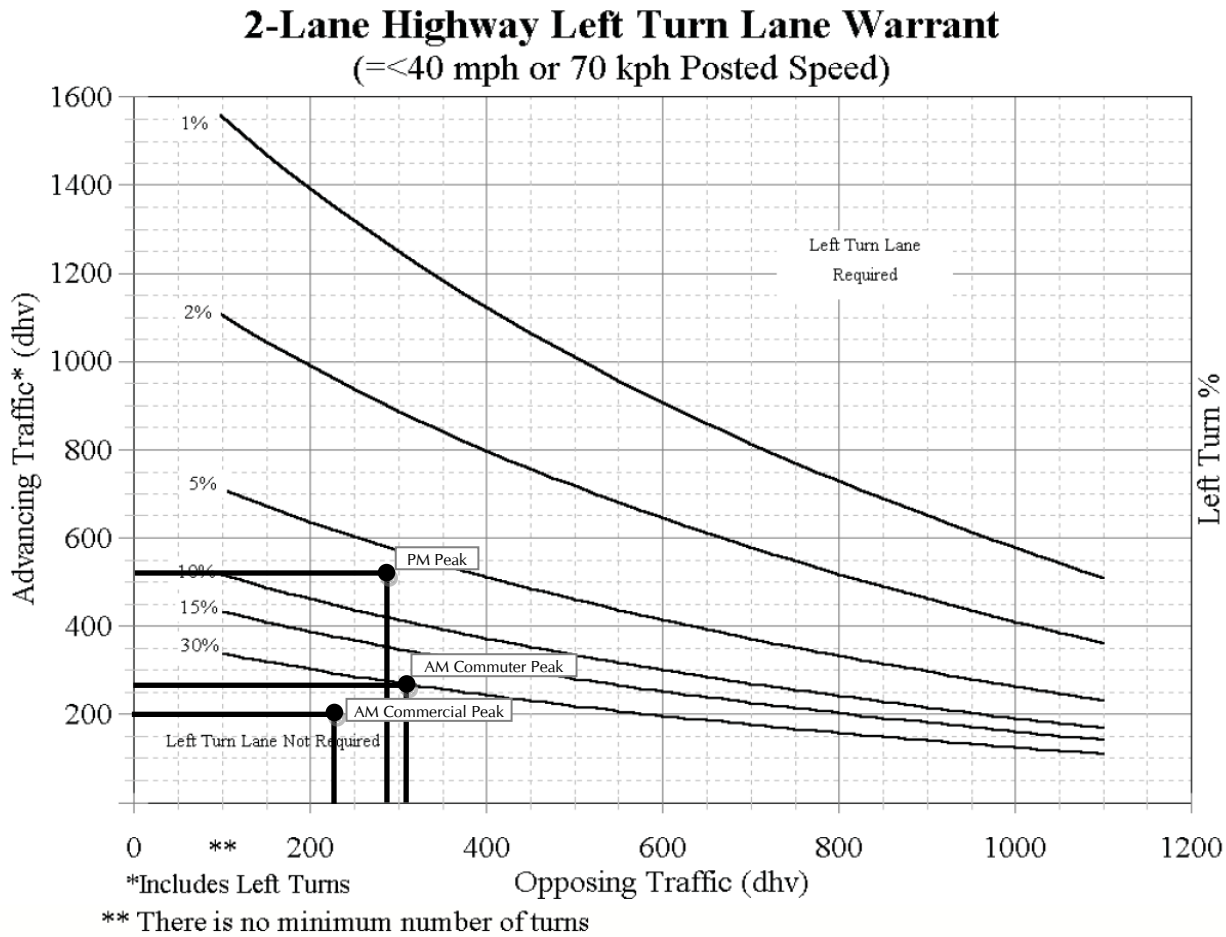
Tallmadge Road / Sunnybrook Road Intersection

Eastbound Left Turn



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Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 260 Veh
- Left Turn Traffic = 60 Veh
- Opposing Traffic = 310 Veh
- Left Turn % = 23.1%

AM Commercial Peak Hour:
- Advancing Traffic = 200 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 230 Veh
- Left Turn % = 5.0%

PM Peak Hour:
- Advancing Traffic = 520 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 290 Veh
- Left Turn % = 1.9%

Turn Lane Not Warranted

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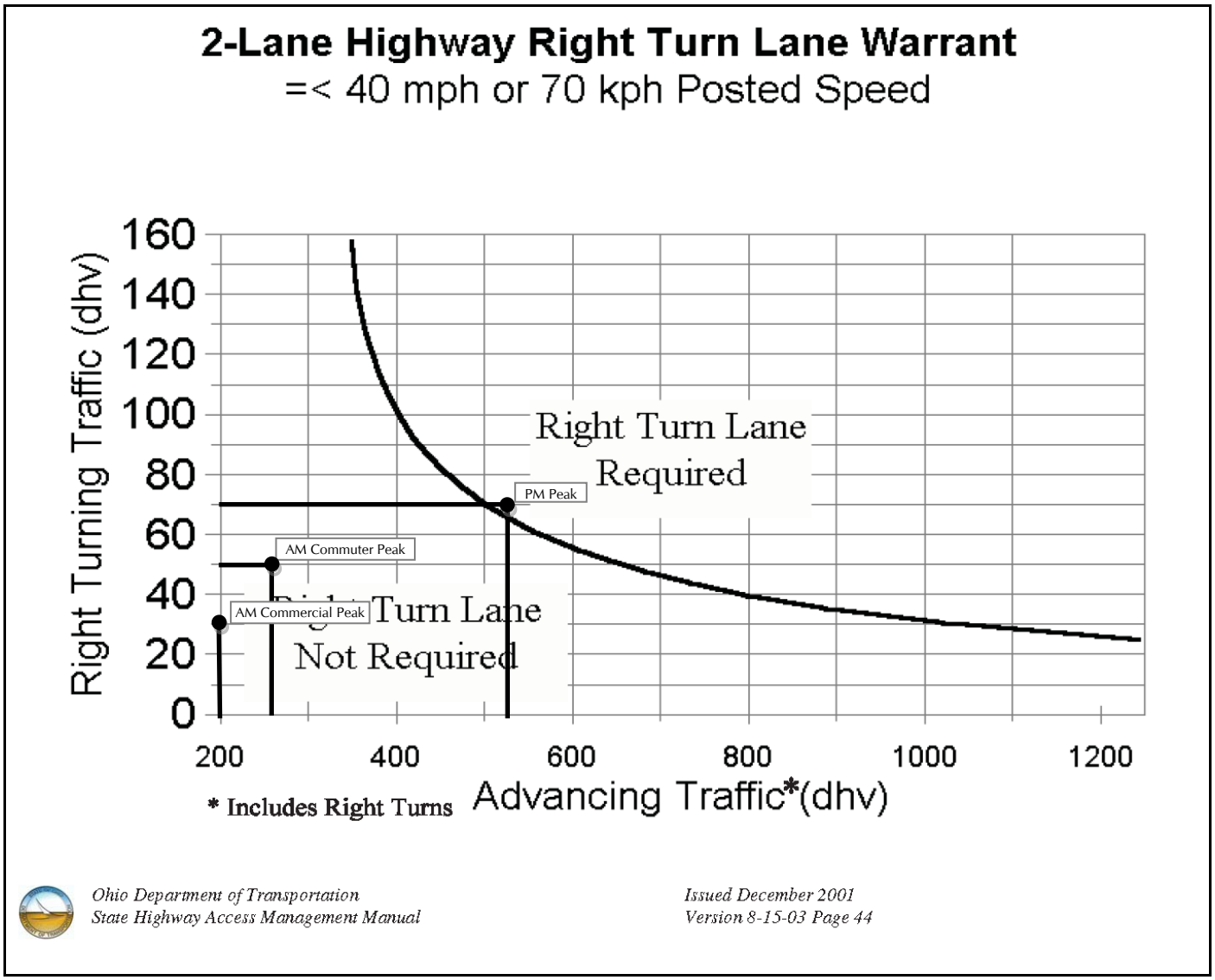
Tallmadge Road / Sunnybrook Road Intersection

Eastbound Right Turn



Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour:
Advancing Traffic = 260 Veh
Right Turn Traffic = 50 Veh

AM Commercial Peak Hour:
Advancing Traffic = 200 Veh
Right Turn Traffic = 30 Veh

PM Peak Hour:
Advancing Traffic = 520 Veh
Right Turn Traffic = 70 Veh

Turn Lane Warranted

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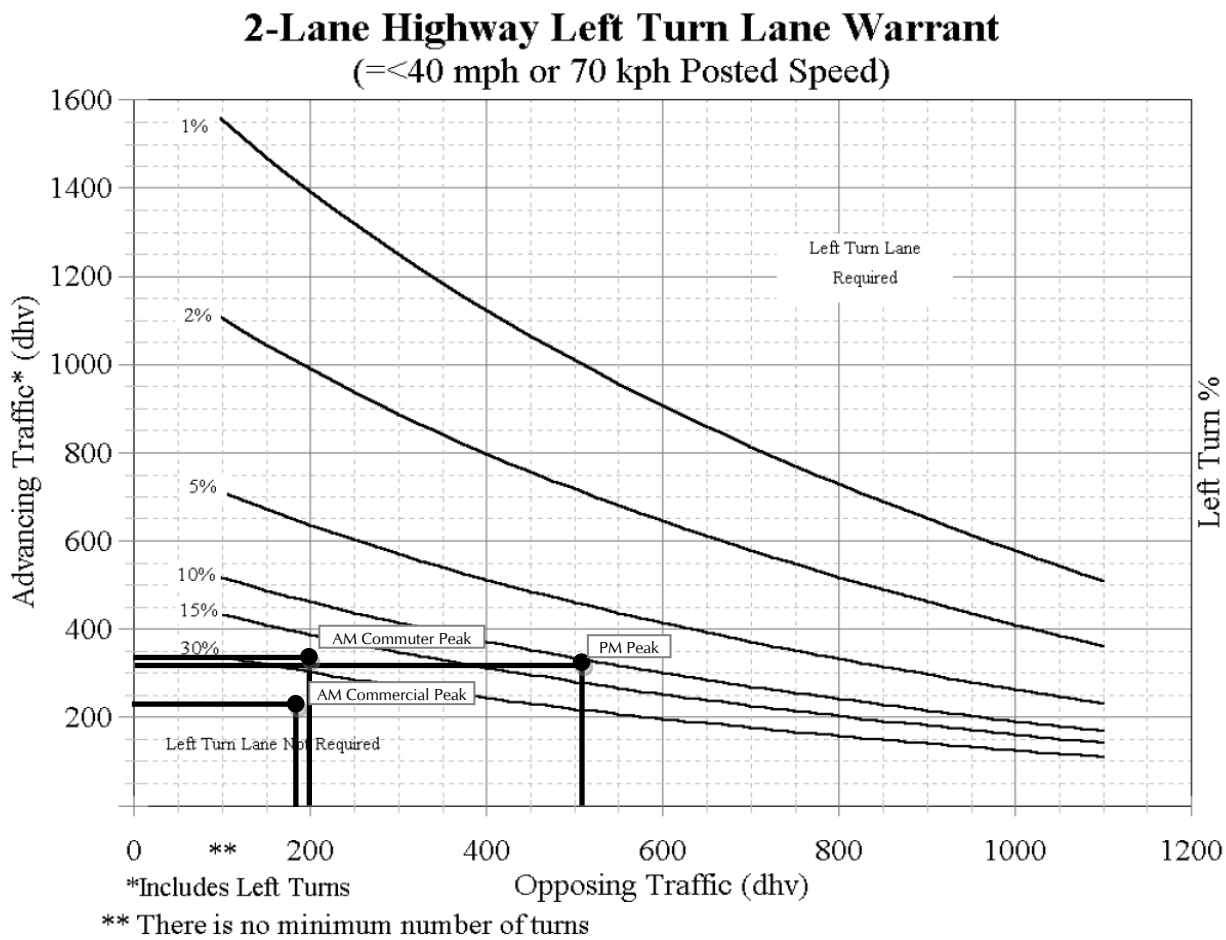
Tallmadge Road / Sunnybrook Road Intersection

Westbound Left Turn



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Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 340 Veh
- Left Turn Traffic = 30 Veh
- Opposing Traffic = 200 Veh
- Left Turn % = 8.8%

AM Commercial Peak Hour:
- Advancing Traffic = 240 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 190 Veh
- Left Turn % = 4.2%

PM Peak Hour:
- Advancing Traffic = 320 Veh
- Left Turn Traffic = 30 Veh
- Opposing Traffic = 510 Veh
- Left Turn % = 9.4%

Turn Lane Not Warranted

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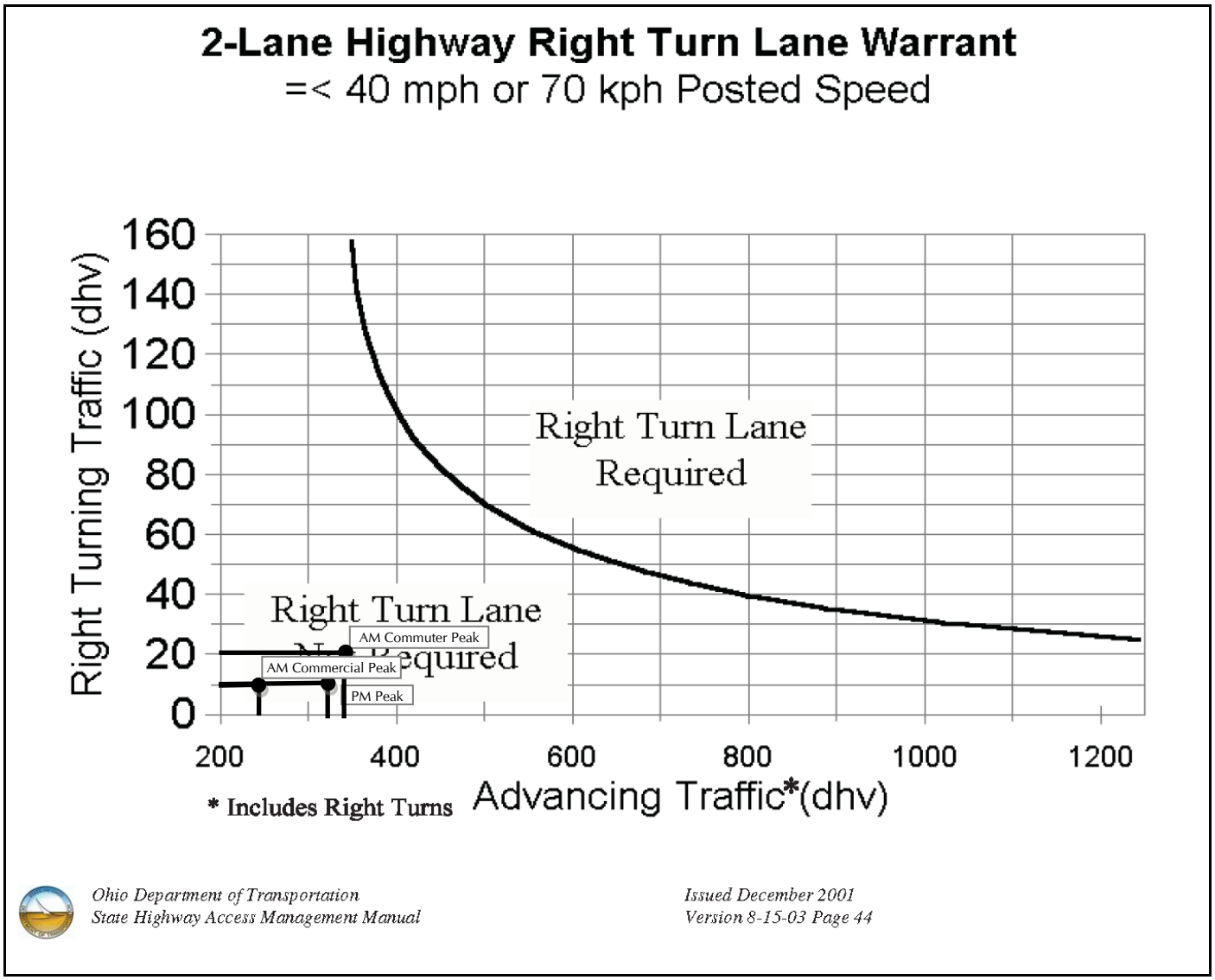
Tallmadge Road / Sunnybrook Road Intersection

Westbound Right Turn



Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour:
Advancing Traffic = 340 Veh
Right Turn Traffic = 20 Veh

AM Commercial Peak Hour:
Advancing Traffic = 240 Veh
Right Turn Traffic = 10 Veh

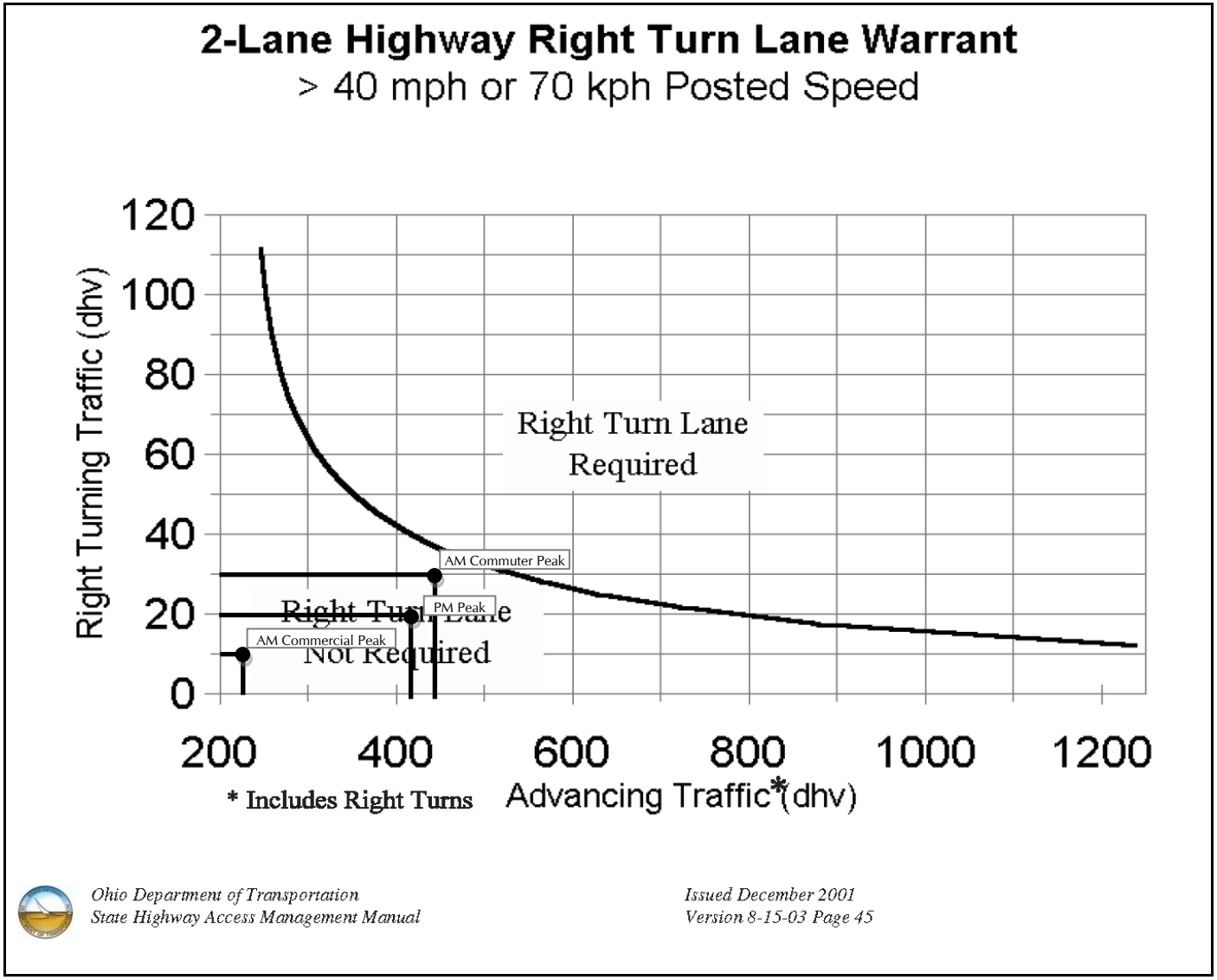
PM Peak Hour:
Advancing Traffic = 320 Veh
Right Turn Traffic = 10 Veh

Turn Lane Not Warranted

GPD GROUP®
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Mogadore Road / Sunnybrook Road Intersection

Northbound Right Turn



Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour:
Advancing Traffic = 440 Veh
Right Turn Traffic = 30 Veh

AM Commercial Peak Hour:
Advancing Traffic = 220 Veh
Right Turn Traffic = 10 Veh

PM Peak Hour:
Advancing Traffic = 410 Veh
Right Turn Traffic = 20 Veh

Turn Lane Not Warranted

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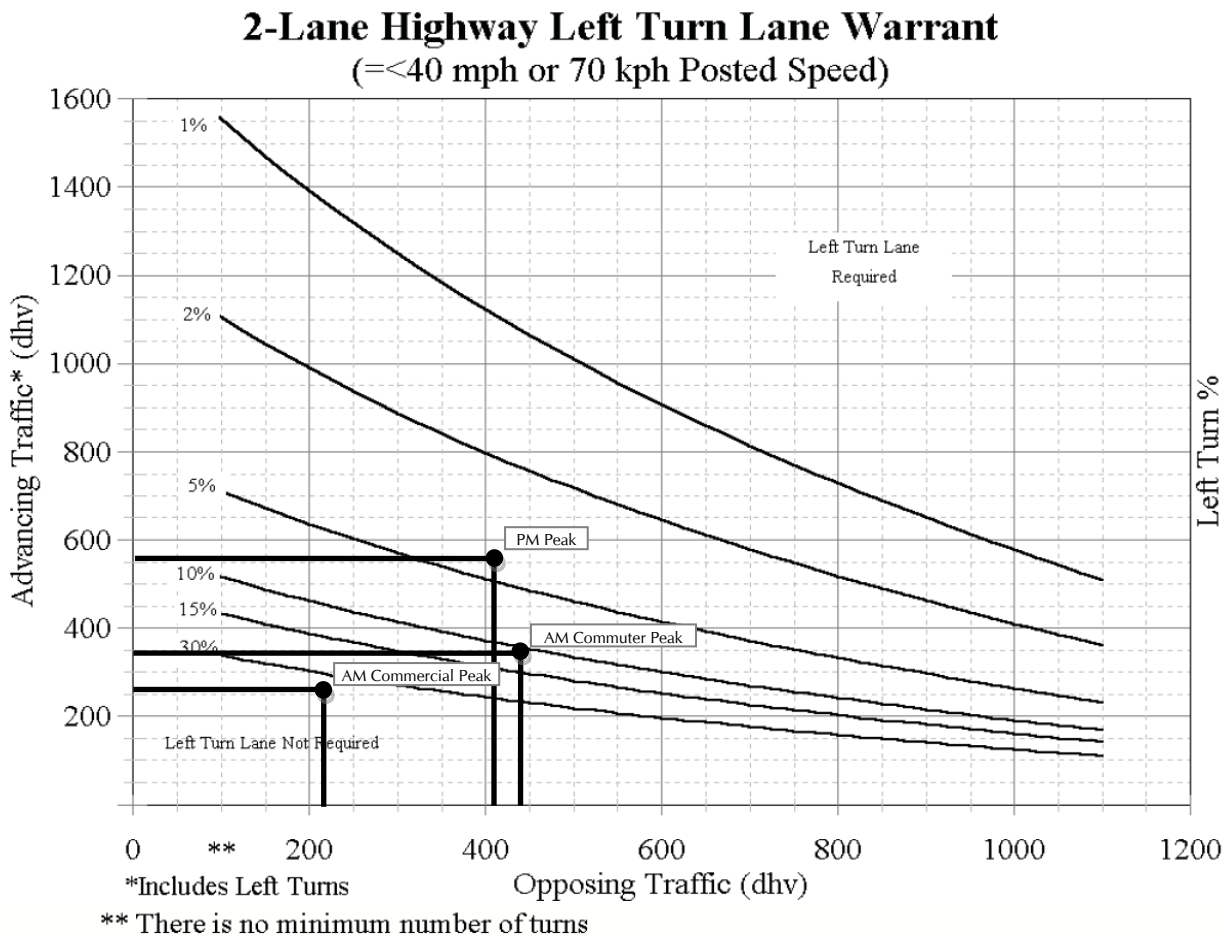
Mogadore Road / Sunnybrook Road Intersection

Southbound Left Turn



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Opening Year 2019 'Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 350 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 440 Veh
- Left Turn % = 2.9%

AM Commercial Peak Hour:
- Advancing Traffic = 260 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 220 Veh
- Left Turn % = 3.9%

PM Peak Hour:
- Advancing Traffic = 560 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 410 Veh
- Left Turn % = 1.8%

Turn Lane Not Warranted

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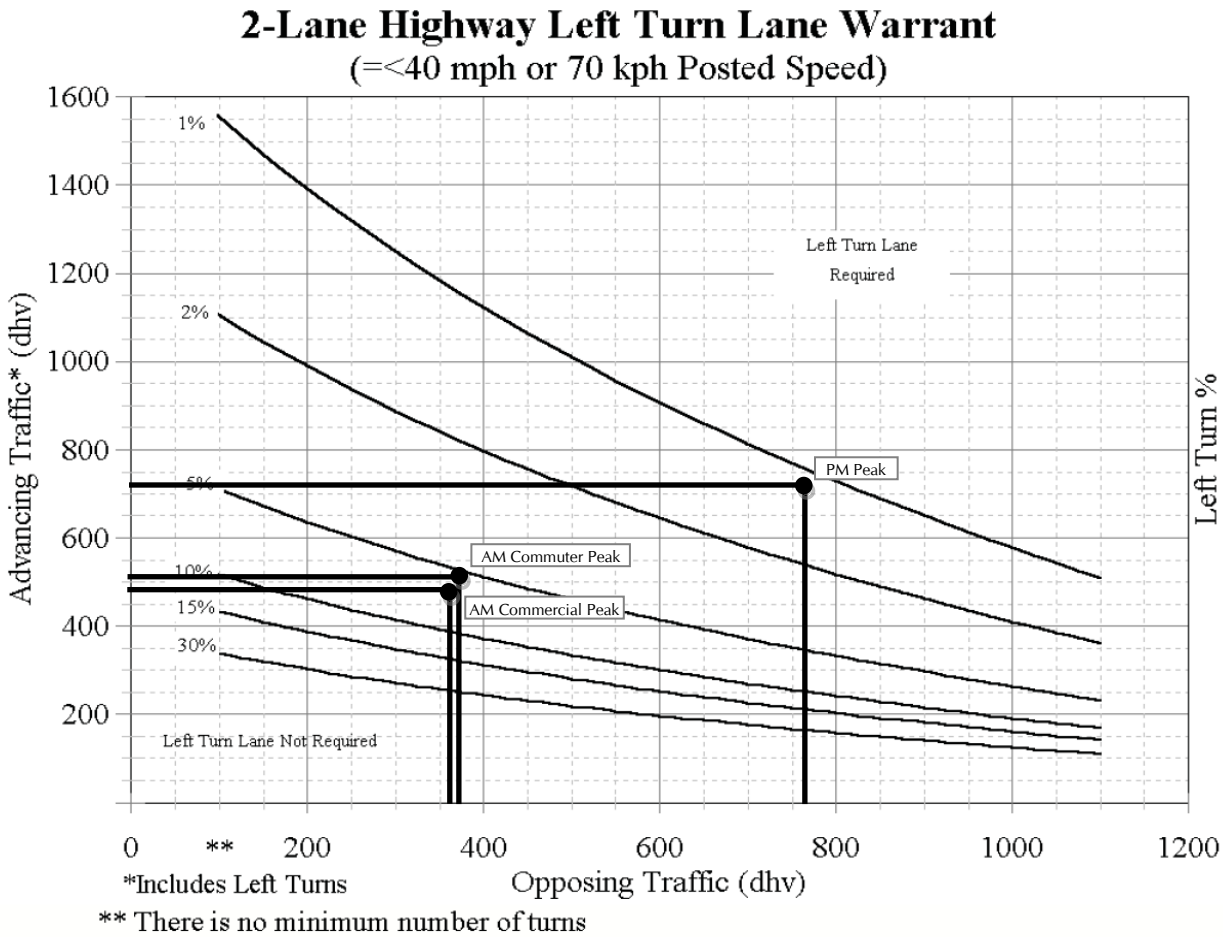
Tallmadge Road / Parliament Drive Intersection

Eastbound Left Turn



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Design Year 2039 'No-Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 510 Veh
- Left Turn Traffic = 0 Veh
- Opposing Traffic = 370 Veh
- Left Turn % = 0.0%

AM Commercial Peak Hour:
- Advancing Traffic = 490 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 360 Veh
- Left Turn % = 2.0%

PM Peak Hour:
- Advancing Traffic = 710 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 760 Veh
- Left Turn % = 1.4%

Turn Lane Warranted

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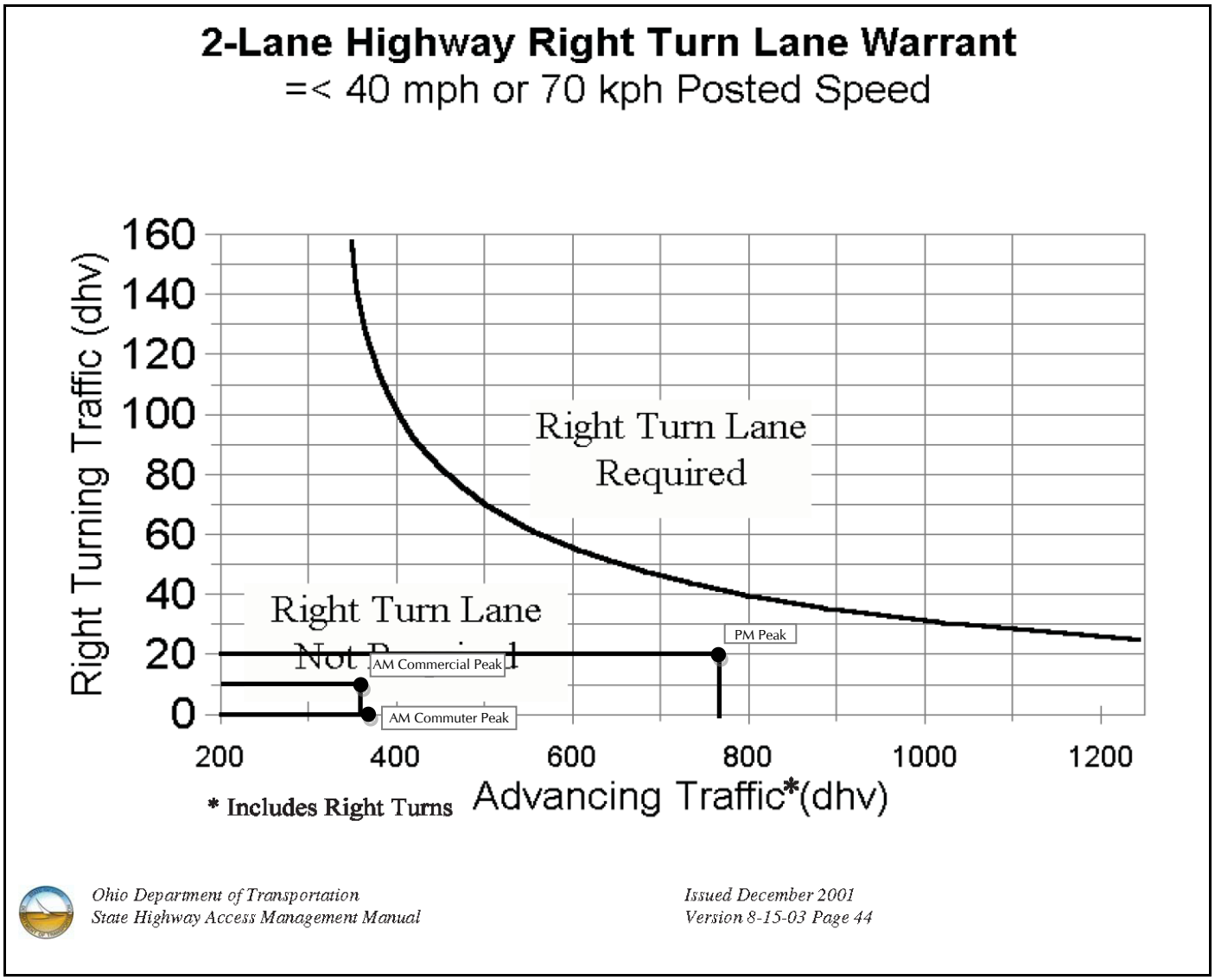
Tallmadge Road / Parliament Drive Intersection

Westbound Right Turn



Design Year 2039 'No-Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 370 Veh
- Right Turn Traffic = 0 Veh

AM Commercial Peak Hour:
- Advancing Traffic = 360 Veh
- Right Turn Traffic = 10 Veh

PM Peak Hour:
- Advancing Traffic = 760 Veh
- Right Turn Traffic = 20 Veh

Turn Lane Not Warranted

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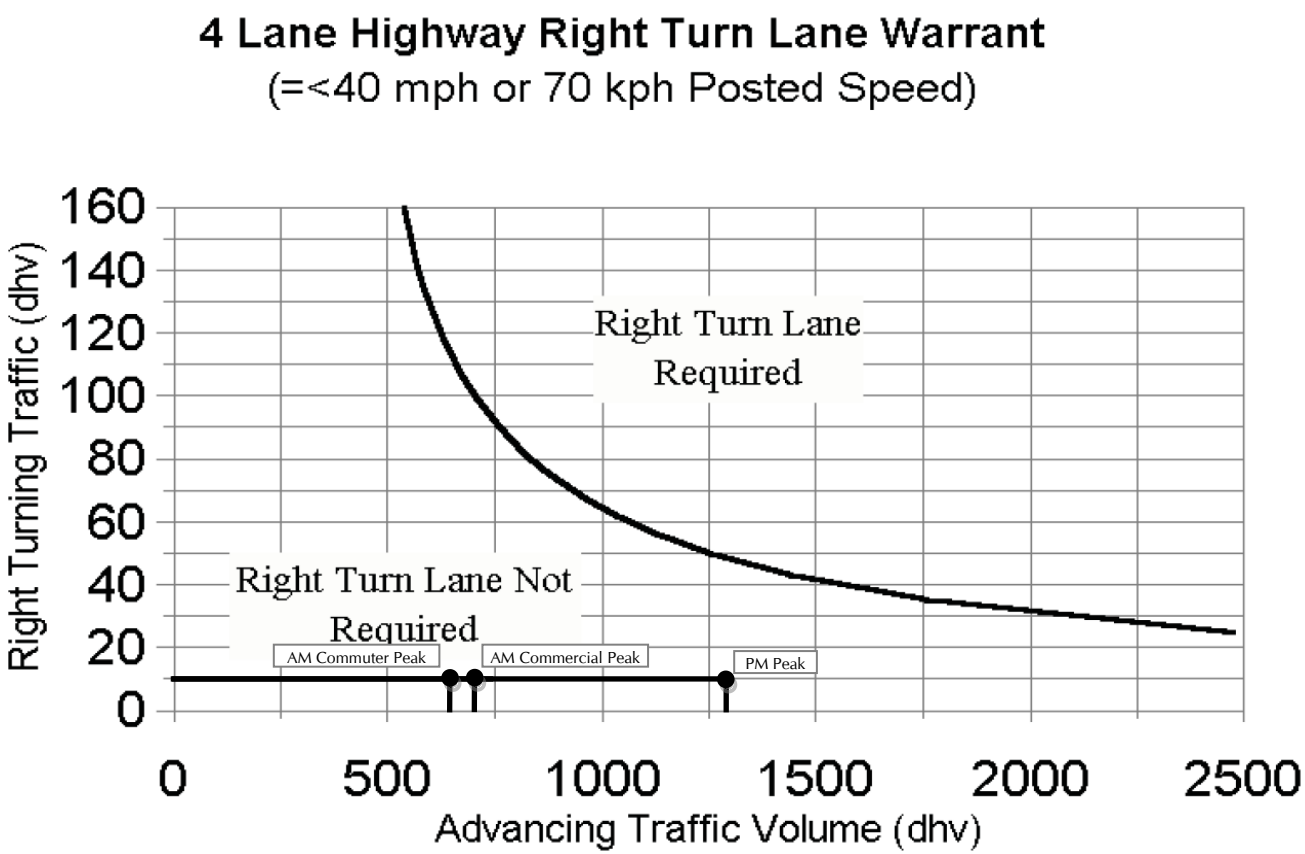
Tallmadge Road / Highway View Drive Intersection

Eastbound Right Turn



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Design Year 2039 'No-Build' Conditions

AM Commuter Peak Hour:
Advancing Traffic = 660 Veh
Right Turn Traffic = 10 Veh

AM Commercial Peak Hour:
Advancing Traffic = 700 Veh
Right Turn Traffic = 10 Veh

PM Peak Hour:
Advancing Traffic = 1270 Veh
Right Turn Traffic = 10 Veh

Turn Lane Not Warranted

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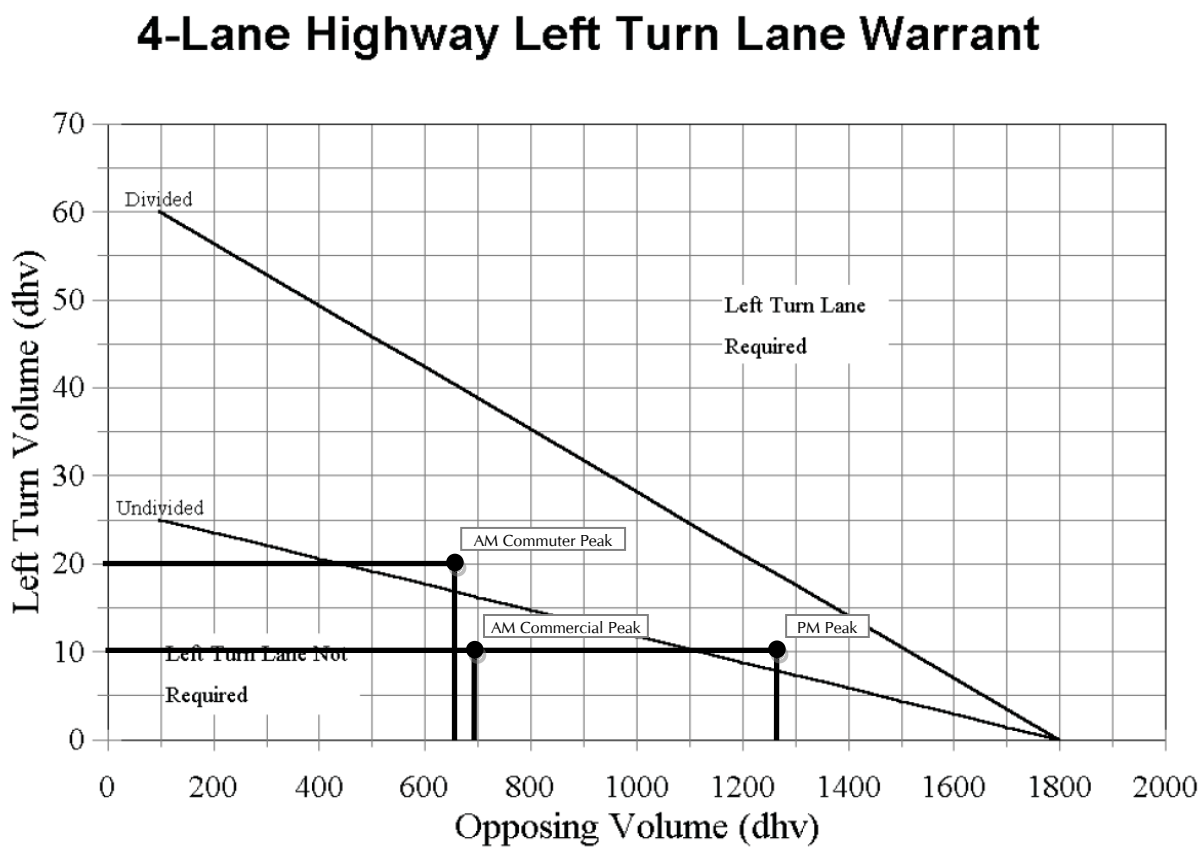
Tallmadge Road / Highway View Drive Intersection

Westbound Left Turn



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Design Year 2039 'No-Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 650 Veh
- Left Turn Traffic = 20 Veh
- Opposing Traffic = 660 Veh
- Left Turn % = 3.1%

AM Commercial Peak Hour:
- Advancing Traffic = 770 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 700 Veh
- Left Turn % = 1.3%

PM Peak Hour:
- Advancing Traffic = 1520 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 1270 Veh
- Left Turn % = 0.7%

Turn Lane Warranted

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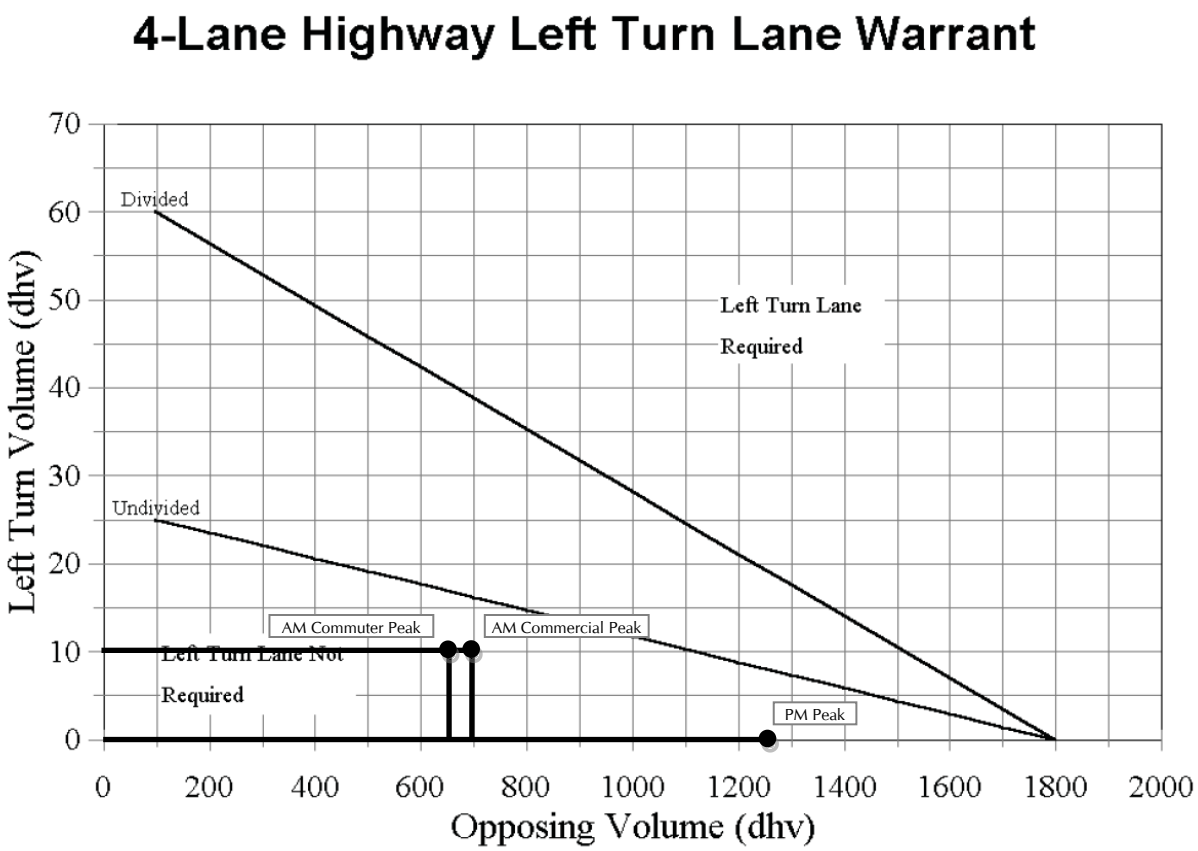
Tallmadge Road / East End Welding Drive Intersection

Eastbound Left Turn



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Design Year 2039 'No-Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 660 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 660 Veh
- Left Turn % = 1.5%

AM Commercial Peak Hour:
- Advancing Traffic = 700 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 770 Veh
- Left Turn % = 1.4%

PM Peak Hour:
- Advancing Traffic = 1280 Veh
- Left Turn Traffic = 0 Veh
- Opposing Traffic = 1510 Veh
- Left Turn % = 0.0%

Turn Lane Not Warranted

GPD GROUP®
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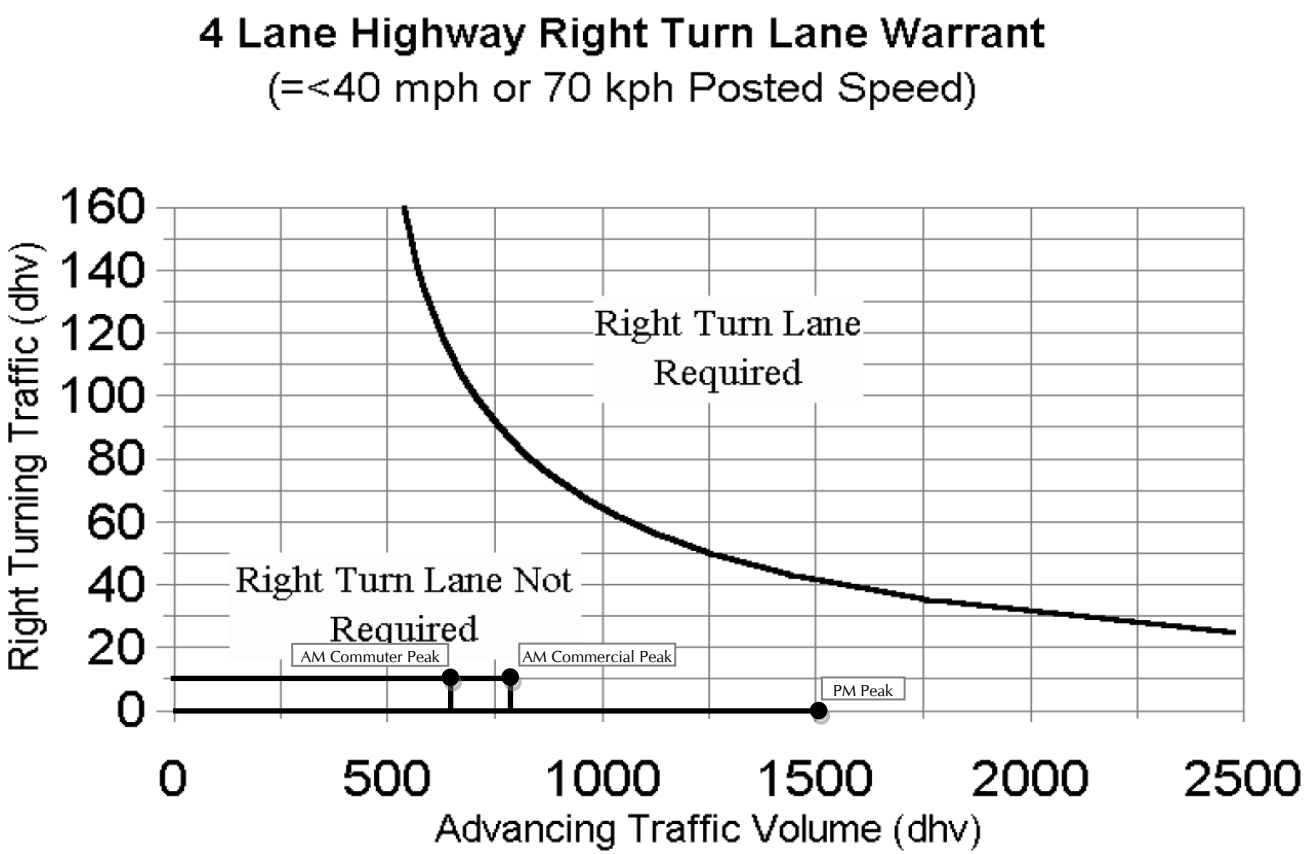
Tallmadge Road / East End Welding Drive Intersection

Westbound Right Turn



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Design Year 2039 'No-Build' Conditions

AM Commuter Peak Hour:
Advancing Traffic = 660 Veh
Right Turn Traffic = 10 Veh

AM Commercial Peak Hour:
Advancing Traffic = 770 Veh
Right Turn Traffic = 10 Veh

PM Peak Hour:
Advancing Traffic = 1510 Veh
Right Turn Traffic = 0 Veh

Turn Lane Not Warranted

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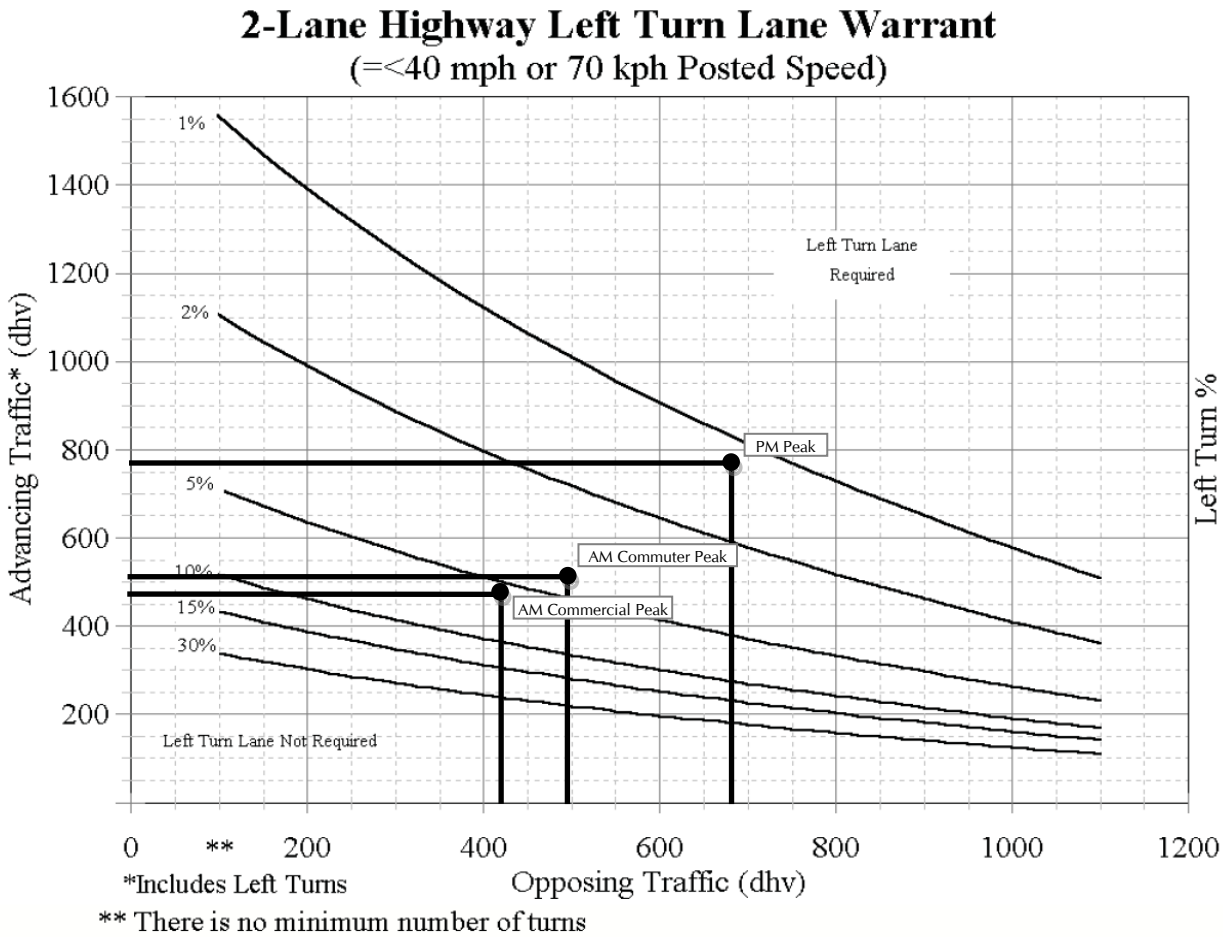
Tallmadge Road / Sunnybrook Road Intersection

Eastbound Left Turn



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Design Year 2039 'No-Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 510 Veh
- Left Turn Traffic = 60 Veh
- Opposing Traffic = 500 Veh
- Left Turn % = 11.8%

AM Commercial Peak Hour:
- Advancing Traffic = 460 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 410 Veh
- Left Turn % = 2.2%

PM Peak Hour:
- Advancing Traffic = 770 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 680 Veh
- Left Turn % = 1.3%

Turn Lane Warranted

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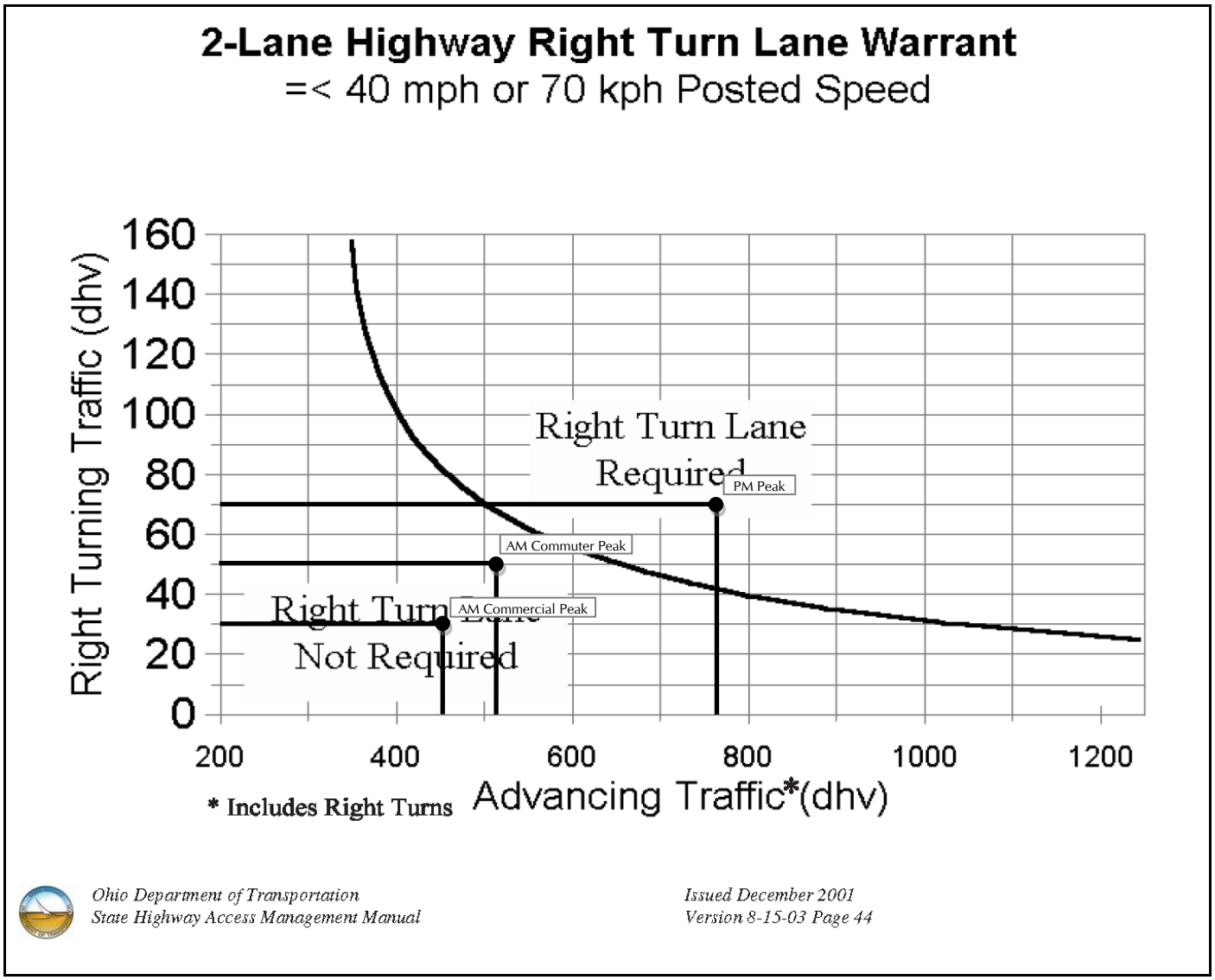
Tallmadge Road / Sunnybrook Road Intersection

Eastbound Right Turn



Design Year 2039 'No-Build' Conditions

AM Commuter Peak Hour:
Advancing Traffic = 510 Veh
Right Turn Traffic = 50 Veh

AM Commercial Peak Hour:
Advancing Traffic = 460 Veh
Right Turn Traffic = 30 Veh

PM Peak Hour:
Advancing Traffic = 770 Veh
Right Turn Traffic = 70 Veh

Turn Lane Warranted

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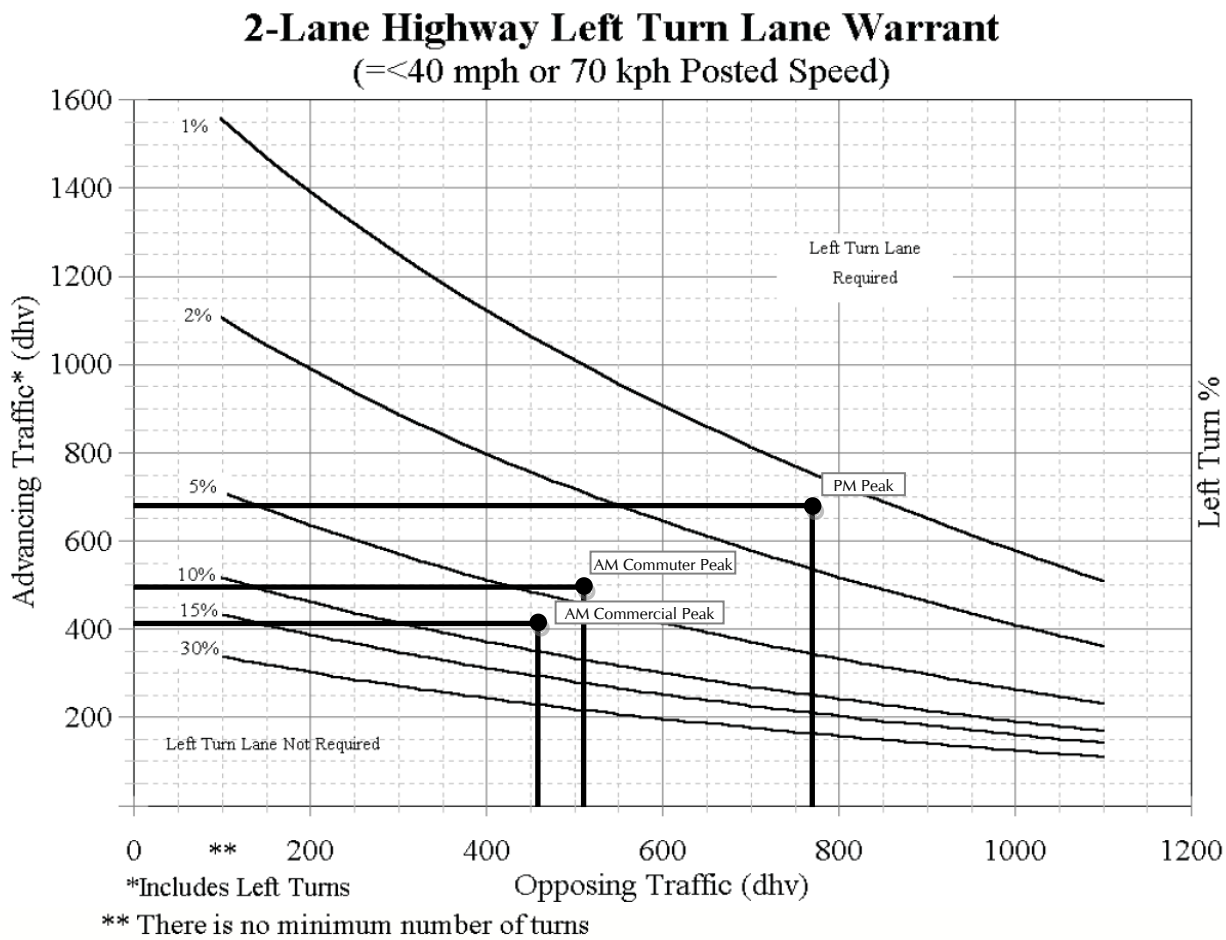
Tallmadge Road / Sunnybrook Road Intersection

Westbound Left Turn



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Design Year 2039 'No-Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 500 Veh
- Left Turn Traffic = 30 Veh
- Opposing Traffic = 510 Veh
- Left Turn % = 6.0%

AM Commercial Peak Hour:
- Advancing Traffic = 410 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 460 Veh
- Left Turn % = 2.4%

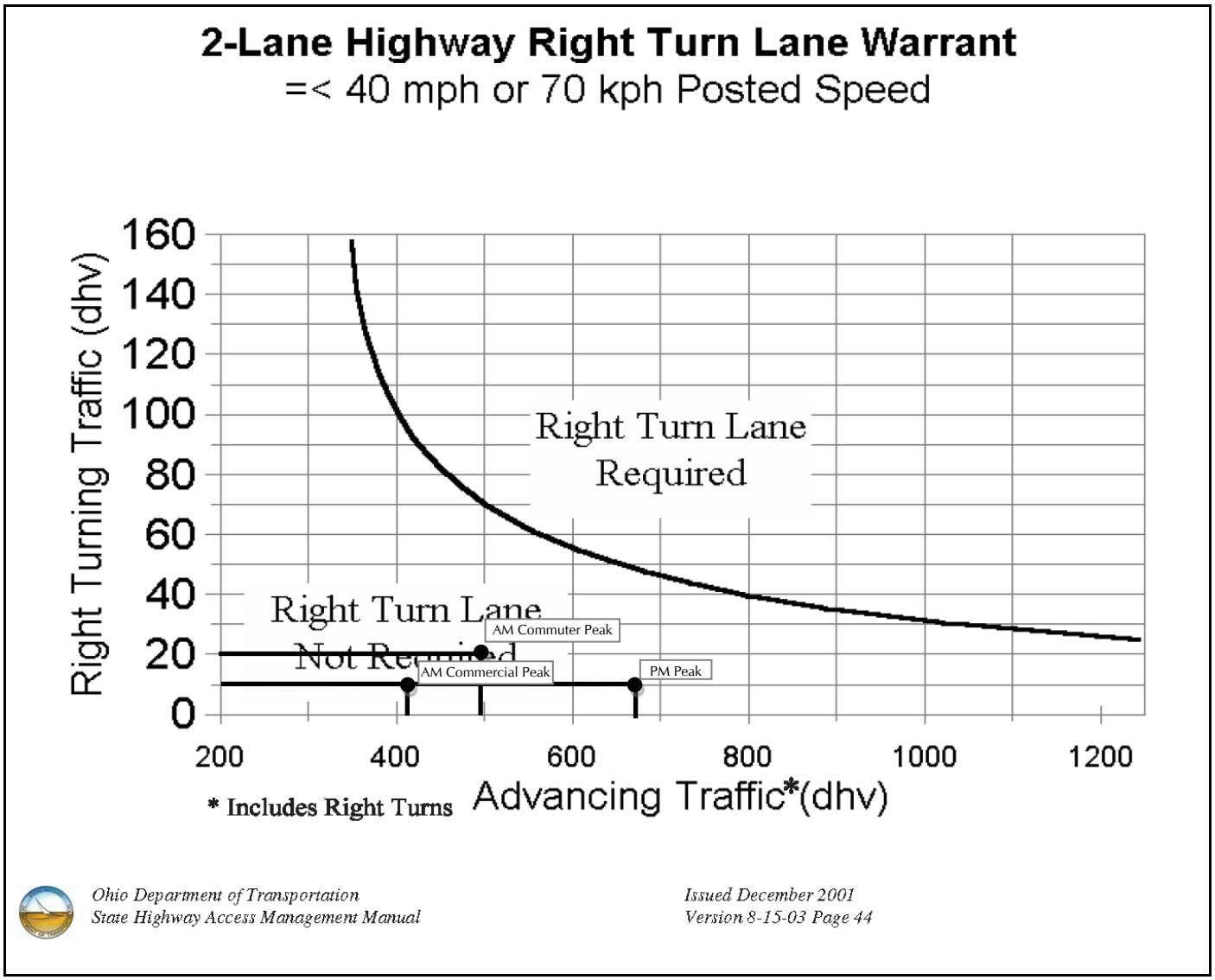
PM Peak Hour:
- Advancing Traffic = 680 Veh
- Left Turn Traffic = 30 Veh
- Opposing Traffic = 770 Veh
- Left Turn % = 4.4%

Turn Lane Warranted

GPD GROUP®
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / Sunnybrook Road Intersection

Westbound Right Turn



Design Year 2039 'No-Build' Conditions

AM Commuter Peak Hour:
Advancing Traffic = 500 Veh
Right Turn Traffic = 20 Veh

AM Commercial Peak Hour:
Advancing Traffic = 410 Veh
Right Turn Traffic = 10 Veh

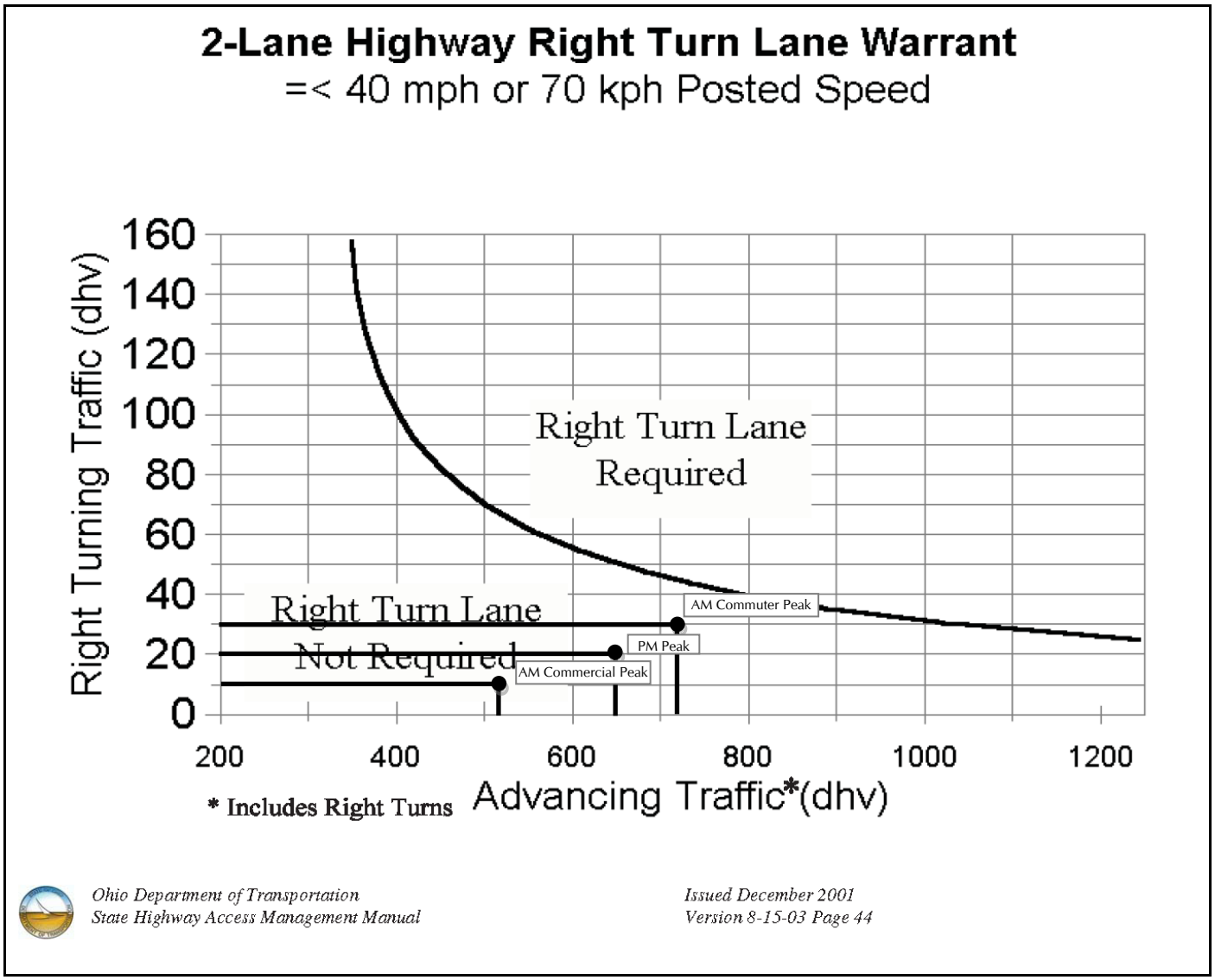
PM Peak Hour:
Advancing Traffic = 680 Veh
Right Turn Traffic = 10 Veh

Turn Lane Not Warranted

GPD GROUP®
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Mogadore Road / Sunnybrook Road Intersection

Northbound Right Turn



Design Year 2039 'No-Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 710 Veh
- Right Turn Traffic = 30 Veh

AM Commercial Peak Hour:
- Advancing Traffic = 510 Veh
- Right Turn Traffic = 10 Veh

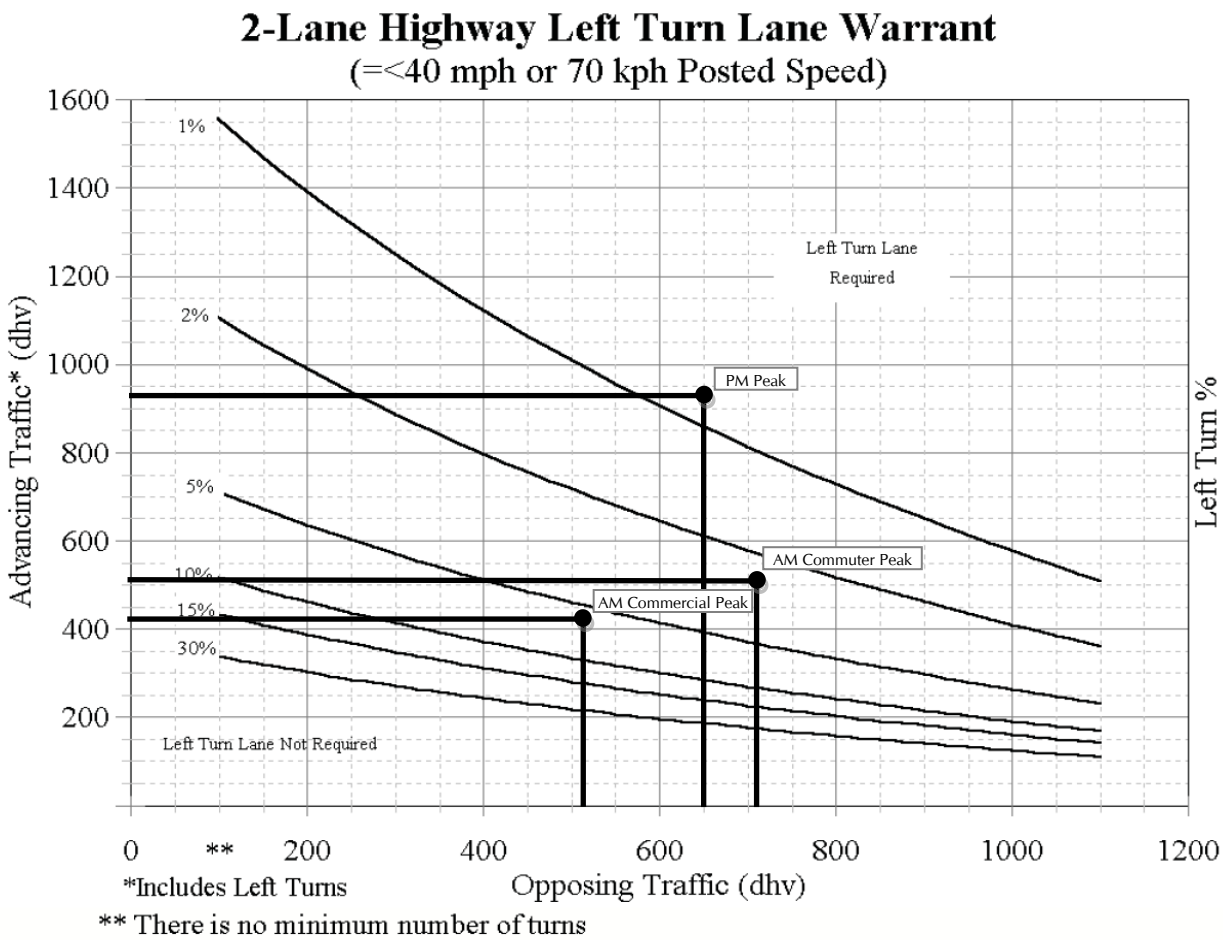
PM Peak Hour:
- Advancing Traffic = 650 Veh
- Right Turn Traffic = 20 Veh

Turn Lane Not Warranted

GPD GROUP®
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Mogadore Road / Sunnybrook Road Intersection

Southbound Left Turn



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Design Year 2039 'No-Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 510 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 710 Veh
- Left Turn % = 1.9%

AM Commercial Peak Hour:
- Advancing Traffic = 420 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 510 Veh
- Left Turn % = 2.4%

PM Peak Hour:
- Advancing Traffic = 940 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 650 Veh
- Left Turn % = 1.1%

Turn Lane Warranted

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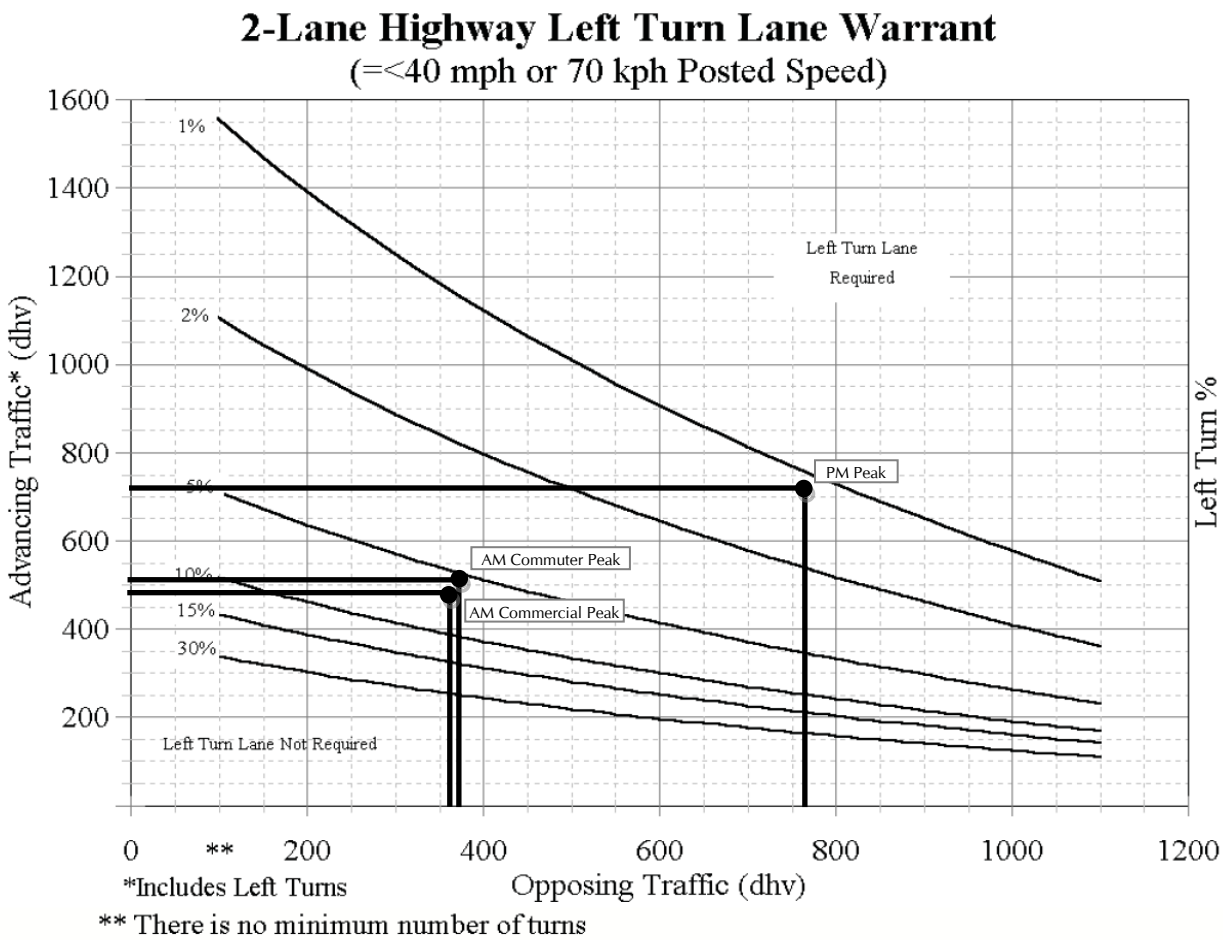
Tallmadge Road / Parliament Drive Intersection

Eastbound Left Turn



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Design Year 2039 'Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 510 Veh
- Left Turn Traffic = 0 Veh
- Opposing Traffic = 370 Veh
- Left Turn % = 0.0%

AM Commercial Peak Hour:
- Advancing Traffic = 490 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 360 Veh
- Left Turn % = 2.0%

PM Peak Hour:
- Advancing Traffic = 710 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 760 Veh
- Left Turn % = 1.4%

Turn Lane Warranted

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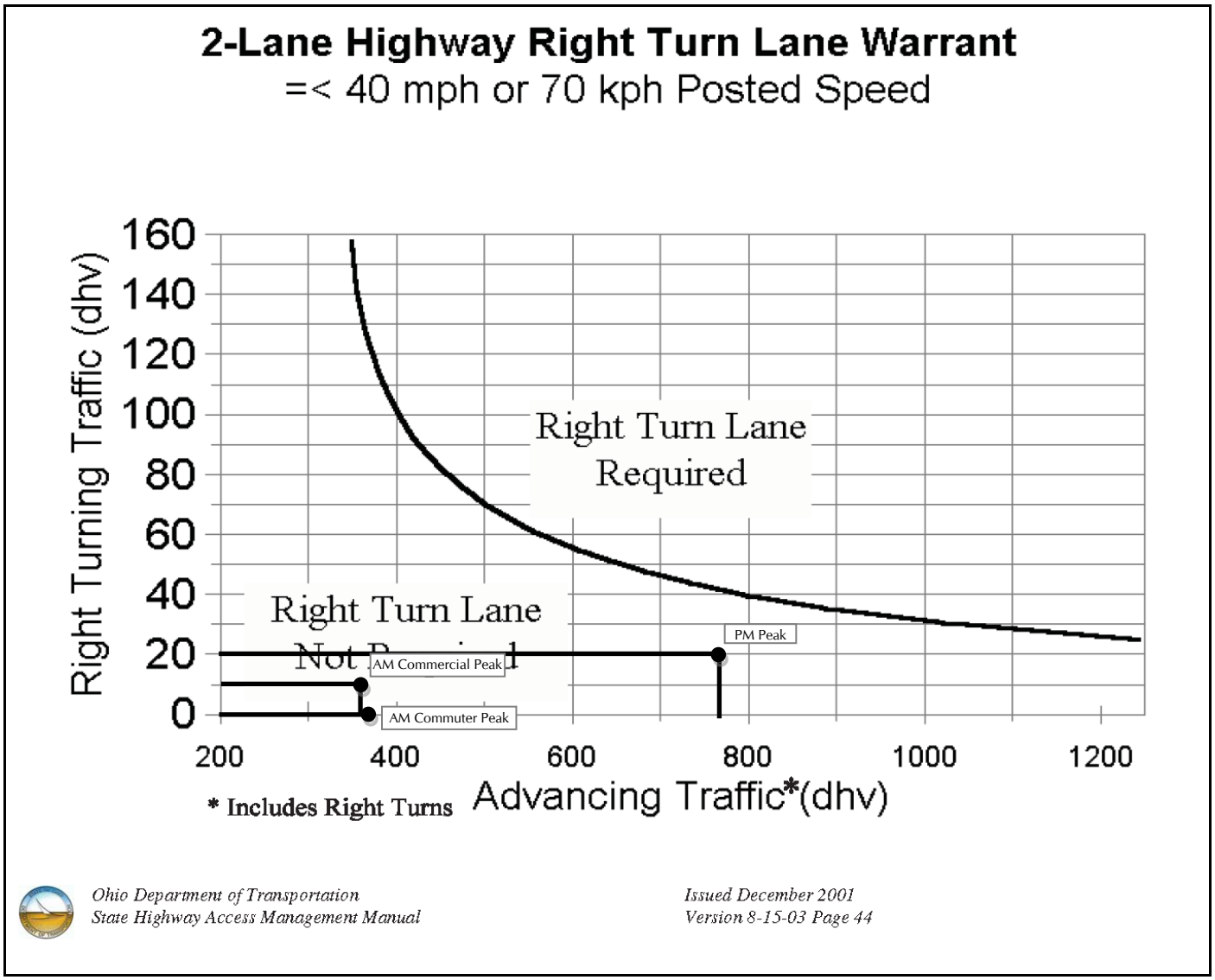
Tallmadge Road / Parliament Drive Intersection

Westbound Right Turn



Design Year 2039 'Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 370 Veh
- Right Turn Traffic = 0 Veh

AM Commercial Peak Hour:
- Advancing Traffic = 360 Veh
- Right Turn Traffic = 10 Veh

PM Peak Hour:
- Advancing Traffic = 760 Veh
- Right Turn Traffic = 20 Veh

Turn Lane Not Warranted

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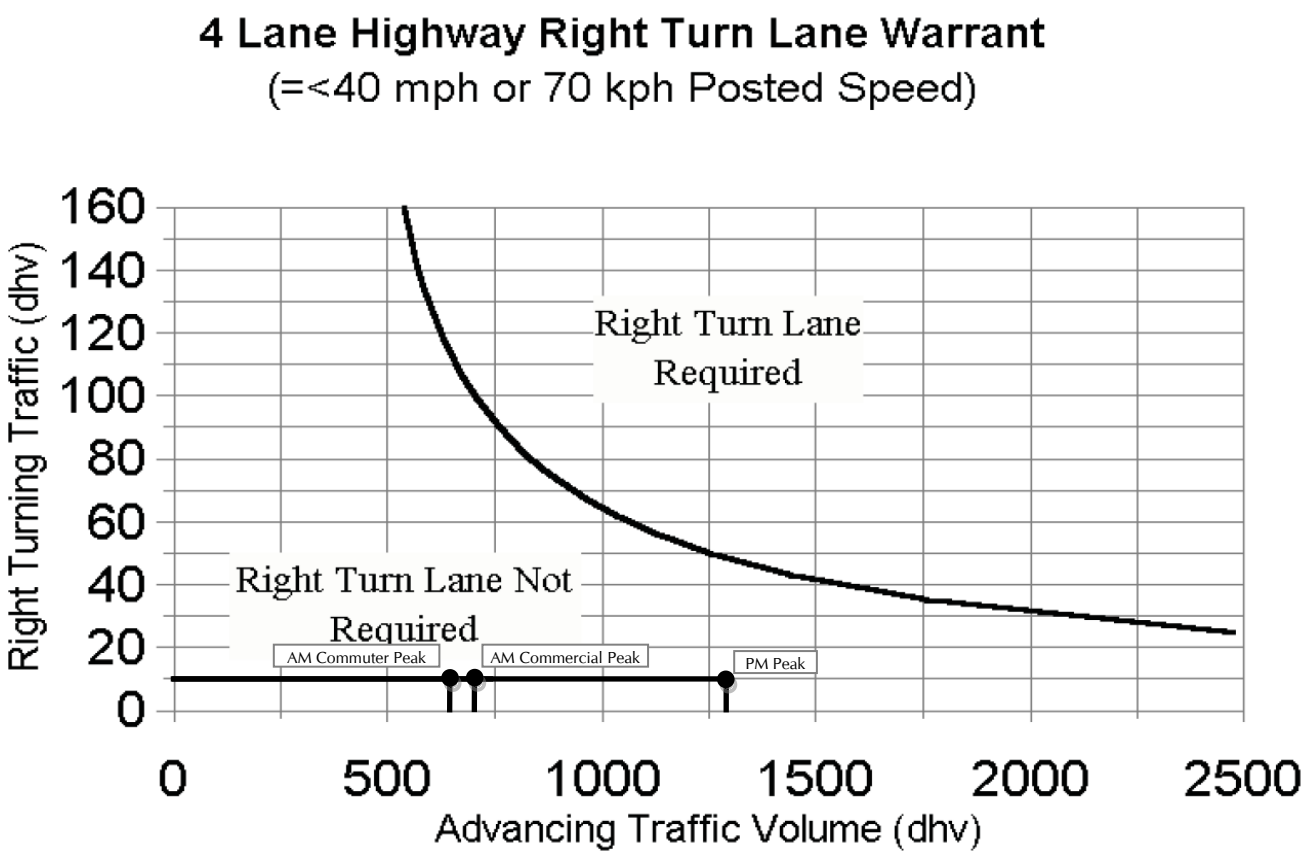
Tallmadge Road / Highway View Drive Intersection

Eastbound Right Turn



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Design Year 2039 'Build' Conditions

AM Commuter Peak Hour:
Advancing Traffic = 660 Veh
Right Turn Traffic = 10 Veh

AM Commercial Peak Hour:
Advancing Traffic = 700 Veh
Right Turn Traffic = 10 Veh

PM Peak Hour:
Advancing Traffic = 1270 Veh
Right Turn Traffic = 10 Veh

Turn Lane Not Warranted

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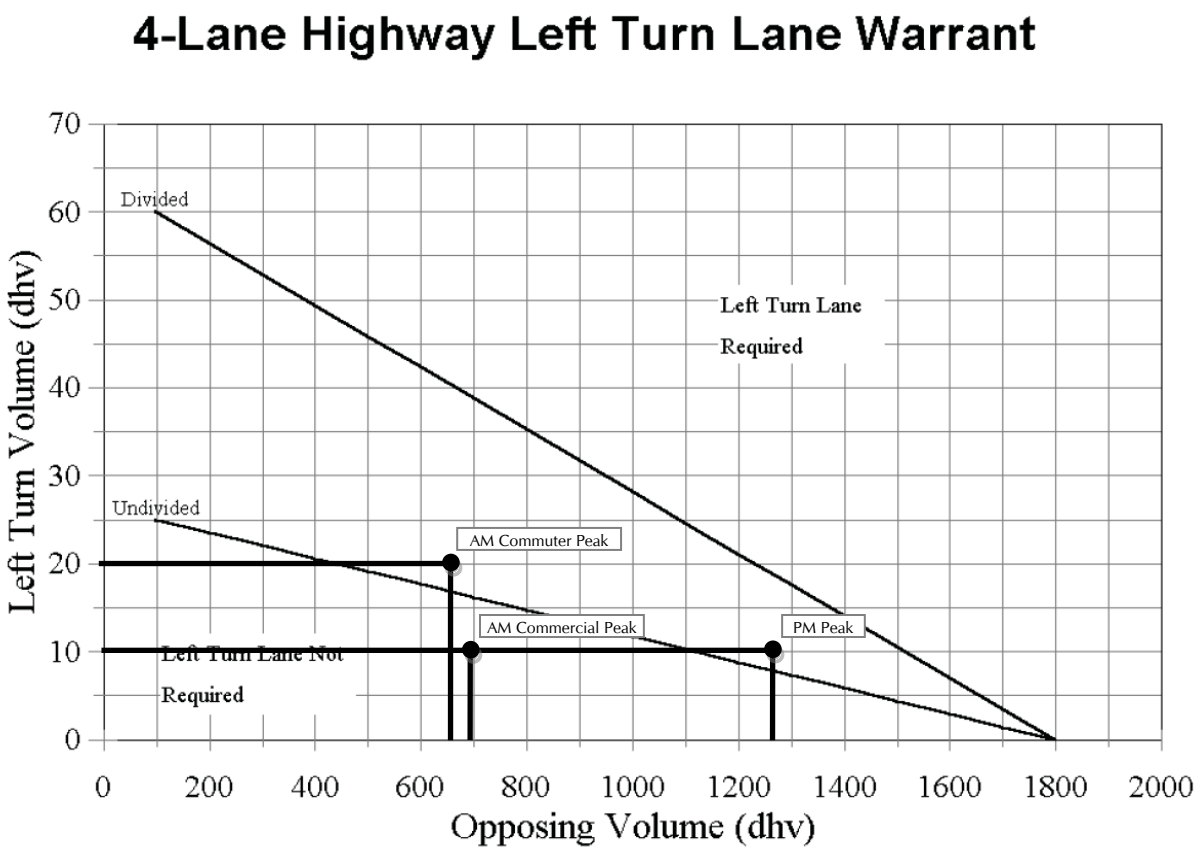
Tallmadge Road / Highway View Drive Intersection

Westbound Left Turn



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Design Year 2039 'Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 650 Veh
- Left Turn Traffic = 20 Veh
- Opposing Traffic = 660 Veh
- Left Turn % = 3.1%

AM Commercial Peak Hour:
- Advancing Traffic = 770 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 700 Veh
- Left Turn % = 1.3%

PM Peak Hour:
- Advancing Traffic = 1520 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 1270 Veh
- Left Turn % = 0.7%

Turn Lane Warranted

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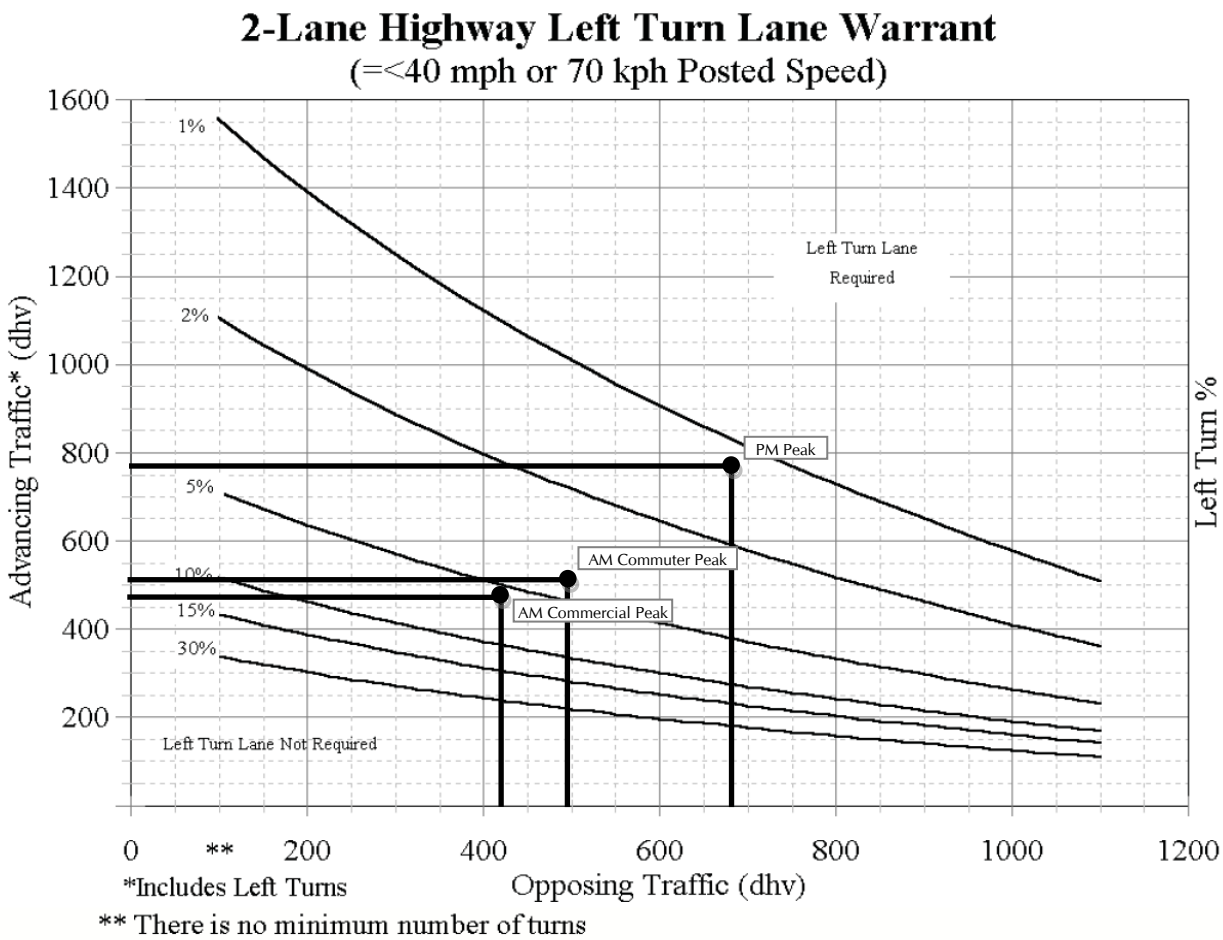
Tallmadge Road / Sunnybrook Road Intersection

Eastbound Left Turn



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Design Year 2039 'Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 510 Veh
- Left Turn Traffic = 60 Veh
- Opposing Traffic = 500 Veh
- Left Turn % = 11.8%

AM Commercial Peak Hour:
- Advancing Traffic = 460 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 410 Veh
- Left Turn % = 2.2%

PM Peak Hour:
- Advancing Traffic = 770 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 680 Veh
- Left Turn % = 1.3%

Turn Lane Warranted

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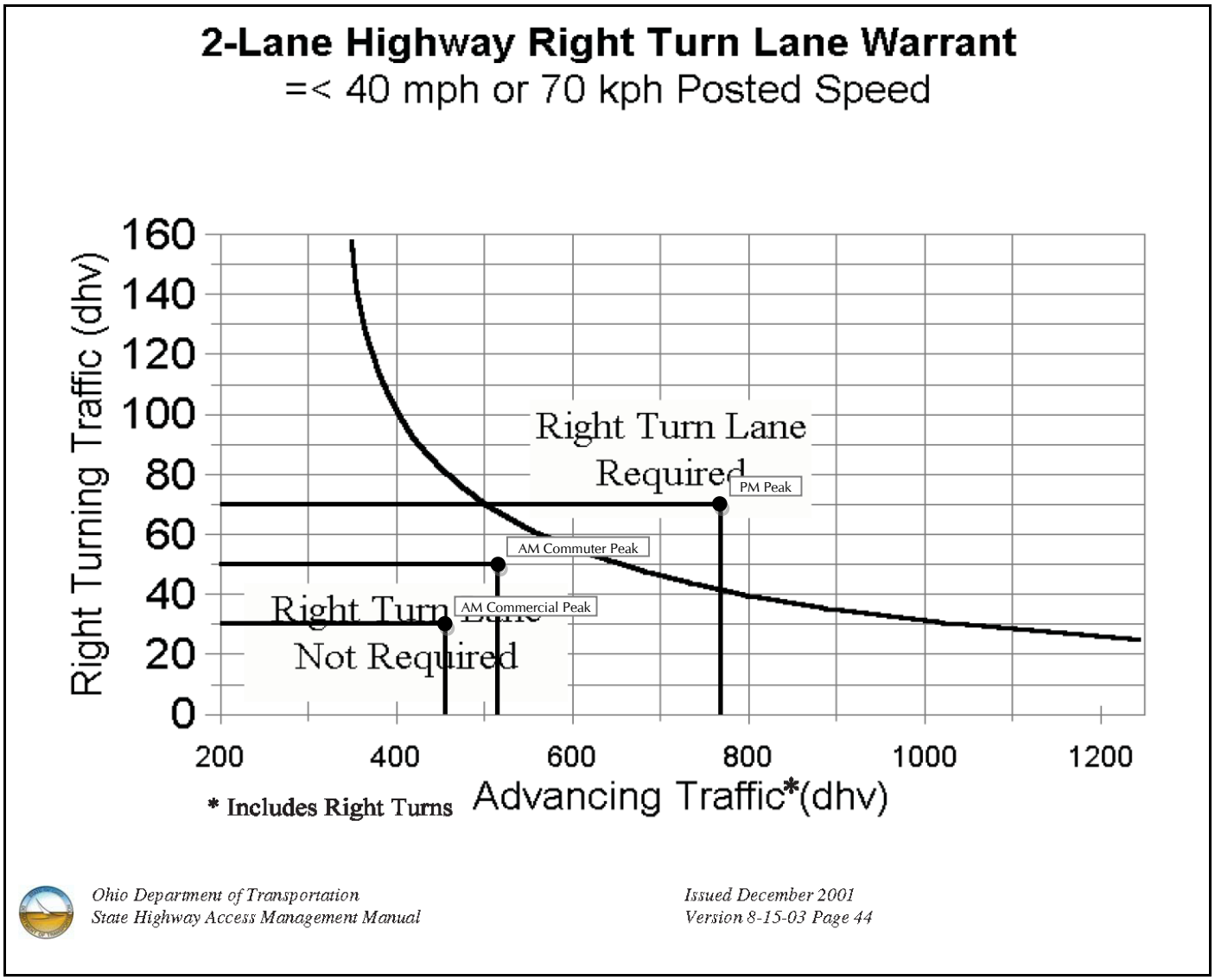
Tallmadge Road / Sunnybrook Road Intersection

Eastbound Right Turn



Design Year 2039 'Build' Conditions

AM Commuter Peak Hour:
Advancing Traffic = 510 Veh
Right Turn Traffic = 50 Veh

AM Commercial Peak Hour:
Advancing Traffic = 460 Veh
Right Turn Traffic = 30 Veh

PM Peak Hour:
Advancing Traffic = 770 Veh
Right Turn Traffic = 70 Veh

Turn Lane Warranted

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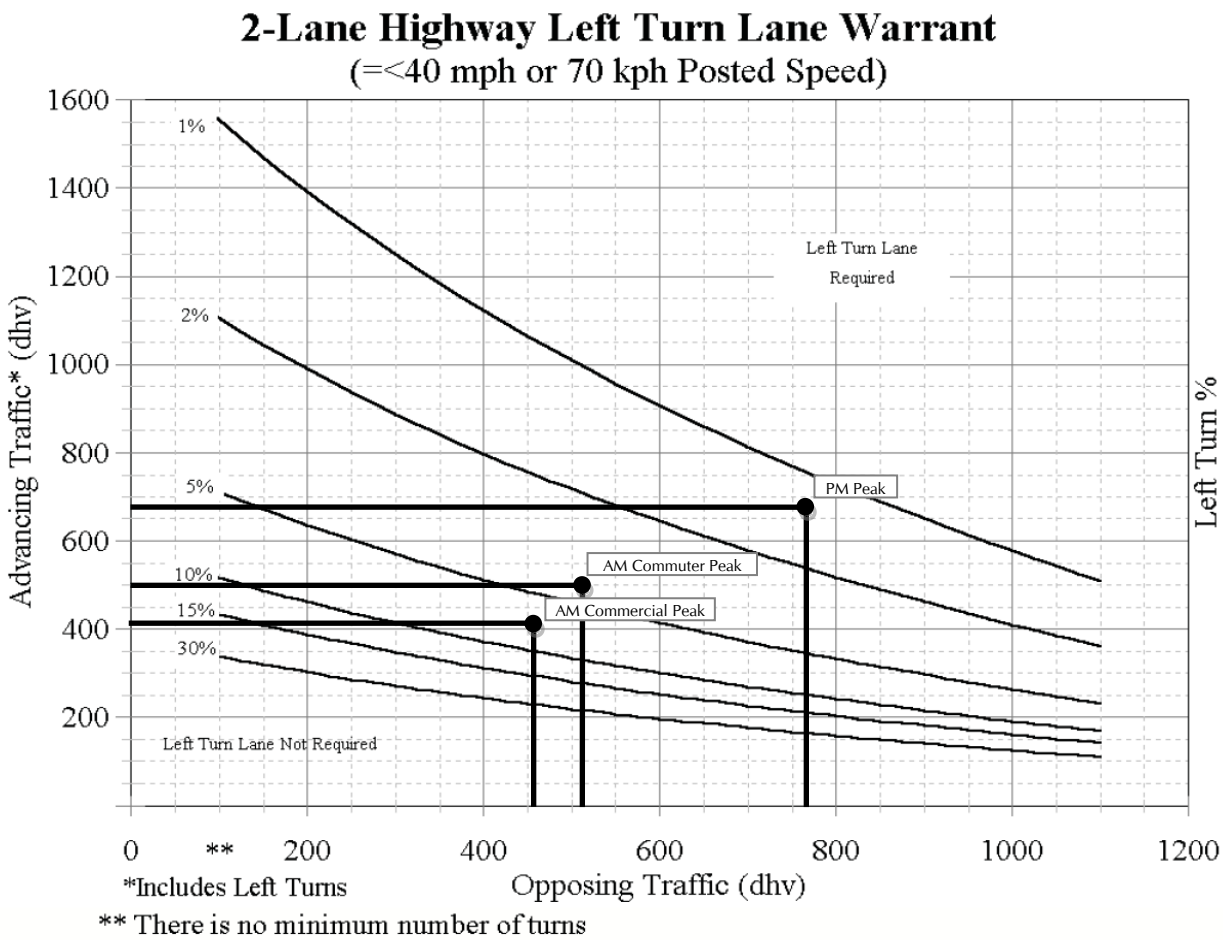
Tallmadge Road / Sunnybrook Road Intersection

Westbound Left Turn



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Design Year 2039 'Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 500 Veh
- Left Turn Traffic = 30 Veh
- Opposing Traffic = 510 Veh
- Left Turn % = 6.0%

AM Commercial Peak Hour:
- Advancing Traffic = 410 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 460 Veh
- Left Turn % = 2.4%

PM Peak Hour:
- Advancing Traffic = 680 Veh
- Left Turn Traffic = 30 Veh
- Opposing Traffic = 770 Veh
- Left Turn % = 4.4%

Turn Lane Warranted

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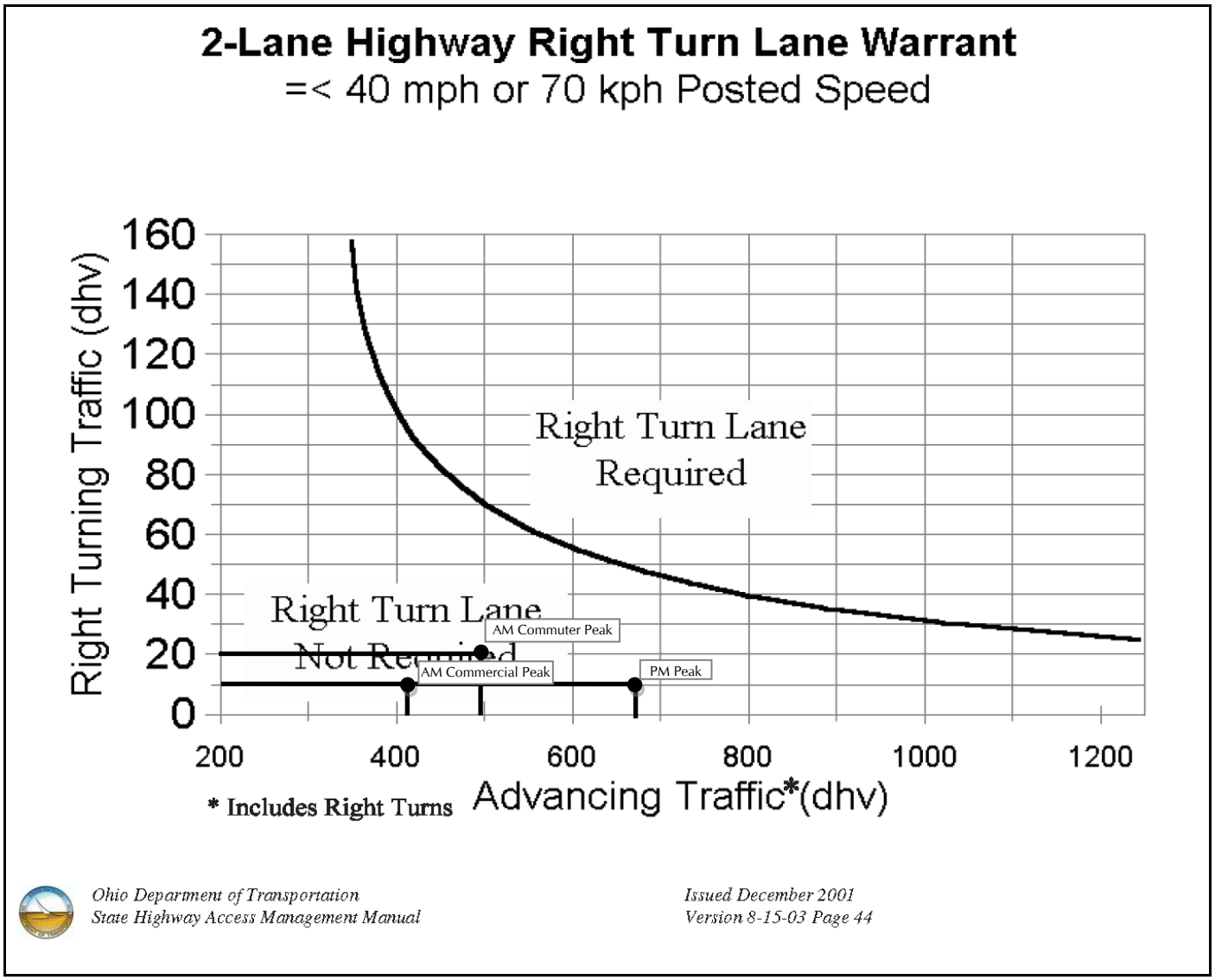
Tallmadge Road / Sunnybrook Road Intersection

Westbound Right Turn



Design Year 2039 'Build' Conditions

AM Commuter Peak Hour:
Advancing Traffic = 500 Veh
Right Turn Traffic = 20 Veh

AM Commercial Peak Hour:
Advancing Traffic = 410 Veh
Right Turn Traffic = 10 Veh

PM Peak Hour:
Advancing Traffic = 680 Veh
Right Turn Traffic = 10 Veh

Turn Lane Not Warranted

GPD GROUP®
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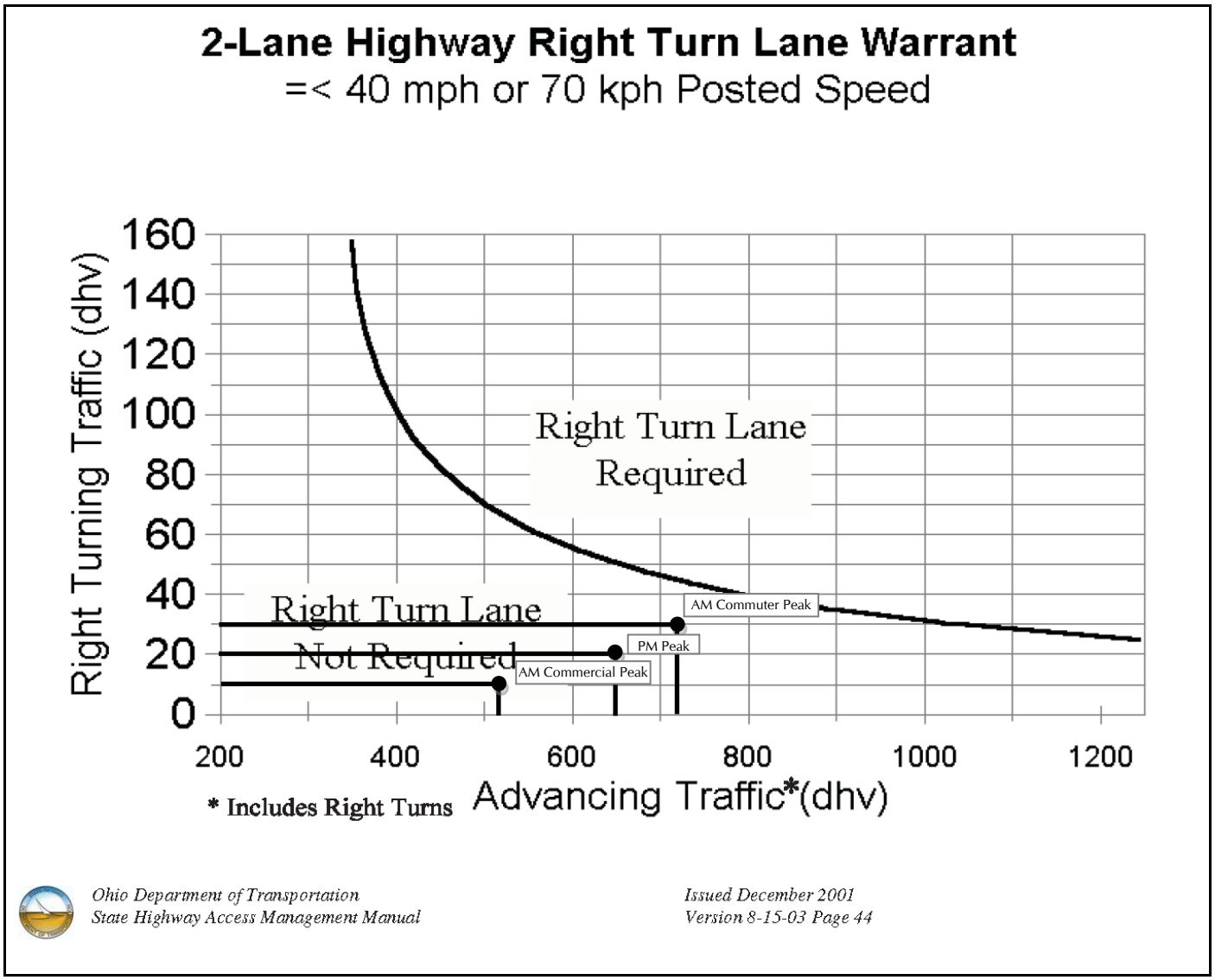
Mogadore Road / Sunnybrook Road Intersection

Northbound Right Turn



Design Year 2039 'Build' Conditions

AM Commuter Peak Hour:
Advancing Traffic = 710 Veh
Right Turn Traffic = 30 Veh

AM Commercial Peak Hour:
Advancing Traffic = 510 Veh
Right Turn Traffic = 10 Veh

PM Peak Hour:
Advancing Traffic = 650 Veh
Right Turn Traffic = 20 Veh

Turn Lane Not Warranted

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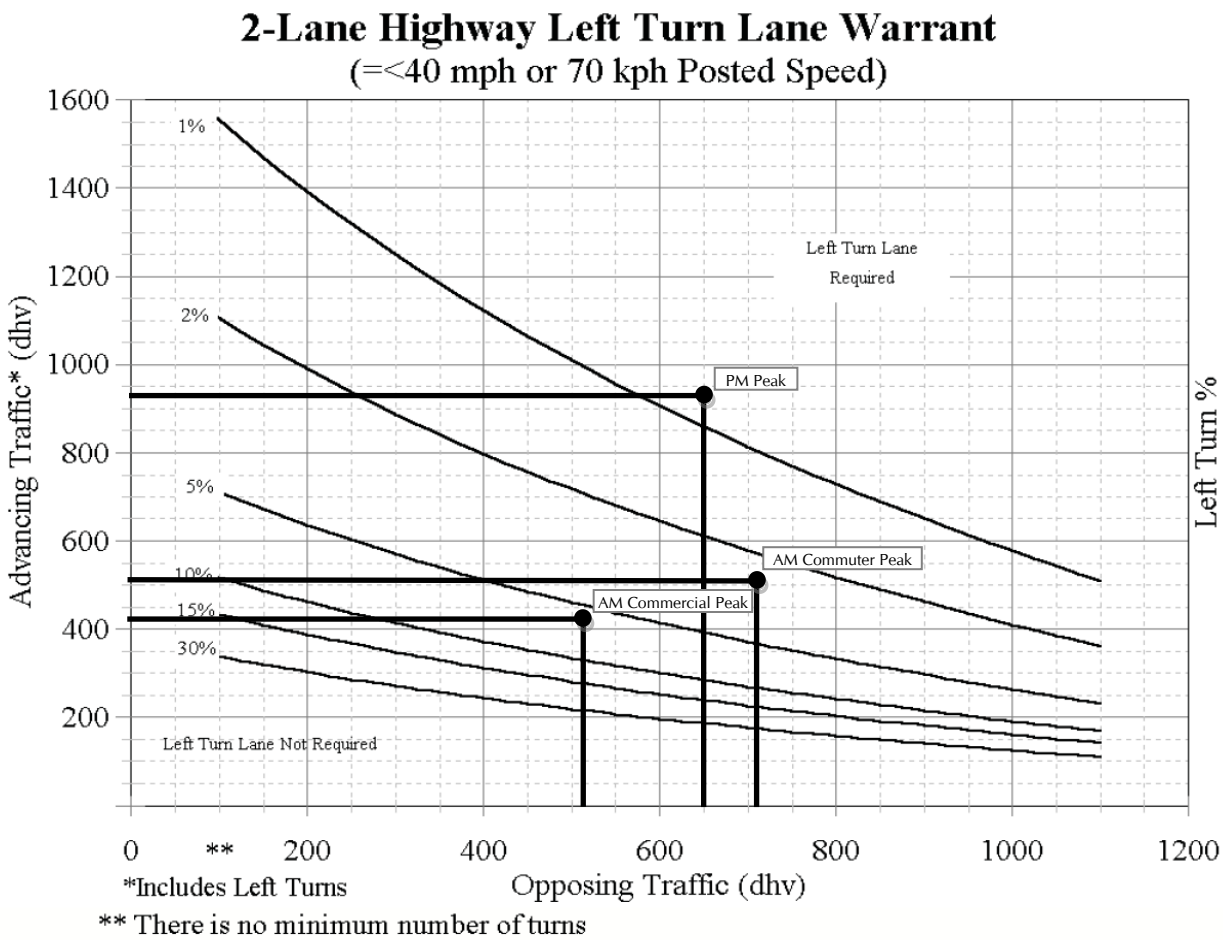
Mogadore Road / Sunnybrook Road Intersection

Southbound Left Turn



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Design Year 2039 'Build' Conditions

AM Commuter Peak Hour:
- Advancing Traffic = 510 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 710 Veh
- Left Turn % = 1.9%

AM Commercial Peak Hour:
- Advancing Traffic = 420 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 510 Veh
- Left Turn % = 2.4%

PM Peak Hour:
- Advancing Traffic = 940 Veh
- Left Turn Traffic = 10 Veh
- Opposing Traffic = 650 Veh
- Left Turn % = 1.1%

Turn Lane Warranted

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APPENDIX H
EXISTING SIGNAL TIMING PRINTOUTS

Intersection 1 - Econolite Type - ASC3

Tillmadge EAST Drive

Controller Timing Plan (MM)2-1
Plan 1

Phase	1 (WBLT)	2 (EB)	3	4 (SB)	5	6 (WB)	7	8 (NB)	9	10	11	12	13	14	15	16
Min Green	7	10	0	10	0	17	0	10	5	5	5	5	5	5	5	5
BK Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	0	0	0	0	0	0	0	0	7	0	7	0	10	0	10
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	7	0	7	0	7	0	7	7	10	7	10	0	16	0	16
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vehicle Ext	1.1	4.3	0.0	0.8	0.0	5.0	0.0	0.8	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Ext 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max 1	12	40	0	30	0	52	0	30	35	35	35	35	35	35	35	35
Max 2	12	40	0	30	0	52	0	30	40	40	40	40	40	40	40	40
Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DYM Stp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.9	3.9	3.0	3.1	3.0	3.9	3.0	3.1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.7	1.7	0.0	2.5	0.0	1.7	0.0	2.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ACT B4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SEC ACT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Max Int	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time B4	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Cars Wt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
STPT Duc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection 1 - Econolite Type - ASC3

Time Base Day Plan/Schedule

Day Plan (MM)5-3

Plan	Event	Action Plan	Start Time
1	1	4	12:00 AM
1	2	1	6:00 AM
1	3	2	10:00 AM
1	4	3	2:00 PM
1	5	4	7:00 PM

Schedule (MM)5-4

Schedule Number	Day Plan Number	Months	Days of Week	Days of Month
0	1			1, 2, 10, 11, 12, 13, 25, 26, 27
1	1	Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sept, Oct, Nov, Dec	Sun, Mon, Tues, Wed, Thurs, Fri, Sat	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31

Intersection 1 - Econolite Type - ASC3

Coordination Options

Coordination Options (MM)3-1

Manual Pattern: Auto
INTCONT Source: HDW
Transition: Smooth
Offset Reference: Yell
Dly Coord Wz-Lz: No
Fo Add Ini Green: No
Ped Recall: No
Resync Count: 0
Multisync: No
Splits In: Percent
INCONT Foramt: TS2
ECPI Coord: Yes
Dwell Add Time: 0
Force Off: Float
Use Ped Time: Yes
Ped Resv: No
Local Zero Ovrd: No
Max Select: MAXINH
Offsets In: Percent

Split Demand (MM)3-5

Demand 1	Demand 2
Phase	Phase

Demand	Detector	Call Time	Cycle Count

Split Pattern Data (MM)3-3

Coord Phases

Split Pattern	Phase
1	2
1	6
2	2
2	6
3	2
3	6
4	2
4	6

Split/Modes

Split Pattern	Phase	Split	Mode
1	1	10	None
1	2	70	None
1	4	20	None
1	6	80	None
1	8	20	None
2	1	13	None
2	2	62	None
2	4	25	None
2	6	75	None
2	8	25	None
3	1	13	None
3	2	61	None
3	4	26	None
3	6	74	None
3	8	26	None
4	1	15	None
4	2	65	None
4	4	20	None
4	6	80	None
4	8	20	None

Auto Perm Minimum Green (Seconds) (MM)3-4

Phase	Min Green

Intersection 1 - Econolite Type - ASC3

Coordination Pattern Data

Pattern Data (MM)3-2

Pattern	TS2	Cycle	Offset Value	Splits In	XArt Pattern	Vehicle Perm 1	Vehicle Perm 2 Disp
1	0-1	60	0	Percent	0	0	0
2	0-2	70	0	Percent	0	0	0
3	0-3	80	0	Percent	0	0	0
4	1-1	60	0	Percent	0	0	0

Pattern	Actuated Coord	Actuated Walk Rest	Std(COS)	Split Pattern	Sequence	Offsets In	Sequence Select
1	No	No	0	1	0	Percent	Coord
2	No	No	0	2	0	Percent	Coord
3	No	No	0	3	0	Percent	Coord
4	No	No	0	4	0	Percent	Coord

Pattern	Vehicle Perm 2	Action Plan 2	Timing Plan	Phase Reservice	Ring Split Ext 1	Ring Split Ext 2	Ring Split Ext 3
1	0	0	0	No	0	0	0
2	0	0	0	No	0	0	0
3	0	0	0	No	0	0	0
4	0	0	0	No	0	0	0

Pattern	Ring Split Ext 4	Split Demand Pattern 1	Split Demand Pattern 2	Ring Displacement 2	Ring Displacement 3	Ring Displacement 4
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0

Split Preferencec Phases

Pattern	Phase	Preference 1	Preference 2

Special Functions

Pattern	Function	Output

Portage County Tallmadge Rd & Cascade West Dr 2/21/2006 10:46

By-Phase Timing Data

	Phase											
Direction	1 WBLT	2 EB	3	4	5	6 WB	7	8 NB	9	10	11	12
Minimum Green	7	10	0	0	0	17	0	10	5	5	5	5
Bike Min Green	0	0	0	0	0	0	0	0	0	0	0	0
Cond Serv Min Grn	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	0	0	0	0	0	0	0	0	10	0	10
Ped Clearance	0	7	0	7	0	7	0	7	0	16	0	16
Veh Extension	1.4	4.8	0.0	0.0	0.0	5.6	0.0	0.8	5.0	5.0	5.0	5.0
Alt Veh Exten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Extension	0	0	0	0	0	0	0	0	0	0	0	0
Max 1	12	40	0	0	0	52	0	30	35	35	35	35
Max 2	12	40	0	0	0	52	0	30	40	40	40	40
Max 3	0	0	0	0	0	0	0	0	0	0	0	0
Det. Fail Max	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Change	3.9	3.9	3.0	3.0	3.0	3.9	3.0	3.1	3.0	3.0	3.0	3.0
Red Clearance	1.9	2.0	0.0	0.0	0.0	1.9	0.0	2.8	1.0	1.0	1.0	1.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act. B4 Init	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	30	30	30	30	30	30	30	30	30	30	30	30
Time B4 Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Cars Waiting	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Coordination Patterns

Pattern 1, 2, 3
Cycle Length . . 60 COS . . . . . FREE
Offset 1 . . 0 Offset 2 . . 0 Offset 3 . . 0
Vehicle Permissive . . [1] 10 [2] 0
Vehicle Perm 2 Displacement 0 Phase Reservice. . NO
Splits: Phase 1- 22 2- 51 3- 0 4- 0
Phase 5- 0 6- 73 7- 0 8- 27
Phase 9- 0 10- 0 11- 0 12- 0 Split Sum: 0
Split Extension/Ring [1] 0 [2] 0
Split Demand Pattern [1] 0 [2] 0
XRT Pattern. . . 0

Phase Number:	1	2	3	4	5	6	7	8	9	10	11	12
Coord Phases . . .		X	.	.	.	X	.	.	.	.	.	.
Veh Recall		.	.	.	.	.	.	.	.	.	.	.
Veh Max Recall . .		.	.	.	.	.	.	.	.	.	.	.
Ped Recall		.	.	.	.	.	.	.	.	.	.	.
Veh Omit		.	.	.	.	.	.	.	.	.	.	.

Alt Sequence . . A: . B: . C: . D: . E: . F: .

Pattern 13, 14, 15
Cycle Length . . 70 COS . . . . . FREE
Offset 1 . . 0 Offset 2 . . 0 Offset 3 . . 0
Vehicle Permissive . . [1] 10 [2] 0
Vehicle Perm 2 Displacement 0 Phase Reservice. . NO
Splits: Phase 1- 18 2- 49 3- 0 4- 0
Phase 5- 0 6- 67 7- 0 8- 33
Phase 9- 0 10- 0 11- 0 12- 0 Split Sum: 0
Split Extension/Ring [1] 0 [2] 0
Split Demand Pattern [1] 0 [2] 0
XRT Pattern. . . 0

Phase Number:	1	2	3	4	5	6	7	8	9	10	11	12
Coord Phases . . .		X	.	.	.	X	.	.	.	.	.	.
Veh Recall		.	.	.	.	.	.	.	.	.	.	.
Veh Max Recall . .		.	.	.	.	.	.	.	.	.	.	.
Ped Recall		.	.	.	.	.	.	.	.	.	.	.
Veh Omit		.	.	.	.	.	.	.	.	.	.	.

Alt Sequence . . A: . B: . C: . D: . E: . F: .

Pattern 25, 26, 27
Cycle Length . . 80 COS . . . . . FREE
Offset 1 . . 0 Offset 2 . . 0 Offset 3 . . 0
Vehicle Permissive . . [1] 10 [2] 0
Vehicle Perm 2 Displacement 0 Phase Reservice. . NO
Splits: Phase 1- 24 2- 41 3- 0 4- 0
Phase 5- 0 6- 65 7- 0 8- 35
Phase 9- 0 10- 0 11- 0 12- 0 Split Sum: 0
Split Extension/Ring [1] 0 [2] 0
Split Demand Pattern [1] 0 [2] 0
XRT Pattern. . . 0

Phase Number:	1	2	3	4	5	6	7	8	9	10	11	12
Coord Phases . . .		X	.	.	.	X	.	.	.	.	.	.
Veh Recall		.	.	.	.	.	.	.	.	.	.	.
Veh Max Recall . .		.	.	.	.	.	.	.	.	.	.	.
Ped Recall		.	.	.	.	.	.	.	.	.	.	.
Veh Omit		.	.	.	.	.	.	.	.	.	.	.

Alt Sequence . . A: . B: . C: . D: . E: . F: .

Portage County Tallmadge Rd & Cascade West Dr 2/21/2006 10:46

NIC Program Steps

Step	Program	Step Begins	Pattern	Override
1	1	0000	37	NO
2	1	0600	1	NO
3	1	1000	13	NO
4	1	1400	25	NO
5	1	1900	37	NO

.tage County Tallmadge Rd & Cascade West Dr 2/21/2006 10:46

ption Data

Phase

	1	2	3	4	5	6	7	8	9	10	11	12
Guaranteed Passage . .	.	.	.	.	.	.	.	.	.	.	.	.
Call To NonActuated 1 . .	.	X	.	.	.	X	.	.	.	.	.	.
Call To NonActuated 2 . .	.	.	.	.	.	.	.	.	.	.	.	.
Dual Entry.	.	X	.	X	.	X	.	X	.	X	.	X
Conditional Service . .	X	.	X	.	X	.	X	.	X	.	X	.
Conditional Reservice . .	.	.	.	.	.	.	.	.	.	.	.	.
Actuated Rest in Walk . .	.	.	.	.	.	.	.	.	.	.	.	.
Flashing Walk	.	.	.	.	.	.	.	.	.	.	.	.

Enable Programmable Options

Dual Entry.	ON	Backup Protection Group 1	OFF
Conditional Service	OFF	Backup Protection Group 2	OFF
Ped Clearance Protection. . . .	OFF	Backup Protection Group 3	OFF
Special Preempt Overlap Flash .	OFF	Simultaneous Gap Group 1.	ON
Cond Service Det Cross Switch .	OFF	Simultaneous Gap Group 2.	ON
Lock Detectors in Red Only. . .	OFF	Simultaneous Gap Group 3.	OFF

Five Section Left Turn Control

Phases:	5-2	7-4	1-6	3-8	11-10	9-12
Left Turn Head. . . .	.	.	.	.	.	.

:tage County Tallmadge Rd & Cascade West Dr 2/21/2006 10:46

:OD Weekly/Yearly

Weekly Program Numbers

	1	2	3	4	5	6	7	8	9	10	
Sunday . . .	1	1	1	1	1	1	1	1	1	1	Program No.
Monday . . .	1	1	1	1	1	1	1	1	1	1	Program No.
Tuesday. . .	1	1	1	1	1	1	1	1	1	1	Program No.
Wednesday. .	1	1	1	1	1	1	1	1	1	1	Program No.
Thursday . .	1	1	1	1	1	1	1	1	1	1	Program No.
Friday . . .	1	1	1	1	1	1	1	1	1	1	Program No.
Saturday . .	1	1	1	1	1	1	1	1	1	1	Program No.

Week of Year

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Prog	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Prog	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Prog	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

INTERSECTION: **I-76 WB & TALLMADGE** COUNTY: PORTAGE

LOG: 31.31

FILE #. 679

HOUSING TYPE: APX

CONTROL: 8 PHASE (16-LS)

MONITOR: 12 CHANNEL

POWER CO. OHIO EDISON

METER #. 797 045 088

AMPLIFIERS:

DELAY: 6 PHASE 4 SB = 5sec, PHASE 8 Ramp = 5sec

REG:

FLASH: Tallmadge = Y
Mogadore = R
Ramp = R

CONTROLLER SEQUENCE

1	2	4	3
5	6	7	8

	WB Lt PHASE 1	CR-18EB PHASE 2	PHASE 3	SB PHASE 4	EB Lt PHASE 5	CR-18WB PHASE 6	PHASE 7	Ramp PHASE 8
WALK								
PED CLR								
MIN	7	20		10	7	20		10
MIN GAP								
PASS	3	3		4	3	3		4
YEL	3	4		3	3	4		3
RED	1	3		4	1	2		4
S\A								
TBR								
TTR								
MAX	12	20		40	10	32		20
MAX 2								
RECALL		MIN.				MIN.		
MEMORY	NO-LOCK			NO-LOCK	NO-LOCK			NO-LOCK
CNA								

SIGNAL HEADS:

SINGLE: 5

2 WAY:

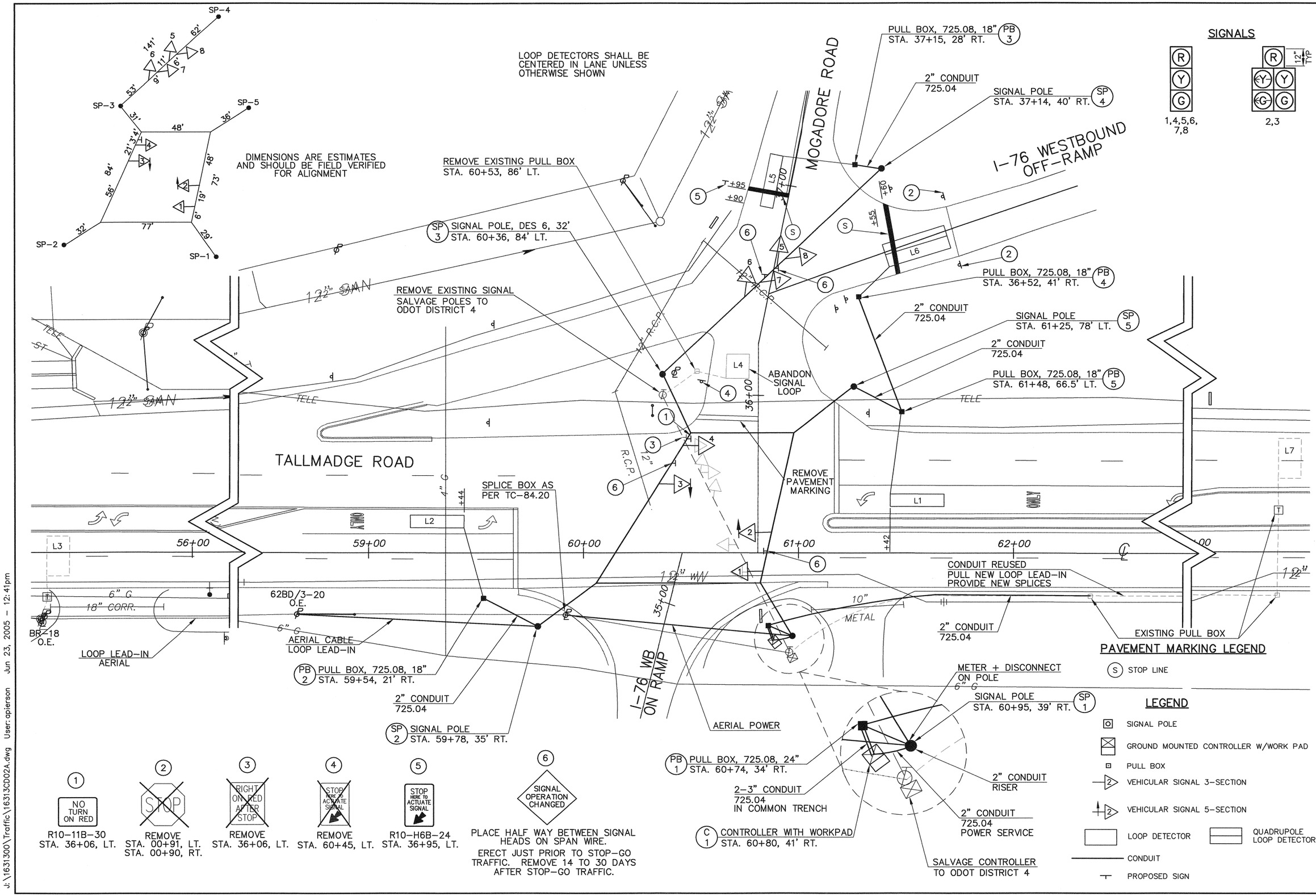
3 WAY:

4 WAY:

5 UNIT: 3

COMMENTS:

DATE 11-4-10
HAS A BATTERY BACK-UP
OLA=4
Tether & Backplate = 3-15-11


SP-1
SP-2
SP-3
SP-4
SP-5
DIMENSIONS ARE ESTIMATES AND SHOULD BE FIELD VERIFIED FOR ALIGNMENT
LOOP DETECTORS SHALL BE CENTERED IN LANE UNLESS OTHERWISE SHOWN
REMOVE EXISTING PULL BOX
STA. 60+53, 86' LT.
SP 3 SIGNAL POLE, DES 6, 32'
STA. 60+36, 84' LT.
REMOVE EXISTING SIGNAL
SALVAGE POLES TO ODOT DISTRICT 4
TALLMADGE ROAD
MOGADORE ROAD
I-76 WESTBOUND OFF-RAMP
PULL BOX, 725.08, 18" PB 3
STA. 37+15, 28' RT.
2" CONDUIT
725.04
SIGNAL POLE
STA. 37+14, 40' RT. SP 4
PULL BOX, 725.08, 18" PB 4
STA. 36+52, 41' RT.
2" CONDUIT
725.04
SIGNAL POLE
STA. 61+25, 78' LT. SP 5
2" CONDUIT
725.04
PULL BOX, 725.08, 18" PB 5
STA. 61+48, 66.5' LT.
ABANDON SIGNAL LOOP
REMOVE PAVEMENT MARKING
SPLICE BOX AS PER TC-84.20
62BD/3-20
O.E.
AERIAL CABLE
LOOP LEAD-IN
LOOP LEAD-IN AERIAL
PULL BOX, 725.08, 18" PB 2
STA. 59+54, 21' RT.
2" CONDUIT
725.04
SIGNAL POLE SP 2
STA. 59+78, 35' RT.
I-76 WB ON RAMP
AERIAL POWER
CONDUIT REUSED
PULL NEW LOOP LEAD-IN
PROVIDE NEW SPLICES
2" CONDUIT
725.04
EXISTING PULL BOX
METER + DISCONNECT ON POLE
SIGNAL POLE
STA. 60+95, 39' RT. SP 1
PULL BOX, 725.08, 24" PB 1
STA. 60+74, 34' RT.
2-3" CONDUIT
725.04
IN COMMON TRENCH
CONTROLLER WITH WORKPAD C 1
STA. 60+80, 41' RT.
2" CONDUIT
RISER
2" CONDUIT
725.04
POWER SERVICE
SALVAGE CONTROLLER TO ODOT DISTRICT 4
SIGNALS
1,4,5,6,7,8
2,3
PAVEMENT MARKING LEGEND
S STOP LINE
LEGEND
SIGNAL POLE
GROUND MOUNTED CONTROLLER W/WORK PAD
PULL BOX
VEHICULAR SIGNAL 3-SECTION
VEHICULAR SIGNAL 5-SECTION
LOOP DETECTOR
QUADRUPOLE LOOP DETECTOR
CONDUIT
PROPOSED SIGN
1 NO TURN ON RED
R10-11B-30
STA. 36+06, LT.
2 STOP
REMOVE
STA. 00+91, LT.
STA. 00+90, RT.
3 RIGHT ON RED AFTER STOP
REMOVE
STA. 36+06, LT.
4 STOP HERE TO ACTUATE SIGNAL
REMOVE
STA. 60+45, LT.
5 STOP HERE TO ACTUATE SIGNAL
R10-H6B-24
STA. 36+95, LT.
6 SIGNAL OPERATION CHANGED
PLACE HALF WAY BETWEEN SIGNAL HEADS ON SPAN WIRE.
ERECT JUST PRIOR TO STOP-GO TRAFFIC. REMOVE 14 TO 30 DAYS AFTER STOP-GO TRAFFIC.
CALCULATED AJP
CHECKED TKI
TRAFFIC SIGNAL PLAN
I-76 WESTBOUND RAMPS/MOGADORE ROAD
CASCADES CENTER
13
20
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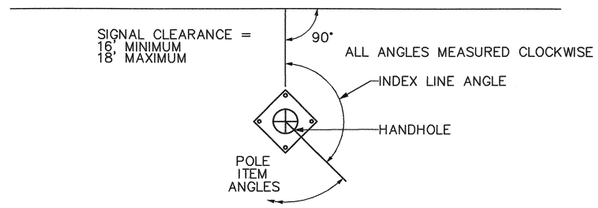
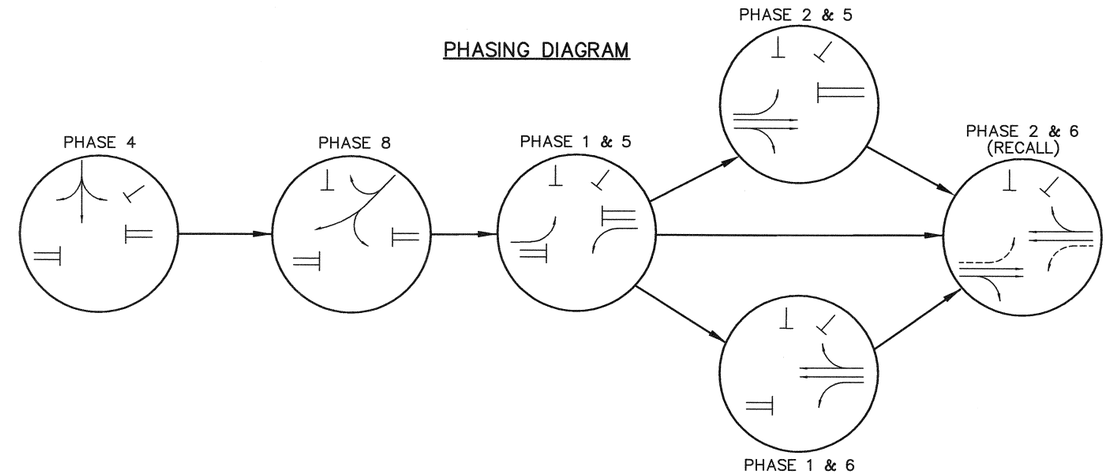


PHASING DIAGRAM



SIGNAL SUPPORT TYPE TC-81.10

POLE NO.	POLE DESIGN NO.	POLE HEIGHT (FT.)	FOUNDATION ELEVATION	GROUND ELEVATION AT FOUNDATION	MESSENGER WIRE ATTACHMENT HEIGHT	INDEX LINE ANGLE (HANDHOLE)	ANGLES (DEG.) FROM INDEX LINE				
							MESSENGER WIRE	CABLE ENTRANCE (12" FROM TOP)	ANCHOR BOLT REF ANGLE	UNUSED CONDUIT ELL, 2"	POWER SERVICE
SP1	7	30'	1096.48	1095.98	25.92'	135	180	180			180
SP2	7	30'	1095.31	1094.81	25.93'	180	225	180			
SP3	6	32'	1093.98	1093.48	30.90'	90	225	180		90	
SP3					28.00'	90	120	180			
SP4	7	30'	1094.38	1093.88	27.60'	225	180	180	45		
SP5	7	30'	1092.90	1092.40	27.96'	180	225	180			

POLES SUPPLIED BY ODOT

TIMING CHART

INTERVAL OR FEATURE			NEMA PHASE NO.							
			1	2	3	4	5	6	7	8
INTERSECTION MOVEMENT			WB LT	EB		SB	EB LT	WB		SW
MINIMUM GREEN (INITIAL)		(SEC.)	7	15		10	7	20		10
VEHICLE EXTENSION		(SEC.)	3	3		4	3	3		4
MAXIMUM GREEN I		(SEC.)	12	20		20	10	32		20
YELLOW CHANGE		(SEC.)	3	4		3	3	4		3
ALL RED CLEARANCE		(SEC.)	2	2		4	2	2		5
WALK		(SEC.)	–	–		–	–	–		–
PEDESTRIAN CLEARANCE		(SEC.)	–	–		–	–	–		–
RECALL	MAXIMUM	(ON/OFF)	OFF	OFF		OFF	OFF	OFF		OFF
	MINIMUM	(ON/OFF)	OFF	ON		OFF	OFF	ON		OFF
	PEDESTRIAN	(ON/OFF)	OFF	OFF		OFF	OFF	OFF		OFF
MEMORY		(ON/OFF)	OFF	OFF		OFF	OFF	OFF		OFF

TRAFFIC SIGNAL DETECTOR CHART

LOOP DESIGNATION	SIZE	NUMBER OF TURNS	PULSE OR PRESENCE	DELAY (SEC.)	–	DELAY INHIBITED DURING PHASE	CONNECT TO DETECTOR UNIT	ASSOCIATED CONTROLLER PHASE	REMARKS
L1	6' x 25'	3	PRESENCE	–	–	–	1	1	WB LEFT
L2	6' x 25'	3	PRESENCE	–	–	–	2	5	EB LEFT
L3 *	6' x 19'	3	PRESENCE	–	–	–	3	2	EB EXTENSION
L5	6' x 25'	3	PRESENCE	5	–	4	4	4	SB
L6	10' x 30'	QUAD	PRESENCE	5	–	8	5	8	I-76 RAMP
L7 *	6' x 25'	3	PRESENCE	–	–	–	6	6	WB EXTENSION

* – EXISTING LOOP

DISPLAY CHART

PHASE	1+5				1+6				2+5				2+6				4				8				
DISPLAY	R/W	C1	C2		R/W	C1	C2		R/W	C1	C2		R/W	C1	C2		R/W	C1	C2		R/W	C1	C2		FLASH
SIGNAL																									
1	R	R	R		R	R	R		G	Y	R		G	Y	R		R	R	R		R	R	R		Y
2	~~G~~/R	~~Y~~/R	R	1*	R	R	R		~~G~~/G	~~Y~~/Y	R		G	Y	R		R	R	R		R	R	R		Y
3	~~G~~/R	~~Y~~/R	R	2*	~~G~~/G	~~Y~~/Y	R		R	R	R		G	Y	R		R	R	R		R	R	R		Y
4	R	R	R		G	Y	R		R	R	R		G	Y	R		R	R	R		R	R	R		Y
5+6	R	R	R		R	R	R		R	R	R		R	R	R		G	Y	R		R	R	R		R
7+8	R	R	R		R	R	R		R	R	R		R	R	R		R	R	R		G	Y	R		R

1* – REMAINS ~~G~~/R IF FOLLOWED BY 2+5
2* – REMAINS ~~G~~/R IF FOLLOWED BY 1+6

CALCULATED AJP
CHECKED TKI

PHASING, TIMING, DETECTORS AND POLE CHART
I-76 WESTBOUND RAMPS/MOGADORE ROAD

CASCADES CENTER

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INTERSECTION: **I-76 EB & TALLMADGE** COUNTY: PORTAGE

LOG: 31.31

FLASH: SR-18 = Y
I-76 = R

FILE #. 9819

HOUSING TYPE: HENNESSEY

CONTROL: 8 PHASE (16-LS)

MONITOR: 12 CHANNEL

POWER CO. OHIO EDISON

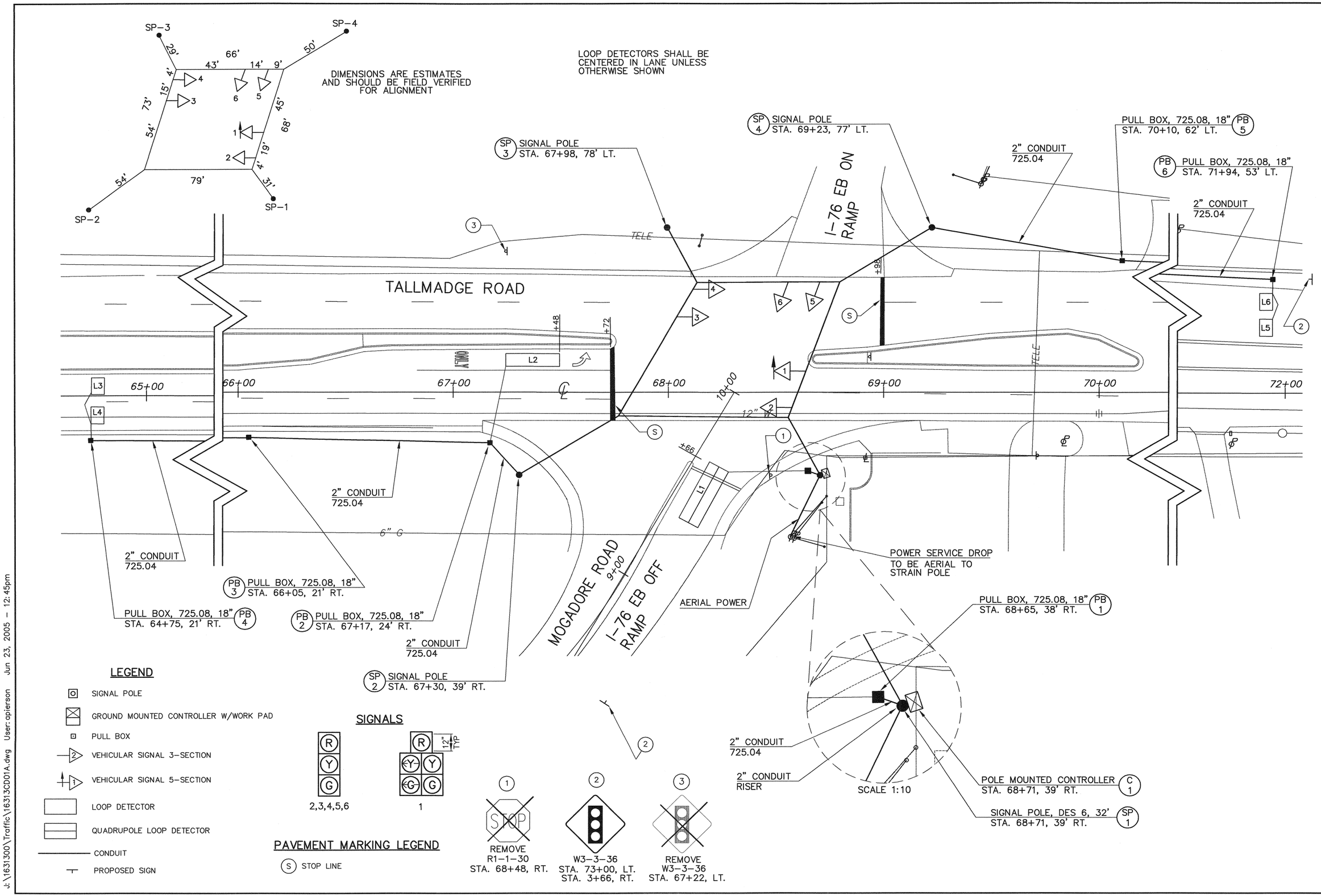
METER #. 920 020 545

AMPLIFIERS:
DELAY: 6 PH-8 NB = 10 sec
REG:

	PHASE 1	CR18EB PHASE 2	PHASE 3	PHASE 4	EB Lt PHASE 5	CR18WB PHASE 6	PHASE 7	Ramp PHASE 8
WALK								
PED CLR								
MIN		22			10	10		12
MIN GAP								
PASS		3			3	3		3
YEL		4			3	4		3
RED		2			2	2		2
S\A								
TBR								
TTR								
MAX		25			15	18		30
MAX 2								
RECALL		MIN.			NO-LOCK	MIN.		NO-LOCK
CNA								

SIGNAL HEADS:
SINGLE: 5
2 WAY:
3 WAY:
4 WAY:
5 UNIT: 1

COMMENTS: DATE 11-9-10
Tether & Backplate = 3-18-11


SP-3
SP-4
SP-2
SP-1
29'
66'
43'
14'
9'
50'
4'
15'
73'
54'
54'
79'
31'
4'
19'
68'
45'
DIMENSIONS ARE ESTIMATES AND SHOULD BE FIELD VERIFIED FOR ALIGNMENT
LOOP DETECTORS SHALL BE CENTERED IN LANE UNLESS OTHERWISE SHOWN
SP 3 SIGNAL POLE STA. 67+98, 78' LT.
SP 4 SIGNAL POLE STA. 69+23, 77' LT.
PULL BOX, 725.08, 18" PB 5 STA. 70+10, 62' LT.
PB 6 PULL BOX, 725.08, 18" STA. 71+94, 53' LT.
2" CONDUIT 725.04
2" CONDUIT 725.04
I-76 EB ON RAMP
TELE
TALLMADGE ROAD
ONLY
+48
+72
+96
L2
L3
L4
L5
L6
L1
65+00
66+00
67+00
68+00
69+00
70+00
72+00
10+00
12" W
+66
6" G
2" CONDUIT 725.04
2" CONDUIT 725.04
PULL BOX, 725.08, 18" PB 3 STA. 66+05, 21' RT.
PULL BOX, 725.08, 18" PB 4 STA. 64+75, 21' RT.
PB 2 PULL BOX, 725.08, 18" STA. 67+17, 24' RT.
2" CONDUIT 725.04
SP 2 SIGNAL POLE STA. 67+30, 39' RT.
MOGADORE ROAD
9+00
I-76 EB OFF RAMP
AERIAL POWER
POWER SERVICE DROP TO BE AERIAL TO STRAIN POLE
PULL BOX, 725.08, 18" PB 1 STA. 68+65, 38' RT.
2" CONDUIT 725.04
2" CONDUIT RISER
SCALE 1:10
POLE MOUNTED CONTROLLER C 1 STA. 68+71, 39' RT.
SIGNAL POLE, DES 6, 32' SP 1 STA. 68+71, 39' RT.
LEGEND
SIGNAL POLE
GROUND MOUNTED CONTROLLER W/WORK PAD
PULL BOX
VEHICULAR SIGNAL 3-SECTION
VEHICULAR SIGNAL 5-SECTION
LOOP DETECTOR
QUADRUPOLE LOOP DETECTOR
CONDUIT
PROPOSED SIGN
SIGNALS
R
Y
G
2,3,4,5,6
12" TYP
1
PAVEMENT MARKING LEGEND
S STOP LINE
STOP
REMOVE R1-1-30 STA. 68+48, RT.
W3-3-36 STA. 73+00, LT. STA. 3+66, RT.
REMOVE W3-3-36 STA. 67+22, LT.
(IN FEET)
CALCULATED AJP
CHECKED TKI
TRAFFIC SIGNAL PLAN
I-76 EASTBOUND RAMPS/MOGADORE ROAD
CASCADES CENTER
17
20
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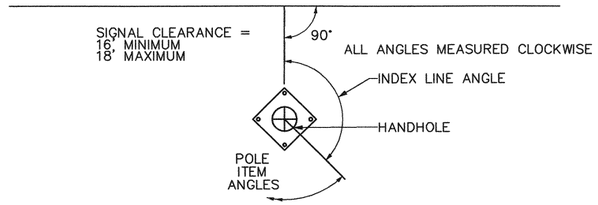
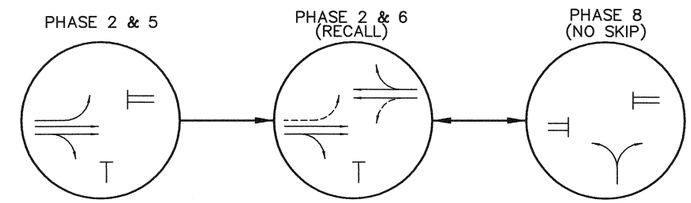


SIGNAL SUPPORT TYPE TC-81.10

POLE NO.	POLE DESIGN NO. (*)	POLE HEIGHT (FT.)	FOUNDATION ELEVATION	GROUND ELEVATION AT FOUNDATION	MESSENGER WIRE ATTACHMENT HEIGHT	INDEX LINE ANGLE (HANDHOLE)	ANGLES (DEG.) FROM INDEX LINE					
							MESSENGER WIRE	CABLE ENTRANCE (12" FROM TOP)	CONTROLLER	UNUSED CONDUIT ELL, 2"	POWER SERVICE	ANCHOR BOLT REF ANGLE
SP1	6	32'	1093.84	1093.34	31.57	135	180	180	270		90	45
SP2	7	30'	1092.44	1091.94	23.84	180	225	180				0
SP3	7	30'	1091.95	1091.45	29.14	180	135	180		180		0
SP4	7	30'	1091.89	1091.39	29.20	180	225	180				0

* – ALL FOUR POLES PROVIDED BY ODOT DISTRICT 4.

PHASING DIAGRAM



DISPLAY CHART

PHASE	2+5				2+6				8				
DISPLAY	R/W	C1	C2		R/W	C1	C2		R/W	C1	C2		FLASH
SIGNAL													
1	~~G~~/G	~~Y~~/G	G		G	Y	R		R	R	R		Y
2	G	G	G		G	Y	R		R	R	R		Y
3,4	R	R	R		G	Y	R		R	R	R		Y
5,6	R	R	R		R	R	R		G	Y	R		R

TRAFFIC SIGNAL DETECTOR CHART

LOOP DESIGNATION	SIZE	NUMBER OF TURNS	PULSE OR PRESENCE	DELAY (SEC.)	I	DELAY INHIBITED DURING PHASE	CONNECT TO DETECTOR UNIT	ASSOCIATED CONTROLLER PHASE	REMARKS
L1	10' x 30'	QUAD	PRESENCE	10	–	8	1	8	NB
L2	6' x 25'	3	PRESENCE	–	–	–	2	5	EB LEFT
L3	6' x 8'	4	PRESENCE	–	–	–	3	2	EB LT EXT.
L4	6' x 8'	4	PRESENCE	–	–	–	4	2	EB RT EXT.
L5	6' x 8'	4	PRESENCE	–	–	–	5	6	WB LT EXT.
L6	6' x 8'	4	PRESENCE	–	–	–	6	6	WB RT EXT.

TIMING CHART

INTERVAL OR FEATURE			NEMA PHASE NO.							
			1	2	3	4	5	6	7	8
INTERSECTION MOVEMENT				EB			EB LT	WB		NB
MINIMUM GREEN (INITIAL)		(SEC.)		22			7	15		15
VEHICLE EXTENSION		(SEC.)		3			3	3		3
MAXIMUM GREEN I		(SEC.)		32			12	20		30
YELLOW CHANGE		(SEC.)		4			3	4		3
ALL RED CLEARANCE		(SEC.)		2			2	2		2
WALK		(SEC.)		–			–	–		–
PEDESTRIAN CLEARANCE		(SEC.)		–			–	–		–
RECALL	MAXIMUM	(ON/OFF)		OFF			OFF	OFF		OFF
	MINIMUM	(ON/OFF)		ON			OFF	ON		OFF
	PEDESTRIAN	(ON/OFF)		OFF			OFF	OFF		OFF
MEMORY		(ON/OFF)		OFF			OFF	OFF		OFF

CALCULATED AJP
CHECKED TKI

PHASING, TIMING, DETECTORS AND POLE CHART
I-76 EASTBOUND RAMPS/MOGADORE ROAD

CASCADES CENTER

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APPENDIX I
HCM INTERSECTION CAPACITY ANALYSIS - 'NO-BUILD' CONDITIONS

EXISTING YEAR 2013 CONDITIONS

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	270	50	70	260	40	90
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	186.3	186.3
Adj Flow Rate, veh/h	293	54	76	283	43	98
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	2	2
Cap, veh/h	844	718	633	1180	272	243
Arrive On Green	0.46	0.46	0.17	1.00	0.15	0.15
Sat Flow, veh/h	1827	1553	1740	1827	1774	1583
Grp Volume(v), veh/h	293	54	76	283	43	98
Grp Sat Flow(s),veh/h/ln	1827	1553	1740	1827	1774	1583
Q Serve(g_s), s	6.0	1.1	1.1	0.0	1.2	3.3
Cycle Q Clear(g_c), s	6.0	1.1	1.1	0.0	1.2	3.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	844	718	633	1180	272	243
V/C Ratio(X)	0.35	0.08	0.12	0.24	0.16	0.40
Avail Cap(c_a), veh/h	844	718	705	1180	311	278
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.98	0.98	1.00	1.00
Uniform Delay (d), s/veh	10.1	8.8	5.4	0.0	21.6	22.4
Incr Delay (d2), s/veh	1.1	0.2	0.1	0.5	0.3	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.5	0.5	0.2	0.6	1.5
LnGrp Delay(d),s/veh	11.2	9.0	5.5	0.5	21.8	23.5
LnGrp LOS	B	A	A	A	C	C
Approach Vol, veh/h	347			359	141	
Approach Delay, s/veh	10.9			1.5	23.0	
Approach LOS	B			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.8	34.3				45.1		14.9
Change Period (Y+Rc), s	* 5.8000002	5.9			* 5.9000001			5.9
Max Green Setting (Gmax), s	* 7.4000001	24.7			* 37.900002			10.3
Max Q Clear Time (g_c+I1), s	3.1	8.0				2.0		5.3
Green Ext Time (p_c), s	0.0	1.7				1.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	330	20	90	320	0	10	0	60	0	0	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	190.0	190.0	186.3	186.3	190.0	186.3	190.0
Adj Flow Rate, veh/h	11	359	22	98	348	0	11	0	65	0	0	0
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	616	887	754	761	1244	0	300	0	194	0	229	0
Arrive On Green	0.97	0.97	0.97	0.10	0.68	0.00	0.12	0.00	0.12	0.00	0.00	0.00
Sat Flow, veh/h	1009	1827	1553	1740	1827	0	1412	0	1583	0	1863	0
Grp Volume(v), veh/h	11	359	22	98	348	0	11	0	65	0	0	0
Grp Sat Flow(s),veh/h/ln	1009	1827	1553	1740	1827	0	1412	0	1583	0	1863	0
Q Serve(g_s), s	0.0	0.5	0.0	1.3	4.3	0.0	0.4	0.0	2.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.5	0.0	1.3	4.3	0.0	0.4	0.0	2.1	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	616	887	754	761	1244	0	300	0	194	0	229	0
V/C Ratio(X)	0.02	0.40	0.03	0.13	0.28	0.00	0.04	0.00	0.33	0.00	0.00	0.00
Avail Cap(c_a), veh/h	616	887	754	806	1244	0	374	0	278	0	327	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.4	0.4	0.4	4.5	3.6	0.0	22.1	0.0	22.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	1.3	0.1	0.1	0.6	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.5	0.0	0.6	2.3	0.0	0.2	0.0	1.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.5	1.8	0.5	4.6	4.2	0.0	22.2	0.0	23.9	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A		C		C			
Approach Vol, veh/h		392			446			76			0	
Approach Delay, s/veh		1.7			4.2			23.6			0.0	
Approach LOS		A			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	11.1	36.3		12.6		47.4		12.6
Change Period (Y+Rc), s	* 5.6000004	* 5.6000004		5.6	* 5.6000004			5.6
Max Green Setting (Gmax), s	* 7	* 26.200001		10.0	* 38.799999			10.0
Max Q Clear Time (g_c+I1), s	3.3	2.5		0.0		6.3		4.1
Green Ext Time (p_c), s	0.1	2.2		0.0		2.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.7
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	200	120	140	210	330	0	0	0	90	260	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	6.0	7.0					7.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00					1.00	
Frt	1.00	0.94		1.00	1.00	0.85					1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00					0.99	
Satd. Flow (prot)	1736	3276		1736	1827	1553					1753	
Flt Permitted	0.45	1.00		0.46	1.00	1.00					0.99	
Satd. Flow (perm)	830	3276		843	1827	1553					1753	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	217	130	152	228	359	0	0	0	98	283	0
RTOR Reduction (vph)	0	73	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	76	274	0	152	228	359	0	0	0	0	381	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt	NA		pm+pt	NA	custom				Split	NA	
Protected Phases	5	2		1	6	4				4 8	4 8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	31.5	21.4		33.9	23.1	54.6					57.9	
Effective Green, g (s)	31.5	21.4		33.9	23.1	54.6					57.9	
Actuated g/C Ratio	0.29	0.20		0.31	0.21	0.51					0.54	
Clearance Time (s)	4.0	7.0		4.0	6.0	7.0						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0						
Lane Grp Cap (vph)	326	648		353	390	784					938	
v/s Ratio Prot	0.02	0.08		c0.04	c0.12	0.13					c0.22	
v/s Ratio Perm	0.05			0.09		0.10						
v/c Ratio	0.23	0.42		0.43	0.58	0.46					0.41	
Uniform Delay, d1	28.5	37.9		28.0	38.2	17.2					14.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00					0.01	
Incremental Delay, d2	0.4	0.4		0.8	2.2	0.4					0.2	
Delay (s)	28.9	38.4		28.8	40.4	17.6					0.4	
Level of Service	C	D		C	D	B					A	
Approach Delay (s)		36.7			27.0			0.0			0.4	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	108.1	Sum of lost time (s)	25.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	20	180	40	0	400	0	0	330	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.0			7.0			7.0	
Lane Util. Factor					1.00			1.00			1.00	
Frt					0.98			1.00			0.99	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					1729			1792			1767	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					1729			1792			1767	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	22	196	43	0	435	0	0	359	43
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	255	0	0	435	0	0	398	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	6%	6%	6%	6%	6%	6%
Turn Type				Split	NA			NA			NA	
Protected Phases				8	8			2 4 5 6			4	
Permitted Phases												
Actuated Green, G (s)					19.4			74.7			31.5	
Effective Green, g (s)					19.4			64.7			31.5	
Actuated g/C Ratio					0.18			0.60			0.29	
Clearance Time (s)					7.0						7.0	
Vehicle Extension (s)					3.0						3.0	
Lane Grp Cap (vph)					310			1072			514	
v/s Ratio Prot					c0.15			c0.24			c0.23	
v/s Ratio Perm												
v/c Ratio					0.82			0.41			0.78	
Uniform Delay, d1					42.7			11.5			35.1	
Progression Factor					1.00			0.08			1.00	
Incremental Delay, d2					16.0			0.2			7.2	
Delay (s)					58.7			1.1			42.3	
Level of Service					E			A			D	
Approach Delay (s)		0.0			58.7			1.1			42.3	
Approach LOS		A			E			A			D	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	108.1	Sum of lost time (s)	25.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	150	20	10	320	10	360	10	110	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	190.0	182.7	190.0	190.0	177.6	190.0			
Adj Flow Rate, veh/h	130	163	22	11	348	11	391	11	120			
Adj No. of Lanes	1	2	0	0	2	0	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	4	4	4	4	0	7	0			
Cap, veh/h	513	1379	183	80	629	20	423	12	130			
Arrive On Green	0.16	0.45	0.45	0.19	0.19	0.19	0.34	0.34	0.34			
Sat Flow, veh/h	1740	3081	410	41	3304	103	1234	35	379			
Grp Volume(v), veh/h	130	91	94	195	0	175	522	0	0			
Grp Sat Flow(s),veh/h/ln	1740	1736	1755	1804	0	1644	1647	0	0			
Q Serve(g_s), s	2.6	1.6	1.6	0.0	0.0	5.1	16.0	0.0	0.0			
Cycle Q Clear(g_c), s	2.6	1.6	1.6	5.1	0.0	5.1	16.0	0.0	0.0			
Prop In Lane	1.00		0.23	0.06		0.06	0.75		0.23			
Lane Grp Cap(c), veh/h	513	777	785	416	0	313	565	0	0			
V/C Ratio(X)	0.25	0.12	0.12	0.47	0.00	0.56	0.92	0.00	0.00			
Avail Cap(c_a), veh/h	728	1256	1270	686	0	564	941	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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	11.1	8.4	8.5	19.3	0.0	19.3	16.6	0.0	0.0			
Incr Delay (d2), s/veh	0.3	0.1	0.1	0.8	0.0	1.6	9.2	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(50%),veh/ln	1.2	0.8	0.8	2.6	0.0	2.4	8.7	0.0	0.0			
LnGrp Delay(d),s/veh	11.3	8.5	8.5	20.1	0.0	20.8	25.8	0.0	0.0			
LnGrp LOS	B	A	A	C		C	C					
Approach Vol, veh/h		315			370			522				
Approach Delay, s/veh		9.7			20.4			25.8				
Approach LOS		A			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		29.5			13.5	16.0		23.0
Change Period (Y+Rc), s		6.0			5.0	6.0		5.0
Max Green Setting (Gmax), s		38.0			15.0	18.0		30.0
Max Q Clear Time (g_c+I1), s		3.6			4.6	7.1		18.0
Green Ext Time (p_c), s		1.6			0.2	1.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.0
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	310	300	0	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	0	337	326	0	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	326	0	-	0	663	326
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	337	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1222	-	-	-	426	715
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1222	-	-	-	426	715
Mov Cap-2 Maneuver	-	-	-	-	426	-
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	723	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1222	-	-	-	534
HCM Lane V/C Ratio	-	-	-	-	0.041
HCM Control Delay (s)	0	-	-	-	12
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	380	10	20	400	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	413	11	22	435	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	424	0	896	212
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	478	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1118	-	295	794
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	623	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1118	-	289	794
Mov Cap-2 Maneuver	-	-	-	-	289	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	611	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	424	-	-	1118	-
HCM Lane V/C Ratio	0.051	-	-	0.019	-
HCM Control Delay (s)	13.9	-	-	8.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	380	420	10	10	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	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	413	457	11	11	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	467	0	-	0	690	462
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	228	-
Critical Hdwy	4.14	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.236	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1084	-	-	-	395	599
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	789	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1084	-	-	-	391	599
Mov Cap-2 Maneuver	-	-	-	-	493	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	781	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1084	-	-	-	493
HCM Lane V/C Ratio	0.01	-	-	-	0.022
HCM Control Delay (s)	8.4	-	-	-	12.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	60	150	50	30	290	20	40	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	65	163	54	33	315	22	43	11	22

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	337	0	0	217	0	0	723	723	190
Stage 1	-	-	-	-	-	-	321	321	-
Stage 2	-	-	-	-	-	-	402	402	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1211	-	-	1341	-	-	342	352	852
Stage 1	-	-	-	-	-	-	691	652	-
Stage 2	-	-	-	-	-	-	625	600	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1211	-	-	1341	-	-	306	321	852
Mov Cap-2 Maneuver	-	-	-	-	-	-	306	321	-
Stage 1	-	-	-	-	-	-	649	612	-
Stage 2	-	-	-	-	-	-	586	582	-

Approach	EB	WB	NB
HCM Control Delay, s	1.9	0.7	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	378	1211	-	-	1341	-	-	379
HCM Lane V/C Ratio	0.201	0.054	-	-	0.024	-	-	0.086
HCM Control Delay (s)	16.9	8.1	0	-	7.8	0	-	15.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0.1	-	-	0.3

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	728	739	326
Stage 1	391	391	-
Stage 2	337	348	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	339	345	715
Stage 1	633	607	-
Stage 2	677	634	-
Platoon blocked, %			
Mov Cap-1 Maneuver	300	314	715
Mov Cap-2 Maneuver	300	314	-
Stage 1	594	589	-
Stage 2	608	595	-

Approach	SB
HCM Control Delay, s	15.4
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	40	440	10	30	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	7	7	2	2
Mvmt Flow	0	43	478	11	33	0

Major/Minor	Minor1		Major1		Minor2	
Conflicting Flow All	484	484	0	0	484	489
Stage 1	484	-	-	-	0	0
Stage 2	0	-	-	-	484	489
Critical Hdwy	6.42	6.22	-	-	6.42	6.52
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	5.42	5.52
Follow-up Hdwy	3.518	3.318	-	-	3.518	4.018
Pot Cap-1 Maneuver	542	583	-	-	542	480
Stage 1	620	-	-	-	-	-
Stage 2	-	-	-	-	620	549
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	542	583	-	-	542	0
Mov Cap-2 Maneuver	542	-	-	-	542	0
Stage 1	620	-	-	-	-	0
Stage 2	-	-	-	-	620	0

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	12.1
HCM LOS	B		B

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBLn1
Capacity (veh/h)	-	-	583	542
HCM Lane V/C Ratio	-	-	0.075	0.06
HCM Control Delay (s)	-	-	11.7	12.1
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	0.2	0.2

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	10	410	30	10	340
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	33	11	446	33	11	370

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	853	462	0	0	478	0
Stage 1	462	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	324	592	-	-	1084	-
Stage 1	626	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	320	592	-	-	1084	-
Mov Cap-2 Maneuver	320	-	-	-	-	-
Stage 1	626	-	-	-	-	-
Stage 2	666	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.3	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	362	1084	-
HCM Lane V/C Ratio	-	-	0.12	0.01	-
HCM Control Delay (s)	-	-	16.3	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	170	110	130	210	70	120
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	186.3	186.3
Adj Flow Rate, veh/h	185	120	141	228	76	130
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	2	2
Cap, veh/h	793	674	695	1166	289	258
Arrive On Green	0.43	0.43	0.21	1.00	0.16	0.16
Sat Flow, veh/h	1827	1553	1740	1827	1774	1583
Grp Volume(v), veh/h	185	120	141	228	76	130
Grp Sat Flow(s),veh/h/ln	1827	1553	1740	1827	1774	1583
Q Serve(g_s), s	3.8	2.8	2.2	0.0	2.2	4.4
Cycle Q Clear(g_c), s	3.8	2.8	2.2	0.0	2.2	4.4
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	793	674	695	1166	289	258
V/C Ratio(X)	0.23	0.18	0.20	0.20	0.26	0.50
Avail Cap(c_a), veh/h	793	674	727	1166	308	275
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.98	0.98	1.00	1.00
Uniform Delay (d), s/veh	10.6	10.3	5.4	0.0	21.7	22.7
Incr Delay (d2), s/veh	0.7	0.6	0.1	0.4	0.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	1.3	1.0	0.1	1.1	2.0
LnGrp Delay(d),s/veh	11.3	10.9	5.6	0.4	22.2	24.2
LnGrp LOS	B	B	A	A	C	C
Approach Vol, veh/h	305			369	206	
Approach Delay, s/veh	11.1			2.4	23.5	
Approach LOS	B			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.1	32.3				44.4		15.6
Change Period (Y+Rc), s	* 5.8000002	5.9			* 5.9000001			5.9
Max Green Setting (Gmax), s	* 7.4000001	24.7			* 37.900002			10.3
Max Q Clear Time (g_c+I1), s	4.2	5.8				2.0		6.4
Green Ext Time (p_c), s	0.1	1.5				1.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	270	10	150	320	10	10	0	80	10	0	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	190.0	190.0	186.3	186.3	190.0	186.3	190.0
Adj Flow Rate, veh/h	11	293	11	163	348	11	11	0	87	11	0	11
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	578	832	708	773	1167	37	333	0	232	174	28	109
Arrive On Green	0.91	0.91	0.91	0.11	0.66	0.66	0.15	0.00	0.15	0.15	0.00	0.15
Sat Flow, veh/h	999	1827	1553	1740	1761	56	1433	0	1583	557	189	746
Grp Volume(v), veh/h	11	293	11	163	0	359	11	0	87	22	0	0
Grp Sat Flow(s),veh/h/ln	999	1827	1553	1740	0	1817	1433	0	1583	1493	0	0
Q Serve(g_s), s	0.1	1.2	0.0	2.4	0.0	4.9	0.0	0.0	2.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	1.2	0.0	2.4	0.0	4.9	0.3	0.0	2.9	0.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	0.50		0.50
Lane Grp Cap(c), veh/h	578	832	708	773	0	1204	333	0	232	311	0	0
V/C Ratio(X)	0.02	0.35	0.02	0.21	0.00	0.30	0.03	0.00	0.38	0.07	0.00	0.00
Avail Cap(c_a), veh/h	578	832	708	787	0	1204	367	0	270	346	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.4	1.5	1.4	5.3	0.0	4.2	21.5	0.0	22.6	21.6	0.0	0.0
Incr Delay (d2), s/veh	0.1	1.1	0.0	0.1	0.0	0.6	0.0	0.0	1.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	1.2	0.0	2.6	0.2	0.0	1.3	0.3	0.0	0.0
LnGrp Delay(d),s/veh	1.5	2.6	1.5	5.4	0.0	4.8	21.5	0.0	23.6	21.7	0.0	0.0
LnGrp LOS	A	A	A	A		A	C		C	C		
Approach Vol, veh/h		315			522			98			22	
Approach Delay, s/veh		2.5			5.0			23.3			21.7	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	12.1	33.7		14.2		45.8		14.2
Change Period (Y+Rc), s	* 5.6000004	* 5.6000004		5.6	* 5.6000004			5.6
Max Green Setting (Gmax), s	* 7	* 26.200001		10.0	* 38.799999			10.0
Max Q Clear Time (g_c+I1), s	4.4	3.2		2.7		6.9		4.9
Green Ext Time (p_c), s	0.1	2.0		0.2		2.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	6.4
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	220	70	70	270	140	0	0	0	60	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	6.0	7.0					7.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00					1.00	
Frt	1.00	0.96		1.00	1.00	0.85					1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00					0.99	
Satd. Flow (prot)	1736	3346		1736	1827	1553					1751	
Flt Permitted	0.35	1.00		0.56	1.00	1.00					0.99	
Satd. Flow (perm)	647	3346		1024	1827	1553					1751	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	239	76	76	293	152	0	0	0	65	163	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	76	293	0	76	293	152	0	0	0	0	228	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt	NA		pm+pt	NA	custom				Split	NA	
Protected Phases	5	2		1	6	4				4 8	4 8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	35.2	25.9		31.2	24.4	46.4					43.7	
Effective Green, g (s)	35.2	25.9		31.2	24.4	46.4					43.7	
Actuated g/C Ratio	0.37	0.27		0.33	0.26	0.49					0.46	
Clearance Time (s)	4.0	7.0		4.0	6.0	7.0						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0						
Lane Grp Cap (vph)	348	918		389	472	763					810	
v/s Ratio Prot	c0.02	0.09		0.01	c0.16	0.05					c0.13	
v/s Ratio Perm	0.06			0.05		0.05						
v/c Ratio	0.22	0.32		0.20	0.62	0.20					0.28	
Uniform Delay, d1	20.0	27.2		22.1	30.9	13.5					15.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00					0.04	
Incremental Delay, d2	0.3	0.2		0.2	2.5	0.1					0.2	
Delay (s)	20.3	27.4		22.4	33.4	13.7					0.9	
Level of Service	C	C		C	C	B					A	
Approach Delay (s)		26.1			26.1			0.0			0.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	94.4	Sum of lost time (s)	25.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	10	140	10	0	210	0	0	200	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.0			7.0			7.0	
Lane Util. Factor					1.00			1.00			1.00	
Frt					0.99			1.00			0.96	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					1755			1792			1730	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					1755			1792			1730	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	11	152	11	0	228	0	0	217	76
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	0	0	0	172	0	0	228	0	0	281	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	6%	6%	6%	6%	6%	6%
Turn Type				Split	NA			NA			NA	
Protected Phases				8	8			2 4 5 6			4	
Permitted Phases												
Actuated Green, G (s)					14.7			64.2			22.0	
Effective Green, g (s)					14.7			58.2			22.0	
Actuated g/C Ratio					0.16			0.62			0.23	
Clearance Time (s)					7.0						7.0	
Vehicle Extension (s)					3.0						3.0	
Lane Grp Cap (vph)					273			1104			403	
v/s Ratio Prot					c0.10			c0.13			c0.16	
v/s Ratio Perm												
v/c Ratio					0.63			0.21			0.70	
Uniform Delay, d1					37.3			8.0			33.2	
Progression Factor					1.00			0.11			1.00	
Incremental Delay, d2					4.7			0.1			5.2	
Delay (s)					42.0			0.9			38.4	
Level of Service					D			A			D	
Approach Delay (s)		0.0			42.0			0.9			38.4	
Approach LOS		A			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	94.4	Sum of lost time (s)	25.0
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	130	140	10	10	240	10	240	10	60	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	190.0	182.7	190.0	190.0	177.6	190.0			
Adj Flow Rate, veh/h	141	152	11	11	261	11	261	11	65			
Adj No. of Lanes	1	2	0	0	2	0	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	4	4	4	4	0	7	0			
Cap, veh/h	630	1661	119	95	704	29	329	14	82			
Arrive On Green	0.18	0.51	0.51	0.22	0.22	0.22	0.26	0.26	0.26			
Sat Flow, veh/h	1740	3285	236	51	3253	135	1282	54	319			
Grp Volume(v), veh/h	141	80	83	149	0	134	337	0	0			
Grp Sat Flow(s),veh/h/ln	1740	1736	1785	1800	0	1639	1655	0	0			
Q Serve(g_s), s	2.3	1.1	1.1	0.0	0.0	3.2	8.8	0.0	0.0			
Cycle Q Clear(g_c), s	2.3	1.1	1.1	3.2	0.0	3.2	8.8	0.0	0.0			
Prop In Lane	1.00		0.13	0.07		0.08	0.77		0.19			
Lane Grp Cap(c), veh/h	630	878	903	473	0	355	424	0	0			
V/C Ratio(X)	0.22	0.09	0.09	0.32	0.00	0.38	0.79	0.00	0.00			
Avail Cap(c_a), veh/h	879	1427	1468	778	0	638	1075	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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	8.2	5.9	5.9	15.4	0.0	15.4	16.0	0.0	0.0			
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.4	0.0	0.7	3.4	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(50%),veh/ln	1.1	0.5	0.5	1.7	0.0	1.5	4.3	0.0	0.0			
LnGrp Delay(d),s/veh	8.4	6.0	6.0	15.8	0.0	16.1	19.5	0.0	0.0			
LnGrp LOS	A	A	A	B		B	B					
Approach Vol, veh/h		304			283			337				
Approach Delay, s/veh		7.1			16.0			19.5				
Approach LOS		A			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		29.4			13.4	16.0		16.8
Change Period (Y+Rc), s		6.0			5.0	6.0		5.0
Max Green Setting (Gmax), s		38.0			15.0	18.0		30.0
Max Q Clear Time (g_c+I1), s		3.1			4.3	5.2		10.8
Green Ext Time (p_c), s		1.2			0.2	1.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	270	270	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	293	293	11	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	304	0	-	0	614	299
Stage 1	-	-	-	-	299	-
Stage 2	-	-	-	-	315	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1246	-	-	-	455	741
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	740	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1246	-	-	-	450	741
Mov Cap-2 Maneuver	-	-	-	-	450	-
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	732	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1246	-	-	-	560
HCM Lane V/C Ratio	0.009	-	-	-	0.039
HCM Control Delay (s)	7.9	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	350	10	10	470	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	380	11	11	511	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	391	0	919	196
Stage 1	-	-	-	-	386	-
Stage 2	-	-	-	-	533	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1150	-	285	813
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	587	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1150	-	282	813
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	419	-	-	1150	-
HCM Lane V/C Ratio	0.052	-	-	0.009	-
HCM Control Delay (s)	14.1	-	-	8.2	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	350	470	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	380	511	11	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	522	0	-	0	728	516
Stage 1	-	-	-	-	516	-
Stage 2	-	-	-	-	212	-
Critical Hdwy	4.14	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.236	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1034	-	-	-	374	558
Stage 1	-	-	-	-	598	-
Stage 2	-	-	-	-	804	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1034	-	-	-	370	558
Mov Cap-2 Maneuver	-	-	-	-	473	-
Stage 1	-	-	-	-	598	-
Stage 2	-	-	-	-	795	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1034	-	-	-	512
HCM Lane V/C Ratio	0.011	-	-	-	0.042
HCM Control Delay (s)	8.5	-	-	-	12.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	160	30	10	220	10	30	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	174	33	11	239	11	33	11	11

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	250	0	0	207	0	0	489	484	190
Stage 1	-	-	-	-	-	-	212	212	-
Stage 2	-	-	-	-	-	-	277	272	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1304	-	-	1352	-	-	489	483	852
Stage 1	-	-	-	-	-	-	790	727	-
Stage 2	-	-	-	-	-	-	729	685	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1304	-	-	1352	-	-	467	474	852
Mov Cap-2 Maneuver	-	-	-	-	-	-	467	474	-
Stage 1	-	-	-	-	-	-	782	720	-
Stage 2	-	-	-	-	-	-	701	679	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.3	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	515	1304	-	-	1352	-	-	541
HCM Lane V/C Ratio	0.106	0.008	-	-	0.008	-	-	0.06
HCM Control Delay (s)	12.8	7.8	0	-	7.7	0	-	12.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.2

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	489	494	245
Stage 1	266	266	-
Stage 2	223	228	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	489	476	794
Stage 1	739	689	-
Stage 2	780	715	-
Platoon blocked, %			
Mov Cap-1 Maneuver	467	467	794
Mov Cap-2 Maneuver	467	467	-
Stage 1	732	683	-
Stage 2	751	708	-

Approach	SB
HCM Control Delay, s	12.1
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	40	270	10	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	7	7	2	2
Mvmt Flow	0	43	293	11	22	0

Major/Minor	Minor1		Major1		Minor2	
Conflicting Flow All	299	299	0	0	299	304
Stage 1	299	-	-	-	0	0
Stage 2	0	-	-	-	299	304
Critical Hdwy	6.42	6.22	-	-	6.42	6.52
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	5.42	5.52
Follow-up Hdwy	3.518	3.318	-	-	3.518	4.018
Pot Cap-1 Maneuver	692	741	-	-	692	609
Stage 1	752	-	-	-	-	-
Stage 2	-	-	-	-	752	663
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	692	741	-	-	692	0
Mov Cap-2 Maneuver	692	-	-	-	692	0
Stage 1	752	-	-	-	-	0
Stage 2	-	-	-	-	752	0

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	10.4
HCM LOS	B		B

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBLn1
Capacity (veh/h)	-	-	741	692
HCM Lane V/C Ratio	-	-	0.059	0.031
HCM Control Delay (s)	-	-	10.2	10.4
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	0.2	0.1

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	210	10	10	250
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	228	11	11	272

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	527	234	0	0	239	0
Stage 1	234	-	-	-	-	-
Stage 2	293	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	505	795	-	-	1328	-
Stage 1	796	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	500	795	-	-	1328	-
Mov Cap-2 Maneuver	500	-	-	-	-	-
Stage 1	796	-	-	-	-	-
Stage 2	741	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	571	1328	-
HCM Lane V/C Ratio	-	-	0.057	0.008	-
HCM Control Delay (s)	-	-	11.7	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	300	200	250	290	190	260
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	186.3	186.3
Adj Flow Rate, veh/h	326	217	272	315	207	283
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	2	2
Cap, veh/h	789	671	559	1145	378	337
Arrive On Green	0.43	0.43	0.23	1.00	0.21	0.21
Sat Flow, veh/h	1827	1553	1740	1827	1774	1583
Grp Volume(v), veh/h	326	217	272	315	207	283
Grp Sat Flow(s),veh/h/ln	1827	1553	1740	1827	1774	1583
Q Serve(g_s), s	9.1	6.8	6.2	0.0	7.6	12.6
Cycle Q Clear(g_c), s	9.1	6.8	6.2	0.0	7.6	12.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	789	671	559	1145	378	337
V/C Ratio(X)	0.41	0.32	0.49	0.28	0.55	0.84
Avail Cap(c_a), veh/h	789	671	675	1145	533	476
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.91	0.91	1.00	1.00
Uniform Delay (d), s/veh	14.4	13.8	7.9	0.0	25.8	27.7
Incr Delay (d2), s/veh	1.6	1.3	0.6	0.5	1.2	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	3.1	2.9	0.2	3.9	6.3
LnGrp Delay(d),s/veh	16.0	15.1	8.5	0.5	27.0	36.8
LnGrp LOS	B	B	A	A	C	D
Approach Vol, veh/h	543			587	490	
Approach Delay, s/veh	15.7			4.2	32.7	
Approach LOS	B			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.3	44.1				58.4		21.6
Change Period (Y+Rc), s	* 5.8000002	5.9			* 5.9000001			5.9
Max Green Setting (Gmax), s	* 13.4	26.9			* 46.100002			22.1
Max Q Clear Time (g_c+I1), s	8.2	11.1				2.0		14.6
Green Ext Time (p_c), s	0.4	2.5				2.7		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	540	10	300	500	10	30	0	190	10	0	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	190.0	190.0	186.3	186.3	190.0	186.3	190.0
Adj Flow Rate, veh/h	11	587	11	326	543	11	33	0	207	11	0	11
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	539	975	829	680	1246	25	317	0	247	158	22	110
Arrive On Green	1.00	1.00	1.00	0.09	0.70	0.70	0.16	0.00	0.16	0.16	0.00	0.16
Sat Flow, veh/h	835	1827	1553	1740	1784	36	1431	0	1583	562	141	703
Grp Volume(v), veh/h	11	587	11	326	0	554	33	0	207	22	0	0
Grp Sat Flow(s),veh/h/ln	835	1827	1553	1740	0	1821	1431	0	1583	1406	0	0
Q Serve(g_s), s	0.0	0.0	0.0	6.2	0.0	10.1	0.4	0.0	9.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.2	0.0	10.1	1.3	0.0	9.7	0.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	0.50		0.50
Lane Grp Cap(c), veh/h	539	975	829	680	0	1271	317	0	247	290	0	0
V/C Ratio(X)	0.02	0.60	0.01	0.48	0.00	0.44	0.10	0.00	0.84	0.08	0.00	0.00
Avail Cap(c_a), veh/h	539	975	829	680	0	1271	376	0	313	346	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	5.8	0.0	5.0	27.8	0.0	31.5	27.7	0.0	0.0
Incr Delay (d2), s/veh	0.1	2.4	0.0	0.5	0.0	1.1	0.1	0.0	14.6	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	2.9	0.0	5.3	0.6	0.0	5.2	0.4	0.0	0.0
LnGrp Delay(d),s/veh	0.1	2.4	0.0	6.3	0.0	6.1	28.0	0.0	46.1	27.8	0.0	0.0
LnGrp LOS	A	A	A	A		A	C		D	C		
Approach Vol, veh/h		609			880			240			22	
Approach Delay, s/veh		2.4			6.2			43.6			27.8	
Approach LOS		A			A			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	12.6	49.8		17.6		62.4		17.6
Change Period (Y+Rc), s	* 5.6000004	* 5.6000004		5.6	* 5.6000004			5.6
Max Green Setting (Gmax), s	* 7	* 41		15.2	* 53.599998			15.2
Max Q Clear Time (g_c+I1), s	8.2	2.0		2.8		12.1		11.7
Green Ext Time (p_c), s	0.0	4.1		0.7		4.1		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	510	190	110	420	290	0	0	0	150	260	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	6.0	7.0					7.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00					1.00	
Frt	1.00	0.96		1.00	1.00	0.85					1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00					0.98	
Satd. Flow (prot)	1736	3330		1736	1827	1553					1739	
Flt Permitted	0.13	1.00		0.13	1.00	1.00					0.98	
Satd. Flow (perm)	240	3330		235	1827	1553					1739	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	554	207	120	457	315	0	0	0	163	283	11
RTOR Reduction (vph)	0	30	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	120	731	0	120	457	315	0	0	0	0	456	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt	NA		pm+pt	NA	custom				Split	NA	
Protected Phases	5	2		1	6	4				4 8	4 8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	40.5	30.5		42.5	32.0	72.0					66.4	
Effective Green, g (s)	40.5	30.5		42.5	32.0	72.0					66.4	
Actuated g/C Ratio	0.32	0.24		0.34	0.26	0.57					0.53	
Clearance Time (s)	4.0	7.0		4.0	6.0	7.0						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0						
Lane Grp Cap (vph)	196	809		205	466	891					920	
v/s Ratio Prot	0.05	0.22		c0.05	c0.25	0.11					c0.26	
v/s Ratio Perm	0.15			0.15		0.09						
v/c Ratio	0.61	0.90		0.59	0.98	0.35					0.50	
Uniform Delay, d1	33.7	46.0		31.5	46.4	14.3					18.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00					0.04	
Incremental Delay, d2	5.6	13.4		4.2	36.5	0.2					0.0	
Delay (s)	39.2	59.4		35.7	82.9	14.5					0.8	
Level of Service	D	E		D	F	B					A	
Approach Delay (s)		56.6			52.4			0.0			0.8	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	43.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	125.4	Sum of lost time (s)	25.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	10	210	10	0	400	0	0	410	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.0			7.0			7.0	
Lane Util. Factor					1.00			1.00			1.00	
Frt					0.99			1.00			0.96	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					1761			1792			1725	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					1761			1792			1725	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	11	228	11	0	435	0	0	446	174
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	0	0	0	248	0	0	435	0	0	609	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	6%	6%	6%	6%	6%	6%
Turn Type				Split	NA			NA			NA	
Protected Phases				8	8			2 4 5 6			4	
Permitted Phases												
Actuated Green, G (s)					19.4			92.0			40.0	
Effective Green, g (s)					19.4			82.0			40.0	
Actuated g/C Ratio					0.15			0.65			0.32	
Clearance Time (s)					7.0						7.0	
Vehicle Extension (s)					3.0						3.0	
Lane Grp Cap (vph)					272			1171			550	
v/s Ratio Prot					c0.14			c0.24			c0.35	
v/s Ratio Perm												
v/c Ratio					0.91			0.37			1.11	
Uniform Delay, d1					52.2			9.9			42.7	
Progression Factor					1.00			0.07			1.00	
Incremental Delay, d2					32.5			0.2			71.2	
Delay (s)					84.6			0.9			113.9	
Level of Service					F			A			F	
Approach Delay (s)		0.0			84.6			0.9			113.9	
Approach LOS		A			F			A			F	

Intersection Summary			
HCM 2000 Control Delay	70.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	125.4	Sum of lost time (s)	25.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	220	380	60	10	360	20	460	10	140	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	190.0	182.7	190.0	190.0	177.6	190.0			
Adj Flow Rate, veh/h	239	413	65	11	391	22	500	11	152			
Adj No. of Lanes	1	2	0	0	2	0	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	4	4	4	4	0	7	0			
Cap, veh/h	437	1228	192	65	569	32	523	12	159			
Arrive On Green	0.15	0.41	0.41	0.18	0.18	0.18	0.42	0.42	0.42			
Sat Flow, veh/h	1740	3009	470	36	3207	178	1242	27	378			
Grp Volume(v), veh/h	239	237	241	223	0	201	663	0	0			
Grp Sat Flow(s),veh/h/ln	1740	1736	1744	1790	0	1631	1647	0	0			
Q Serve(g_s), s	6.5	6.0	6.1	0.7	0.0	7.5	25.1	0.0	0.0			
Cycle Q Clear(g_c), s	6.5	6.0	6.1	7.4	0.0	7.5	25.1	0.0	0.0			
Prop In Lane	1.00		0.27	0.05		0.11	0.75		0.23			
Lane Grp Cap(c), veh/h	437	708	712	376	0	289	694	0	0			
V/C Ratio(X)	0.55	0.33	0.34	0.59	0.00	0.70	0.96	0.00	0.00			
Avail Cap(c_a), veh/h	576	1024	1029	553	0	456	767	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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	16.1	13.1	13.1	24.8	0.0	24.9	18.1	0.0	0.0			
Incr Delay (d2), s/veh	1.1	0.3	0.3	1.5	0.0	3.0	21.4	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(50%),veh/ln	3.2	3.0	3.0	3.9	0.0	3.6	15.3	0.0	0.0			
LnGrp Delay(d),s/veh	17.2	13.3	13.4	26.3	0.0	27.9	39.4	0.0	0.0			
LnGrp LOS	B	B	B	C		C	D					
Approach Vol, veh/h		717			424			663				
Approach Delay, s/veh		14.6			27.0			39.4				
Approach LOS		B			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		32.3			14.9	17.4		32.1
Change Period (Y+Rc), s		6.0			5.0	6.0		5.0
Max Green Setting (Gmax), s		38.0			15.0	18.0		30.0
Max Q Clear Time (g_c+I1), s		8.1			8.5	9.5		27.1
Green Ext Time (p_c), s		2.7			0.4	2.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.7
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	490	460	20	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	533	500	22	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	522	0	-	0	1065	511
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1034	-	-	-	246	563
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1034	-	-	-	242	563
Mov Cap-2 Maneuver	-	-	-	-	242	-
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	566	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1034	-	-	-	338
HCM Lane V/C Ratio	0.011	-	-	-	0.064
HCM Control Delay (s)	8.5	0	-	-	16.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	730	10	10	800	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	793	11	11	870	11	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	804	0	1690	402
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	891	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	803	-	93	599
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	400	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	803	-	92	599
Mov Cap-2 Maneuver	-	-	-	-	92	-
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	25.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	-	-	803	-
HCM Lane V/C Ratio	0.155	-	-	0.014	-
HCM Control Delay (s)	25.2	-	-	9.5	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	750	800	0	60	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	0	815	870	0	65	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	870	0	-	0	1278	870
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	408	-
Critical Hdwy	4.14	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.236	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	766	-	-	-	170	350
Stage 1	-	-	-	-	409	-
Stage 2	-	-	-	-	641	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	766	-	-	-	170	350
Mov Cap-2 Maneuver	-	-	-	-	300	-
Stage 1	-	-	-	-	409	-
Stage 2	-	-	-	-	641	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	766	-	-	-	306
HCM Lane V/C Ratio	-	-	-	-	0.249
HCM Control Delay (s)	0	-	-	-	20.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	440	70	30	280	10	50	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	478	76	33	304	11	54	11	22

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	315	0	0	554	0	0	951	918	516
Stage 1	-	-	-	-	-	-	538	538	-
Stage 2	-	-	-	-	-	-	413	380	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1234	-	-	1006	-	-	240	272	559
Stage 1	-	-	-	-	-	-	527	522	-
Stage 2	-	-	-	-	-	-	616	614	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1234	-	-	1006	-	-	203	258	559
Mov Cap-2 Maneuver	-	-	-	-	-	-	203	258	-
Stage 1	-	-	-	-	-	-	520	515	-
Stage 2	-	-	-	-	-	-	529	589	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.8	27
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	249	1234	-	-	1006	-	-	476
HCM Lane V/C Ratio	0.349	0.009	-	-	0.032	-	-	0.183
HCM Control Delay (s)	27	7.9	0	-	8.7	0	-	14.2
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.5	0	-	-	0.1	-	-	0.7

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	60
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	65

Major/Minor	Minor2		
Conflicting Flow All	929	951	310
Stage 1	375	375	-
Stage 2	554	576	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	248	260	730
Stage 1	646	617	-
Stage 2	517	502	-
Platoon blocked, %			
Mov Cap-1 Maneuver	221	246	730
Mov Cap-2 Maneuver	221	246	-
Stage 1	638	592	-
Stage 2	480	495	-

Approach	SB
HCM Control Delay, s	14.2
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	50	560	10	70	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	7	7	2	2
Mvmt Flow	0	54	609	11	76	0

Major/Minor	Minor1		Major1		Minor2	
Conflicting Flow All	614	614	0	0	614	620
Stage 1	614	-	-	-	0	0
Stage 2	0	-	-	-	614	620
Critical Hdwy	6.42	6.22	-	-	6.42	6.52
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	5.42	5.52
Follow-up Hdwy	3.518	3.318	-	-	3.518	4.018
Pot Cap-1 Maneuver	455	492	-	-	455	404
Stage 1	540	-	-	-	-	-
Stage 2	-	-	-	-	540	480
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	455	492	-	-	455	0
Mov Cap-2 Maneuver	455	-	-	-	455	0
Stage 1	540	-	-	-	-	0
Stage 2	-	-	-	-	540	0

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	14.5
HCM LOS	B		B

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBLn1
Capacity (veh/h)	-	-	492	455
HCM Lane V/C Ratio	-	-	0.11	0.167
HCM Control Delay (s)	-	-	13.2	14.5
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	0.4	0.6

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	390	20	10	550
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	424	22	11	598

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1055	435	0	0	446	0
Stage 1	435	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	246	613	-	-	1114	-
Stage 1	644	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	242	613	-	-	1114	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	521	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.3	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	303	1114	-
HCM Lane V/C Ratio	-	-	0.108	0.01	-
HCM Control Delay (s)	-	-	18.3	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

OPENING YEAR 2019 'NO-BUILD' CONDITIONS

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	270	50	70	260	40	90
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	186.3	186.3
Adj Flow Rate, veh/h	293	54	76	283	43	98
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	2	2
Cap, veh/h	844	718	633	1180	272	243
Arrive On Green	0.46	0.46	0.17	1.00	0.15	0.15
Sat Flow, veh/h	1827	1553	1740	1827	1774	1583
Grp Volume(v), veh/h	293	54	76	283	43	98
Grp Sat Flow(s),veh/h/ln	1827	1553	1740	1827	1774	1583
Q Serve(g_s), s	6.0	1.1	1.1	0.0	1.2	3.3
Cycle Q Clear(g_c), s	6.0	1.1	1.1	0.0	1.2	3.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	844	718	633	1180	272	243
V/C Ratio(X)	0.35	0.08	0.12	0.24	0.16	0.40
Avail Cap(c_a), veh/h	844	718	705	1180	311	278
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.98	0.98	1.00	1.00
Uniform Delay (d), s/veh	10.1	8.8	5.4	0.0	21.6	22.4
Incr Delay (d2), s/veh	1.1	0.2	0.1	0.5	0.3	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.5	0.5	0.2	0.6	1.5
LnGrp Delay(d),s/veh	11.2	9.0	5.5	0.5	21.8	23.5
LnGrp LOS	B	A	A	A	C	C
Approach Vol, veh/h	347			359	141	
Approach Delay, s/veh	10.9			1.5	23.0	
Approach LOS	B			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.8	34.3				45.1		14.9
Change Period (Y+Rc), s	* 5.8000002	5.9			* 5.9000001			5.9
Max Green Setting (Gmax), s	* 7.4000001	24.7			* 37.900002			10.3
Max Q Clear Time (g_c+I1), s	3.1	8.0				2.0		5.3
Green Ext Time (p_c), s	0.0	1.7				1.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.9
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	330	20	90	320	0	10	0	60	0	0	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	190.0	190.0	186.3	186.3	190.0	186.3	190.0
Adj Flow Rate, veh/h	11	359	22	98	348	0	11	0	65	0	0	0
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	616	887	754	761	1244	0	300	0	194	0	229	0
Arrive On Green	0.97	0.97	0.97	0.10	0.68	0.00	0.12	0.00	0.12	0.00	0.00	0.00
Sat Flow, veh/h	1009	1827	1553	1740	1827	0	1412	0	1583	0	1863	0
Grp Volume(v), veh/h	11	359	22	98	348	0	11	0	65	0	0	0
Grp Sat Flow(s),veh/h/ln	1009	1827	1553	1740	1827	0	1412	0	1583	0	1863	0
Q Serve(g_s), s	0.0	0.5	0.0	1.3	4.3	0.0	0.4	0.0	2.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.5	0.0	1.3	4.3	0.0	0.4	0.0	2.1	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	616	887	754	761	1244	0	300	0	194	0	229	0
V/C Ratio(X)	0.02	0.40	0.03	0.13	0.28	0.00	0.04	0.00	0.33	0.00	0.00	0.00
Avail Cap(c_a), veh/h	616	887	754	806	1244	0	374	0	278	0	327	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.4	0.4	0.4	4.5	3.6	0.0	22.1	0.0	22.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	1.3	0.1	0.1	0.6	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.5	0.0	0.6	2.3	0.0	0.2	0.0	1.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	0.5	1.8	0.5	4.6	4.2	0.0	22.2	0.0	23.9	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A		C		C			
Approach Vol, veh/h		392			446			76			0	
Approach Delay, s/veh		1.7			4.2			23.6			0.0	
Approach LOS		A			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	11.1	36.3		12.6		47.4		12.6
Change Period (Y+Rc), s	* 5.6000004	* 5.6000004		5.6	* 5.6000004			5.6
Max Green Setting (Gmax), s	* 7	* 26.200001		10.0	* 38.799999			10.0
Max Q Clear Time (g_c+I1), s	3.3	2.5		0.0		6.3		4.1
Green Ext Time (p_c), s	0.1	2.2		0.0		2.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.7
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	200	120	140	210	330	0	0	0	90	260	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	6.0	7.0					7.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00					1.00	
Frt	1.00	0.94		1.00	1.00	0.85					1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00					0.99	
Satd. Flow (prot)	1736	3276		1736	1827	1553					1753	
Flt Permitted	0.45	1.00		0.46	1.00	1.00					0.99	
Satd. Flow (perm)	830	3276		843	1827	1553					1753	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	217	130	152	228	359	0	0	0	98	283	0
RTOR Reduction (vph)	0	73	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	76	274	0	152	228	359	0	0	0	0	381	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt	NA		pm+pt	NA	custom				Split	NA	
Protected Phases	5	2		1	6	4				4 8	4 8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	31.5	21.4		33.9	23.1	54.6					57.9	
Effective Green, g (s)	31.5	21.4		33.9	23.1	54.6					57.9	
Actuated g/C Ratio	0.29	0.20		0.31	0.21	0.51					0.54	
Clearance Time (s)	4.0	7.0		4.0	6.0	7.0						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0						
Lane Grp Cap (vph)	326	648		353	390	784					938	
v/s Ratio Prot	0.02	0.08		c0.04	c0.12	0.13					c0.22	
v/s Ratio Perm	0.05			0.09		0.10						
v/c Ratio	0.23	0.42		0.43	0.58	0.46					0.41	
Uniform Delay, d1	28.5	37.9		28.0	38.2	17.2					14.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00					0.01	
Incremental Delay, d2	0.4	0.4		0.8	2.2	0.4					0.2	
Delay (s)	28.9	38.4		28.8	40.4	17.6					0.4	
Level of Service	C	D		C	D	B					A	
Approach Delay (s)		36.7			27.0			0.0			0.4	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	108.1	Sum of lost time (s)	25.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	20	180	40	0	400	0	0	330	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.0			7.0			7.0	
Lane Util. Factor					1.00			1.00			1.00	
Frt					0.98			1.00			0.99	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					1729			1792			1767	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					1729			1792			1767	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	22	196	43	0	435	0	0	359	43
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	255	0	0	435	0	0	398	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	6%	6%	6%	6%	6%	6%
Turn Type				Split	NA			NA			NA	
Protected Phases				8	8			2 4 5 6			4	
Permitted Phases												
Actuated Green, G (s)					19.4			74.7			31.5	
Effective Green, g (s)					19.4			64.7			31.5	
Actuated g/C Ratio					0.18			0.60			0.29	
Clearance Time (s)					7.0						7.0	
Vehicle Extension (s)					3.0						3.0	
Lane Grp Cap (vph)					310			1072			514	
v/s Ratio Prot					c0.15			c0.24			c0.23	
v/s Ratio Perm												
v/c Ratio					0.82			0.41			0.78	
Uniform Delay, d1					42.7			11.5			35.1	
Progression Factor					1.00			0.08			1.00	
Incremental Delay, d2					16.0			0.2			7.2	
Delay (s)					58.7			1.1			42.3	
Level of Service					E			A			D	
Approach Delay (s)		0.0			58.7			1.1			42.3	
Approach LOS		A			E			A			D	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	108.1	Sum of lost time (s)	25.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	150	20	10	320	10	360	10	110	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	190.0	182.7	190.0	190.0	177.6	190.0			
Adj Flow Rate, veh/h	130	163	22	11	348	11	391	11	120			
Adj No. of Lanes	1	2	0	0	2	0	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	4	4	4	4	0	7	0			
Cap, veh/h	513	1379	183	80	629	20	423	12	130			
Arrive On Green	0.16	0.45	0.45	0.19	0.19	0.19	0.34	0.34	0.34			
Sat Flow, veh/h	1740	3081	410	41	3304	103	1234	35	379			
Grp Volume(v), veh/h	130	91	94	195	0	175	522	0	0			
Grp Sat Flow(s),veh/h/ln	1740	1736	1755	1804	0	1644	1647	0	0			
Q Serve(g_s), s	2.6	1.6	1.6	0.0	0.0	5.1	16.0	0.0	0.0			
Cycle Q Clear(g_c), s	2.6	1.6	1.6	5.1	0.0	5.1	16.0	0.0	0.0			
Prop In Lane	1.00		0.23	0.06		0.06	0.75		0.23			
Lane Grp Cap(c), veh/h	513	777	785	416	0	313	565	0	0			
V/C Ratio(X)	0.25	0.12	0.12	0.47	0.00	0.56	0.92	0.00	0.00			
Avail Cap(c_a), veh/h	728	1256	1270	686	0	564	941	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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	11.1	8.4	8.5	19.3	0.0	19.3	16.6	0.0	0.0			
Incr Delay (d2), s/veh	0.3	0.1	0.1	0.8	0.0	1.6	9.2	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(50%),veh/ln	1.2	0.8	0.8	2.6	0.0	2.4	8.7	0.0	0.0			
LnGrp Delay(d),s/veh	11.3	8.5	8.5	20.1	0.0	20.8	25.8	0.0	0.0			
LnGrp LOS	B	A	A	C		C	C					
Approach Vol, veh/h		315			370			522				
Approach Delay, s/veh		9.7			20.4			25.8				
Approach LOS		A			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		29.5			13.5	16.0		23.0
Change Period (Y+Rc), s		6.0			5.0	6.0		5.0
Max Green Setting (Gmax), s		38.0			15.0	18.0		30.0
Max Q Clear Time (g_c+I1), s		3.6			4.6	7.1		18.0
Green Ext Time (p_c), s		1.6			0.2	1.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.0
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	310	300	0	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	0	337	326	0	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	326	0	-	0	663	326
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	337	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1222	-	-	-	426	715
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1222	-	-	-	426	715
Mov Cap-2 Maneuver	-	-	-	-	426	-
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	723	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1222	-	-	-	534
HCM Lane V/C Ratio	-	-	-	-	0.041
HCM Control Delay (s)	0	-	-	-	12
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	380	10	20	400	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	413	11	22	435	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	424	0	896	212
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	478	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1118	-	295	794
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	623	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1118	-	289	794
Mov Cap-2 Maneuver	-	-	-	-	289	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	611	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	424	-	-	1118	-
HCM Lane V/C Ratio	0.051	-	-	0.019	-
HCM Control Delay (s)	13.9	-	-	8.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	380	420	10	10	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	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	413	457	11	11	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	467	0	-	0	690	462
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	228	-
Critical Hdwy	4.14	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.236	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1084	-	-	-	395	599
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	789	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1084	-	-	-	391	599
Mov Cap-2 Maneuver	-	-	-	-	493	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	781	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1084	-	-	-	493
HCM Lane V/C Ratio	0.01	-	-	-	0.022
HCM Control Delay (s)	8.4	-	-	-	12.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	60	150	50	30	290	20	40	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	65	163	54	33	315	22	43	11	22

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	337	0	0	217	0	0	723	723	190
Stage 1	-	-	-	-	-	-	321	321	-
Stage 2	-	-	-	-	-	-	402	402	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1211	-	-	1341	-	-	342	352	852
Stage 1	-	-	-	-	-	-	691	652	-
Stage 2	-	-	-	-	-	-	625	600	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1211	-	-	1341	-	-	306	321	852
Mov Cap-2 Maneuver	-	-	-	-	-	-	306	321	-
Stage 1	-	-	-	-	-	-	649	612	-
Stage 2	-	-	-	-	-	-	586	582	-

Approach	EB	WB	NB
HCM Control Delay, s	1.9	0.7	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	378	1211	-	-	1341	-	-	379
HCM Lane V/C Ratio	0.201	0.054	-	-	0.024	-	-	0.086
HCM Control Delay (s)	16.9	8.1	0	-	7.8	0	-	15.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0.1	-	-	0.3

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	728	739	326
Stage 1	391	391	-
Stage 2	337	348	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	339	345	715
Stage 1	633	607	-
Stage 2	677	634	-
Platoon blocked, %			
Mov Cap-1 Maneuver	300	314	715
Mov Cap-2 Maneuver	300	314	-
Stage 1	594	589	-
Stage 2	608	595	-

Approach	SB
HCM Control Delay, s	15.4
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	40	440	10	30	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	7	7	2	2
Mvmt Flow	0	43	478	11	33	0

Major/Minor	Minor1		Major1		Minor2	
Conflicting Flow All	484	484	0	0	484	489
Stage 1	484	-	-	-	0	0
Stage 2	0	-	-	-	484	489
Critical Hdwy	6.42	6.22	-	-	6.42	6.52
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	5.42	5.52
Follow-up Hdwy	3.518	3.318	-	-	3.518	4.018
Pot Cap-1 Maneuver	542	583	-	-	542	480
Stage 1	620	-	-	-	-	-
Stage 2	-	-	-	-	620	549
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	542	583	-	-	542	0
Mov Cap-2 Maneuver	542	-	-	-	542	0
Stage 1	620	-	-	-	-	0
Stage 2	-	-	-	-	620	0

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	12.1
HCM LOS	B		B

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBLn1
Capacity (veh/h)	-	-	583	542
HCM Lane V/C Ratio	-	-	0.075	0.06
HCM Control Delay (s)	-	-	11.7	12.1
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	0.2	0.2

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	10	410	30	10	340
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	33	11	446	33	11	370

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	853	462	0	0	478	0
Stage 1	462	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	324	592	-	-	1084	-
Stage 1	626	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	320	592	-	-	1084	-
Mov Cap-2 Maneuver	320	-	-	-	-	-
Stage 1	626	-	-	-	-	-
Stage 2	666	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.3	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	362	1084	-
HCM Lane V/C Ratio	-	-	0.12	0.01	-
HCM Control Delay (s)	-	-	16.3	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	170	110	130	210	70	120
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	186.3	186.3
Adj Flow Rate, veh/h	185	120	141	228	76	130
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	2	2
Cap, veh/h	793	674	695	1166	289	258
Arrive On Green	0.43	0.43	0.21	1.00	0.16	0.16
Sat Flow, veh/h	1827	1553	1740	1827	1774	1583
Grp Volume(v), veh/h	185	120	141	228	76	130
Grp Sat Flow(s),veh/h/ln	1827	1553	1740	1827	1774	1583
Q Serve(g_s), s	3.8	2.8	2.2	0.0	2.2	4.4
Cycle Q Clear(g_c), s	3.8	2.8	2.2	0.0	2.2	4.4
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	793	674	695	1166	289	258
V/C Ratio(X)	0.23	0.18	0.20	0.20	0.26	0.50
Avail Cap(c_a), veh/h	793	674	727	1166	308	275
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.98	0.98	1.00	1.00
Uniform Delay (d), s/veh	10.6	10.3	5.4	0.0	21.7	22.7
Incr Delay (d2), s/veh	0.7	0.6	0.1	0.4	0.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	1.3	1.0	0.1	1.1	2.0
LnGrp Delay(d),s/veh	11.3	10.9	5.6	0.4	22.2	24.2
LnGrp LOS	B	B	A	A	C	C
Approach Vol, veh/h	305			369	206	
Approach Delay, s/veh	11.1			2.4	23.5	
Approach LOS	B			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.1	32.3				44.4		15.6
Change Period (Y+Rc), s	* 5.8000002	5.9			* 5.9000001			5.9
Max Green Setting (Gmax), s	* 7.4000001	24.7			* 37.900002			10.3
Max Q Clear Time (g_c+I1), s	4.2	5.8				2.0		6.4
Green Ext Time (p_c), s	0.1	1.5				1.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	270	10	150	320	10	10	0	80	10	0	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	190.0	190.0	186.3	186.3	190.0	186.3	190.0
Adj Flow Rate, veh/h	11	293	11	163	348	11	11	0	87	11	0	11
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	578	832	708	773	1167	37	333	0	232	174	28	109
Arrive On Green	0.91	0.91	0.91	0.11	0.66	0.66	0.15	0.00	0.15	0.15	0.00	0.15
Sat Flow, veh/h	999	1827	1553	1740	1761	56	1433	0	1583	557	189	746
Grp Volume(v), veh/h	11	293	11	163	0	359	11	0	87	22	0	0
Grp Sat Flow(s),veh/h/ln	999	1827	1553	1740	0	1817	1433	0	1583	1493	0	0
Q Serve(g_s), s	0.1	1.2	0.0	2.4	0.0	4.9	0.0	0.0	2.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	1.2	0.0	2.4	0.0	4.9	0.3	0.0	2.9	0.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	0.50		0.50
Lane Grp Cap(c), veh/h	578	832	708	773	0	1204	333	0	232	311	0	0
V/C Ratio(X)	0.02	0.35	0.02	0.21	0.00	0.30	0.03	0.00	0.38	0.07	0.00	0.00
Avail Cap(c_a), veh/h	578	832	708	787	0	1204	367	0	270	346	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	1.4	1.5	1.4	5.3	0.0	4.2	21.5	0.0	22.6	21.6	0.0	0.0
Incr Delay (d2), s/veh	0.1	1.1	0.0	0.1	0.0	0.6	0.0	0.0	1.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	1.2	0.0	2.6	0.2	0.0	1.3	0.3	0.0	0.0
LnGrp Delay(d),s/veh	1.5	2.6	1.5	5.4	0.0	4.8	21.5	0.0	23.6	21.7	0.0	0.0
LnGrp LOS	A	A	A	A		A	C		C	C		
Approach Vol, veh/h		315			522			98			22	
Approach Delay, s/veh		2.5			5.0			23.3			21.7	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	12.1	33.7		14.2		45.8		14.2
Change Period (Y+Rc), s	* 5.6000004	* 5.6000004		5.6	* 5.6000004			5.6
Max Green Setting (Gmax), s	* 7	* 26.200001		10.0	* 38.799999			10.0
Max Q Clear Time (g_c+I1), s	4.4	3.2		2.7		6.9		4.9
Green Ext Time (p_c), s	0.1	2.0		0.2		2.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	6.4
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	220	70	70	270	140	0	0	0	60	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	6.0	7.0					7.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00					1.00	
Frt	1.00	0.96		1.00	1.00	0.85					1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00					0.99	
Satd. Flow (prot)	1736	3346		1736	1827	1553					1751	
Flt Permitted	0.35	1.00		0.56	1.00	1.00					0.99	
Satd. Flow (perm)	647	3346		1024	1827	1553					1751	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	239	76	76	293	152	0	0	0	65	163	0
RTOR Reduction (vph)	0	22	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	76	293	0	76	293	152	0	0	0	0	228	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt	NA		pm+pt	NA	custom				Split	NA	
Protected Phases	5	2		1	6	4				4 8	4 8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	35.2	25.9		31.2	24.4	46.4					43.7	
Effective Green, g (s)	35.2	25.9		31.2	24.4	46.4					43.7	
Actuated g/C Ratio	0.37	0.27		0.33	0.26	0.49					0.46	
Clearance Time (s)	4.0	7.0		4.0	6.0	7.0						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0						
Lane Grp Cap (vph)	348	918		389	472	763					810	
v/s Ratio Prot	c0.02	0.09		0.01	c0.16	0.05					c0.13	
v/s Ratio Perm	0.06			0.05		0.05						
v/c Ratio	0.22	0.32		0.20	0.62	0.20					0.28	
Uniform Delay, d1	20.0	27.2		22.1	30.9	13.5					15.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00					0.04	
Incremental Delay, d2	0.3	0.2		0.2	2.5	0.1					0.2	
Delay (s)	20.3	27.4		22.4	33.4	13.7					0.9	
Level of Service	C	C		C	C	B					A	
Approach Delay (s)		26.1			26.1			0.0			0.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	94.4	Sum of lost time (s)	25.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	10	140	10	0	210	0	0	200	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.0			7.0			7.0	
Lane Util. Factor					1.00			1.00			1.00	
Frt					0.99			1.00			0.96	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					1755			1792			1730	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					1755			1792			1730	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	11	152	11	0	228	0	0	217	76
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	12	0
Lane Group Flow (vph)	0	0	0	0	172	0	0	228	0	0	281	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	6%	6%	6%	6%	6%	6%
Turn Type				Split	NA			NA			NA	
Protected Phases				8	8			2 4 5 6			4	
Permitted Phases												
Actuated Green, G (s)					14.7			64.2			22.0	
Effective Green, g (s)					14.7			58.2			22.0	
Actuated g/C Ratio					0.16			0.62			0.23	
Clearance Time (s)					7.0						7.0	
Vehicle Extension (s)					3.0						3.0	
Lane Grp Cap (vph)					273			1104			403	
v/s Ratio Prot					c0.10			c0.13			c0.16	
v/s Ratio Perm												
v/c Ratio					0.63			0.21			0.70	
Uniform Delay, d1					37.3			8.0			33.2	
Progression Factor					1.00			0.11			1.00	
Incremental Delay, d2					4.7			0.1			5.2	
Delay (s)					42.0			0.9			38.4	
Level of Service					D			A			D	
Approach Delay (s)		0.0			42.0			0.9			38.4	
Approach LOS		A			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	94.4	Sum of lost time (s)	25.0
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	130	140	10	10	240	10	240	10	60	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	190.0	182.7	190.0	190.0	177.6	190.0			
Adj Flow Rate, veh/h	141	152	11	11	261	11	261	11	65			
Adj No. of Lanes	1	2	0	0	2	0	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	4	4	4	4	0	7	0			
Cap, veh/h	630	1661	119	95	704	29	329	14	82			
Arrive On Green	0.18	0.51	0.51	0.22	0.22	0.22	0.26	0.26	0.26			
Sat Flow, veh/h	1740	3285	236	51	3253	135	1282	54	319			
Grp Volume(v), veh/h	141	80	83	149	0	134	337	0	0			
Grp Sat Flow(s),veh/h/ln	1740	1736	1785	1800	0	1639	1655	0	0			
Q Serve(g_s), s	2.3	1.1	1.1	0.0	0.0	3.2	8.8	0.0	0.0			
Cycle Q Clear(g_c), s	2.3	1.1	1.1	3.2	0.0	3.2	8.8	0.0	0.0			
Prop In Lane	1.00		0.13	0.07		0.08	0.77		0.19			
Lane Grp Cap(c), veh/h	630	878	903	473	0	355	424	0	0			
V/C Ratio(X)	0.22	0.09	0.09	0.32	0.00	0.38	0.79	0.00	0.00			
Avail Cap(c_a), veh/h	879	1427	1468	778	0	638	1075	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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	8.2	5.9	5.9	15.4	0.0	15.4	16.0	0.0	0.0			
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.4	0.0	0.7	3.4	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(50%),veh/ln	1.1	0.5	0.5	1.7	0.0	1.5	4.3	0.0	0.0			
LnGrp Delay(d),s/veh	8.4	6.0	6.0	15.8	0.0	16.1	19.5	0.0	0.0			
LnGrp LOS	A	A	A	B		B	B					
Approach Vol, veh/h		304			283			337				
Approach Delay, s/veh		7.1			16.0			19.5				
Approach LOS		A			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		29.4			13.4	16.0		16.8
Change Period (Y+Rc), s		6.0			5.0	6.0		5.0
Max Green Setting (Gmax), s		38.0			15.0	18.0		30.0
Max Q Clear Time (g_c+I1), s		3.1			4.3	5.2		10.8
Green Ext Time (p_c), s		1.2			0.2	1.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	270	270	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	293	293	11	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	304	0	-	0	614	299
Stage 1	-	-	-	-	299	-
Stage 2	-	-	-	-	315	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1246	-	-	-	455	741
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	740	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1246	-	-	-	450	741
Mov Cap-2 Maneuver	-	-	-	-	450	-
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	732	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1246	-	-	-	560
HCM Lane V/C Ratio	0.009	-	-	-	0.039
HCM Control Delay (s)	7.9	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	350	10	10	470	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	380	11	11	511	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	391	0	919	196
Stage 1	-	-	-	-	386	-
Stage 2	-	-	-	-	533	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1150	-	285	813
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	587	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1150	-	282	813
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	419	-	-	1150	-
HCM Lane V/C Ratio	0.052	-	-	0.009	-
HCM Control Delay (s)	14.1	-	-	8.2	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	350	470	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	380	511	11	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	522	0	-	0	728	516
Stage 1	-	-	-	-	516	-
Stage 2	-	-	-	-	212	-
Critical Hdwy	4.14	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.236	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	1034	-	-	-	374	558
Stage 1	-	-	-	-	598	-
Stage 2	-	-	-	-	804	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1034	-	-	-	370	558
Mov Cap-2 Maneuver	-	-	-	-	473	-
Stage 1	-	-	-	-	598	-
Stage 2	-	-	-	-	795	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1034	-	-	-	512
HCM Lane V/C Ratio	0.011	-	-	-	0.042
HCM Control Delay (s)	8.5	-	-	-	12.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	160	30	10	220	10	30	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	174	33	11	239	11	33	11	11

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	250	0	0	207	0	0	489	484	190
Stage 1	-	-	-	-	-	-	212	212	-
Stage 2	-	-	-	-	-	-	277	272	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1304	-	-	1352	-	-	489	483	852
Stage 1	-	-	-	-	-	-	790	727	-
Stage 2	-	-	-	-	-	-	729	685	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1304	-	-	1352	-	-	467	474	852
Mov Cap-2 Maneuver	-	-	-	-	-	-	467	474	-
Stage 1	-	-	-	-	-	-	782	720	-
Stage 2	-	-	-	-	-	-	701	679	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.3	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	515	1304	-	-	1352	-	-	541
HCM Lane V/C Ratio	0.106	0.008	-	-	0.008	-	-	0.06
HCM Control Delay (s)	12.8	7.8	0	-	7.7	0	-	12.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	489	494	245
Stage 1	266	266	-
Stage 2	223	228	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	489	476	794
Stage 1	739	689	-
Stage 2	780	715	-
Platoon blocked, %			
Mov Cap-1 Maneuver	467	467	794
Mov Cap-2 Maneuver	467	467	-
Stage 1	732	683	-
Stage 2	751	708	-

Approach	SB
HCM Control Delay, s	12.1
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	40	270	10	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	7	7	2	2
Mvmt Flow	0	43	293	11	22	0

Major/Minor	Minor1		Major1		Minor2	
Conflicting Flow All	299	299	0	0	299	304
Stage 1	299	-	-	-	0	0
Stage 2	0	-	-	-	299	304
Critical Hdwy	6.42	6.22	-	-	6.42	6.52
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	5.42	5.52
Follow-up Hdwy	3.518	3.318	-	-	3.518	4.018
Pot Cap-1 Maneuver	692	741	-	-	692	609
Stage 1	752	-	-	-	-	-
Stage 2	-	-	-	-	752	663
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	692	741	-	-	692	0
Mov Cap-2 Maneuver	692	-	-	-	692	0
Stage 1	752	-	-	-	-	0
Stage 2	-	-	-	-	752	0

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	10.4
HCM LOS	B		B

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBLn1
Capacity (veh/h)	-	-	741	692
HCM Lane V/C Ratio	-	-	0.059	0.031
HCM Control Delay (s)	-	-	10.2	10.4
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	0.2	0.1

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	210	10	10	250
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	228	11	11	272

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	527	234	0	0	239	0
Stage 1	234	-	-	-	-	-
Stage 2	293	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	505	795	-	-	1328	-
Stage 1	796	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	500	795	-	-	1328	-
Mov Cap-2 Maneuver	500	-	-	-	-	-
Stage 1	796	-	-	-	-	-
Stage 2	741	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	571	1328	-
HCM Lane V/C Ratio	-	-	0.057	0.008	-
HCM Control Delay (s)	-	-	11.7	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	300	200	250	290	190	260
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	186.3	186.3
Adj Flow Rate, veh/h	326	217	272	315	207	283
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	2	2
Cap, veh/h	789	671	559	1145	378	337
Arrive On Green	0.43	0.43	0.23	1.00	0.21	0.21
Sat Flow, veh/h	1827	1553	1740	1827	1774	1583
Grp Volume(v), veh/h	326	217	272	315	207	283
Grp Sat Flow(s),veh/h/ln	1827	1553	1740	1827	1774	1583
Q Serve(g_s), s	9.1	6.8	6.2	0.0	7.6	12.6
Cycle Q Clear(g_c), s	9.1	6.8	6.2	0.0	7.6	12.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	789	671	559	1145	378	337
V/C Ratio(X)	0.41	0.32	0.49	0.28	0.55	0.84
Avail Cap(c_a), veh/h	789	671	675	1145	533	476
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.91	0.91	1.00	1.00
Uniform Delay (d), s/veh	14.4	13.8	7.9	0.0	25.8	27.7
Incr Delay (d2), s/veh	1.6	1.3	0.6	0.5	1.2	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	3.1	2.9	0.2	3.9	6.3
LnGrp Delay(d),s/veh	16.0	15.1	8.5	0.5	27.0	36.8
LnGrp LOS	B	B	A	A	C	D
Approach Vol, veh/h	543			587	490	
Approach Delay, s/veh	15.7			4.2	32.7	
Approach LOS	B			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.3	44.1				58.4		21.6
Change Period (Y+Rc), s	* 5.8000002	5.9			* 5.9000001			5.9
Max Green Setting (Gmax), s	* 13.4	26.9			* 46.100002			22.1
Max Q Clear Time (g_c+I1), s	8.2	11.1				2.0		14.6
Green Ext Time (p_c), s	0.4	2.5				2.7		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	540	10	300	500	10	30	0	190	10	0	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	190.0	190.0	186.3	186.3	190.0	186.3	190.0
Adj Flow Rate, veh/h	11	587	11	326	543	11	33	0	207	11	0	11
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	539	975	829	680	1246	25	317	0	247	158	22	110
Arrive On Green	1.00	1.00	1.00	0.09	0.70	0.70	0.16	0.00	0.16	0.16	0.00	0.16
Sat Flow, veh/h	835	1827	1553	1740	1784	36	1431	0	1583	562	141	703
Grp Volume(v), veh/h	11	587	11	326	0	554	33	0	207	22	0	0
Grp Sat Flow(s),veh/h/ln	835	1827	1553	1740	0	1821	1431	0	1583	1406	0	0
Q Serve(g_s), s	0.0	0.0	0.0	6.2	0.0	10.1	0.4	0.0	9.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.2	0.0	10.1	1.3	0.0	9.7	0.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	0.50		0.50
Lane Grp Cap(c), veh/h	539	975	829	680	0	1271	317	0	247	290	0	0
V/C Ratio(X)	0.02	0.60	0.01	0.48	0.00	0.44	0.10	0.00	0.84	0.08	0.00	0.00
Avail Cap(c_a), veh/h	539	975	829	680	0	1271	376	0	313	346	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	5.8	0.0	5.0	27.8	0.0	31.5	27.7	0.0	0.0
Incr Delay (d2), s/veh	0.1	2.4	0.0	0.5	0.0	1.1	0.1	0.0	14.6	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	2.9	0.0	5.3	0.6	0.0	5.2	0.4	0.0	0.0
LnGrp Delay(d),s/veh	0.1	2.4	0.0	6.3	0.0	6.1	28.0	0.0	46.1	27.8	0.0	0.0
LnGrp LOS	A	A	A	A		A	C		D	C		
Approach Vol, veh/h		609			880			240			22	
Approach Delay, s/veh		2.4			6.2			43.6			27.8	
Approach LOS		A			A			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	12.6	49.8		17.6		62.4		17.6
Change Period (Y+Rc), s	* 5.6000004	* 5.6000004		5.6	* 5.6000004			5.6
Max Green Setting (Gmax), s	* 7	* 41		15.2	* 53.599998			15.2
Max Q Clear Time (g_c+I1), s	8.2	2.0		2.8		12.1		11.7
Green Ext Time (p_c), s	0.0	4.1		0.7		4.1		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	510	190	110	420	290	0	0	0	150	260	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	6.0	7.0					7.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00					1.00	
Frt	1.00	0.96		1.00	1.00	0.85					1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00					0.98	
Satd. Flow (prot)	1736	3330		1736	1827	1553					1739	
Flt Permitted	0.13	1.00		0.13	1.00	1.00					0.98	
Satd. Flow (perm)	240	3330		235	1827	1553					1739	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	554	207	120	457	315	0	0	0	163	283	11
RTOR Reduction (vph)	0	30	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	120	731	0	120	457	315	0	0	0	0	456	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt	NA		pm+pt	NA	custom				Split	NA	
Protected Phases	5	2		1	6	4				4 8	4 8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	40.5	30.5		42.5	32.0	72.0					66.4	
Effective Green, g (s)	40.5	30.5		42.5	32.0	72.0					66.4	
Actuated g/C Ratio	0.32	0.24		0.34	0.26	0.57					0.53	
Clearance Time (s)	4.0	7.0		4.0	6.0	7.0						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0						
Lane Grp Cap (vph)	196	809		205	466	891					920	
v/s Ratio Prot	0.05	0.22		c0.05	c0.25	0.11					c0.26	
v/s Ratio Perm	0.15			0.15		0.09						
v/c Ratio	0.61	0.90		0.59	0.98	0.35					0.50	
Uniform Delay, d1	33.7	46.0		31.5	46.4	14.3					18.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00					0.04	
Incremental Delay, d2	5.6	13.4		4.2	36.5	0.2					0.0	
Delay (s)	39.2	59.4		35.7	82.9	14.5					0.8	
Level of Service	D	E		D	F	B					A	
Approach Delay (s)		56.6			52.4			0.0			0.8	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	43.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	125.4	Sum of lost time (s)	25.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	10	210	10	0	400	0	0	410	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.0			7.0			7.0	
Lane Util. Factor					1.00			1.00			1.00	
Frt					0.99			1.00			0.96	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					1761			1792			1725	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					1761			1792			1725	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	11	228	11	0	435	0	0	446	174
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	0	0	0	248	0	0	435	0	0	609	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	6%	6%	6%	6%	6%	6%
Turn Type				Split	NA			NA			NA	
Protected Phases				8	8			2 4 5 6			4	
Permitted Phases												
Actuated Green, G (s)					19.4			92.0			40.0	
Effective Green, g (s)					19.4			82.0			40.0	
Actuated g/C Ratio					0.15			0.65			0.32	
Clearance Time (s)					7.0						7.0	
Vehicle Extension (s)					3.0						3.0	
Lane Grp Cap (vph)					272			1171			550	
v/s Ratio Prot					c0.14			c0.24			c0.35	
v/s Ratio Perm												
v/c Ratio					0.91			0.37			1.11	
Uniform Delay, d1					52.2			9.9			42.7	
Progression Factor					1.00			0.07			1.00	
Incremental Delay, d2					32.5			0.2			71.2	
Delay (s)					84.6			0.9			113.9	
Level of Service					F			A			F	
Approach Delay (s)		0.0			84.6			0.9			113.9	
Approach LOS		A			F			A			F	

Intersection Summary			
HCM 2000 Control Delay	70.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	125.4	Sum of lost time (s)	25.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	220	380	60	10	360	20	460	10	140	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	190.0	182.7	190.0	190.0	177.6	190.0			
Adj Flow Rate, veh/h	239	413	65	11	391	22	500	11	152			
Adj No. of Lanes	1	2	0	0	2	0	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	4	4	4	4	0	7	0			
Cap, veh/h	437	1228	192	65	569	32	523	12	159			
Arrive On Green	0.15	0.41	0.41	0.18	0.18	0.18	0.42	0.42	0.42			
Sat Flow, veh/h	1740	3009	470	36	3207	178	1242	27	378			
Grp Volume(v), veh/h	239	237	241	223	0	201	663	0	0			
Grp Sat Flow(s),veh/h/ln	1740	1736	1744	1790	0	1631	1647	0	0			
Q Serve(g_s), s	6.5	6.0	6.1	0.7	0.0	7.5	25.1	0.0	0.0			
Cycle Q Clear(g_c), s	6.5	6.0	6.1	7.4	0.0	7.5	25.1	0.0	0.0			
Prop In Lane	1.00		0.27	0.05		0.11	0.75		0.23			
Lane Grp Cap(c), veh/h	437	708	712	376	0	289	694	0	0			
V/C Ratio(X)	0.55	0.33	0.34	0.59	0.00	0.70	0.96	0.00	0.00			
Avail Cap(c_a), veh/h	576	1024	1029	553	0	456	767	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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	16.1	13.1	13.1	24.8	0.0	24.9	18.1	0.0	0.0			
Incr Delay (d2), s/veh	1.1	0.3	0.3	1.5	0.0	3.0	21.4	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(50%),veh/ln	3.2	3.0	3.0	3.9	0.0	3.6	15.3	0.0	0.0			
LnGrp Delay(d),s/veh	17.2	13.3	13.4	26.3	0.0	27.9	39.4	0.0	0.0			
LnGrp LOS	B	B	B	C		C	D					
Approach Vol, veh/h		717			424			663				
Approach Delay, s/veh		14.6			27.0			39.4				
Approach LOS		B			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		32.3			14.9	17.4		32.1
Change Period (Y+Rc), s		6.0			5.0	6.0		5.0
Max Green Setting (Gmax), s		38.0			15.0	18.0		30.0
Max Q Clear Time (g_c+I1), s		8.1			8.5	9.5		27.1
Green Ext Time (p_c), s		2.7			0.4	2.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.7
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	490	460	20	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	533	500	22	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	522	0	-	0	1065	511
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1034	-	-	-	246	563
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1034	-	-	-	242	563
Mov Cap-2 Maneuver	-	-	-	-	242	-
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	566	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1034	-	-	-	338
HCM Lane V/C Ratio	0.011	-	-	-	0.064
HCM Control Delay (s)	8.5	0	-	-	16.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	730	10	10	800	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	793	11	11	870	11	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	804	0	1690	402
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	891	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	803	-	93	599
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	400	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	803	-	92	599
Mov Cap-2 Maneuver	-	-	-	-	92	-
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	25.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	-	-	803	-
HCM Lane V/C Ratio	0.155	-	-	0.014	-
HCM Control Delay (s)	25.2	-	-	9.5	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	750	800	0	60	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	0	815	870	0	65	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	870	0	-	0	1278	870
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	408	-
Critical Hdwy	4.14	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.236	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	766	-	-	-	170	350
Stage 1	-	-	-	-	409	-
Stage 2	-	-	-	-	641	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	766	-	-	-	170	350
Mov Cap-2 Maneuver	-	-	-	-	300	-
Stage 1	-	-	-	-	409	-
Stage 2	-	-	-	-	641	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	766	-	-	-	306
HCM Lane V/C Ratio	-	-	-	-	0.249
HCM Control Delay (s)	0	-	-	-	20.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	1

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	440	70	30	280	10	50	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	478	76	33	304	11	54	11	22

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	315	0	0	554	0	0	951	918	516
Stage 1	-	-	-	-	-	-	538	538	-
Stage 2	-	-	-	-	-	-	413	380	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1234	-	-	1006	-	-	240	272	559
Stage 1	-	-	-	-	-	-	527	522	-
Stage 2	-	-	-	-	-	-	616	614	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1234	-	-	1006	-	-	203	258	559
Mov Cap-2 Maneuver	-	-	-	-	-	-	203	258	-
Stage 1	-	-	-	-	-	-	520	515	-
Stage 2	-	-	-	-	-	-	529	589	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.8	27
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	249	1234	-	-	1006	-	-	476
HCM Lane V/C Ratio	0.349	0.009	-	-	0.032	-	-	0.183
HCM Control Delay (s)	27	7.9	0	-	8.7	0	-	14.2
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.5	0	-	-	0.1	-	-	0.7

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	60
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	65

Major/Minor	Minor2		
Conflicting Flow All	929	951	310
Stage 1	375	375	-
Stage 2	554	576	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	248	260	730
Stage 1	646	617	-
Stage 2	517	502	-
Platoon blocked, %			
Mov Cap-1 Maneuver	221	246	730
Mov Cap-2 Maneuver	221	246	-
Stage 1	638	592	-
Stage 2	480	495	-

Approach	SB
HCM Control Delay, s	14.2
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	50	560	10	70	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	7	7	2	2
Mvmt Flow	0	54	609	11	76	0

Major/Minor	Minor1		Major1		Minor2	
Conflicting Flow All	614	614	0	0	614	620
Stage 1	614	-	-	-	0	0
Stage 2	0	-	-	-	614	620
Critical Hdwy	6.42	6.22	-	-	6.42	6.52
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	5.42	5.52
Follow-up Hdwy	3.518	3.318	-	-	3.518	4.018
Pot Cap-1 Maneuver	455	492	-	-	455	404
Stage 1	540	-	-	-	-	-
Stage 2	-	-	-	-	540	480
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	455	492	-	-	455	0
Mov Cap-2 Maneuver	455	-	-	-	455	0
Stage 1	540	-	-	-	-	0
Stage 2	-	-	-	-	540	0

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	14.5
HCM LOS	B		B

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBLn1
Capacity (veh/h)	-	-	492	455
HCM Lane V/C Ratio	-	-	0.11	0.167
HCM Control Delay (s)	-	-	13.2	14.5
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	0.4	0.6

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	390	20	10	550
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	424	22	11	598

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1055	435	0	0	446	0
Stage 1	435	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	246	613	-	-	1114	-
Stage 1	644	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	242	613	-	-	1114	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	521	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.3	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	303	1114	-
HCM Lane V/C Ratio	-	-	0.108	0.01	-
HCM Control Delay (s)	-	-	18.3	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

DESIGN YEAR 2039 'NO-BUILD' CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	430	50	70	300	70	40	0	90	40	0	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	182.7	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	43	467	54	76	326	76	43	0	98	43	0	33
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	719	992	843	564	1025	872	263	0	217	203	0	217
Arrive On Green	0.06	0.54	0.54	0.15	1.00	1.00	0.14	0.00	0.14	0.14	0.00	0.14
Sat Flow, veh/h	1740	1827	1553	1740	1827	1553	1370	0	1583	1292	0	1583
Grp Volume(v), veh/h	43	467	54	76	326	76	43	0	98	43	0	33
Grp Sat Flow(s),veh/h/ln	1740	1827	1553	1740	1827	1553	1370	0	1583	1292	0	1583
Q Serve(g_s), s	0.7	11.3	1.2	1.2	0.0	0.0	2.1	0.0	4.1	2.3	0.0	1.3
Cycle Q Clear(g_c), s	0.7	11.3	1.2	1.2	0.0	0.0	3.4	0.0	4.1	6.4	0.0	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	719	992	843	564	1025	872	263	0	217	203	0	217
V/C Ratio(X)	0.06	0.47	0.06	0.13	0.32	0.09	0.16	0.00	0.45	0.21	0.00	0.15
Avail Cap(c_a), veh/h	841	992	843	654	1025	872	343	0	310	279	0	310
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.94	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	10.1	7.8	5.9	0.0	0.0	28.9	0.0	28.6	31.5	0.0	27.4
Incr Delay (d2), s/veh	0.0	1.6	0.1	0.1	0.8	0.2	0.3	0.0	1.5	0.5	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	6.0	0.5	0.5	0.2	0.0	0.8	0.0	1.9	0.8	0.0	0.6
LnGrp Delay(d),s/veh	6.0	11.7	7.9	6.0	0.8	0.2	29.2	0.0	30.1	32.0	0.0	27.7
LnGrp LOS	A	B	A	A	A	A	C		C	C		C
Approach Vol, veh/h		564			478			141			76	
Approach Delay, s/veh		10.9			1.5			29.8			30.2	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.3	53.0		15.8	9.9	54.3		15.8
Change Period (Y+Rc), s	* 5.8000002	5.9	* 5.8999996	5.9	* 5.9000001	5.9	* 5.8999996	5.9
Max Green Setting (Gmax), s	* 9.1999998	39.1	* 14.1	9.1	* 9.39.100002	9.1	* 14.1	9.1
Max Q Clear Time (g_c+I1), s	3.2	13.3		8.4	2.7	2.0		6.1
Green Ext Time (p_c), s	0.1	2.9		0.3	0.0	2.9		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	510	20	90	420	130	10	0	60	90	0	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	182.7	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	33	554	22	98	457	141	11	0	65	98	0	11
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	539	1000	850	693	1067	907	281	0	215	263	0	215
Arrive On Green	0.09	1.00	1.00	0.08	0.58	0.58	0.14	0.00	0.14	0.14	0.00	0.14
Sat Flow, veh/h	1740	1827	1553	1740	1827	1553	1335	0	1583	1331	0	1583
Grp Volume(v), veh/h	33	554	22	98	457	141	11	0	65	98	0	11
Grp Sat Flow(s),veh/h/ln	1740	1827	1553	1740	1827	1553	1335	0	1583	1331	0	1583
Q Serve(g_s), s	0.5	0.0	0.0	1.6	10.0	3.0	0.5	0.0	2.7	5.0	0.0	0.4
Cycle Q Clear(g_c), s	0.5	0.0	0.0	1.6	10.0	3.0	0.9	0.0	2.7	6.0	0.0	0.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	539	1000	850	693	1067	907	281	0	215	263	0	215
V/C Ratio(X)	0.06	0.55	0.03	0.14	0.43	0.16	0.04	0.00	0.30	0.37	0.00	0.05
Avail Cap(c_a), veh/h	684	1000	850	775	1067	907	371	0	317	349	0	317
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.1	0.0	0.0	5.2	8.3	6.8	27.5	0.0	28.0	29.9	0.0	27.1
Incr Delay (d2), s/veh	0.0	2.1	0.1	0.1	1.3	0.4	0.1	0.0	0.8	0.9	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.6	0.0	0.8	5.3	1.3	0.2	0.0	1.2	1.9	0.0	0.2
LnGrp Delay(d),s/veh	6.1	2.1	0.1	5.3	9.6	7.2	27.5	0.0	28.8	30.8	0.0	27.2
LnGrp LOS	A	A	A	A	A	A	C		C	C		C
Approach Vol, veh/h		609			696			76			109	
Approach Delay, s/veh		2.2			8.5			28.6			30.4	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.6	53.0		15.4	9.0	55.7		15.4
Change Period (Y+Rc), s*	5.6000004	4.6000004		5.6	5.6000004	4.6000004		5.6
Max Green Setting (Gmax), s*	9.3999996	49.400002		14.4	3.3999996	49.400002		14.4
Max Q Clear Time (g_c+I1), s	3.6	2.0		8.0	2.5	12.0		4.7
Green Ext Time (p_c), s	0.1	4.0		0.3	0.0	4.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	150	330	20	10	480	10	490	10	180	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	190.0	182.7	190.0	190.0	177.6	190.0			
Adj Flow Rate, veh/h	163	359	22	11	522	11	533	11	196			
Adj No. of Lanes	1	2	0	0	2	0	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	4	4	4	4	0	7	0			
Cap, veh/h	387	1363	83	59	673	14	510	11	187			
Arrive On Green	0.14	0.41	0.41	0.20	0.20	0.20	0.43	0.43	0.43			
Sat Flow, veh/h	1740	3324	203	27	3357	70	1181	24	434			
Grp Volume(v), veh/h	163	187	194	285	0	259	740	0	0			
Grp Sat Flow(s),veh/h/ln	1740	1736	1791	1804	0	1650	1640	0	0			
Q Serve(g_s), s	4.5	4.9	5.0	1.9	0.0	10.3	30.0	0.0	0.0			
Cycle Q Clear(g_c), s	4.5	4.9	5.0	10.3	0.0	10.3	30.0	0.0	0.0			
Prop In Lane	1.00		0.11	0.04		0.04	0.72		0.26			
Lane Grp Cap(c), veh/h	387	712	735	415	0	331	708	0	0			
V/C Ratio(X)	0.42	0.26	0.26	0.69	0.00	0.78	1.05	0.00	0.00			
Avail Cap(c_a), veh/h	523	949	979	519	0	427	708	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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	16.7	13.6	13.6	26.3	0.0	26.4	19.8	0.0	0.0			
Incr Delay (d2), s/veh	0.7	0.2	0.2	2.7	0.0	7.0	46.3	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(50%),veh/ln	2.2	2.4	2.5	5.5	0.0	5.3	22.5	0.0	0.0			
LnGrp Delay(d),s/veh	17.5	13.7	13.8	29.1	0.0	33.4	66.0	0.0	0.0			
LnGrp LOS	B	B	B	C		C	F					
Approach Vol, veh/h		544			544			740				
Approach Delay, s/veh		14.9			31.1			66.0				
Approach LOS		B			C			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		34.5			14.6	19.9		35.0
Change Period (Y+Rc), s		6.0			5.0	6.0		5.0
Max Green Setting (Gmax), s		38.0			15.0	18.0		30.0
Max Q Clear Time (g_c+I1), s		7.0			6.5	12.3		32.0
Green Ext Time (p_c), s		2.8			0.3	1.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	40.4
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	330	160	160	340	470	0	0	0	170	270	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	6.0	7.0					7.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00					1.00	
Frt	1.00	0.95		1.00	1.00	0.85					1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00					0.98	
Satd. Flow (prot)	1736	3301		1736	1827	1553					1742	
Flt Permitted	0.20	1.00		0.26	1.00	1.00					0.98	
Satd. Flow (perm)	361	3301		477	1827	1553					1742	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	359	174	174	370	511	0	0	0	185	293	0
RTOR Reduction (vph)	0	47	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	185	486	0	174	370	511	0	0	0	0	478	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt	NA		pm+pt	NA	custom				Split	NA	
Protected Phases	5	2		1	6	4				4 8	4 8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	36.5	26.5		40.5	29.0	69.0					67.0	
Effective Green, g (s)	36.5	26.5		40.5	29.0	69.0					67.0	
Actuated g/C Ratio	0.30	0.22		0.33	0.24	0.56					0.54	
Clearance Time (s)	4.0	7.0		4.0	6.0	7.0						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0						
Lane Grp Cap (vph)	218	711		274	430	871					948	
v/s Ratio Prot	c0.07	0.15		0.06	c0.20	c0.19					c0.27	
v/s Ratio Perm	0.18			0.15		0.14						
v/c Ratio	0.85	0.68		0.64	0.86	0.59					0.50	
Uniform Delay, d1	35.9	44.4		31.5	45.1	17.7					17.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00					0.05	
Incremental Delay, d2	25.2	2.7		4.8	16.0	1.0					0.0	
Delay (s)	61.1	47.1		36.3	61.0	18.7					0.9	
Level of Service	E	D		D	E	B					A	
Approach Delay (s)		50.7			36.4			0.0			0.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	33.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	123.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	20	210	80	0	640	0	0	420	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.0			7.0			7.0	
Lane Util. Factor					1.00			1.00			1.00	
Frt					0.97			1.00			0.97	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					1708			1792			1742	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					1708			1792			1742	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	22	228	87	0	696	0	0	457	120
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	0	0	0	327	0	0	696	0	0	570	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	6%	6%	6%	6%	6%	6%
Turn Type				Split	NA			NA			NA	
Protected Phases				8	8			2 4 5 6			4	
Permitted Phases												
Actuated Green, G (s)					20.0			89.0			40.0	
Effective Green, g (s)					20.0			79.0			40.0	
Actuated g/C Ratio					0.16			0.64			0.33	
Clearance Time (s)					7.0						7.0	
Vehicle Extension (s)					3.0						3.0	
Lane Grp Cap (vph)					277			1150			566	
v/s Ratio Prot					c0.19			c0.39			c0.33	
v/s Ratio Perm												
v/c Ratio					1.18			0.61			1.01	
Uniform Delay, d1					51.5			12.9			41.5	
Progression Factor					1.00			0.09			1.00	
Incremental Delay, d2					112.0			0.7			39.4	
Delay (s)					163.5			1.9			80.9	
Level of Service					F			A			F	
Approach Delay (s)		0.0			163.5			1.9			80.9	
Approach LOS		A			F			A			F	

Intersection Summary			
HCM 2000 Control Delay	64.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	123.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	510	370	0	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	0	554	402	0	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	402	0	-	0	956	402
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1146	-	-	-	286	648
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1146	-	-	-	286	648
Mov Cap-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	575	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1146	-	-	-	397
HCM Lane V/C Ratio	-	-	-	-	0.055
HCM Control Delay (s)	0	-	-	-	14.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	650	10	20	630	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	707	11	22	685	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	717	0	1440	359
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	728	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	867	-	134	638
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	477	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	867	-	131	638
Mov Cap-2 Maneuver	-	-	-	-	131	-
Stage 1	-	-	-	-	448	-
Stage 2	-	-	-	-	465	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	23.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	217	-	-	867	-
HCM Lane V/C Ratio	0.1	-	-	0.025	-
HCM Control Delay (s)	23.4	-	-	9.3	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	650	650	10	10	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	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	707	707	11	11	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	717	0	-	0	1087	712
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	375	-
Critical Hdwy	4.14	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.236	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	875	-	-	-	224	431
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	666	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	875	-	-	-	221	431
Mov Cap-2 Maneuver	-	-	-	-	352	-
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	658	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	875	-	-	-	352
HCM Lane V/C Ratio	0.012	-	-	-	0.031
HCM Control Delay (s)	9.2	-	-	-	15.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	60	400	50	30	450	20	40	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	65	435	54	33	489	22	43	11	22

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	511	0	0	489	0	0	1168	1168	462
Stage 1	-	-	-	-	-	-	592	592	-
Stage 2	-	-	-	-	-	-	576	576	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1044	-	-	1064	-	-	170	193	600
Stage 1	-	-	-	-	-	-	493	494	-
Stage 2	-	-	-	-	-	-	503	502	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1044	-	-	1064	-	-	143	169	600
Mov Cap-2 Maneuver	-	-	-	-	-	-	143	169	-
Stage 1	-	-	-	-	-	-	451	452	-
Stage 2	-	-	-	-	-	-	462	480	-

Approach	EB	WB	NB
HCM Control Delay, s	1	0.5	36.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	188	1044	-	-	1064	-	-	201
HCM Lane V/C Ratio	0.405	0.062	-	-	0.031	-	-	0.162
HCM Control Delay (s)	36.6	8.7	0	-	8.5	0	-	26.3
HCM Lane LOS	E	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	1.8	0.2	-	-	0.1	-	-	0.6

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	1174	1185	500
Stage 1	565	565	-
Stage 2	609	620	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	169	189	571
Stage 1	510	508	-
Stage 2	482	480	-
Platoon blocked, %			
Mov Cap-1 Maneuver	140	165	571
Mov Cap-2 Maneuver	140	165	-
Stage 1	466	486	-
Stage 2	414	439	-

Approach	SB
HCM Control Delay, s	26.3
HCM LOS	D

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	40	640	10	30	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	7	7	2	2
Mvmt Flow	0	43	696	11	33	0

Major/Minor	Minor1		Major1		Minor2	
Conflicting Flow All	701	701	0	0	701	707
Stage 1	701	-	-	-	0	0
Stage 2	0	-	-	-	701	707
Critical Hdwy	6.42	6.22	-	-	6.42	6.52
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	5.42	5.52
Follow-up Hdwy	3.518	3.318	-	-	3.518	4.018
Pot Cap-1 Maneuver	405	439	-	-	405	360
Stage 1	492	-	-	-	-	-
Stage 2	-	-	-	-	492	438
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	405	439	-	-	405	0
Mov Cap-2 Maneuver	405	-	-	-	405	0
Stage 1	492	-	-	-	-	0
Stage 2	-	-	-	-	492	0

Approach	WB	NB	SB
HCM Control Delay, s	14.1	0	14.7
HCM LOS	B		B

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBLn1
Capacity (veh/h)	-	-	439	405
HCM Lane V/C Ratio	-	-	0.099	0.081
HCM Control Delay (s)	-	-	14.1	14.7
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	0.3	0.3

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	10	680	30	10	500
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	33	11	739	33	11	543

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1320	755	0	0	772	0
Stage 1	755	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	170	402	-	-	843	-
Stage 1	457	-	-	-	-	-
Stage 2	561	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	167	402	-	-	843	-
Mov Cap-2 Maneuver	167	-	-	-	-	-
Stage 1	457	-	-	-	-	-
Stage 2	550	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.5	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	196	843	-
HCM Lane V/C Ratio	-	-	0.222	0.013	-
HCM Control Delay (s)	-	-	28.5	9.3	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	330	110	130	250	90	70	0	120	70	0	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	182.7	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	54	359	120	141	272	98	76	0	130	76	0	43
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	715	944	802	604	987	839	285	0	258	206	0	258
Arrive On Green	0.06	0.52	0.52	0.18	1.00	1.00	0.16	0.00	0.16	0.16	0.00	0.16
Sat Flow, veh/h	1740	1827	1553	1740	1827	1553	1358	0	1583	1255	0	1583
Grp Volume(v), veh/h	54	359	120	141	272	98	76	0	130	76	0	43
Grp Sat Flow(s),veh/h/ln	1740	1827	1553	1740	1827	1553	1358	0	1583	1255	0	1583
Q Serve(g_s), s	1.0	8.9	3.1	2.6	0.0	0.0	3.9	0.0	5.7	4.4	0.0	1.8
Cycle Q Clear(g_c), s	1.0	8.9	3.1	2.6	0.0	0.0	5.6	0.0	5.7	10.1	0.0	1.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	715	944	802	604	987	839	285	0	258	206	0	258
V/C Ratio(X)	0.08	0.38	0.15	0.23	0.28	0.12	0.27	0.00	0.50	0.37	0.00	0.17
Avail Cap(c_a), veh/h	815	944	802	663	987	839	316	0	295	235	0	295
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.9	11.0	9.6	6.4	0.0	0.0	29.7	0.0	28.9	33.5	0.0	27.2
Incr Delay (d2), s/veh	0.0	1.2	0.4	0.2	0.6	0.3	0.5	0.0	1.5	1.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	4.8	1.4	1.2	0.2	0.1	1.5	0.0	2.6	1.6	0.0	0.8
LnGrp Delay(d),s/veh	6.9	12.2	10.0	6.6	0.6	0.3	30.2	0.0	30.4	34.6	0.0	27.5
LnGrp LOS	A	B	A	A	A	A	C		C	C		C
Approach Vol, veh/h		533			511			206			119	
Approach Delay, s/veh		11.1			2.2			30.3			32.0	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.4	49.3		18.2	10.7	51.1		18.2
Change Period (Y+Rc), s	* 5.8000002	5.9	* 5.8999996	5.9	* 5.9000001	5.9	* 5.8999996	5.9
Max Green Setting (Gmax), s	* 6.1999998	39.1	* 14.1	9.3	* 9.100002	39.1	* 14.1	9.3
Max Q Clear Time (g_c+I1), s	4.6	10.9	12.1	3.0	2.0		7.7	
Green Ext Time (p_c), s	0.1	2.6	0.2	0.0	2.7		0.6	

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	470	10	150	430	190	10	0	80	150	0	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	182.7	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	43	511	11	163	467	207	11	0	87	163	0	33
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	486	945	803	694	1007	856	308	0	275	289	0	275
Arrive On Green	0.11	1.00	1.00	0.09	0.55	0.55	0.17	0.00	0.17	0.17	0.00	0.17
Sat Flow, veh/h	1740	1827	1553	1740	1827	1553	1231	0	1583	1305	0	1583
Grp Volume(v), veh/h	43	511	11	163	467	207	11	0	87	163	0	33
Grp Sat Flow(s),veh/h/ln	1740	1827	1553	1740	1827	1553	1231	0	1583	1305	0	1583
Q Serve(g_s), s	0.8	0.0	0.0	3.1	11.7	5.3	0.5	0.0	3.7	9.3	0.0	1.3
Cycle Q Clear(g_c), s	0.8	0.0	0.0	3.1	11.7	5.3	1.9	0.0	3.7	11.1	0.0	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	486	945	803	694	1007	856	308	0	275	289	0	275
V/C Ratio(X)	0.09	0.54	0.01	0.23	0.46	0.24	0.04	0.00	0.32	0.56	0.00	0.12
Avail Cap(c_a), veh/h	605	945	803	754	1007	856	329	0	299	309	0	299
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.3	0.0	0.0	6.5	10.3	8.9	27.4	0.0	27.5	31.5	0.0	26.6
Incr Delay (d2), s/veh	0.1	2.1	0.0	0.2	1.5	0.7	0.0	0.0	0.7	2.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.6	0.0	1.5	6.3	2.4	0.2	0.0	1.6	3.5	0.0	0.6
LnGrp Delay(d),s/veh	7.4	2.1	0.0	6.7	11.9	9.5	27.4	0.0	28.2	33.6	0.0	26.8
LnGrp LOS	A	A	A	A	B	A	C		C	C		C
Approach Vol, veh/h		565			837			98			196	
Approach Delay, s/veh		2.5			10.3			28.1			32.4	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.4	48.8		18.8	9.8	51.4		18.8
Change Period (Y+Rc), s*	5.6000004	5.6000004		5.6000004	5.6000004	5.6000004		5.6
Max Green Setting (Gmax)*	9.3999996	39.400002		14.3999996	4.1	39.400002		14.4
Max Q Clear Time (g_c+I1), s	5.1	2.0		13.1	2.8	13.7		5.7
Green Ext Time (p_c), s	0.2	4.1		0.1	0.0	4.0		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	170	330	10	10	410	10	390	10	130	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	190.0	182.7	190.0	190.0	177.6	190.0			
Adj Flow Rate, veh/h	185	359	11	11	446	11	424	11	141			
Adj No. of Lanes	1	2	0	0	2	0	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	4	4	4	4	0	7	0			
Cap, veh/h	465	1511	46	70	638	16	451	12	150			
Arrive On Green	0.16	0.44	0.44	0.19	0.19	0.19	0.37	0.37	0.37			
Sat Flow, veh/h	1740	3439	105	32	3335	81	1210	31	402			
Grp Volume(v), veh/h	185	181	189	245	0	223	576	0	0			
Grp Sat Flow(s),veh/h/ln	1740	1736	1808	1800	0	1648	1644	0	0			
Q Serve(g_s), s	4.3	3.8	3.8	0.7	0.0	7.4	19.8	0.0	0.0			
Cycle Q Clear(g_c), s	4.3	3.8	3.8	7.4	0.0	7.4	19.8	0.0	0.0			
Prop In Lane	1.00		0.06	0.04		0.05	0.74		0.24			
Lane Grp Cap(c), veh/h	465	763	794	409	0	315	613	0	0			
V/C Ratio(X)	0.40	0.24	0.24	0.60	0.00	0.71	0.94	0.00	0.00			
Avail Cap(c_a), veh/h	629	1128	1175	614	0	507	844	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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	13.2	10.3	10.3	22.1	0.0	22.1	17.7	0.0	0.0			
Incr Delay (d2), s/veh	0.6	0.2	0.2	1.4	0.0	2.9	15.0	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.1	1.8	1.9	3.8	0.0	3.6	11.3	0.0	0.0			
LnGrp Delay(d),s/veh	13.7	10.4	10.4	23.5	0.0	25.0	32.7	0.0	0.0			
LnGrp LOS	B	B	B	C		C	C					
Approach Vol, veh/h		555			468			576				
Approach Delay, s/veh		11.5			24.2			32.7				
Approach LOS		B			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		31.7			14.5	17.2		26.8
Change Period (Y+Rc), s		6.0			5.0	6.0		5.0
Max Green Setting (Gmax), s		38.0			15.0	18.0		30.0
Max Q Clear Time (g_c+I1), s		5.8			6.3	9.4		21.8
Green Ext Time (p_c), s		2.5			0.3	1.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	22.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	380	130	80	440	280	0	0	0	130	160	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	6.0	7.0					7.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00					1.00	
Frt	1.00	0.96		1.00	1.00	0.85					1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00					0.98	
Satd. Flow (prot)	1736	3339		1736	1827	1553					1737	
Flt Permitted	0.12	1.00		0.34	1.00	1.00					0.98	
Satd. Flow (perm)	214	3339		615	1827	1553					1737	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	413	141	87	478	304	0	0	0	141	174	0
RTOR Reduction (vph)	0	25	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	207	529	0	87	478	304	0	0	0	0	315	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt	NA		pm+pt	NA	custom				Split	NA	
Protected Phases	5	2		1	6	4				4 8	4 8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	44.1	34.1		40.9	33.0	69.4					62.6	
Effective Green, g (s)	44.1	34.1		40.9	33.0	69.4					62.6	
Actuated g/C Ratio	0.36	0.28		0.33	0.27	0.57					0.51	
Clearance Time (s)	4.0	7.0		4.0	6.0	7.0						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0						
Lane Grp Cap (vph)	201	928		277	491	879					886	
v/s Ratio Prot	c0.08	0.16		0.02	0.26	0.10					c0.18	
v/s Ratio Perm	c0.29			0.08		0.09						
v/c Ratio	1.03	0.57		0.31	0.97	0.35					0.36	
Uniform Delay, d1	32.9	38.0		29.0	44.4	14.4					17.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00					0.04	
Incremental Delay, d2	71.5	0.8		0.7	33.6	0.2					0.1	
Delay (s)	104.4	38.8		29.6	78.0	14.6					0.8	
Level of Service	F	D		C	E	B					A	
Approach Delay (s)		56.6			51.0			0.0			0.8	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	45.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	122.6	Sum of lost time (s)	25.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	10	180	40	0	470	0	0	280	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.0			7.0			7.0	
Lane Util. Factor					1.00			1.00			1.00	
Frt					0.98			1.00			0.95	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					1731			1792			1708	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					1731			1792			1708	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	11	196	43	0	511	0	0	304	163
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	15	0
Lane Group Flow (vph)	0	0	0	0	244	0	0	511	0	0	452	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	6%	6%	6%	6%	6%	6%
Turn Type				Split	NA			NA			NA	
Protected Phases				8	8			2 4 5 6			4	
Permitted Phases												
Actuated Green, G (s)					19.2			87.5			36.4	
Effective Green, g (s)					19.2			81.5			36.4	
Actuated g/C Ratio					0.16			0.66			0.30	
Clearance Time (s)					7.0						7.0	
Vehicle Extension (s)					3.0						3.0	
Lane Grp Cap (vph)					271			1191			507	
v/s Ratio Prot					c0.14			c0.29			c0.26	
v/s Ratio Perm												
v/c Ratio					0.90			0.43			0.89	
Uniform Delay, d1					50.8			9.6			41.2	
Progression Factor					1.00			0.16			1.00	
Incremental Delay, d2					30.2			0.2			17.6	
Delay (s)					81.0			1.7			58.8	
Level of Service					F			A			E	
Approach Delay (s)		0.0			81.0			1.7			58.8	
Approach LOS		A			F			A			E	

Intersection Summary			
HCM 2000 Control Delay	39.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	122.6	Sum of lost time (s)	25.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	480	350	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	522	380	11	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	391	0	-	0	929	386
Stage 1	-	-	-	-	386	-
Stage 2	-	-	-	-	543	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1157	-	-	-	297	662
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	582	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1157	-	-	-	293	662
Mov Cap-2 Maneuver	-	-	-	-	293	-
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	574	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1157	-	-	-	406
HCM Lane V/C Ratio	0.009	-	-	-	0.054
HCM Control Delay (s)	8.1	0	-	-	14.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	690	10	10	760	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	750	11	11	826	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	761	0	1603	380
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	848	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	834	-	106	619
Stage 1	-	-	-	-	426	-
Stage 2	-	-	-	-	419	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	834	-	105	619
Mov Cap-2 Maneuver	-	-	-	-	105	-
Stage 1	-	-	-	-	426	-
Stage 2	-	-	-	-	413	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	27.7
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	180	-	-	834	-
HCM Lane V/C Ratio	0.121	-	-	0.013	-
HCM Control Delay (s)	27.7	-	-	9.4	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	690	760	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	750	826	11	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	837	0	-	0	1229	832
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	397	-
Critical Hdwy	4.14	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.236	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	789	-	-	-	183	368
Stage 1	-	-	-	-	426	-
Stage 2	-	-	-	-	649	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	789	-	-	-	180	368
Mov Cap-2 Maneuver	-	-	-	-	311	-
Stage 1	-	-	-	-	426	-
Stage 2	-	-	-	-	640	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	789	-	-	-	337
HCM Lane V/C Ratio	0.014	-	-	-	0.065
HCM Control Delay (s)	9.6	-	-	-	16.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	420	30	10	390	10	30	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	457	33	11	424	11	33	11	11

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	435	0	0	489	0	0	957	952	473
Stage 1	-	-	-	-	-	-	495	495	-
Stage 2	-	-	-	-	-	-	462	457	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1114	-	-	1064	-	-	237	259	591
Stage 1	-	-	-	-	-	-	556	546	-
Stage 2	-	-	-	-	-	-	580	568	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1114	-	-	1064	-	-	220	252	591
Mov Cap-2 Maneuver	-	-	-	-	-	-	220	252	-
Stage 1	-	-	-	-	-	-	548	538	-
Stage 2	-	-	-	-	-	-	551	560	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.2	22.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	259	1114	-	-	1064	-	-	296
HCM Lane V/C Ratio	0.21	0.01	-	-	0.01	-	-	0.11
HCM Control Delay (s)	22.6	8.3	0	-	8.4	0	-	18.7
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.4

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	956	962	429
Stage 1	451	451	-
Stage 2	505	511	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	238	256	626
Stage 1	588	571	-
Stage 2	549	537	-
Platoon blocked, %			
Mov Cap-1 Maneuver	221	249	626
Mov Cap-2 Maneuver	221	249	-
Stage 1	580	563	-
Stage 2	521	529	-

Approach	SB
HCM Control Delay, s	18.7
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	40	490	10	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	7	7	2	2
Mvmt Flow	0	43	533	11	22	0

Major/Minor	Minor1		Major1		Minor2	
Conflicting Flow All	538	538	0	0	538	543
Stage 1	538	-	-	-	0	0
Stage 2	0	-	-	-	538	543
Critical Hdwy	6.42	6.22	-	-	6.42	6.52
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	5.42	5.52
Follow-up Hdwy	3.518	3.318	-	-	3.518	4.018
Pot Cap-1 Maneuver	504	543	-	-	504	447
Stage 1	585	-	-	-	-	-
Stage 2	-	-	-	-	585	520
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	504	543	-	-	504	0
Mov Cap-2 Maneuver	504	-	-	-	504	0
Stage 1	585	-	-	-	-	0
Stage 2	-	-	-	-	585	0

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	12.5
HCM LOS	B		B

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBLn1
Capacity (veh/h)	-	-	543	504
HCM Lane V/C Ratio	-	-	0.08	0.043
HCM Control Delay (s)	-	-	12.2	12.5
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	0.3	0.1

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	500	10	10	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	543	11	11	446

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1016	549	0	0	554	0
Stage 1	549	-	-	-	-	-
Stage 2	467	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	259	528	-	-	1016	-
Stage 1	571	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	255	528	-	-	1016	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	571	-	-	-	-	-
Stage 2	614	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.1	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	308	1016	-
HCM Lane V/C Ratio	-	-	0.106	0.011	-
HCM Control Delay (s)	-	-	18.1	8.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	110	400	200	250	470	190	190	10	260	160	10	100
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	182.7	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	120	435	217	272	511	207	207	11	283	174	11	109
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	421	665	565	416	724	615	400	18	462	245	44	439
Arrive On Green	0.08	0.36	0.36	0.23	0.79	0.79	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1740	1827	1553	1740	1827	1553	1266	60	1533	1081	147	1458
Grp Volume(v), veh/h	120	435	217	272	511	207	207	0	294	174	0	120
Grp Sat Flow(s),veh/h/ln	1740	1827	1553	1740	1827	1553	1266	0	1592	1081	0	1605
Q Serve(g_s), s	3.3	15.9	8.3	8.3	10.6	3.0	11.8	0.0	12.7	11.4	0.0	4.5
Cycle Q Clear(g_c), s	3.3	15.9	8.3	8.3	10.6	3.0	16.3	0.0	12.7	24.1	0.0	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.96	1.00		0.91
Lane Grp Cap(c), veh/h	421	665	565	416	724	615	400	0	480	245	0	484
V/C Ratio(X)	0.29	0.65	0.38	0.65	0.71	0.34	0.52	0.00	0.61	0.71	0.00	0.25
Avail Cap(c_a), veh/h	477	665	565	416	724	615	400	0	480	245	0	484
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.7	21.3	18.8	13.3	6.1	5.3	27.3	0.0	24.0	34.9	0.0	21.1
Incr Delay (d2), s/veh	0.4	5.0	2.0	0.3	0.5	0.1	1.2	0.0	2.3	9.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	8.9	3.9	3.8	4.9	1.3	4.3	0.0	5.9	4.4	0.0	2.0
LnGrp Delay(d),s/veh	14.1	26.2	20.8	13.7	6.7	5.5	28.4	0.0	26.3	44.2	0.0	21.4
LnGrp LOS	B	C	C	B	A	A	C		C	D		C
Approach Vol, veh/h		772			990			501			294	
Approach Delay, s/veh		22.8			8.3			27.2			34.9	
Approach LOS		C			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	35.0		30.0	12.4	37.6		30.0
Change Period (Y+Rc), s	* 5.8000002	5.9	* 5.8999996	5.9	* 5.9000001	5.9	* 5.8999996	5.9
Max Green Setting (Gmax), s	* 9.1999998	29.1	* 24.1	9.1	* 29.1	9.1	* 24.1	9.1
Max Q Clear Time (g_c+I1), s	10.3	17.9		26.1	5.3	12.6		18.3
Green Ext Time (p_c), s	0.0	3.7		0.0	0.1	4.3		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	19.4
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	740	10	300	820	400	30	10	190	340	10	60
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	182.7	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	76	804	11	326	891	435	33	11	207	370	11	65
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	214	786	668	294	870	739	298	88	384	311	57	336
Arrive On Green	0.09	0.57	0.57	0.12	0.48	0.48	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1740	1827	1553	1740	1827	1553	902	365	1583	1158	234	1384
Grp Volume(v), veh/h	76	804	11	326	891	435	44	0	207	370	0	76
Grp Sat Flow(s),veh/h/ln	1740	1827	1553	1740	1827	1553	1267	0	1583	1158	0	1618
Q Serve(g_s), s	1.8	34.4	0.2	9.4	38.1	16.3	1.1	0.0	9.1	15.3	0.0	3.0
Cycle Q Clear(g_c), s	1.8	34.4	0.2	9.4	38.1	16.3	4.1	0.0	9.1	19.4	0.0	3.0
Prop In Lane	1.00		1.00	1.00		1.00	0.75		1.00	1.00		0.86
Lane Grp Cap(c), veh/h	214	786	668	294	870	739	386	0	384	311	0	392
V/C Ratio(X)	0.35	1.02	0.02	1.11	1.02	0.59	0.11	0.00	0.54	1.19	0.00	0.19
Avail Cap(c_a), veh/h	294	786	668	294	870	739	386	0	384	311	0	392
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.69	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.3	17.1	9.8	22.8	21.0	15.2	24.6	0.0	26.4	34.6	0.0	24.1
Incr Delay (d2), s/veh	0.7	32.7	0.0	84.3	36.8	3.4	0.1	0.0	1.5	112.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	24.0	0.1	13.4	28.0	7.6	0.8	0.0	4.1	16.5	0.0	1.4
LnGrp Delay(d),s/veh	18.0	49.8	9.8	107.2	57.8	18.7	24.7	0.0	27.9	146.9	0.0	24.3
LnGrp LOS	B	F	A	F	F	B	C		C	F		C
Approach Vol, veh/h		891			1652			251			446	
Approach Delay, s/veh		46.6			57.2			27.4			126.0	
Approach LOS		D			E			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	40.0		25.0	11.3	43.7		25.0
Change Period (Y+Rc), s*	5.6000004	5.6000004		5.6000004	5.6000004	5.6000004		5.6
Max Green Setting (Gmax)*	9.3999996	34.400002		19.3999996	5.6	34.400002		19.4
Max Q Clear Time (g_c+I1), s	11.4	36.4		21.4	3.8	40.1		11.1
Green Ext Time (p_c), s	0.0	0.0		0.0	0.1	0.0		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	61.5
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	330	610	60	10	720	20	660	10	160	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	190.0	182.7	190.0	190.0	177.6	190.0			
Adj Flow Rate, veh/h	359	663	65	11	783	22	717	11	174			
Adj No. of Lanes	1	2	0	0	2	0	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	4	4	4	4	0	7	0			
Cap, veh/h	398	1507	148	52	773	22	508	8	123			
Arrive On Green	0.18	0.47	0.47	0.23	0.23	0.23	0.39	0.39	0.39			
Sat Flow, veh/h	1740	3194	313	17	3336	93	1315	20	319			
Grp Volume(v), veh/h	359	360	368	427	0	389	902	0	0			
Grp Sat Flow(s),veh/h/ln	1740	1736	1772	1800	0	1646	1654	0	0			
Q Serve(g_s), s	11.4	10.7	10.8	6.9	0.0	18.0	30.0	0.0	0.0			
Cycle Q Clear(g_c), s	11.4	10.7	10.8	18.0	0.0	18.0	30.0	0.0	0.0			
Prop In Lane	1.00		0.18	0.03		0.06	0.79		0.19			
Lane Grp Cap(c), veh/h	398	819	836	465	0	382	639	0	0			
V/C Ratio(X)	0.90	0.44	0.44	0.92	0.00	1.02	1.41	0.00	0.00			
Avail Cap(c_a), veh/h	429	850	867	465	0	382	639	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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	18.3	13.7	13.7	29.9	0.0	29.8	23.8	0.0	0.0			
Incr Delay (d2), s/veh	20.9	0.4	0.4	23.2	0.0	51.2	194.4	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(50%),veh/ln	7.7	5.2	5.3	12.0	0.0	13.5	48.0	0.0	0.0			
LnGrp Delay(d),s/veh	39.2	14.0	14.0	53.2	0.0	81.0	218.2	0.0	0.0			
LnGrp LOS	D	B	B	D		F	F					
Approach Vol, veh/h		1087			816			902				
Approach Delay, s/veh		22.3			66.4			218.2				
Approach LOS		C			E			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		42.6			18.6	24.0		35.0
Change Period (Y+Rc), s		6.0			5.0	6.0		5.0
Max Green Setting (Gmax), s		38.0			15.0	18.0		30.0
Max Q Clear Time (g_c+I1), s		12.8			13.4	20.0		32.0
Green Ext Time (p_c), s		5.2			0.2	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	98.1
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	740	340	180	820	380	0	0	0	260	330	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0		4.0	6.0	7.0					7.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00					1.00	
Frt	1.00	0.95		1.00	1.00	0.85					1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00					0.98	
Satd. Flow (prot)	1736	3307		1736	1827	1553					1734	
Flt Permitted	0.14	1.00		0.12	1.00	1.00					0.98	
Satd. Flow (perm)	252	3307		228	1827	1553					1734	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	283	804	370	196	891	413	0	0	0	283	359	11
RTOR Reduction (vph)	0	42	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	283	1132	0	196	891	413	0	0	0	0	653	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	7%	7%	7%	7%	7%	7%
Turn Type	pm+pt	NA		pm+pt	NA	custom				Split	NA	
Protected Phases	5	2		1	6	4				4 8	4 8	
Permitted Phases	2			6		6						
Actuated Green, G (s)	39.0	29.0		44.0	32.0	72.0					67.0	
Effective Green, g (s)	39.0	29.0		44.0	32.0	72.0					67.0	
Actuated g/C Ratio	0.31	0.23		0.35	0.25	0.57					0.53	
Clearance Time (s)	4.0	7.0		4.0	6.0	7.0						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0						
Lane Grp Cap (vph)	195	761		223	464	887					922	
v/s Ratio Prot	c0.11	0.34		c0.08	c0.49	0.15					c0.38	
v/s Ratio Perm	0.33			0.22		0.12						
v/c Ratio	1.45	1.49		0.88	1.92	0.47					0.71	
Uniform Delay, d1	38.4	48.5		33.6	47.0	15.8					22.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00					0.21	
Incremental Delay, d2	229.4	226.2		29.9	422.1	0.4					0.2	
Delay (s)	267.7	274.7		63.5	469.1	16.2					4.8	
Level of Service	F	F		E	F	B					A	
Approach Delay (s)		273.3			291.4			0.0			4.8	
Approach LOS		F			F			A			A	

Intersection Summary			
HCM 2000 Control Delay	232.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	126.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	104.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	10	300	20	0	640	0	0	590	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.0			7.0			7.0	
Lane Util. Factor					1.00			1.00			1.00	
Frt					0.99			1.00			0.95	
Flt Protected					1.00			1.00			1.00	
Satd. Flow (prot)					1758			1792			1698	
Flt Permitted					1.00			1.00			1.00	
Satd. Flow (perm)					1758			1792			1698	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	11	326	22	0	696	0	0	641	413
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	18	0
Lane Group Flow (vph)	0	0	0	0	357	0	0	696	0	0	1036	0
Heavy Vehicles (%)	7%	7%	7%	7%	7%	7%	6%	6%	6%	6%	6%	6%
Turn Type				Split	NA			NA			NA	
Protected Phases				8	8			2 4 5 6			4	
Permitted Phases												
Actuated Green, G (s)					20.0			92.0			40.0	
Effective Green, g (s)					20.0			82.0			40.0	
Actuated g/C Ratio					0.16			0.65			0.32	
Clearance Time (s)					7.0						7.0	
Vehicle Extension (s)					3.0						3.0	
Lane Grp Cap (vph)					279			1166			539	
v/s Ratio Prot					c0.20			c0.39			c0.61	
v/s Ratio Perm												
v/c Ratio					1.28			0.60			1.92	
Uniform Delay, d1					53.0			12.6			43.0	
Progression Factor					1.00			0.21			1.00	
Incremental Delay, d2					151.0			0.4			421.4	
Delay (s)					204.0			3.0			464.4	
Level of Service					F			A			F	
Approach Delay (s)		0.0			204.0			3.0			464.4	
Approach LOS		A			F			A			F	

Intersection Summary			
HCM 2000 Control Delay	267.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	126.0	Sum of lost time (s)	25.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	700	740	20	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	761	804	22	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	826	0	-	0	1598	815
Stage 1	-	-	-	-	815	-
Stage 2	-	-	-	-	783	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	796	-	-	-	117	377
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	450	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	796	-	-	-	114	377
Mov Cap-2 Maneuver	-	-	-	-	114	-
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	439	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	28.5
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	796	-	-	-	175
HCM Lane V/C Ratio	0.014	-	-	-	0.124
HCM Control Delay (s)	9.6	0	-	-	28.5
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1260	10	10	1510	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	1370	11	11	1641	11	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1380	0	3038	690
Stage 1	-	-	-	-	1375	-
Stage 2	-	-	-	-	1663	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	482	-	12	388
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	169	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	482	-	12	388
Mov Cap-2 Maneuver	-	-	-	-	12	-
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	165	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	$ 315.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	34	-	-	482	-
HCM Lane V/C Ratio	0.959	-	-	0.023	-
HCM Control Delay (s)	$ 315.6	-	-	12.6	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	3.4	-	-	0.1	-

Notes

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

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	1280	1510	0	60	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	0	1391	1641	0	65	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1641	0	-	0	2337	1641
Stage 1	-	-	-	-	1641	-
Stage 2	-	-	-	-	696	-
Critical Hdwy	4.14	-	-	-	6.63	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.83	-
Follow-up Hdwy	2.236	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	389	-	-	-	~ 35	123
Stage 1	-	-	-	-	173	-
Stage 2	-	-	-	-	457	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	389	-	-	-	~ 35	123
Mov Cap-2 Maneuver	-	-	-	-	127	-
Stage 1	-	-	-	-	173	-
Stage 2	-	-	-	-	457	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	69.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	389	-	-	-	126
HCM Lane V/C Ratio	-	-	-	-	0.604
HCM Control Delay (s)	0	-	-	-	69.8
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0	-	-	-	3.1

Notes

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

Intersection	
Int Delay, s/veh	12.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	690	70	30	640	10	50	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	750	76	33	696	11	54	11	22

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	707	0	0	826	0	0	1614	1582	788
Stage 1	-	-	-	-	-	-	810	810	-
Stage 2	-	-	-	-	-	-	804	772	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	882	-	-	796	-	-	84	109	391
Stage 1	-	-	-	-	-	-	374	393	-
Stage 2	-	-	-	-	-	-	377	409	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	882	-	-	796	-	-	61	99	391
Mov Cap-2 Maneuver	-	-	-	-	-	-	61	99	-
Stage 1	-	-	-	-	-	-	365	384	-
Stage 2	-	-	-	-	-	-	291	381	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.4	207.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	82	882	-	-	796	-	-	208
HCM Lane V/C Ratio	1.06	0.012	-	-	0.041	-	-	0.418
HCM Control Delay (s)	207.9	9.1	0	-	9.7	0	-	34.2
HCM Lane LOS	F	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	6	0	-	-	0.1	-	-	1.9

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	60
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	65

Major/Minor	Minor2		
Conflicting Flow All	1592	1614	701
Stage 1	766	766	-
Stage 2	826	848	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	87	104	439
Stage 1	395	412	-
Stage 2	366	378	-
Platoon blocked, %			
Mov Cap-1 Maneuver	70	95	439
Mov Cap-2 Maneuver	70	95	-
Stage 1	386	384	-
Stage 2	328	369	-

Approach	SB
HCM Control Delay, s	34.2
HCM LOS	D

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	50	780	10	70	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	7	7	2	2
Mvmt Flow	0	54	848	11	76	0

Major/Minor	Minor1		Major1		Minor2	
Conflicting Flow All	853	853	0	0	853	859
Stage 1	853	-	-	-	0	0
Stage 2	0	-	-	-	853	859
Critical Hdwy	6.42	6.22	-	-	6.42	6.52
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	5.42	5.52
Follow-up Hdwy	3.518	3.318	-	-	3.518	4.018
Pot Cap-1 Maneuver	330	359	-	-	330	294
Stage 1	418	-	-	-	-	-
Stage 2	-	-	-	-	418	373
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	330	359	-	-	330	0
Mov Cap-2 Maneuver	330	-	-	-	330	0
Stage 1	418	-	-	-	-	0
Stage 2	-	-	-	-	418	0

Approach	WB	NB	SB
HCM Control Delay, s	16.8	0	19.1
HCM LOS	C		C

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBLn1
Capacity (veh/h)	-	-	359	330
HCM Lane V/C Ratio	-	-	0.151	0.231
HCM Control Delay (s)	-	-	16.8	19.1
HCM Lane LOS	-	-	C	C
HCM 95th %tile Q(veh)	-	-	0.5	0.9

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	630	20	10	930
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	685	22	11	1011

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1729	696	0	0	707	0
Stage 1	696	-	-	-	-	-
Stage 2	1033	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	95	435	-	-	891	-
Stage 1	487	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	92	435	-	-	891	-
Mov Cap-2 Maneuver	92	-	-	-	-	-
Stage 1	487	-	-	-	-	-
Stage 2	328	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	43.7	0	0.1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	125	891	-
HCM Lane V/C Ratio	-	-	0.261	0.012	-
HCM Control Delay (s)	-	-	43.7	9.1	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	1	0	-

APPENDIX J
HCM INTERSECTION CAPACITY ANALYSIS - 'BUILD OPTION 1' CONDITION

OPENING YEAR 2019 'BUILD OPTION 1' CONDITIONS

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	270	50	70	260	40	90
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	186.3	186.3
Adj Flow Rate, veh/h	293	54	76	283	43	98
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	2	2
Cap, veh/h	1004	853	758	1331	233	208
Arrive On Green	0.55	0.55	0.22	1.00	0.13	0.13
Sat Flow, veh/h	1827	1553	1740	1827	1774	1583
Grp Volume(v), veh/h	293	54	76	283	43	98
Grp Sat Flow(s),veh/h/ln	1827	1553	1740	1827	1774	1583
Q Serve(g_s), s	6.1	1.2	0.9	0.0	1.5	4.1
Cycle Q Clear(g_c), s	6.1	1.2	0.9	0.0	1.5	4.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1004	853	758	1331	233	208
V/C Ratio(X)	0.29	0.06	0.10	0.21	0.18	0.47
Avail Cap(c_a), veh/h	1004	853	885	1331	323	288
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.99	0.99	1.00	1.00
Uniform Delay (d), s/veh	8.6	7.5	3.6	0.0	27.6	28.7
Incr Delay (d2), s/veh	0.7	0.1	0.1	0.4	0.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.5	0.4	0.1	0.8	1.9
LnGrp Delay(d),s/veh	9.4	7.7	3.7	0.4	28.0	30.3
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h	347			359	141	
Approach Delay, s/veh	9.1			1.1	29.6	
Approach LOS	A			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.8	47.8				60.6		14.4
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	13.0	34.0				52.0		13.0
Max Q Clear Time (g_c+I1), s	2.9	8.1				2.0		6.1
Green Ext Time (p_c), s	0.1	1.8				1.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	330	20	90	320	0	10	0	60	0	0	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	190.0	190.0	186.3	186.3	190.0	186.3	190.0
Adj Flow Rate, veh/h	11	359	22	98	348	0	11	0	65	0	0	0
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	697	1076	915	772	1363	0	259	0	310	0	206	0
Arrive On Green	0.78	0.78	0.78	0.09	0.75	0.00	0.11	0.00	0.11	0.00	0.00	0.00
Sat Flow, veh/h	1009	1827	1553	1740	1827	0	1412	0	1583	0	1863	0
Grp Volume(v), veh/h	11	359	22	98	348	0	11	0	65	0	0	0
Grp Sat Flow(s),veh/h/ln	1009	1827	1553	1740	1827	0	1412	0	1583	0	1863	0
Q Serve(g_s), s	0.2	4.0	0.2	1.2	4.2	0.0	0.5	0.0	2.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	4.0	0.2	1.2	4.2	0.0	0.5	0.0	2.4	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	697	1076	915	772	1363	0	259	0	310	0	206	0
V/C Ratio(X)	0.02	0.33	0.02	0.13	0.26	0.00	0.04	0.00	0.21	0.00	0.00	0.00
Avail Cap(c_a), veh/h	697	1076	915	948	1363	0	367	0	430	0	347	0
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	3.1	3.5	3.1	3.5	2.8	0.0	27.8	0.0	23.5	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.1	0.5	0.0	0.1	0.0	0.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.2	0.1	0.6	2.2	0.0	0.2	0.0	1.1	0.0	0.0	0.0
LnGrp Delay(d),s/veh	3.2	4.4	3.2	3.6	3.2	0.0	27.9	0.0	23.8	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A		C		C			
Approach Vol, veh/h		392			446			76			0	
Approach Delay, s/veh		4.3			3.3			24.4			0.0	
Approach LOS		A			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	11.0	51.3		12.7		62.3		12.7
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s	13.0	34.0		13.0		52.0		13.0
Max Q Clear Time (g_c+I1), s	3.2	6.0		0.0		6.2		4.4
Green Ext Time (p_c), s	0.1	2.2		0.0		2.3		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	5.5
HCM 2010 LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	80	310	380	380	340	40
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	179.2	179.2
Adj Flow Rate, veh/h	87	337	413	413	370	43
Adj No. of Lanes	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	6	6
Cap, veh/h	584	2442	1000	850	496	228
Arrive On Green	0.08	0.70	0.91	0.91	0.15	0.15
Sat Flow, veh/h	1740	3563	1827	1553	3312	1524
Grp Volume(v), veh/h	87	337	413	413	370	43
Grp Sat Flow(s),veh/h/ln	1740	1736	1827	1553	1656	1524
Q Serve(g_s), s	1.2	2.2	2.1	2.8	7.3	1.7
Cycle Q Clear(g_c), s	1.2	2.2	2.1	2.8	7.3	1.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	584	2442	1000	850	496	228
V/C Ratio(X)	0.15	0.14	0.41	0.49	0.75	0.19
Avail Cap(c_a), veh/h	670	2442	1000	850	825	380
HCM Platoon Ratio	1.00	1.00	1.67	1.67	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.98	0.98	1.00	1.00
Uniform Delay (d), s/veh	4.3	3.3	1.4	1.4	27.8	25.4
Incr Delay (d2), s/veh	0.1	0.1	1.2	1.9	2.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.1	1.2	1.3	3.5	1.5
LnGrp Delay(d),s/veh	4.4	3.4	2.7	3.4	30.0	25.8
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h		424	826		413	
Approach Delay, s/veh		3.6	3.0		29.6	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		59.8		15.2	10.7	49.1		
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		
Max Green Setting (Gmax), s		48.0		17.0	9.0	34.0		
Max Q Clear Time (g_c+I1), s		4.2		9.3	3.2	4.8		
Green Ext Time (p_c), s		4.3		0.9	0.1	4.2		

Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	270	380	140	540	0	0	0	0	20	0	220
Number	5	2	12	1	6	16				7	4	14
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
Adj Sat Flow, veh/h/ln	0.0	182.7	190.0	182.7	182.7	0.0				190.0	177.6	190.0
Adj Flow Rate, veh/h	0	293	413	152	587	0				22	0	239
Adj No. of Lanes	0	2	0	1	2	0				0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	4	4	4	4	0				0	7	0
Cap, veh/h	0	839	751	562	2277	0				25	0	272
Arrive On Green	0.00	0.81	0.81	0.03	0.22	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	1827	1553	1740	3563	0				128	0	1395
Grp Volume(v), veh/h	0	293	413	152	587	0				261	0	0
Grp Sat Flow(s),veh/h/ln	0	1736	1553	1740	1736	0				1523	0	0
Q Serve(g_s), s	0.0	3.0	6.2	2.5	9.4	0.0				11.2	0.0	0.0
Cycle Q Clear(g_c), s	0.0	3.0	6.2	2.5	9.4	0.0				11.2	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				0.08		0.92
Lane Grp Cap(c), veh/h	0	839	751	562	2277	0				297	0	0
V/C Ratio(X)	0.00	0.35	0.55	0.27	0.26	0.00				0.88	0.00	0.00
Avail Cap(c_a), veh/h	0	839	751	676	2277	0				477	0	0
HCM Platoon Ratio	1.00	1.67	1.67	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.93	0.93	0.98	0.98	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	3.6	3.9	6.7	12.7	0.0				26.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.1	2.7	0.3	0.3	0.0				10.7	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(50%),veh/ln	0.0	1.6	3.1	1.2	4.6	0.0				5.6	0.0	0.0
LnGrp Delay(d),s/veh	0.0	4.7	6.6	6.9	13.0	0.0				37.0	0.0	0.0
LnGrp LOS		A	A	A	B					D		
Approach Vol, veh/h		706			739						261	
Approach Delay, s/veh		5.8			11.7						37.0	
Approach LOS		A			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.6	45.3		18.1		56.9		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	11.0	28.0		21.0		44.0		
Max Q Clear Time (g_c+I1), s	4.5	8.2		13.2		11.4		
Green Ext Time (p_c), s	0.2	4.6		0.0		4.9		

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	170	0	0	340	20	340	0	110	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	0.0	0.0	182.7	190.0	190.0	177.6	177.6			
Adj Flow Rate, veh/h	130	185	0	0	370	22	370	0	120			
Adj No. of Lanes	1	2	0	0	2	0	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	0	0	4	4	7	7	7			
Cap, veh/h	615	2038	0	0	1330	79	415	0	370			
Arrive On Green	0.03	0.19	0.00	0.00	0.40	0.40	0.25	0.00	0.25			
Sat Flow, veh/h	1740	3563	0	0	3422	197	1691	0	1509			
Grp Volume(v), veh/h	130	185	0	0	192	200	370	0	120			
Grp Sat Flow(s),veh/h/ln	1740	1736	0	0	1736	1792	1691	0	1509			
Q Serve(g_s), s	2.3	2.6	0.0	0.0	4.5	4.5	12.6	0.0	3.9			
Cycle Q Clear(g_c), s	2.3	2.6	0.0	0.0	4.5	4.5	12.6	0.0	3.9			
Prop In Lane	1.00		0.00	0.00		0.11	1.00		1.00			
Lane Grp Cap(c), veh/h	615	2038	0	0	693	716	415	0	370			
V/C Ratio(X)	0.21	0.09	0.00	0.00	0.28	0.28	0.89	0.00	0.32			
Avail Cap(c_a), veh/h	639	2038	0	0	693	716	851	0	759			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.94	0.94	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	7.9	11.0	0.0	0.0	12.1	12.1	21.7	0.0	18.4			
Incr Delay (d2), s/veh	0.2	0.1	0.0	0.0	1.0	1.0	6.8	0.0	0.5			
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(50%),veh/ln	1.1	1.3	0.0	0.0	2.3	2.4	6.6	0.0	1.7			
LnGrp Delay(d),s/veh	8.1	11.1	0.0	0.0	13.1	13.1	28.5	0.0	19.0			
LnGrp LOS	A	B			B	B	C		B			
Approach Vol, veh/h		315			392			490				
Approach Delay, s/veh		9.8			13.1			26.2				
Approach LOS		A			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		55.4			11.2	44.2		19.6
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0
Max Green Setting (Gmax), s		35.0			7.0	23.0		30.0
Max Q Clear Time (g_c+I1), s		4.6			4.3	6.5		14.6
Green Ext Time (p_c), s		1.7			0.1	1.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	310	300	0	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	0	337	326	0	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	326	0	-	0	663	326
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	337	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1222	-	-	-	426	715
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1222	-	-	-	426	715
Mov Cap-2 Maneuver	-	-	-	-	426	-
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	723	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1222	-	-	-	534
HCM Lane V/C Ratio	-	-	-	-	0.041
HCM Control Delay (s)	0	-	-	-	12
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	380	10	20	400	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	413	11	22	435	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	424	0	896	212
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	478	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1118	-	295	794
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	623	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1118	-	289	794
Mov Cap-2 Maneuver	-	-	-	-	289	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	611	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	424	-	-	1118	-
HCM Lane V/C Ratio	0.051	-	-	0.019	-
HCM Control Delay (s)	13.9	-	-	8.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	60	140	80	40	280	20	70	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	65	152	87	43	304	22	76	11	33

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	326	0	0	239	0	0	739	739	196
Stage 1	-	-	-	-	-	-	326	326	-
Stage 2	-	-	-	-	-	-	413	413	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1222	-	-	1316	-	-	333	345	845
Stage 1	-	-	-	-	-	-	687	648	-
Stage 2	-	-	-	-	-	-	616	594	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1222	-	-	1316	-	-	295	311	845
Mov Cap-2 Maneuver	-	-	-	-	-	-	295	311	-
Stage 1	-	-	-	-	-	-	644	608	-
Stage 2	-	-	-	-	-	-	572	570	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	0.9	19.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	361	1222	-	-	1316	-	-	363
HCM Lane V/C Ratio	0.331	0.053	-	-	0.033	-	-	0.09
HCM Control Delay (s)	19.8	8.1	0	-	7.8	0	-	15.9
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.4	0.2	-	-	0.1	-	-	0.3

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	750	772	315
Stage 1	402	402	-
Stage 2	348	370	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	328	330	725
Stage 1	625	600	-
Stage 2	668	620	-
Platoon blocked, %			
Mov Cap-1 Maneuver	284	297	725
Mov Cap-2 Maneuver	284	297	-
Stage 1	586	576	-
Stage 2	592	582	-

Approach	SB
HCM Control Delay, s	15.9
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	10	20	440	370	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	6	6	6	6
Mvmt Flow	0	11	22	478	402	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	924	402	402	0	-	0
Stage 1	402	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.16	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	299	648	1135	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	291	648	1135	-	-	-
Mov Cap-2 Maneuver	291	-	-	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	580	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1135	-	648	-	-
HCM Lane V/C Ratio	0.019	-	0.017	-	-
HCM Control Delay (s)	8.2	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	10	410	30	10	340
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	33	11	446	33	11	370

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	853	462	0	0	478	0
Stage 1	462	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	324	592	-	-	1084	-
Stage 1	626	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	320	592	-	-	1084	-
Mov Cap-2 Maneuver	320	-	-	-	-	-
Stage 1	626	-	-	-	-	-
Stage 2	666	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.3	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	362	1084	-
HCM Lane V/C Ratio	-	-	0.12	0.01	-
HCM Control Delay (s)	-	-	16.3	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	170	110	130	210	70	120
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	186.3	186.3
Adj Flow Rate, veh/h	185	120	141	228	76	130
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	2	2
Cap, veh/h	956	813	821	1322	243	217
Arrive On Green	0.52	0.52	0.26	1.00	0.14	0.14
Sat Flow, veh/h	1827	1553	1740	1827	1774	1583
Grp Volume(v), veh/h	185	120	141	228	76	130
Grp Sat Flow(s),veh/h/ln	1827	1553	1740	1827	1774	1583
Q Serve(g_s), s	3.9	2.9	1.9	0.0	2.8	5.5
Cycle Q Clear(g_c), s	3.9	2.9	1.9	0.0	2.8	5.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	956	813	821	1322	243	217
V/C Ratio(X)	0.19	0.15	0.17	0.17	0.31	0.60
Avail Cap(c_a), veh/h	956	813	908	1322	321	287
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.98	0.98	1.00	1.00
Uniform Delay (d), s/veh	9.1	8.8	3.6	0.0	28.0	29.1
Incr Delay (d2), s/veh	0.5	0.4	0.1	0.3	0.7	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	1.3	0.9	0.1	1.4	2.6
LnGrp Delay(d),s/veh	9.5	9.2	3.7	0.3	28.7	31.8
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h	305			369	206	
Approach Delay, s/veh	9.4			1.6	30.6	
Approach LOS	A			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.4	45.8				60.2		14.8
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	13.0	34.0				52.0		13.0
Max Q Clear Time (g_c+I1), s	3.9	5.9				2.0		7.5
Green Ext Time (p_c), s	0.2	1.6				1.6		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	11.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	270	10	150	320	10	10	0	80	10	0	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	190.0	190.0	186.3	186.3	190.0	186.3	190.0
Adj Flow Rate, veh/h	11	293	11	163	348	11	11	0	87	11	0	11
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	667	1036	880	717	1289	41	285	0	352	148	23	95
Arrive On Green	0.19	0.19	0.19	0.09	0.73	0.73	0.13	0.00	0.13	0.13	0.00	0.13
Sat Flow, veh/h	999	1827	1553	1740	1761	56	1439	0	1583	564	181	745
Grp Volume(v), veh/h	11	293	11	163	0	359	11	0	87	22	0	0
Grp Sat Flow(s),veh/h/ln	999	1827	1553	1740	0	1817	1439	0	1583	1490	0	0
Q Serve(g_s), s	0.6	9.8	0.4	2.3	0.0	4.7	0.0	0.0	3.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.6	9.8	0.4	2.3	0.0	4.7	0.4	0.0	3.2	0.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	0.50		0.50
Lane Grp Cap(c), veh/h	667	1036	880	717	0	1330	285	0	352	266	0	0
V/C Ratio(X)	0.02	0.28	0.01	0.23	0.00	0.27	0.04	0.00	0.25	0.08	0.00	0.00
Avail Cap(c_a), veh/h	667	1036	880	870	0	1330	362	0	439	345	0	0
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.8	16.5	12.7	4.9	0.0	3.2	27.2	0.0	22.8	27.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.2	0.0	0.5	0.1	0.0	0.4	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	5.1	0.2	1.1	0.0	2.5	0.2	0.0	1.4	0.4	0.0	0.0
LnGrp Delay(d),s/veh	12.8	17.2	12.7	5.1	0.0	3.7	27.3	0.0	23.1	27.5	0.0	0.0
LnGrp LOS	B	B	B	A		A	C		C	C		
Approach Vol, veh/h		315			522			98			22	
Approach Delay, s/veh		16.9			4.1			23.6			27.5	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	11.7	49.2		14.1		60.9		14.1
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s	13.0	34.0		13.0		52.0		13.0
Max Q Clear Time (g_c+I1), s	4.3	11.8		2.8		6.7		5.2
Green Ext Time (p_c), s	0.3	2.0		0.2		2.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	80	280	400	160	210	80
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	179.2	179.2
Adj Flow Rate, veh/h	87	304	435	174	228	87
Adj No. of Lanes	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	6	6
Cap, veh/h	694	2508	1046	889	459	211
Arrive On Green	0.08	0.72	1.00	1.00	0.14	0.14
Sat Flow, veh/h	1740	3563	1827	1553	3312	1524
Grp Volume(v), veh/h	87	304	435	174	228	87
Grp Sat Flow(s),veh/h/ln	1740	1736	1827	1553	1656	1524
Q Serve(g_s), s	1.2	1.9	0.0	0.0	4.6	3.8
Cycle Q Clear(g_c), s	1.2	1.9	0.0	0.0	4.6	3.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	694	2508	1046	889	459	211
V/C Ratio(X)	0.13	0.12	0.42	0.20	0.50	0.41
Avail Cap(c_a), veh/h	772	2508	1046	889	598	275
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.99	0.99	1.00	1.00
Uniform Delay (d), s/veh	3.9	3.0	0.0	0.0	28.7	28.3
Incr Delay (d2), s/veh	0.1	0.1	1.2	0.5	0.8	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.9	0.4	0.1	2.1	3.3
LnGrp Delay(d),s/veh	4.0	3.1	1.2	0.5	29.5	29.6
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h		391	609		315	
Approach Delay, s/veh		3.3	1.0		29.5	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		60.0		15.0	10.8	49.2		
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		
Max Green Setting (Gmax), s		52.0		13.0	9.0	38.0		
Max Q Clear Time (g_c+I1), s		3.9		6.6	3.2	2.0		
Green Ext Time (p_c), s		3.1		0.6	0.1	3.1		

Intersection Summary	
HCM 2010 Ctrl Delay	8.5
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	270	220	70	410	0	0	0	0	10	0	150
Number	5	2	12	1	6	16				7	4	14
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
Adj Sat Flow, veh/h/ln	0.0	182.7	190.0	182.7	182.7	0.0				190.0	177.6	190.0
Adj Flow Rate, veh/h	0	293	239	76	446	0				11	0	163
Adj No. of Lanes	0	2	0	1	2	0				0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	4	4	4	4	0				0	7	0
Cap, veh/h	0	993	788	711	2420	0				14	0	211
Arrive On Green	0.00	1.00	1.00	0.16	1.00	0.00				0.15	0.00	0.15
Sat Flow, veh/h	0	1934	1462	1740	3563	0				96	0	1424
Grp Volume(v), veh/h	0	276	256	76	446	0				174	0	0
Grp Sat Flow(s),veh/h/ln	0	1736	1569	1740	1736	0				1520	0	0
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	0.0				7.1	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.0	0.0	0.0				7.1	0.0	0.0
Prop In Lane	0.00		0.93	1.00		0.00				0.06		0.94
Lane Grp Cap(c), veh/h	0	935	846	711	2420	0				225	0	0
V/C Ratio(X)	0.00	0.29	0.30	0.11	0.18	0.00				0.77	0.00	0.00
Avail Cap(c_a), veh/h	0	935	846	867	2420	0				471	0	0
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.97	0.97	0.99	0.99	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	3.8	0.0	0.0				26.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.8	0.9	0.1	0.2	0.0				5.6	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(50%),veh/ln	0.0	0.2	0.2	0.5	0.1	0.0				3.3	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.8	0.9	3.8	0.2	0.0				32.0	0.0	0.0
LnGrp LOS		A	A	A	A					C		
Approach Vol, veh/h		532			522						174	
Approach Delay, s/veh		0.8			0.7						32.0	
Approach LOS		A			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	10.2	50.2		14.6		60.4		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	11.0	29.0		20.0		45.0		
Max Q Clear Time (g_c+I1), s	3.0	2.0		9.1		2.0		
Green Ext Time (p_c), s	0.1	3.4		0.0		3.4		

Intersection Summary	
HCM 2010 Ctrl Delay	5.2
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	130	150	0	0	270	20	210	0	70	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	0.0	0.0	182.7	190.0	190.0	177.6	177.6			
Adj Flow Rate, veh/h	141	163	0	0	293	22	228	0	76			
Adj No. of Lanes	1	2	0	0	2	0	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	0	0	4	4	7	7	7			
Cap, veh/h	748	2317	0	0	1566	117	280	0	250			
Arrive On Green	0.14	0.89	0.00	0.00	0.48	0.48	0.17	0.00	0.17			
Sat Flow, veh/h	1740	3563	0	0	3366	244	1691	0	1509			
Grp Volume(v), veh/h	141	163	0	0	154	161	228	0	76			
Grp Sat Flow(s),veh/h/ln	1740	1736	0	0	1736	1784	1691	0	1509			
Q Serve(g_s), s	2.0	0.3	0.0	0.0	3.1	3.1	7.8	0.0	2.7			
Cycle Q Clear(g_c), s	2.0	0.3	0.0	0.0	3.1	3.1	7.8	0.0	2.7			
Prop In Lane	1.00		0.00	0.00		0.14	1.00		1.00			
Lane Grp Cap(c), veh/h	748	2317	0	0	830	853	280	0	250			
V/C Ratio(X)	0.19	0.07	0.00	0.00	0.19	0.19	0.81	0.00	0.30			
Avail Cap(c_a), veh/h	854	2317	0	0	830	853	705	0	630			
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.97	0.97	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	4.8	1.1	0.0	0.0	9.0	9.0	24.1	0.0	22.0			
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	0.5	0.5	5.7	0.0	0.7			
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(50%),veh/ln	0.9	0.2	0.0	0.0	1.6	1.6	4.1	0.0	1.1			
LnGrp Delay(d),s/veh	4.9	1.2	0.0	0.0	9.4	9.5	29.8	0.0	22.6			
LnGrp LOS	A	A			A	A	C		C			
Approach Vol, veh/h		304			315			304				
Approach Delay, s/veh		2.9			9.4			28.0				
Approach LOS		A			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		60.1			11.3	48.7		14.9
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0
Max Green Setting (Gmax), s		40.0			10.0	25.0		25.0
Max Q Clear Time (g_c+I1), s		2.3			4.0	5.1		9.8
Green Ext Time (p_c), s		1.4			0.2	1.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	270	270	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	293	293	11	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	304	0	-	0	614	299
Stage 1	-	-	-	-	299	-
Stage 2	-	-	-	-	315	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1246	-	-	-	455	741
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	740	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1246	-	-	-	450	741
Mov Cap-2 Maneuver	-	-	-	-	450	-
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	732	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1246	-	-	-	560
HCM Lane V/C Ratio	0.009	-	-	-	0.039
HCM Control Delay (s)	7.9	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	350	10	10	470	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	380	11	11	511	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	391	0	919	196
Stage 1	-	-	-	-	386	-
Stage 2	-	-	-	-	533	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1150	-	285	813
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	587	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1150	-	282	813
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	419	-	-	1150	-
HCM Lane V/C Ratio	0.052	-	-	0.009	-
HCM Control Delay (s)	14.1	-	-	8.2	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	160	50	20	210	10	70	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	174	54	22	228	11	76	11	11

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	239	0	0	228	0	0	511	506	201
Stage 1	-	-	-	-	-	-	223	223	-
Stage 2	-	-	-	-	-	-	288	283	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1316	-	-	1328	-	-	473	469	840
Stage 1	-	-	-	-	-	-	780	719	-
Stage 2	-	-	-	-	-	-	720	677	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1316	-	-	1328	-	-	448	455	840
Mov Cap-2 Maneuver	-	-	-	-	-	-	448	455	-
Stage 1	-	-	-	-	-	-	772	712	-
Stage 2	-	-	-	-	-	-	685	664	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.6	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	473	1316	-	-	1328	-	-	523
HCM Lane V/C Ratio	0.207	0.008	-	-	0.016	-	-	0.062
HCM Control Delay (s)	14.6	7.8	0	-	7.8	0	-	12.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0.1	-	-	0.2

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	511	527	234
Stage 1	277	277	-
Stage 2	234	250	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	473	456	805
Stage 1	729	681	-
Stage 2	769	700	-
Platoon blocked, %			
Mov Cap-1 Maneuver	448	443	805
Mov Cap-2 Maneuver	448	443	-
Stage 1	722	668	-
Stage 2	740	693	-

Approach	SB
HCM Control Delay, s	12.3
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	20	20	220	270	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	6	6	6	6
Mvmt Flow	0	22	22	239	293	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	576	293	293	0	-	0
Stage 1	293	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.16	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	479	746	1246	-	-	-
Stage 1	757	-	-	-	-	-
Stage 2	765	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	469	746	1246	-	-	-
Mov Cap-2 Maneuver	469	-	-	-	-	-
Stage 1	757	-	-	-	-	-
Stage 2	750	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1246	-	746	-	-
HCM Lane V/C Ratio	0.017	-	0.029	-	-
HCM Control Delay (s)	7.9	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	210	10	10	250
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	228	11	11	272

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	527	234	0	0	239	0
Stage 1	234	-	-	-	-	-
Stage 2	293	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	505	795	-	-	1328	-
Stage 1	796	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	500	795	-	-	1328	-
Mov Cap-2 Maneuver	500	-	-	-	-	-
Stage 1	796	-	-	-	-	-
Stage 2	741	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	571	1328	-
HCM Lane V/C Ratio	-	-	0.057	0.008	-
HCM Control Delay (s)	-	-	11.7	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	300	200	250	290	190	260
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	186.3	186.3
Adj Flow Rate, veh/h	326	217	272	315	207	283
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	2	2
Cap, veh/h	771	656	606	1168	382	341
Arrive On Green	0.42	0.42	0.29	1.00	0.22	0.22
Sat Flow, veh/h	1827	1553	1740	1827	1774	1583
Grp Volume(v), veh/h	326	217	272	315	207	283
Grp Sat Flow(s),veh/h/ln	1827	1553	1740	1827	1774	1583
Q Serve(g_s), s	8.6	6.5	5.3	0.0	7.1	11.8
Cycle Q Clear(g_c), s	8.6	6.5	5.3	0.0	7.1	11.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	771	656	606	1168	382	341
V/C Ratio(X)	0.42	0.33	0.45	0.27	0.54	0.83
Avail Cap(c_a), veh/h	771	656	709	1168	541	483
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.95	0.95	1.00	1.00
Uniform Delay (d), s/veh	14.0	13.3	6.5	0.0	24.0	25.8
Incr Delay (d2), s/veh	1.7	1.4	0.5	0.5	1.2	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	3.0	2.4	0.2	3.6	5.9
LnGrp Delay(d),s/veh	15.7	14.7	7.0	0.5	25.2	34.0
LnGrp LOS	B	B	A	A	C	C
Approach Vol, veh/h	543			587	490	
Approach Delay, s/veh	15.3			3.5	30.3	
Approach LOS	B			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.9	40.3				55.2		19.8
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	14.0	25.0				44.0		21.0
Max Q Clear Time (g_c+I1), s	7.3	10.6				2.0		13.8
Green Ext Time (p_c), s	0.4	2.4				2.7		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	540	10	300	500	10	30	0	190	10	0	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	190.0	190.0	186.3	186.3	190.0	186.3	190.0
Adj Flow Rate, veh/h	11	587	11	326	543	11	33	0	207	11	0	11
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	557	1007	856	518	1294	26	298	0	391	149	22	99
Arrive On Green	0.37	0.37	0.37	0.11	0.73	0.73	0.14	0.00	0.14	0.14	0.00	0.14
Sat Flow, veh/h	835	1827	1553	1740	1784	36	1435	0	1583	547	160	707
Grp Volume(v), veh/h	11	587	11	326	0	554	33	0	207	22	0	0
Grp Sat Flow(s),veh/h/ln	835	1827	1553	1740	0	1821	1435	0	1583	1414	0	0
Q Serve(g_s), s	0.6	19.2	0.3	5.4	0.0	8.9	0.4	0.0	8.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.6	19.2	0.3	5.4	0.0	8.9	1.3	0.0	8.4	0.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	0.50		0.50
Lane Grp Cap(c), veh/h	557	1007	856	518	0	1321	298	0	391	271	0	0
V/C Ratio(X)	0.02	0.58	0.01	0.63	0.00	0.42	0.11	0.00	0.53	0.08	0.00	0.00
Avail Cap(c_a), veh/h	557	1007	856	659	0	1321	308	0	403	281	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.7	16.6	10.6	9.6	0.0	4.0	28.0	0.0	24.3	27.9	0.0	0.0
Incr Delay (d2), s/veh	0.1	2.2	0.0	1.3	0.0	1.0	0.2	0.0	1.2	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	10.3	0.1	3.4	0.0	4.8	0.6	0.0	3.8	0.4	0.0	0.0
LnGrp Delay(d),s/veh	10.8	18.8	10.7	10.9	0.0	5.0	28.2	0.0	25.5	28.0	0.0	0.0
LnGrp LOS	B	B	B	B		A	C		C	C		
Approach Vol, veh/h		609			880			240			22	
Approach Delay, s/veh		18.5			7.2			25.9			28.0	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	13.0	46.6		15.4		59.6		15.4
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s	14.0	35.0		11.0		54.0		11.0
Max Q Clear Time (g_c+I1), s	7.4	21.2		2.8		10.9		10.4
Green Ext Time (p_c), s	0.6	3.4		0.5		4.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	110	640	630	300	460	180
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	179.2	179.2
Adj Flow Rate, veh/h	120	696	685	326	500	196
Adj No. of Lanes	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	6	6
Cap, veh/h	534	2329	936	795	627	288
Arrive On Green	0.09	0.67	1.00	1.00	0.19	0.19
Sat Flow, veh/h	1740	3563	1827	1553	3312	1524
Grp Volume(v), veh/h	120	696	685	326	500	196
Grp Sat Flow(s),veh/h/ln	1740	1736	1827	1553	1656	1524
Q Serve(g_s), s	2.0	5.9	0.0	0.0	10.3	8.6
Cycle Q Clear(g_c), s	2.0	5.9	0.0	0.0	10.3	8.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	534	2329	936	795	627	288
V/C Ratio(X)	0.22	0.30	0.73	0.41	0.80	0.68
Avail Cap(c_a), veh/h	574	2329	936	795	787	362
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	1.00	1.00
Uniform Delay (d), s/veh	5.3	4.8	0.0	0.0	27.7	27.0
Incr Delay (d2), s/veh	0.2	0.3	4.8	1.5	4.6	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.9	1.3	0.3	5.1	7.3
LnGrp Delay(d),s/veh	5.5	5.2	4.8	1.5	32.3	30.6
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h		816	1011		696	
Approach Delay, s/veh		5.2	3.8		31.8	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		56.5		18.5	11.4	45.1		
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		
Max Green Setting (Gmax), s		48.0		17.0	8.0	35.0		
Max Q Clear Time (g_c+I1), s		7.9		12.3	4.0	2.0		
Green Ext Time (p_c), s		7.4		1.2	0.1	7.2		

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	650	450	110	710	0	0	0	0	10	0	220
Number	5	2	12	1	6	16				7	4	14
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
Adj Sat Flow, veh/h/ln	0.0	182.7	190.0	182.7	182.7	0.0				190.0	177.6	190.0
Adj Flow Rate, veh/h	0	707	489	120	772	0				11	0	239
Adj No. of Lanes	0	2	0	1	2	0				0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	4	4	4	4	0				0	7	0
Cap, veh/h	0	970	667	487	2296	0				13	0	273
Arrive On Green	0.00	0.98	0.98	0.19	1.00	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	2061	1354	1740	3563	0				67	0	1450
Grp Volume(v), veh/h	0	622	574	120	772	0				250	0	0
Grp Sat Flow(s),veh/h/ln	0	1736	1588	1740	1736	0				1517	0	0
Q Serve(g_s), s	0.0	1.3	1.3	1.8	0.0	0.0				10.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	1.3	1.3	1.8	0.0	0.0				10.7	0.0	0.0
Prop In Lane	0.00		0.85	1.00		0.00				0.04		0.96
Lane Grp Cap(c), veh/h	0	855	782	487	2296	0				286	0	0
V/C Ratio(X)	0.00	0.73	0.73	0.25	0.34	0.00				0.88	0.00	0.00
Avail Cap(c_a), veh/h	0	855	782	533	2296	0				479	0	0
HCM Platoon Ratio	1.00	2.00	2.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.87	0.87	0.93	0.93	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.3	0.3	4.8	0.0	0.0				26.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	4.7	5.3	0.2	0.4	0.0				9.5	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(50%),veh/ln	0.0	1.4	1.4	0.8	0.1	0.0				5.2	0.0	0.0
LnGrp Delay(d),s/veh	0.0	5.0	5.5	5.0	0.4	0.0				35.7	0.0	0.0
LnGrp LOS		A	A	A	A					D		
Approach Vol, veh/h		1196			892						250	
Approach Delay, s/veh		5.3			1.0						35.7	
Approach LOS		A			A						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.2	46.2		17.5		57.5		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	8.0	31.0		21.0		44.0		
Max Q Clear Time (g_c+I1), s	3.8	3.3		12.7		2.0		
Green Ext Time (p_c), s	0.1	8.6		0.0		9.3		

Intersection Summary	
HCM 2010 Ctrl Delay	6.9
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	220	440	0	0	390	30	430	0	140	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	0.0	0.0	182.7	190.0	190.0	177.6	177.6			
Adj Flow Rate, veh/h	239	478	0	0	424	33	467	0	152			
Adj No. of Lanes	1	2	0	0	2	0	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	0	0	4	4	7	7	7			
Cap, veh/h	541	1893	0	0	1171	91	506	0	451			
Arrive On Green	0.04	0.18	0.00	0.00	0.36	0.36	0.30	0.00	0.30			
Sat Flow, veh/h	1740	3563	0	0	3356	253	1691	0	1509			
Grp Volume(v), veh/h	239	478	0	0	225	232	467	0	152			
Grp Sat Flow(s),veh/h/ln	1740	1736	0	0	1736	1782	1691	0	1509			
Q Serve(g_s), s	5.0	7.6	0.0	0.0	6.1	6.2	17.2	0.0	5.0			
Cycle Q Clear(g_c), s	5.0	7.6	0.0	0.0	6.1	6.2	17.2	0.0	5.0			
Prop In Lane	1.00		0.00	0.00		0.14	1.00		1.00			
Lane Grp Cap(c), veh/h	541	1893	0	0	622	639	506	0	451			
V/C Ratio(X)	0.44	0.25	0.00	0.00	0.36	0.36	0.92	0.00	0.34			
Avail Cap(c_a), veh/h	569	1893	0	0	622	639	790	0	705			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.77	0.77	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	10.9	15.1	0.0	0.0	15.2	15.2	21.8	0.0	17.5			
Incr Delay (d2), s/veh	0.4	0.2	0.0	0.0	1.6	1.6	11.6	0.0	0.4			
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(50%),veh/ln	2.4	3.7	0.0	0.0	3.2	3.3	9.5	0.0	2.1			
LnGrp Delay(d),s/veh	11.3	15.3	0.0	0.0	16.8	16.8	33.4	0.0	18.0			
LnGrp LOS	B	B			B	B	C		B			
Approach Vol, veh/h		717			457			619				
Approach Delay, s/veh		14.0			16.8			29.6				
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		50.8			12.0	38.8		24.2
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0
Max Green Setting (Gmax), s		35.0			8.0	22.0		30.0
Max Q Clear Time (g_c+I1), s		9.6			7.0	8.2		19.2
Green Ext Time (p_c), s		3.1			0.1	2.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	490	460	20	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	533	500	22	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	522	0	-	0	1065	511
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1034	-	-	-	246	563
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1034	-	-	-	242	563
Mov Cap-2 Maneuver	-	-	-	-	242	-
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	566	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1034	-	-	-	338
HCM Lane V/C Ratio	0.011	-	-	-	0.064
HCM Control Delay (s)	8.5	0	-	-	16.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	730	10	10	800	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	793	11	11	870	11	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	804	0	1690	402
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	891	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	803	-	93	599
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	400	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	803	-	92	599
Mov Cap-2 Maneuver	-	-	-	-	92	-
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	25.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	-	-	803	-
HCM Lane V/C Ratio	0.155	-	-	0.014	-
HCM Control Delay (s)	25.2	-	-	9.5	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	430	140	40	270	10	90	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	467	152	43	293	11	98	11	33

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	304	0	0	620	0	0	989	956	543
Stage 1	-	-	-	-	-	-	565	565	-
Stage 2	-	-	-	-	-	-	424	391	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1246	-	-	951	-	-	226	258	540
Stage 1	-	-	-	-	-	-	510	508	-
Stage 2	-	-	-	-	-	-	608	607	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1246	-	-	951	-	-	188	241	540
Mov Cap-2 Maneuver	-	-	-	-	-	-	188	241	-
Stage 1	-	-	-	-	-	-	503	501	-
Stage 2	-	-	-	-	-	-	515	574	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	1.1	44.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	226	1246	-	-	951	-	-	452
HCM Lane V/C Ratio	0.625	0.009	-	-	0.046	-	-	0.192
HCM Control Delay (s)	44.3	7.9	0	-	9	0	-	14.9
HCM Lane LOS	E	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	3.7	0	-	-	0.1	-	-	0.7

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	60
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	65

Major/Minor	Minor2		
Conflicting Flow All	973	1027	299
Stage 1	386	386	-
Stage 2	587	641	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	231	234	741
Stage 1	637	610	-
Stage 2	496	469	-
Platoon blocked, %			
Mov Cap-1 Maneuver	199	218	741
Mov Cap-2 Maneuver	199	218	-
Stage 1	628	577	-
Stage 2	450	462	-

Approach	SB
HCM Control Delay, s	14.9
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	70	0	410	570	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	6	6	6	6
Mvmt Flow	0	76	0	446	620	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1066	620	620	0	-	0
Stage 1	620	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.16	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	246	488	941	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	645	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	246	488	941	-	-	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	645	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	941	-	488	-	-
HCM Lane V/C Ratio	-	-	0.156	-	-
HCM Control Delay (s)	0	-	13.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	390	20	10	550
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	424	22	11	598

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1055	435	0	0	446	0
Stage 1	435	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	246	613	-	-	1114	-
Stage 1	644	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	242	613	-	-	1114	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	521	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.3	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	303	1114	-
HCM Lane V/C Ratio	-	-	0.108	0.01	-
HCM Control Delay (s)	-	-	18.3	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

DESIGN YEAR 2039 'BUILD OPTION 1' CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	430	50	70	300	70	40	0	90	40	0	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	182.7	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	43	467	54	76	326	76	43	0	98	43	0	33
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	719	1040	884	599	1077	916	270	0	222	223	0	222
Arrive On Green	0.06	0.57	0.57	0.10	0.78	0.78	0.14	0.00	0.14	0.14	0.00	0.14
Sat Flow, veh/h	1740	1827	1553	1740	1827	1553	1191	0	1583	1292	0	1583
Grp Volume(v), veh/h	43	467	54	76	326	76	43	0	98	43	0	33
Grp Sat Flow(s),veh/h/ln	1740	1827	1553	1740	1827	1553	1192	0	1583	1292	0	1583
Q Serve(g_s), s	0.7	10.4	1.1	1.1	3.5	0.8	2.0	0.0	4.0	2.2	0.0	1.3
Cycle Q Clear(g_c), s	0.7	10.4	1.1	1.1	3.5	0.8	3.3	0.0	4.0	5.5	0.0	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	719	1040	884	599	1077	916	270	0	222	223	0	222
V/C Ratio(X)	0.06	0.45	0.06	0.13	0.30	0.08	0.16	0.00	0.44	0.19	0.00	0.15
Avail Cap(c_a), veh/h	868	1040	884	713	1077	916	370	0	338	318	0	338
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.98	0.98	0.98	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.1	8.8	6.8	5.3	3.5	3.2	28.0	0.0	27.7	29.9	0.0	26.5
Incr Delay (d2), s/veh	0.0	1.4	0.1	0.1	0.7	0.2	0.3	0.0	1.4	0.4	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	5.6	0.5	0.5	2.0	0.4	0.8	0.0	1.8	0.8	0.0	0.6
LnGrp Delay(d),s/veh	5.1	10.2	6.9	5.4	4.2	3.4	28.2	0.0	29.1	30.3	0.0	26.8
LnGrp LOS	A	B	A	A	A	A	C		C	C		C
Approach Vol, veh/h		564			478			141			76	
Approach Delay, s/veh		9.5			4.3			28.8			28.8	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.4	54.7		14.9	9.0	56.2		14.9
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	10.0	40.0		15.0	10.0	40.0		15.0
Max Q Clear Time (g_c+I1), s	3.1	12.4		7.5	2.7	5.5		6.0
Green Ext Time (p_c), s	0.1	2.9		0.4	0.0	2.9		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	510	20	90	420	130	10	0	60	90	0	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	182.7	182.7	190.0	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	33	554	22	98	457	141	11	0	65	98	0	11
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	534	1819	72	702	1507	461	308	0	233	289	0	233
Arrive On Green	0.10	1.00	1.00	0.03	0.19	0.19	0.15	0.00	0.15	0.15	0.00	0.15
Sat Flow, veh/h	1740	3404	135	1740	2619	802	1341	0	1583	1331	0	1583
Grp Volume(v), veh/h	33	282	294	98	302	296	11	0	65	98	0	11
Grp Sat Flow(s),veh/h/ln	1740	1736	1803	1740	1736	1685	1341	0	1583	1331	0	1583
Q Serve(g_s), s	0.5	0.0	0.0	1.5	9.8	9.9	0.4	0.0	2.4	4.5	0.0	0.4
Cycle Q Clear(g_c), s	0.5	0.0	0.0	1.5	9.8	9.9	0.8	0.0	2.4	5.3	0.0	0.4
Prop In Lane	1.00		0.07	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	534	928	964	702	998	969	308	0	233	289	0	233
V/C Ratio(X)	0.06	0.30	0.30	0.14	0.30	0.31	0.04	0.00	0.28	0.34	0.00	0.05
Avail Cap(c_a), veh/h	715	928	964	813	998	969	529	0	484	500	0	484
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	0.0	0.0	5.2	15.2	15.3	24.3	0.0	24.8	26.5	0.0	24.0
Incr Delay (d2), s/veh	0.0	0.8	0.8	0.1	0.8	0.8	0.0	0.0	0.6	0.7	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.2	0.2	0.7	4.9	4.8	0.2	0.0	1.1	1.7	0.0	0.2
LnGrp Delay(d),s/veh	6.0	0.8	0.8	5.3	16.0	16.1	24.4	0.0	25.5	27.1	0.0	24.0
LnGrp LOS	A	A	A	A	B	B	C		C	C		C
Approach Vol, veh/h		609			696			76			109	
Approach Delay, s/veh		1.1			14.5			25.3			26.8	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.8	54.5		14.7	8.2	57.2		14.7
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	10.0	35.0		20.0	10.0	35.0		20.0
Max Q Clear Time (g_c+I1), s	3.5	2.0		7.3	2.5	11.9		4.4
Green Ext Time (p_c), s	0.1	3.8		0.4	0.0	3.6		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	10.5
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	180	480	540	560	430	110
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	179.2	179.2
Adj Flow Rate, veh/h	196	522	587	609	467	120
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	6	6
Cap, veh/h	468	2368	1806	808	601	276
Arrive On Green	0.03	0.23	0.69	0.69	0.18	0.18
Sat Flow, veh/h	1740	3563	3563	1553	3312	1524
Grp Volume(v), veh/h	196	522	587	609	467	120
Grp Sat Flow(s),veh/h/ln	1740	1736	1736	1553	1656	1524
Q Serve(g_s), s	3.3	9.0	4.9	18.5	9.8	5.1
Cycle Q Clear(g_c), s	3.3	9.0	4.9	18.5	9.8	5.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	468	2368	1806	808	601	276
V/C Ratio(X)	0.42	0.22	0.33	0.75	0.78	0.43
Avail Cap(c_a), veh/h	543	2368	1806	808	904	416
HCM Platoon Ratio	0.33	0.33	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.87	0.87	1.00	1.00
Uniform Delay (d), s/veh	6.3	12.5	6.2	8.3	28.6	26.7
Incr Delay (d2), s/veh	0.6	0.2	0.4	5.6	2.5	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	4.4	2.4	8.9	4.7	4.5
LnGrp Delay(d),s/veh	6.9	12.7	6.6	13.9	31.1	27.7
LnGrp LOS	A	B	A	B	C	C
Approach Vol, veh/h		718	1196		587	
Approach Delay, s/veh		11.1	10.3		30.4	
Approach LOS		B	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		61.7		18.3	11.9	49.8		
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		
Max Green Setting (Gmax), s		50.0		20.0	10.0	35.0		
Max Q Clear Time (g_c+I1), s		11.0		11.8	5.3	20.5		
Green Ext Time (p_c), s		7.9		1.4	0.2	6.0		

Intersection Summary	
HCM 2010 Ctrl Delay	15.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	480	430	160	810	0	0	0	0	20	0	290
Number	5	2	12	1	6	16				7	4	14
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
Adj Sat Flow, veh/h/ln	0.0	182.7	182.7	182.7	182.7	0.0				190.0	177.6	177.6
Adj Flow Rate, veh/h	0	522	467	174	880	0				22	0	315
Adj No. of Lanes	0	2	1	1	2	0				0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	4	4	4	4	0				7	7	7
Cap, veh/h	0	1487	665	507	2103	0				411	0	366
Arrive On Green	0.00	0.86	0.86	0.03	0.20	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3563	1553	1740	3563	0				1691	0	1509
Grp Volume(v), veh/h	0	522	467	174	880	0				22	0	315
Grp Sat Flow(s),veh/h/ln	0	1736	1553	1740	1736	0				1691	0	1509
Q Serve(g_s), s	0.0	2.0	7.1	3.2	14.6	0.0				0.7	0.0	13.2
Cycle Q Clear(g_c), s	0.0	2.0	7.1	3.2	14.6	0.0				0.7	0.0	13.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1487	665	507	2103	0				411	0	366
V/C Ratio(X)	0.00	0.35	0.70	0.34	0.42	0.00				0.05	0.00	0.86
Avail Cap(c_a), veh/h	0	1487	665	594	2103	0				768	0	686
HCM Platoon Ratio	1.00	2.00	2.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.90	0.90	0.88	0.88	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	2.8	3.2	7.8	16.3	0.0				19.2	0.0	23.9
Incr Delay (d2), s/veh	0.0	0.6	5.5	0.4	0.5	0.0				0.1	0.0	5.9
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(50%),veh/ln	0.0	1.0	3.6	1.6	7.2	0.0				0.3	0.0	6.1
LnGrp Delay(d),s/veh	0.0	3.4	8.7	8.2	16.8	0.0				19.2	0.0	29.9
LnGrp LOS		A	A	A	B					B		C
Approach Vol, veh/h		989			1054						337	
Approach Delay, s/veh		5.9			15.4						29.2	
Approach LOS		A			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.7	47.3		21.0		59.0		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	10.0	25.0		30.0		40.0		
Max Q Clear Time (g_c+I1), s	5.2	9.1		15.2		16.6		
Green Ext Time (p_c), s	0.2	6.8		0.9		7.9		

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	150	350	0	0	500	20	470	0	180	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	0.0	0.0	182.7	182.7	190.0	177.6	177.6			
Adj Flow Rate, veh/h	163	380	0	0	543	22	511	0	196			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	0	0	4	4	7	7	7			
Cap, veh/h	471	1813	0	0	1193	534	548	0	489			
Arrive On Green	0.03	0.17	0.00	0.00	0.34	0.34	0.32	0.00	0.32			
Sat Flow, veh/h	1740	3563	0	0	3563	1553	1691	0	1509			
Grp Volume(v), veh/h	163	380	0	0	543	22	511	0	196			
Grp Sat Flow(s),veh/h/ln	1740	1736	0	0	1736	1553	1691	0	1509			
Q Serve(g_s), s	3.5	6.1	0.0	0.0	7.9	0.6	19.1	0.0	6.6			
Cycle Q Clear(g_c), s	3.5	6.1	0.0	0.0	7.9	0.6	19.1	0.0	6.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	471	1813	0	0	1193	534	548	0	489			
V/C Ratio(X)	0.35	0.21	0.00	0.00	0.46	0.04	0.93	0.00	0.40			
Avail Cap(c_a), veh/h	534	1813	0	0	1193	534	935	0	835			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.96	0.96	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	11.6	15.4	0.0	0.0	16.6	14.2	21.3	0.0	17.1			
Incr Delay (d2), s/veh	0.4	0.3	0.0	0.0	1.3	0.1	9.9	0.0	0.5			
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(50%),veh/ln	1.7	3.0	0.0	0.0	4.0	0.3	10.3	0.0	2.8			
LnGrp Delay(d),s/veh	12.1	15.7	0.0	0.0	17.9	14.4	31.2	0.0	17.6			
LnGrp LOS	B	B			B	B	C		B			
Approach Vol, veh/h		543			565			707				
Approach Delay, s/veh		14.6			17.7			27.4				
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		53.9			11.6	42.3		26.1
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0
Max Green Setting (Gmax), s		34.0			9.0	20.0		36.0
Max Q Clear Time (g_c+I1), s		8.1			5.5	9.9		21.1
Green Ext Time (p_c), s		3.4			0.1	2.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	510	370	0	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	0	554	402	0	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	402	0	-	0	956	402
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1146	-	-	-	286	648
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1146	-	-	-	286	648
Mov Cap-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	575	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1146	-	-	-	397
HCM Lane V/C Ratio	-	-	-	-	0.055
HCM Control Delay (s)	0	-	-	-	14.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	650	10	20	630	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	707	11	22	685	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	717	0	1098	359
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	386	-
Critical Hdwy	-	-	4.18	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.24	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	867	-	207	638
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	656	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	867	-	202	638
Mov Cap-2 Maneuver	-	-	-	-	202	-
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	639	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	307	-	-	867	-
HCM Lane V/C Ratio	0.071	-	-	0.025	-
HCM Control Delay (s)	17.6	-	-	9.3	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	60	390	80	40	440	20	70	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	65	424	87	43	478	22	76	11	33

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	500	0	0	511	0	0	1185	1185	467
Stage 1	-	-	-	-	-	-	598	598	-
Stage 2	-	-	-	-	-	-	587	587	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1054	-	-	1044	-	-	166	189	596
Stage 1	-	-	-	-	-	-	489	491	-
Stage 2	-	-	-	-	-	-	496	497	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1054	-	-	1044	-	-	138	163	596
Mov Cap-2 Maneuver	-	-	-	-	-	-	138	163	-
Stage 1	-	-	-	-	-	-	446	448	-
Stage 2	-	-	-	-	-	-	448	469	-

Approach	EB	WB	NB
HCM Control Delay, s	1	0.7	58.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	178	1054	-	-	1044	-	-	190
HCM Lane V/C Ratio	0.672	0.062	-	-	0.042	-	-	0.172
HCM Control Delay (s)	58.9	8.6	0	-	8.6	0	-	27.8
HCM Lane LOS	F	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	4	0.2	-	-	0.1	-	-	0.6

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	1196	1217	489
Stage 1	576	576	-
Stage 2	620	641	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	163	181	579
Stage 1	503	502	-
Stage 2	476	469	-
Platoon blocked, %			
Mov Cap-1 Maneuver	131	156	579
Mov Cap-2 Maneuver	131	156	-
Stage 1	459	473	-
Stage 2	401	428	-

Approach	SB
HCM Control Delay, s	27.8
HCM LOS	D

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	10	20	720	530	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	6	6	6	6
Mvmt Flow	0	11	22	783	576	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1402	576	576	0	-	0
Stage 1	576	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.16	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	154	517	978	-	-	-
Stage 1	562	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	148	517	978	-	-	-
Mov Cap-2 Maneuver	148	-	-	-	-	-
Stage 1	562	-	-	-	-	-
Stage 2	413	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	978	-	517	-	-
HCM Lane V/C Ratio	0.022	-	0.021	-	-
HCM Control Delay (s)	8.8	0	12.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	10	680	30	10	500
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	33	11	739	33	11	543

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1320	755	0	0	772	0
Stage 1	755	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	170	402	-	-	843	-
Stage 1	457	-	-	-	-	-
Stage 2	561	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	167	402	-	-	843	-
Mov Cap-2 Maneuver	167	-	-	-	-	-
Stage 1	457	-	-	-	-	-
Stage 2	550	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.5	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	196	843	-
HCM Lane V/C Ratio	-	-	0.222	0.013	-
HCM Control Delay (s)	-	-	28.5	9.3	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	330	110	130	250	90	70	0	120	70	0	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	182.7	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	54	359	120	141	272	98	76	0	130	76	0	43
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	744	991	842	639	1039	883	289	0	260	211	0	260
Arrive On Green	0.06	0.54	0.54	0.18	1.00	1.00	0.16	0.00	0.16	0.16	0.00	0.16
Sat Flow, veh/h	1740	1827	1553	1740	1827	1553	1165	0	1583	1255	0	1583
Grp Volume(v), veh/h	54	359	120	141	272	98	76	0	130	76	0	43
Grp Sat Flow(s),veh/h/ln	1740	1827	1553	1740	1827	1553	1165	0	1583	1255	0	1583
Q Serve(g_s), s	0.9	8.3	2.8	2.4	0.0	0.0	3.8	0.0	5.5	4.3	0.0	1.7
Cycle Q Clear(g_c), s	0.9	8.3	2.8	2.4	0.0	0.0	5.5	0.0	5.5	9.8	0.0	1.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	744	991	842	639	1039	883	289	0	260	211	0	260
V/C Ratio(X)	0.07	0.36	0.14	0.22	0.26	0.11	0.26	0.00	0.50	0.36	0.00	0.17
Avail Cap(c_a), veh/h	870	991	842	719	1039	883	342	0	322	260	0	322
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	9.6	8.4	5.4	0.0	0.0	28.8	0.0	28.0	32.5	0.0	26.5
Incr Delay (d2), s/veh	0.0	1.0	0.4	0.2	0.6	0.2	0.5	0.0	1.5	1.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	4.4	1.3	1.1	0.2	0.1	1.5	0.0	2.5	1.6	0.0	0.8
LnGrp Delay(d),s/veh	5.9	10.6	8.7	5.5	0.6	0.2	29.3	0.0	29.5	33.5	0.0	26.8
LnGrp LOS	A	B	A	A	A	A	C		C	C		C
Approach Vol, veh/h		533			511			206			119	
Approach Delay, s/veh		9.7			1.9			29.4			31.1	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.6	51.3		17.1	9.7	53.2		17.1
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	10.0	40.0		15.0	10.0	40.0		15.0
Max Q Clear Time (g_c+I1), s	4.4	10.3		11.8	2.9	2.0		7.5
Green Ext Time (p_c), s	0.2	2.6		0.3	0.0	2.7		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	470	10	150	430	190	10	0	80	150	0	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	182.7	182.7	190.0	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	43	511	11	163	467	207	11	0	87	163	0	33
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	500	1756	38	707	1280	563	329	0	287	309	0	287
Arrive On Green	0.11	1.00	1.00	0.06	0.37	0.37	0.18	0.00	0.18	0.18	0.00	0.18
Sat Flow, veh/h	1740	3475	75	1740	2347	1033	1239	0	1583	1305	0	1583
Grp Volume(v), veh/h	43	255	267	163	344	330	11	0	87	163	0	33
Grp Sat Flow(s),veh/h/ln	1740	1736	1814	1740	1736	1645	1239	0	1583	1305	0	1583
Q Serve(g_s), s	0.7	0.0	0.0	2.9	10.1	10.2	0.5	0.0	3.3	8.3	0.0	1.2
Cycle Q Clear(g_c), s	0.7	0.0	0.0	2.9	10.1	10.2	1.7	0.0	3.3	10.0	0.0	1.2
Prop In Lane	1.00		0.04	1.00		0.63	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	500	877	917	707	946	897	329	0	287	309	0	287
V/C Ratio(X)	0.09	0.29	0.29	0.23	0.36	0.37	0.03	0.00	0.30	0.53	0.00	0.11
Avail Cap(c_a), veh/h	653	877	917	790	946	897	476	0	457	449	0	457
HCM Platoon Ratio	2.00	2.00	2.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.8	0.0	0.0	6.3	13.2	13.2	24.4	0.0	24.6	28.1	0.0	23.7
Incr Delay (d2), s/veh	0.1	0.8	0.8	0.2	1.1	1.2	0.0	0.0	0.6	1.4	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.2	0.2	1.4	5.1	4.9	0.2	0.0	1.5	3.1	0.0	0.5
LnGrp Delay(d),s/veh	6.9	0.8	0.8	6.4	14.3	14.4	24.4	0.0	25.1	29.5	0.0	23.9
LnGrp LOS	A	A	A	A	B	B	C		C	C		C
Approach Vol, veh/h		565			837			98			196	
Approach Delay, s/veh		1.2			12.8			25.1			28.6	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.7	50.7		17.6	8.9	53.5		17.6
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	10.0	35.0		20.0	10.0	35.0		20.0
Max Q Clear Time (g_c+I1), s	4.9	2.0		12.0	2.7	12.2		5.3
Green Ext Time (p_c), s	0.2	3.9		0.6	0.0	3.8		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	200	500	610	330	290	160
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	179.2	179.2
Adj Flow Rate, veh/h	217	543	663	359	315	174
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	6	6
Cap, veh/h	559	2443	1862	833	515	237
Arrive On Green	0.10	0.70	1.00	1.00	0.16	0.16
Sat Flow, veh/h	1740	3563	3563	1553	3312	1524
Grp Volume(v), veh/h	217	543	663	359	315	174
Grp Sat Flow(s),veh/h/ln	1740	1736	1736	1553	1656	1524
Q Serve(g_s), s	3.4	3.9	0.0	0.0	6.3	7.7
Cycle Q Clear(g_c), s	3.4	3.9	0.0	0.0	6.3	7.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	559	2443	1862	833	515	237
V/C Ratio(X)	0.39	0.22	0.36	0.43	0.61	0.74
Avail Cap(c_a), veh/h	635	2443	1862	833	932	429
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.93	0.93	1.00	1.00
Uniform Delay (d), s/veh	4.7	3.7	0.0	0.0	28.0	28.6
Incr Delay (d2), s/veh	0.4	0.2	0.5	1.5	1.2	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.9	0.1	0.3	3.0	6.6
LnGrp Delay(d),s/veh	5.1	3.9	0.5	1.5	29.2	33.0
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h		760	1022		489	
Approach Delay, s/veh		4.3	0.9		30.5	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		64.0		16.0	11.9	52.1		
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		
Max Green Setting (Gmax), s		50.0		20.0	10.0	35.0		
Max Q Clear Time (g_c+I1), s		5.9		9.7	5.4	2.0		
Green Ext Time (p_c), s		6.7		1.3	0.2	6.6		

Intersection Summary	
HCM 2010 Ctrl Delay	8.4
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	500	290	80	720	0	0	0	0	10	0	220
Number	5	2	12	1	6	16				7	4	14
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
Adj Sat Flow, veh/h/ln	0.0	182.7	182.7	182.7	182.7	0.0				190.0	177.6	177.6
Adj Flow Rate, veh/h	0	543	315	87	783	0				11	0	239
Adj No. of Lanes	0	2	1	1	2	0				0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	4	4	4	4	0				7	7	7
Cap, veh/h	0	1759	787	569	2303	0				320	0	285
Arrive On Green	0.00	1.00	1.00	0.11	0.88	0.00				0.19	0.00	0.19
Sat Flow, veh/h	0	3563	1553	1740	3563	0				1691	0	1509
Grp Volume(v), veh/h	0	543	315	87	783	0				11	0	239
Grp Sat Flow(s),veh/h/ln	0	1736	1553	1740	1736	0				1691	0	1509
Q Serve(g_s), s	0.0	0.0	0.0	1.3	2.6	0.0				0.4	0.0	10.3
Cycle Q Clear(g_c), s	0.0	0.0	0.0	1.3	2.6	0.0				0.4	0.0	10.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1759	787	569	2303	0				320	0	285
V/C Ratio(X)	0.00	0.31	0.40	0.15	0.34	0.00				0.03	0.00	0.84
Avail Cap(c_a), veh/h	0	1759	787	681	2303	0				623	0	556
HCM Platoon Ratio	1.00	2.00	2.00	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.94	0.94	0.95	0.95	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	5.0	1.5	0.0				22.4	0.0	26.5
Incr Delay (d2), s/veh	0.0	0.4	1.4	0.1	0.4	0.0				0.0	0.0	6.5
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(50%),veh/ln	0.0	0.1	0.3	0.6	1.3	0.0				0.2	0.0	4.8
LnGrp Delay(d),s/veh	0.0	0.4	1.4	5.2	1.9	0.0				22.5	0.0	33.0
LnGrp LOS		A	A	A	A					C		C
Approach Vol, veh/h		858			870						250	
Approach Delay, s/veh		0.8			2.2						32.5	
Approach LOS		A			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	10.6	51.5		17.8		62.2		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	10.0	30.0		25.0		45.0		
Max Q Clear Time (g_c+I1), s	3.3	2.0		12.3		4.6		
Green Ext Time (p_c), s	0.1	6.9		0.6		7.2		

Intersection Summary	
HCM 2010 Ctrl Delay	5.4
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	170	340	0	0	440	20	360	0	140	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	0.0	0.0	182.7	182.7	190.0	177.6	177.6			
Adj Flow Rate, veh/h	185	370	0	0	478	22	391	0	152			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	0	0	4	4	7	7	7			
Cap, veh/h	571	2070	0	0	1460	653	431	0	384			
Arrive On Green	0.03	0.20	0.00	0.00	0.42	0.42	0.25	0.00	0.25			
Sat Flow, veh/h	1740	3563	0	0	3563	1553	1691	0	1509			
Grp Volume(v), veh/h	185	370	0	0	478	22	391	0	152			
Grp Sat Flow(s),veh/h/ln	1740	1736	0	0	1736	1553	1691	0	1509			
Q Serve(g_s), s	3.6	6.0	0.0	0.0	6.2	0.6	15.0	0.0	5.6			
Cycle Q Clear(g_c), s	3.6	6.0	0.0	0.0	6.2	0.6	15.0	0.0	5.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	571	2070	0	0	1460	653	431	0	384			
V/C Ratio(X)	0.32	0.18	0.00	0.00	0.33	0.03	0.91	0.00	0.40			
Avail Cap(c_a), veh/h	655	2070	0	0	1460	653	756	0	675			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.98	0.98	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	8.8	13.3	0.0	0.0	13.1	11.4	24.2	0.0	20.7			
Incr Delay (d2), s/veh	0.3	0.2	0.0	0.0	0.6	0.1	8.3	0.0	0.7			
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(50%),veh/ln	1.7	2.9	0.0	0.0	3.0	0.3	7.9	0.0	2.4			
LnGrp Delay(d),s/veh	9.1	13.4	0.0	0.0	13.6	11.5	32.6	0.0	21.4			
LnGrp LOS	A	B			B	B	C		C			
Approach Vol, veh/h		555			500			543				
Approach Delay, s/veh		12.0			13.6			29.4				
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		57.9			11.8	46.1		22.1
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0
Max Green Setting (Gmax), s		40.0			10.0	25.0		30.0
Max Q Clear Time (g_c+I1), s		8.0			5.6	8.2		17.0
Green Ext Time (p_c), s		3.2			0.2	2.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	480	350	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	522	380	11	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	391	0	-	0	929	386
Stage 1	-	-	-	-	386	-
Stage 2	-	-	-	-	543	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1157	-	-	-	297	662
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	582	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1157	-	-	-	293	662
Mov Cap-2 Maneuver	-	-	-	-	293	-
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	574	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1157	-	-	-	406
HCM Lane V/C Ratio	0.009	-	-	-	0.054
HCM Control Delay (s)	8.1	0	-	-	14.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	690	10	10	760	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	750	11	11	826	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	761	0	1190	380
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	435	-
Critical Hdwy	-	-	4.18	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.24	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	834	-	180	618
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	620	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	834	-	178	618
Mov Cap-2 Maneuver	-	-	-	-	178	-
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	612	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	19.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	276	-	-	834	-
HCM Lane V/C Ratio	0.079	-	-	0.013	-
HCM Control Delay (s)	19.2	-	-	9.4	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	420	50	20	380	10	70	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	457	54	22	413	11	76	11	11

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	424	0	0	511	0	0	978	972	484
Stage 1	-	-	-	-	-	-	505	505	-
Stage 2	-	-	-	-	-	-	473	467	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1125	-	-	1044	-	-	230	252	583
Stage 1	-	-	-	-	-	-	549	540	-
Stage 2	-	-	-	-	-	-	572	562	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1125	-	-	1044	-	-	211	242	583
Mov Cap-2 Maneuver	-	-	-	-	-	-	211	242	-
Stage 1	-	-	-	-	-	-	541	532	-
Stage 2	-	-	-	-	-	-	536	546	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.4	31.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	231	1125	-	-	1044	-	-	284
HCM Lane V/C Ratio	0.423	0.01	-	-	0.021	-	-	0.115
HCM Control Delay (s)	31.6	8.2	0	-	8.5	0	-	19.3
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2	0	-	-	0.1	-	-	0.4

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	978	995	418
Stage 1	462	462	-
Stage 2	516	533	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	230	245	635
Stage 1	580	565	-
Stage 2	542	525	-
Platoon blocked, %			
Mov Cap-1 Maneuver	211	235	635
Mov Cap-2 Maneuver	211	235	-
Stage 1	572	549	-
Stage 2	514	518	-

Approach	SB
HCM Control Delay, s	19.3
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	20	20	510	430	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	6	6	6	6
Mvmt Flow	0	22	22	554	467	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1065	467	467	0	-	0
Stage 1	467	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.16	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	246	596	1074	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	239	596	1074	-	-	-
Mov Cap-2 Maneuver	239	-	-	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	533	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1074	-	596	-	-
HCM Lane V/C Ratio	0.02	-	0.036	-	-
HCM Control Delay (s)	8.4	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	500	10	10	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	543	11	11	446

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1016	549	0	0	554	0
Stage 1	549	-	-	-	-	-
Stage 2	467	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	259	528	-	-	1016	-
Stage 1	571	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	255	528	-	-	1016	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	571	-	-	-	-	-
Stage 2	614	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.1	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	308	1016	-
HCM Lane V/C Ratio	-	-	0.106	0.011	-
HCM Control Delay (s)	-	-	18.1	8.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	110	400	200	250	470	190	190	10	260	160	10	100
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	182.7	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	120	435	217	272	511	207	207	11	283	174	11	109
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	433	656	557	430	735	625	422	18	518	225	48	477
Arrive On Green	0.08	0.36	0.36	0.25	0.80	0.80	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1740	1827	1553	1740	1827	1553	1019	54	1583	1081	147	1458
Grp Volume(v), veh/h	120	435	217	272	511	207	218	0	283	174	0	120
Grp Sat Flow(s),veh/h/ln	1740	1827	1553	1740	1827	1553	1073	0	1583	1081	0	1605
Q Serve(g_s), s	3.3	15.9	8.3	7.9	9.8	2.8	11.8	0.0	11.6	9.9	0.0	4.3
Cycle Q Clear(g_c), s	3.3	15.9	8.3	7.9	9.8	2.8	16.1	0.0	11.6	26.0	0.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	0.95		1.00	1.00		0.91
Lane Grp Cap(c), veh/h	433	656	557	430	735	625	439	0	518	225	0	525
V/C Ratio(X)	0.28	0.66	0.39	0.63	0.69	0.33	0.50	0.00	0.55	0.77	0.00	0.23
Avail Cap(c_a), veh/h	443	656	557	452	735	625	439	0	518	225	0	525
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.42	0.42	0.42	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.7	21.4	19.0	12.7	5.6	4.9	25.3	0.0	21.9	35.9	0.0	19.5
Incr Delay (d2), s/veh	0.3	5.2	2.0	1.1	2.3	0.6	0.9	0.0	1.2	15.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	8.9	3.9	3.8	5.1	1.3	4.3	0.0	5.2	4.7	0.0	1.9
LnGrp Delay(d),s/veh	14.0	26.7	21.0	13.8	7.9	5.5	26.2	0.0	23.1	51.2	0.0	19.7
LnGrp LOS	B	C	C	B	A	A	C		C	D		B
Approach Vol, veh/h		772			990			501			294	
Approach Delay, s/veh		23.1			9.0			24.5			38.4	
Approach LOS		C			A			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	34.0		31.0	11.5	37.5		31.0
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	11.0	28.0		26.0	7.0	32.0		26.0
Max Q Clear Time (g_c+I1), s	9.9	17.9		28.0	5.3	11.8		18.1
Green Ext Time (p_c), s	0.1	3.5		0.0	0.0	4.6		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.7
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	740	10	300	820	400	30	10	190	340	10	60
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	182.7	182.7	190.0	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	76	804	11	326	891	435	33	11	207	370	11	65
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	237	1218	17	454	953	460	383	117	503	408	74	440
Arrive On Green	0.10	0.46	0.46	0.19	0.56	0.56	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1740	3506	48	1740	2272	1097	954	368	1583	1158	234	1384
Grp Volume(v), veh/h	76	398	417	326	678	648	44	0	207	370	0	76
Grp Sat Flow(s),veh/h/ln	1740	1736	1818	1740	1736	1633	1321	0	1583	1158	0	1618
Q Serve(g_s), s	2.1	14.0	14.0	9.0	28.3	29.2	0.9	0.0	8.1	21.5	0.0	2.6
Cycle Q Clear(g_c), s	2.1	14.0	14.0	9.0	28.3	29.2	3.5	0.0	8.1	25.0	0.0	2.6
Prop In Lane	1.00		0.03	1.00		0.67	0.75		1.00	1.00		0.86
Lane Grp Cap(c), veh/h	237	603	632	454	728	685	500	0	503	408	0	514
V/C Ratio(X)	0.32	0.66	0.66	0.72	0.93	0.95	0.09	0.00	0.41	0.91	0.00	0.15
Avail Cap(c_a), veh/h	266	603	632	534	728	685	500	0	503	408	0	514
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	0.81	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	17.6	17.6	13.6	16.4	16.5	19.5	0.0	21.1	30.2	0.0	19.2
Incr Delay (d2), s/veh	0.6	4.5	4.3	3.8	20.3	23.3	0.1	0.0	0.5	23.7	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	7.3	7.6	4.7	17.3	17.2	0.7	0.0	3.6	10.6	0.0	1.2
LnGrp Delay(d),s/veh	18.3	22.1	21.9	17.4	36.7	39.8	19.6	0.0	21.6	53.9	0.0	19.3
LnGrp LOS	B	C	C	B	D	D	B		C	D		B
Approach Vol, veh/h		891			1652			251			446	
Approach Delay, s/veh		21.7			34.1			21.2			48.0	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.3	33.7		30.0	10.7	39.3		30.0
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	15.0	25.0		25.0	7.0	33.0		25.0
Max Q Clear Time (g_c+I1), s	11.0	16.0		27.0	4.1	31.2		10.1
Green Ext Time (p_c), s	0.4	5.2		0.0	0.0	1.4		2.5

Intersection Summary	
HCM 2010 Ctrl Delay	31.6
HCM 2010 LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	260	1020	1120	400	640	400
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	179.2	179.2
Adj Flow Rate, veh/h	283	1109	1217	435	696	435
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	6	6
Cap, veh/h	326	1964	1354	606	1021	470
Arrive On Green	0.04	0.19	0.78	0.78	0.31	0.31
Sat Flow, veh/h	1740	3563	3563	1553	3312	1524
Grp Volume(v), veh/h	283	1109	1217	435	696	435
Grp Sat Flow(s),veh/h/ln	1740	1736	1736	1553	1656	1524
Q Serve(g_s), s	7.0	23.1	20.5	11.1	14.6	22.0
Cycle Q Clear(g_c), s	7.0	23.1	20.5	11.1	14.6	22.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	326	1964	1354	606	1021	470
V/C Ratio(X)	0.87	0.56	0.90	0.72	0.68	0.93
Avail Cap(c_a), veh/h	326	1964	1354	606	1041	479
HCM Platoon Ratio	0.33	0.33	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.73	0.73	1.00	1.00
Uniform Delay (d), s/veh	18.1	23.4	7.6	6.6	24.1	26.6
Incr Delay (d2), s/veh	21.2	1.2	7.4	5.3	1.8	23.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	11.4	10.2	5.3	6.9	19.3
LnGrp Delay(d),s/veh	39.3	24.6	15.0	11.9	25.9	50.5
LnGrp LOS	D	C	B	B	C	D
Approach Vol, veh/h		1392	1652		1131	
Approach Delay, s/veh		27.6	14.2		35.3	
Approach LOS		C	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		50.5		29.5	14.0	36.5		
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		
Max Green Setting (Gmax), s		45.0		25.0	9.0	31.0		
Max Q Clear Time (g_c+I1), s		25.1		24.0	9.0	22.5		
Green Ext Time (p_c), s		12.0		0.5	0.0	6.5		

Intersection Summary	
HCM 2010 Ctrl Delay	24.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	990	670	180	1200	0	0	0	0	10	0	320
Number	5	2	12	1	6	16				7	4	14
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
Adj Sat Flow, veh/h/ln	0.0	182.7	182.7	182.7	182.7	0.0				190.0	177.6	177.6
Adj Flow Rate, veh/h	0	1076	728	196	1304	0				11	0	348
Adj No. of Lanes	0	2	1	1	2	0				0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	4	4	4	4	0				7	7	7
Cap, veh/h	0	1633	731	351	2157	0				426	0	380
Arrive On Green	0.00	0.94	0.94	0.06	0.42	0.00				0.25	0.00	0.25
Sat Flow, veh/h	0	3563	1553	1740	3563	0				1691	0	1509
Grp Volume(v), veh/h	0	1076	728	196	1304	0				11	0	348
Grp Sat Flow(s),veh/h/ln	0	1736	1553	1740	1736	0				1691	0	1509
Q Serve(g_s), s	0.0	3.8	35.0	4.1	23.1	0.0				0.4	0.0	17.7
Cycle Q Clear(g_c), s	0.0	3.8	35.0	4.1	23.1	0.0				0.4	0.0	17.7
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1633	731	351	2157	0				426	0	380
V/C Ratio(X)	0.00	0.66	1.00	0.56	0.60	0.00				0.03	0.00	0.92
Avail Cap(c_a), veh/h	0	1633	731	419	2157	0				450	0	402
HCM Platoon Ratio	1.00	2.00	2.00	0.67	0.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.75	0.75	0.18	0.18	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	1.3	2.3	9.0	15.5	0.0				22.2	0.0	28.7
Incr Delay (d2), s/veh	0.0	1.6	27.9	0.2	0.2	0.0				0.0	0.0	24.6
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(50%),veh/ln	0.0	1.4	14.4	2.0	11.1	0.0				0.2	0.0	9.9
LnGrp Delay(d),s/veh	0.0	2.9	30.2	9.3	15.7	0.0				22.2	0.0	53.3
LnGrp LOS		A	C	A	B					C		D
Approach Vol, veh/h		1804			1500						359	
Approach Delay, s/veh		13.9			14.8						52.4	
Approach LOS		B			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.9	43.2		24.9		55.1		
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		
Max Green Setting (Gmax), s	10.0	34.0		21.0		49.0		
Max Q Clear Time (g_c+I1), s	6.1	37.0		19.7		25.1		
Green Ext Time (p_c), s	0.2	0.0		0.2		15.6		

Intersection Summary	
HCM 2010 Ctrl Delay	18.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	330	670	0	0	750	30	630	0	160	0	0	0
Number	5	2	12	1	6	16	3	8	18			
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			
Adj Sat Flow, veh/h/ln	182.7	182.7	0.0	0.0	182.7	182.7	190.0	177.6	177.6			
Adj Flow Rate, veh/h	359	728	0	0	815	33	685	0	174			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	4	4	0	0	4	4	7	7	7			
Cap, veh/h	371	1610	0	0	846	379	695	0	621			
Arrive On Green	0.05	0.15	0.00	0.00	0.24	0.24	0.41	0.00	0.41			
Sat Flow, veh/h	1740	3563	0	0	3563	1553	1691	0	1509			
Grp Volume(v), veh/h	359	728	0	0	815	33	685	0	174			
Grp Sat Flow(s),veh/h/ln	1740	1736	0	0	1736	1553	1691	0	1509			
Q Serve(g_s), s	12.0	15.3	0.0	0.0	18.6	1.3	32.1	0.0	6.1			
Cycle Q Clear(g_c), s	12.0	15.3	0.0	0.0	18.6	1.3	32.1	0.0	6.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	371	1610	0	0	846	379	695	0	621			
V/C Ratio(X)	0.97	0.45	0.00	0.00	0.96	0.09	0.98	0.00	0.28			
Avail Cap(c_a), veh/h	371	1610	0	0	846	379	695	0	621			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.72	0.72	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	23.5	24.6	0.0	0.0	29.9	23.4	23.3	0.0	15.7			
Incr Delay (d2), s/veh	31.0	0.7	0.0	0.0	23.2	0.5	30.2	0.0	0.2			
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(50%),veh/ln	11.1	7.5	0.0	0.0	11.6	0.6	20.7	0.0	2.6			
LnGrp Delay(d),s/veh	54.5	25.3	0.0	0.0	53.1	23.8	53.6	0.0	15.9			
LnGrp LOS	D	C			D	C	D		B			
Approach Vol, veh/h		1087			848			859				
Approach Delay, s/veh		34.9			52.0			45.9				
Approach LOS		C			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		42.1			17.6	24.5		37.9
Change Period (Y+Rc), s		5.0			5.0	5.0		5.0
Max Green Setting (Gmax), s		37.1			12.6	19.5		32.9
Max Q Clear Time (g_c+I1), s		17.3			14.0	20.6		34.1
Green Ext Time (p_c), s		6.1			0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	43.5
HCM 2010 LOS	D

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	700	740	20	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	761	804	22	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	826	0	-	0	1598	815
Stage 1	-	-	-	-	815	-
Stage 2	-	-	-	-	783	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	796	-	-	-	117	377
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	450	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	796	-	-	-	114	377
Mov Cap-2 Maneuver	-	-	-	-	114	-
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	439	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	28.5
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	796	-	-	-	175
HCM Lane V/C Ratio	0.014	-	-	-	0.124
HCM Control Delay (s)	9.6	0	-	-	28.5
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1260	10	10	1510	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	1370	11	11	1641	11	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1380	0	2217	690
Stage 1	-	-	-	-	1375	-
Stage 2	-	-	-	-	842	-
Critical Hdwy	-	-	4.18	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.24	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	482	-	37	388
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	383	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	482	-	36	388
Mov Cap-2 Maneuver	-	-	-	-	36	-
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	374	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	65.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	91	-	-	482	-
HCM Lane V/C Ratio	0.358	-	-	0.023	-
HCM Control Delay (s)	65.2	-	-	12.6	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	46.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	680	140	40	630	10	90	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	739	152	43	685	11	98	11	33

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	696	0	0	891	0	0	1652	1620	815
Stage 1	-	-	-	-	-	-	837	837	-
Stage 2	-	-	-	-	-	-	815	783	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	891	-	-	752	-	-	~ 79	103	377
Stage 1	-	-	-	-	-	-	361	382	-
Stage 2	-	-	-	-	-	-	371	404	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	891	-	-	752	-	-	~ 55	91	377
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 55	91	-
Stage 1	-	-	-	-	-	-	352	372	-
Stage 2	-	-	-	-	-	-	279	366	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.6	$ 586.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	71	891	-	-	752	-	-	190
HCM Lane V/C Ratio	1.99	0.012	-	-	0.058	-	-	0.458
HCM Control Delay (s)	$ 586.8	9.1	0	-	10.1	0	-	39
HCM Lane LOS	F	A	A	-	B	A	-	E
HCM 95th %tile Q(veh)	12.9	0	-	-	0.2	-	-	2.2

Notes

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

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	60
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	65

Major/Minor	Minor2		
Conflicting Flow All	1636	1690	690
Stage 1	777	777	-
Stage 2	859	913	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	81	93	445
Stage 1	390	407	-
Stage 2	351	352	-
Platoon blocked, %			
Mov Cap-1 Maneuver	61	82	445
Mov Cap-2 Maneuver	61	82	-
Stage 1	380	369	-
Stage 2	303	343	-

Approach	SB
HCM Control Delay, s	39
HCM LOS	E

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	70	0	660	970	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	6	6	6	6
Mvmt Flow	0	76	0	717	1054	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1771	1054	1054	0	-	0
Stage 1	1054	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.16	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	91	275	645	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	484	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	91	275	645	-	-	-
Mov Cap-2 Maneuver	91	-	-	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	484	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	645	-	275	-	-
HCM Lane V/C Ratio	-	-	0.277	-	-
HCM Control Delay (s)	0	-	23	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	1.1	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	630	20	10	930
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	685	22	11	1011

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1729	696	0	0	707	0
Stage 1	696	-	-	-	-	-
Stage 2	1033	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	95	435	-	-	891	-
Stage 1	487	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	92	435	-	-	891	-
Mov Cap-2 Maneuver	92	-	-	-	-	-
Stage 1	487	-	-	-	-	-
Stage 2	328	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	43.7	0	0.1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	125	891	-
HCM Lane V/C Ratio	-	-	0.261	0.012	-
HCM Control Delay (s)	-	-	43.7	9.1	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	1	0	-

APPENDIX K
HCM INTERSECTION CAPACITY ANALYSIS - 'BUILD OPTION 2' CONDITION

OPENING YEAR 2019 'BUILD OPTION 2' CONDITIONS

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	270	50	70	260	40	90
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	186.3	186.3
Adj Flow Rate, veh/h	293	54	76	283	43	98
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	2	2
Cap, veh/h	983	836	751	1317	239	213
Arrive On Green	0.54	0.54	0.22	1.00	0.13	0.13
Sat Flow, veh/h	1827	1553	1740	1827	1774	1583
Grp Volume(v), veh/h	293	54	76	283	43	98
Grp Sat Flow(s),veh/h/ln	1827	1553	1740	1827	1774	1583
Q Serve(g_s), s	6.1	1.2	0.9	0.0	1.5	4.0
Cycle Q Clear(g_c), s	6.1	1.2	0.9	0.0	1.5	4.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	983	836	751	1317	239	213
V/C Ratio(X)	0.30	0.06	0.10	0.21	0.18	0.46
Avail Cap(c_a), veh/h	983	836	884	1317	384	343
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.99	0.99	1.00	1.00
Uniform Delay (d), s/veh	8.8	7.7	3.7	0.0	26.6	27.7
Incr Delay (d2), s/veh	0.8	0.1	0.1	0.4	0.4	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.5	0.4	0.1	0.8	1.8
LnGrp Delay(d),s/veh	9.6	7.8	3.8	0.4	27.0	29.2
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h	347			359	141	
Approach Delay, s/veh	9.3			1.1	28.5	
Approach LOS	A			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.7	48.0				60.7		14.3
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	13.0	32.0				50.0		15.0
Max Q Clear Time (g_c+I1), s	2.9	8.1				2.0		6.0
Green Ext Time (p_c), s	0.1	1.8				1.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.0
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	330	20	90	320	0	10	0	60	0	0	0
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	190.0	190.0	186.3	186.3	190.0	186.3	190.0
Adj Flow Rate, veh/h	11	359	22	98	348	0	11	0	65	0	0	0
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	701	1085	922	665	1368	0	256	0	307	0	204	0
Arrive On Green	0.20	0.20	0.20	0.08	0.75	0.00	0.11	0.00	0.11	0.00	0.00	0.00
Sat Flow, veh/h	1009	1827	1553	1740	1827	0	1412	0	1583	0	1863	0
Grp Volume(v), veh/h	11	359	22	98	348	0	11	0	65	0	0	0
Grp Sat Flow(s),veh/h/ln	1009	1827	1553	1740	1827	0	1412	0	1583	0	1863	0
Q Serve(g_s), s	0.6	12.0	0.8	1.2	4.2	0.0	0.5	0.0	2.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.6	12.0	0.8	1.2	4.2	0.0	0.5	0.0	2.4	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	701	1085	922	665	1368	0	256	0	307	0	204	0
V/C Ratio(X)	0.02	0.33	0.02	0.15	0.25	0.00	0.04	0.00	0.21	0.00	0.00	0.00
Avail Cap(c_a), veh/h	701	1085	922	788	1368	0	341	0	402	0	316	0
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	11.8	16.4	11.9	4.8	2.8	0.0	28.3	0.0	24.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.8	0.0	0.1	0.4	0.0	0.1	0.0	0.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	6.3	0.4	0.6	2.2	0.0	0.2	0.0	1.1	0.0	0.0	0.0
LnGrp Delay(d),s/veh	11.8	17.2	11.9	4.9	3.2	0.0	28.3	0.0	24.3	0.0	0.0	0.0
LnGrp LOS	B	B	B	A	A		C		C			
Approach Vol, veh/h		392			446			76			0	
Approach Delay, s/veh		16.7			3.6			24.9			0.0	
Approach LOS		B			A			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	11.0	51.3		12.8		62.2		12.8
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s	11.0	37.0		12.0		53.0		12.0
Max Q Clear Time (g_c+I1), s	3.2	14.0		0.0		6.2		4.4
Green Ext Time (p_c), s	0.1	2.2		0.0		2.3		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	80	310	380	380	340	40
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	179.2	179.2
Adj Flow Rate, veh/h	87	337	413	413	370	43
Adj No. of Lanes	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	6	6
Cap, veh/h	519	2442	1000	850	496	228
Arrive On Green	0.08	0.70	0.55	0.55	0.15	0.15
Sat Flow, veh/h	1740	3563	1827	1553	3312	1524
Grp Volume(v), veh/h	87	337	413	413	370	43
Grp Sat Flow(s),veh/h/ln	1740	1736	1827	1553	1656	1524
Q Serve(g_s), s	1.2	2.2	9.0	11.2	7.3	1.7
Cycle Q Clear(g_c), s	1.2	2.2	9.0	11.2	7.3	1.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	519	2442	1000	850	496	228
V/C Ratio(X)	0.17	0.14	0.41	0.49	0.75	0.19
Avail Cap(c_a), veh/h	604	2442	1000	850	825	380
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.2	3.3	9.0	9.5	27.8	25.4
Incr Delay (d2), s/veh	0.2	0.1	1.3	2.0	2.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.1	4.8	5.2	3.5	1.5
LnGrp Delay(d),s/veh	5.3	3.4	10.3	11.5	30.0	25.8
LnGrp LOS	A	A	B	B	C	C
Approach Vol, veh/h		424	826		413	
Approach Delay, s/veh		3.8	10.9		29.6	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		59.8		15.2	10.7	49.1		
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		
Max Green Setting (Gmax), s		48.0		17.0	9.0	34.0		
Max Q Clear Time (g_c+I1), s		4.2		9.3	3.2	13.2		
Green Ext Time (p_c), s		4.3		0.9	0.1	4.0		

Intersection Summary	
HCM 2010 Ctrl Delay	13.7
HCM 2010 LOS	B

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	540	0	0	270	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0			5.0				
Lane Util. Factor					0.95			0.95				
Frt					1.00			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3471			3471				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3471			3471				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	587	0	0	293	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	587	0	0	293	0	0	0	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type					NA			NA				
Protected Phases					4			2				
Permitted Phases												
Actuated Green, G (s)					33.0			32.0				
Effective Green, g (s)					33.0			32.0				
Actuated g/C Ratio					0.44			0.43				
Clearance Time (s)					5.0			5.0				
Lane Grp Cap (vph)					1527			1480				
v/s Ratio Prot					c0.17			c0.08				
v/s Ratio Perm												
v/c Ratio					0.38			0.20				
Uniform Delay, d1					14.2			13.5				
Progression Factor					0.70			0.82				
Incremental Delay, d2					0.7			0.3				
Delay (s)					10.6			11.3				
Level of Service					B			B				
Approach Delay (s)		0.0			10.6			11.3			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑			↰	
Volume (vph)	0	270	0	0	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	
Lane Util. Factor		0.95			1.00	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		3471			1687	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		3471			1687	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	293	0	0	22	0
RTOR Reduction (vph)	0	0	0	0	12	0
Lane Group Flow (vph)	0	293	0	0	10	0
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type		NA			Prot	
Protected Phases		2			4	
Permitted Phases						
Actuated Green, G (s)		32.0			33.0	
Effective Green, g (s)		32.0			33.0	
Actuated g/C Ratio		0.43			0.44	
Clearance Time (s)		5.0			5.0	
Lane Grp Cap (vph)		1480			742	
v/s Ratio Prot		c0.08			c0.01	
v/s Ratio Perm						
v/c Ratio		0.20			0.01	
Uniform Delay, d1		13.5			11.8	
Progression Factor		0.06			1.00	
Incremental Delay, d2		0.3			0.0	
Delay (s)		1.0			11.9	
Level of Service		A			B	
Approach Delay (s)		1.0	0.0		11.9	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	1.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.10		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑			↱
Volume (vph)	0	0	540	0	0	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.0			5.0
Lane Util. Factor			0.95			1.00
Frt			1.00			0.86
Flt Protected			1.00			1.00
Satd. Flow (prot)			3471			1536
Flt Permitted			1.00			1.00
Satd. Flow (perm)			3471			1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	587	0	0	239
RTOR Reduction (vph)	0	0	0	0	0	109
Lane Group Flow (vph)	0	0	587	0	0	130
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type			NA			Prot
Protected Phases			4			2
Permitted Phases						
Actuated Green, G (s)			33.0			32.0
Effective Green, g (s)			33.0			32.0
Actuated g/C Ratio			0.44			0.43
Clearance Time (s)			5.0			5.0
Lane Grp Cap (vph)			1527			655
v/s Ratio Prot			c0.17			c0.08
v/s Ratio Perm						
v/c Ratio			0.38			0.20
Uniform Delay, d1			14.2			13.5
Progression Factor			0.05			1.00
Incremental Delay, d2			0.7			0.7
Delay (s)			1.4			14.1
Level of Service			A			B
Approach Delay (s)		0.0	1.4		14.1	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	5.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	170	0	0	0	0	0	0	0	0	340	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3471									3471	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3471									3471	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	185	0	0	0	0	0	0	0	0	370	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	185	0	0	0	0	0	0	0	0	370	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA									NA	
Protected Phases		2									4	
Permitted Phases												
Actuated Green, G (s)		40.0									25.0	
Effective Green, g (s)		40.0									25.0	
Actuated g/C Ratio		0.53									0.33	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1851									1157	
v/s Ratio Prot		c0.05									c0.11	
v/s Ratio Perm												
v/c Ratio		0.10									0.32	
Uniform Delay, d1		8.6									18.7	
Progression Factor		0.48									1.00	
Incremental Delay, d2		0.1									0.7	
Delay (s)		4.2									19.4	
Level of Service		A									B	
Approach Delay (s)		4.2			0.0			0.0			19.4	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	0	0	0	340	340	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	
Lane Util. Factor				0.95	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	0.95	
Satd. Flow (prot)				3471	1687	
Flt Permitted				1.00	0.95	
Satd. Flow (perm)				3471	1687	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	370	370	0
RTOR Reduction (vph)	0	0	0	0	120	0
Lane Group Flow (vph)	0	0	0	370	250	0
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type				NA	Prot	
Protected Phases				4	2	
Permitted Phases						
Actuated Green, G (s)				25.0	40.0	
Effective Green, g (s)				25.0	40.0	
Actuated g/C Ratio				0.33	0.53	
Clearance Time (s)				5.0	5.0	
Lane Grp Cap (vph)				1157	899	
v/s Ratio Prot				c0.11	c0.15	
v/s Ratio Perm						
v/c Ratio				0.32	0.28	
Uniform Delay, d1				18.7	9.6	
Progression Factor				0.08	1.00	
Incremental Delay, d2				0.7	0.8	
Delay (s)				2.1	10.4	
Level of Service				A	B	
Approach Delay (s)	0.0			2.1	10.4	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	170	0	0	0	0	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0					5.0
Lane Util. Factor	0.95					1.00
Frt	1.00					0.86
Flt Protected	1.00					1.00
Satd. Flow (prot)	3471					1536
Flt Permitted	1.00					1.00
Satd. Flow (perm)	3471					1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	0	0	0	0	120
RTOR Reduction (vph)	0	0	0	0	0	80
Lane Group Flow (vph)	185	0	0	0	0	40
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type	NA					Prot
Protected Phases	2					4
Permitted Phases						
Actuated Green, G (s)	40.0					25.0
Effective Green, g (s)	40.0					25.0
Actuated g/C Ratio	0.53					0.33
Clearance Time (s)	5.0					5.0
Lane Grp Cap (vph)	1851					512
v/s Ratio Prot	c0.05					c0.03
v/s Ratio Perm						
v/c Ratio	0.10					0.08
Uniform Delay, d1	8.6					17.1
Progression Factor	0.24					1.00
Incremental Delay, d2	0.1					0.3
Delay (s)	2.2					17.4
Level of Service	A					B
Approach Delay (s)	2.2			0.0	17.4	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.09		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	310	300	0	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	0	337	326	0	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	326	0	-	0	663	326
Stage 1	-	-	-	-	326	-
Stage 2	-	-	-	-	337	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1222	-	-	-	426	715
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1222	-	-	-	426	715
Mov Cap-2 Maneuver	-	-	-	-	426	-
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	723	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1222	-	-	-	534
HCM Lane V/C Ratio	-	-	-	-	0.041
HCM Control Delay (s)	0	-	-	-	12
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	380	10	20	400	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	413	11	22	435	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	424	0	896	212
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	478	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1118	-	295	794
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	623	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1118	-	289	794
Mov Cap-2 Maneuver	-	-	-	-	289	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	611	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	424	-	-	1118	-
HCM Lane V/C Ratio	0.051	-	-	0.019	-
HCM Control Delay (s)	13.9	-	-	8.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	60	140	80	40	280	20	70	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	65	152	87	43	304	22	76	11	33

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	326	0	0	239	0	0	739	739	196
Stage 1	-	-	-	-	-	-	326	326	-
Stage 2	-	-	-	-	-	-	413	413	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1222	-	-	1316	-	-	333	345	845
Stage 1	-	-	-	-	-	-	687	648	-
Stage 2	-	-	-	-	-	-	616	594	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1222	-	-	1316	-	-	295	311	845
Mov Cap-2 Maneuver	-	-	-	-	-	-	295	311	-
Stage 1	-	-	-	-	-	-	644	608	-
Stage 2	-	-	-	-	-	-	572	570	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	0.9	19.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	361	1222	-	-	1316	-	-	363
HCM Lane V/C Ratio	0.331	0.053	-	-	0.033	-	-	0.09
HCM Control Delay (s)	19.8	8.1	0	-	7.8	0	-	15.9
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.4	0.2	-	-	0.1	-	-	0.3

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	750	772	315
Stage 1	402	402	-
Stage 2	348	370	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	328	330	725
Stage 1	625	600	-
Stage 2	668	620	-
Platoon blocked, %			
Mov Cap-1 Maneuver	284	297	725
Mov Cap-2 Maneuver	284	297	-
Stage 1	586	576	-
Stage 2	592	582	-

Approach	SB
HCM Control Delay, s	15.9
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	10	20	440	370	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	6	6	6	6
Mvmt Flow	0	11	22	478	402	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	924	402	402	0	-	0
Stage 1	402	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.16	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	299	648	1135	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	291	648	1135	-	-	-
Mov Cap-2 Maneuver	291	-	-	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	580	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1135	-	648	-	-
HCM Lane V/C Ratio	0.019	-	0.017	-	-
HCM Control Delay (s)	8.2	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	10	410	30	10	340
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	33	11	446	33	11	370

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	853	462	0	0	478	0
Stage 1	462	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	324	592	-	-	1084	-
Stage 1	626	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	320	592	-	-	1084	-
Mov Cap-2 Maneuver	320	-	-	-	-	-
Stage 1	626	-	-	-	-	-
Stage 2	666	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.3	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	362	1084	-
HCM Lane V/C Ratio	-	-	0.12	0.01	-
HCM Control Delay (s)	-	-	16.3	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	170	110	130	210	70	120
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	186.3	186.3
Adj Flow Rate, veh/h	185	120	141	228	76	130
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	2	2
Cap, veh/h	921	783	811	1301	253	226
Arrive On Green	0.50	0.50	0.27	1.00	0.14	0.14
Sat Flow, veh/h	1827	1553	1740	1827	1774	1583
Grp Volume(v), veh/h	185	120	141	228	76	130
Grp Sat Flow(s),veh/h/ln	1827	1553	1740	1827	1774	1583
Q Serve(g_s), s	3.8	2.9	1.9	0.0	2.6	5.3
Cycle Q Clear(g_c), s	3.8	2.9	1.9	0.0	2.6	5.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	921	783	811	1301	253	226
V/C Ratio(X)	0.20	0.15	0.17	0.18	0.30	0.58
Avail Cap(c_a), veh/h	921	783	929	1301	413	368
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.98	0.98	1.00	1.00
Uniform Delay (d), s/veh	9.4	9.2	3.7	0.0	26.4	27.6
Incr Delay (d2), s/veh	0.5	0.4	0.1	0.3	0.7	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	1.3	0.9	0.1	1.3	2.5
LnGrp Delay(d),s/veh	9.9	9.6	3.8	0.3	27.1	29.9
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h	305			369	206	
Approach Delay, s/veh	9.8			1.6	28.8	
Approach LOS	A			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.3	45.9				60.2		14.8
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	14.0	30.0				49.0		16.0
Max Q Clear Time (g_c+I1), s	3.9	5.8				2.0		7.3
Green Ext Time (p_c), s	0.2	1.5				1.6		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	270	10	150	320	10	10	0	80	10	0	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	190.0	190.0	186.3	186.3	190.0	186.3	190.0
Adj Flow Rate, veh/h	11	293	11	163	348	11	11	0	87	11	0	11
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	672	1046	889	719	1295	41	282	0	348	146	23	94
Arrive On Green	0.19	0.19	0.19	0.09	0.74	0.74	0.13	0.00	0.13	0.13	0.00	0.13
Sat Flow, veh/h	999	1827	1553	1740	1761	56	1440	0	1583	565	180	745
Grp Volume(v), veh/h	11	293	11	163	0	359	11	0	87	22	0	0
Grp Sat Flow(s),veh/h/ln	999	1827	1553	1740	0	1817	1440	0	1583	1490	0	0
Q Serve(g_s), s	0.6	9.9	0.4	2.3	0.0	4.7	0.0	0.0	3.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.6	9.9	0.4	2.3	0.0	4.7	0.4	0.0	3.3	0.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	0.50		0.50
Lane Grp Cap(c), veh/h	672	1046	889	719	0	1336	282	0	348	263	0	0
V/C Ratio(X)	0.02	0.28	0.01	0.23	0.00	0.27	0.04	0.00	0.25	0.08	0.00	0.00
Avail Cap(c_a), veh/h	672	1046	889	871	0	1336	338	0	411	320	0	0
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.8	16.5	12.7	4.9	0.0	3.2	27.7	0.0	23.2	27.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.2	0.0	0.5	0.1	0.0	0.4	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	5.2	0.2	1.1	0.0	2.5	0.2	0.0	1.5	0.4	0.0	0.0
LnGrp Delay(d),s/veh	12.8	17.2	12.7	5.1	0.0	3.6	27.7	0.0	23.6	28.0	0.0	0.0
LnGrp LOS	B	B	B	A		A	C		C	C		
Approach Vol, veh/h		315			522			98			22	
Approach Delay, s/veh		16.9			4.1			24.1			28.0	
Approach LOS		B			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	11.7	49.2		14.1		60.9		14.1
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s	13.0	35.0		12.0		53.0		12.0
Max Q Clear Time (g_c+I1), s	4.3	11.9		2.8		6.7		5.3
Green Ext Time (p_c), s	0.3	2.0		0.2		2.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	80	280	400	160	210	80
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	179.2	179.2
Adj Flow Rate, veh/h	87	304	435	174	228	87
Adj No. of Lanes	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	6	6
Cap, veh/h	588	2508	1046	889	459	211
Arrive On Green	0.08	0.72	0.57	0.57	0.14	0.14
Sat Flow, veh/h	1740	3563	1827	1553	3312	1524
Grp Volume(v), veh/h	87	304	435	174	228	87
Grp Sat Flow(s),veh/h/ln	1740	1736	1827	1553	1656	1524
Q Serve(g_s), s	1.2	1.9	9.6	3.9	4.6	3.8
Cycle Q Clear(g_c), s	1.2	1.9	9.6	3.9	4.6	3.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	588	2508	1046	889	459	211
V/C Ratio(X)	0.15	0.12	0.42	0.20	0.50	0.41
Avail Cap(c_a), veh/h	666	2508	1046	889	598	275
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	4.9	3.0	8.6	7.4	28.7	28.3
Incr Delay (d2), s/veh	0.1	0.1	1.2	0.5	0.8	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.9	5.2	1.8	2.1	3.3
LnGrp Delay(d),s/veh	5.0	3.1	9.8	7.9	29.5	29.6
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h		391	609		315	
Approach Delay, s/veh		3.6	9.3		29.5	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		60.0		15.0	10.8	49.2		
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		
Max Green Setting (Gmax), s		52.0		13.0	9.0	38.0		
Max Q Clear Time (g_c+I1), s		3.9		6.6	3.2	11.6		
Green Ext Time (p_c), s		3.1		0.6	0.1	3.0		

Intersection Summary	
HCM 2010 Ctrl Delay	12.4
HCM 2010 LOS	B

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	410	0	0	270	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0			5.0				
Lane Util. Factor					0.95			0.95				
Frt					1.00			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3471			3471				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3471			3471				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	446	0	0	293	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	446	0	0	293	0	0	0	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type					NA			NA				
Protected Phases					4			2				
Permitted Phases												
Actuated Green, G (s)					33.0			32.0				
Effective Green, g (s)					33.0			32.0				
Actuated g/C Ratio					0.44			0.43				
Clearance Time (s)					5.0			5.0				
Lane Grp Cap (vph)					1527			1480				
v/s Ratio Prot					c0.13			c0.08				
v/s Ratio Perm												
v/c Ratio					0.29			0.20				
Uniform Delay, d1					13.5			13.5				
Progression Factor					0.40			0.88				
Incremental Delay, d2					0.5			0.3				
Delay (s)					5.9			12.1				
Level of Service					A			B				
Approach Delay (s)		0.0			5.9			12.1			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑			↰	
Volume (vph)	0	270	0	0	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	
Lane Util. Factor		0.95			1.00	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		3471			1687	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		3471			1687	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	293	0	0	11	0
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	293	0	0	5	0
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type		NA			Prot	
Protected Phases		2			4	
Permitted Phases						
Actuated Green, G (s)		32.0			33.0	
Effective Green, g (s)		32.0			33.0	
Actuated g/C Ratio		0.43			0.44	
Clearance Time (s)		5.0			5.0	
Lane Grp Cap (vph)		1480			742	
v/s Ratio Prot		c0.08			c0.00	
v/s Ratio Perm						
v/c Ratio		0.20			0.01	
Uniform Delay, d1		13.5			11.8	
Progression Factor		0.18			1.00	
Incremental Delay, d2		0.3			0.0	
Delay (s)		2.8			11.8	
Level of Service		A			B	
Approach Delay (s)		2.8	0.0		11.8	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	3.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.10		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑			↱
Volume (vph)	0	0	410	0	0	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.0			5.0
Lane Util. Factor			0.95			1.00
Frt			1.00			0.86
Flt Protected			1.00			1.00
Satd. Flow (prot)			3471			1536
Flt Permitted			1.00			1.00
Satd. Flow (perm)			3471			1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	446	0	0	163
RTOR Reduction (vph)	0	0	0	0	0	93
Lane Group Flow (vph)	0	0	446	0	0	70
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type			NA			Prot
Protected Phases			4			2
Permitted Phases						
Actuated Green, G (s)			33.0			32.0
Effective Green, g (s)			33.0			32.0
Actuated g/C Ratio			0.44			0.43
Clearance Time (s)			5.0			5.0
Lane Grp Cap (vph)			1527			655
v/s Ratio Prot			c0.13			c0.05
v/s Ratio Perm						
v/c Ratio			0.29			0.11
Uniform Delay, d1			13.5			12.9
Progression Factor			0.03			1.00
Incremental Delay, d2			0.5			0.3
Delay (s)			0.9			13.2
Level of Service			A			B
Approach Delay (s)		0.0	0.9		13.2	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	4.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑									↑↑	
Volume (vph)	0	150	0	0	0	0	0	0	0	0	270	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3471									3471	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3471									3471	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	163	0	0	0	0	0	0	0	0	293	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	163	0	0	0	0	0	0	0	0	293	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA									NA	
Protected Phases		2									4	
Permitted Phases												
Actuated Green, G (s)		38.0									27.0	
Effective Green, g (s)		38.0									27.0	
Actuated g/C Ratio		0.51									0.36	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1758									1249	
v/s Ratio Prot		c0.05									c0.08	
v/s Ratio Perm												
v/c Ratio		0.09									0.23	
Uniform Delay, d1		9.6									16.8	
Progression Factor		0.96									1.00	
Incremental Delay, d2		0.1									0.4	
Delay (s)		9.3									17.2	
Level of Service		A									B	
Approach Delay (s)		9.3			0.0			0.0			17.2	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	0	0	0	270	210	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	
Lane Util. Factor				0.95	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	0.95	
Satd. Flow (prot)				3471	1687	
Flt Permitted				1.00	0.95	
Satd. Flow (perm)				3471	1687	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	293	228	0
RTOR Reduction (vph)	0	0	0	0	112	0
Lane Group Flow (vph)	0	0	0	293	116	0
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type				NA	Prot	
Protected Phases				4	2	
Permitted Phases						
Actuated Green, G (s)				27.0	38.0	
Effective Green, g (s)				27.0	38.0	
Actuated g/C Ratio				0.36	0.51	
Clearance Time (s)				5.0	5.0	
Lane Grp Cap (vph)				1249	854	
v/s Ratio Prot				c0.08	c0.07	
v/s Ratio Perm						
v/c Ratio				0.23	0.14	
Uniform Delay, d1				16.8	9.8	
Progression Factor				0.08	1.00	
Incremental Delay, d2				0.4	0.3	
Delay (s)				1.8	10.1	
Level of Service				A	B	
Approach Delay (s)	0.0			1.8	10.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	150	0	0	0	0	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0					5.0
Lane Util. Factor	0.95					1.00
Frt	1.00					0.86
Flt Protected	1.00					1.00
Satd. Flow (prot)	3471					1536
Flt Permitted	1.00					1.00
Satd. Flow (perm)	3471					1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	0	0	0	0	76
RTOR Reduction (vph)	0	0	0	0	0	49
Lane Group Flow (vph)	163	0	0	0	0	27
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type	NA					Prot
Protected Phases	2					4
Permitted Phases						
Actuated Green, G (s)	38.0					27.0
Effective Green, g (s)	38.0					27.0
Actuated g/C Ratio	0.51					0.36
Clearance Time (s)	5.0					5.0
Lane Grp Cap (vph)	1758					552
v/s Ratio Prot	c0.05					c0.02
v/s Ratio Perm						
v/c Ratio	0.09					0.05
Uniform Delay, d1	9.6					15.6
Progression Factor	0.04					1.00
Incremental Delay, d2	0.1					0.2
Delay (s)	0.5					15.8
Level of Service	A					B
Approach Delay (s)	0.5			0.0	15.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.07		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	270	270	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	293	293	11	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	304	0	-	0	614	299
Stage 1	-	-	-	-	299	-
Stage 2	-	-	-	-	315	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1246	-	-	-	455	741
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	740	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1246	-	-	-	450	741
Mov Cap-2 Maneuver	-	-	-	-	450	-
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	732	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1246	-	-	-	560
HCM Lane V/C Ratio	0.009	-	-	-	0.039
HCM Control Delay (s)	7.9	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	350	10	10	470	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	380	11	11	511	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	391	0	919	196
Stage 1	-	-	-	-	386	-
Stage 2	-	-	-	-	533	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1150	-	285	813
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	587	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1150	-	282	813
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	657	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	419	-	-	1150	-
HCM Lane V/C Ratio	0.052	-	-	0.009	-
HCM Control Delay (s)	14.1	-	-	8.2	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	160	50	20	210	10	70	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	174	54	22	228	11	76	11	11

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	239	0	0	228	0	0	511	506	201
Stage 1	-	-	-	-	-	-	223	223	-
Stage 2	-	-	-	-	-	-	288	283	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1316	-	-	1328	-	-	473	469	840
Stage 1	-	-	-	-	-	-	780	719	-
Stage 2	-	-	-	-	-	-	720	677	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1316	-	-	1328	-	-	448	455	840
Mov Cap-2 Maneuver	-	-	-	-	-	-	448	455	-
Stage 1	-	-	-	-	-	-	772	712	-
Stage 2	-	-	-	-	-	-	685	664	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.6	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	473	1316	-	-	1328	-	-	523
HCM Lane V/C Ratio	0.207	0.008	-	-	0.016	-	-	0.062
HCM Control Delay (s)	14.6	7.8	0	-	7.8	0	-	12.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0.1	-	-	0.2

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	511	527	234
Stage 1	277	277	-
Stage 2	234	250	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	473	456	805
Stage 1	729	681	-
Stage 2	769	700	-
Platoon blocked, %			
Mov Cap-1 Maneuver	448	443	805
Mov Cap-2 Maneuver	448	443	-
Stage 1	722	668	-
Stage 2	740	693	-

Approach	SB
HCM Control Delay, s	12.3
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	20	20	220	270	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	6	6	6	6
Mvmt Flow	0	22	22	239	293	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	576	293	293	0	-	0
Stage 1	293	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.16	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	479	746	1246	-	-	-
Stage 1	757	-	-	-	-	-
Stage 2	765	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	469	746	1246	-	-	-
Mov Cap-2 Maneuver	469	-	-	-	-	-
Stage 1	757	-	-	-	-	-
Stage 2	750	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1246	-	746	-	-
HCM Lane V/C Ratio	0.017	-	0.029	-	-
HCM Control Delay (s)	7.9	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	210	10	10	250
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	228	11	11	272

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	527	234	0	0	239	0
Stage 1	234	-	-	-	-	-
Stage 2	293	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	505	795	-	-	1328	-
Stage 1	796	-	-	-	-	-
Stage 2	748	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	500	795	-	-	1328	-
Mov Cap-2 Maneuver	500	-	-	-	-	-
Stage 1	796	-	-	-	-	-
Stage 2	741	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	571	1328	-
HCM Lane V/C Ratio	-	-	0.057	0.008	-
HCM Control Delay (s)	-	-	11.7	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	300	200	250	290	190	260
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	186.3	186.3
Adj Flow Rate, veh/h	326	217	272	315	207	283
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	2	2
Cap, veh/h	771	656	606	1168	382	341
Arrive On Green	0.42	0.42	0.29	1.00	0.22	0.22
Sat Flow, veh/h	1827	1553	1740	1827	1774	1583
Grp Volume(v), veh/h	326	217	272	315	207	283
Grp Sat Flow(s),veh/h/ln	1827	1553	1740	1827	1774	1583
Q Serve(g_s), s	8.6	6.5	5.3	0.0	7.1	11.8
Cycle Q Clear(g_c), s	8.6	6.5	5.3	0.0	7.1	11.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	771	656	606	1168	382	341
V/C Ratio(X)	0.42	0.33	0.45	0.27	0.54	0.83
Avail Cap(c_a), veh/h	771	656	709	1168	541	483
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.95	0.95	1.00	1.00
Uniform Delay (d), s/veh	14.0	13.3	6.5	0.0	24.0	25.8
Incr Delay (d2), s/veh	1.7	1.4	0.5	0.5	1.2	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	3.0	2.4	0.2	3.6	5.9
LnGrp Delay(d),s/veh	15.7	14.7	7.0	0.5	25.2	34.0
LnGrp LOS	B	B	A	A	C	C
Approach Vol, veh/h	543			587	490	
Approach Delay, s/veh	15.3			3.5	30.3	
Approach LOS	B			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.9	40.3				55.2		19.8
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	14.0	25.0				44.0		21.0
Max Q Clear Time (g_c+I1), s	7.3	10.6				2.0		13.8
Green Ext Time (p_c), s	0.4	2.4				2.7		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	540	10	300	500	10	30	0	190	10	0	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	182.7	190.0	190.0	186.3	186.3	190.0	186.3	190.0
Adj Flow Rate, veh/h	11	587	11	326	543	11	33	0	207	11	0	11
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	565	1027	873	728	1309	27	288	0	377	144	22	94
Arrive On Green	1.00	1.00	1.00	0.10	0.73	0.73	0.13	0.00	0.13	0.13	0.00	0.13
Sat Flow, veh/h	835	1827	1553	1740	1784	36	1437	0	1583	542	166	708
Grp Volume(v), veh/h	11	587	11	326	0	554	33	0	207	22	0	0
Grp Sat Flow(s),veh/h/ln	835	1827	1553	1740	0	1821	1437	0	1583	1417	0	0
Q Serve(g_s), s	0.0	0.0	0.0	5.3	0.0	8.7	0.4	0.0	8.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.3	0.0	8.7	1.3	0.0	8.6	0.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	0.50		0.50
Lane Grp Cap(c), veh/h	565	1027	873	728	0	1335	288	0	377	261	0	0
V/C Ratio(X)	0.02	0.57	0.01	0.45	0.00	0.41	0.11	0.00	0.55	0.08	0.00	0.00
Avail Cap(c_a), veh/h	565	1027	873	871	0	1335	288	0	377	261	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	4.4	0.0	3.8	28.7	0.0	25.0	28.5	0.0	0.0
Incr Delay (d2), s/veh	0.1	2.1	0.0	0.4	0.0	1.0	0.2	0.0	1.7	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.6	0.0	2.5	0.0	4.7	0.6	0.0	3.9	0.4	0.0	0.0
LnGrp Delay(d),s/veh	0.1	2.1	0.0	4.8	0.0	4.8	28.9	0.0	26.7	28.7	0.0	0.0
LnGrp LOS	A	A	A	A		A	C		C	C		
Approach Vol, veh/h		609			880			240			22	
Approach Delay, s/veh		2.0			4.8			27.0			28.7	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	12.9	47.1		15.0		60.0		15.0
Change Period (Y+Rc), s	5.0	5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s	14.0	36.0		10.0		55.0		10.0
Max Q Clear Time (g_c+I1), s	7.3	2.0		2.8		10.7		10.6
Green Ext Time (p_c), s	0.6	4.1		0.5		4.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	7.2
HCM 2010 LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	110	640	630	300	460	180
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	179.2	179.2
Adj Flow Rate, veh/h	120	696	685	326	500	196
Adj No. of Lanes	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	6	6
Cap, veh/h	378	2347	948	806	616	283
Arrive On Green	0.09	0.68	0.52	0.52	0.19	0.19
Sat Flow, veh/h	1740	3563	1827	1553	3312	1524
Grp Volume(v), veh/h	120	696	685	326	500	196
Grp Sat Flow(s),veh/h/ln	1740	1736	1827	1553	1656	1524
Q Serve(g_s), s	2.0	5.9	20.9	9.3	10.5	8.7
Cycle Q Clear(g_c), s	2.0	5.9	20.9	9.3	10.5	8.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	378	2347	948	806	616	283
V/C Ratio(X)	0.32	0.30	0.72	0.40	0.81	0.69
Avail Cap(c_a), veh/h	393	2347	948	806	731	336
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.8	4.8	13.4	10.6	28.3	27.6
Incr Delay (d2), s/veh	0.5	0.3	4.8	1.5	6.0	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.9	11.7	4.2	5.3	7.5
LnGrp Delay(d),s/veh	10.3	5.1	18.2	12.1	34.2	32.3
LnGrp LOS	B	A	B	B	C	C
Approach Vol, veh/h		816	1011		696	
Approach Delay, s/veh		5.8	16.2		33.7	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		56.5		18.5	11.4	45.2		
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		
Max Green Setting (Gmax), s		49.0		16.0	7.0	37.0		
Max Q Clear Time (g_c+I1), s		7.9		12.5	4.0	22.9		
Green Ext Time (p_c), s		7.4		1.0	0.1	5.6		

Intersection Summary	
HCM 2010 Ctrl Delay	17.7
HCM 2010 LOS	B

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations					↑↑			↑↑				
Volume (vph)	0	0	0	0	710	0	0	650	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0			5.0				
Lane Util. Factor					0.95			0.95				
Frt					1.00			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3471			3471				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3471			3471				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	772	0	0	707	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	772	0	0	707	0	0	0	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type					NA			NA				
Protected Phases					4			2				
Permitted Phases												
Actuated Green, G (s)					33.0			32.0				
Effective Green, g (s)					33.0			32.0				
Actuated g/C Ratio					0.44			0.43				
Clearance Time (s)					5.0			5.0				
Lane Grp Cap (vph)					1527			1480				
v/s Ratio Prot					c0.22			c0.20				
v/s Ratio Perm												
v/c Ratio					0.51			0.48				
Uniform Delay, d1					15.1			15.5				
Progression Factor					0.75			0.82				
Incremental Delay, d2					1.1			1.0				
Delay (s)					12.4			13.7				
Level of Service					B			B				
Approach Delay (s)		0.0			12.4			13.7			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑			↰	
Volume (vph)	0	650	0	0	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	
Lane Util. Factor		0.95			1.00	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		3471			1687	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		3471			1687	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	707	0	0	11	0
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	707	0	0	5	0
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type		NA			Prot	
Protected Phases		2			4	
Permitted Phases						
Actuated Green, G (s)		32.0			33.0	
Effective Green, g (s)		32.0			33.0	
Actuated g/C Ratio		0.43			0.44	
Clearance Time (s)		5.0			5.0	
Lane Grp Cap (vph)		1480			742	
v/s Ratio Prot		c0.20			c0.00	
v/s Ratio Perm						
v/c Ratio		0.48			0.01	
Uniform Delay, d1		15.5			11.8	
Progression Factor		0.11			1.00	
Incremental Delay, d2		1.0			0.0	
Delay (s)		2.7			11.8	
Level of Service		A			B	
Approach Delay (s)		2.7	0.0		11.8	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	2.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑			↱
Volume (vph)	0	0	710	0	0	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.0			5.0
Lane Util. Factor			0.95			1.00
Frt			1.00			0.86
Flt Protected			1.00			1.00
Satd. Flow (prot)			3471			1536
Flt Permitted			1.00			1.00
Satd. Flow (perm)			3471			1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	772	0	0	239
RTOR Reduction (vph)	0	0	0	0	0	61
Lane Group Flow (vph)	0	0	772	0	0	178
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type			NA			Prot
Protected Phases			4			2
Permitted Phases						
Actuated Green, G (s)			33.0			32.0
Effective Green, g (s)			33.0			32.0
Actuated g/C Ratio			0.44			0.43
Clearance Time (s)			5.0			5.0
Lane Grp Cap (vph)			1527			655
v/s Ratio Prot			c0.22			c0.12
v/s Ratio Perm						
v/c Ratio			0.51			0.27
Uniform Delay, d1			15.1			13.9
Progression Factor			0.04			1.00
Incremental Delay, d2			1.0			1.0
Delay (s)			1.7			15.0
Level of Service			A			B
Approach Delay (s)		0.0	1.7		15.0	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑									↑↑	
Volume (vph)	0	440	0	0	0	0	0	0	0	0	390	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3471									3471	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3471									3471	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	478	0	0	0	0	0	0	0	0	424	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	478	0	0	0	0	0	0	0	0	424	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA									NA	
Protected Phases		2									4	
Permitted Phases												
Actuated Green, G (s)		39.0									26.0	
Effective Green, g (s)		39.0									26.0	
Actuated g/C Ratio		0.52									0.35	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1804									1203	
v/s Ratio Prot		c0.14									c0.12	
v/s Ratio Perm												
v/c Ratio		0.26									0.35	
Uniform Delay, d1		10.0									18.2	
Progression Factor		0.41									1.00	
Incremental Delay, d2		0.3									0.8	
Delay (s)		4.5									19.0	
Level of Service		A									B	
Approach Delay (s)		4.5			0.0			0.0			19.0	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↰	
Volume (vph)	0	0	0	390	430	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	
Lane Util. Factor				0.95	1.00	
Frt				1.00	1.00	
Flt Protected				1.00	0.95	
Satd. Flow (prot)				3471	1687	
Flt Permitted				1.00	0.95	
Satd. Flow (perm)				3471	1687	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	424	467	0
RTOR Reduction (vph)	0	0	0	0	106	0
Lane Group Flow (vph)	0	0	0	424	361	0
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type				NA	Prot	
Protected Phases				4	2	
Permitted Phases						
Actuated Green, G (s)				26.0	39.0	
Effective Green, g (s)				26.0	39.0	
Actuated g/C Ratio				0.35	0.52	
Clearance Time (s)				5.0	5.0	
Lane Grp Cap (vph)				1203	877	
v/s Ratio Prot				c0.12	c0.21	
v/s Ratio Perm						
v/c Ratio				0.35	0.41	
Uniform Delay, d1				18.2	11.0	
Progression Factor				0.08	1.00	
Incremental Delay, d2				0.8	1.4	
Delay (s)				2.2	12.4	
Level of Service				A	B	
Approach Delay (s)	0.0			2.2	12.4	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	440	0	0	0	0	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0					5.0
Lane Util. Factor	0.95					1.00
Frt	1.00					0.86
Flt Protected	1.00					1.00
Satd. Flow (prot)	3471					1536
Flt Permitted	1.00					1.00
Satd. Flow (perm)	3471					1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	478	0	0	0	0	152
RTOR Reduction (vph)	0	0	0	0	0	99
Lane Group Flow (vph)	478	0	0	0	0	53
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type	NA					Prot
Protected Phases	2					4
Permitted Phases						
Actuated Green, G (s)	39.0					26.0
Effective Green, g (s)	39.0					26.0
Actuated g/C Ratio	0.52					0.35
Clearance Time (s)	5.0					5.0
Lane Grp Cap (vph)	1804					532
v/s Ratio Prot	c0.14					c0.03
v/s Ratio Perm						
v/c Ratio	0.26					0.10
Uniform Delay, d1	10.0					16.6
Progression Factor	0.17					1.00
Incremental Delay, d2	0.4					0.4
Delay (s)	2.0					16.9
Level of Service	A					B
Approach Delay (s)	2.0			0.0	16.9	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	490	460	20	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	533	500	22	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	522	0	-	0	1065	511
Stage 1	-	-	-	-	511	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1034	-	-	-	246	563
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1034	-	-	-	242	563
Mov Cap-2 Maneuver	-	-	-	-	242	-
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	566	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1034	-	-	-	338
HCM Lane V/C Ratio	0.011	-	-	-	0.064
HCM Control Delay (s)	8.5	0	-	-	16.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	730	10	10	800	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	793	11	11	870	11	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	804	0	1690	402
Stage 1	-	-	-	-	799	-
Stage 2	-	-	-	-	891	-
Critical Hdwy	-	-	4.18	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.24	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	803	-	93	599
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	400	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	803	-	92	599
Mov Cap-2 Maneuver	-	-	-	-	92	-
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	395	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	25.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	-	-	803	-
HCM Lane V/C Ratio	0.155	-	-	0.014	-
HCM Control Delay (s)	25.2	-	-	9.5	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	430	140	40	270	10	90	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	467	152	43	293	11	98	11	33

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	304	0	0	620	0	0	989	956	543
Stage 1	-	-	-	-	-	-	565	565	-
Stage 2	-	-	-	-	-	-	424	391	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1246	-	-	951	-	-	226	258	540
Stage 1	-	-	-	-	-	-	510	508	-
Stage 2	-	-	-	-	-	-	608	607	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1246	-	-	951	-	-	188	241	540
Mov Cap-2 Maneuver	-	-	-	-	-	-	188	241	-
Stage 1	-	-	-	-	-	-	503	501	-
Stage 2	-	-	-	-	-	-	515	574	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	1.1	44.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	226	1246	-	-	951	-	-	452
HCM Lane V/C Ratio	0.625	0.009	-	-	0.046	-	-	0.192
HCM Control Delay (s)	44.3	7.9	0	-	9	0	-	14.9
HCM Lane LOS	E	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	3.7	0	-	-	0.1	-	-	0.7

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	60
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	65

Major/Minor	Minor2		
Conflicting Flow All	973	1027	299
Stage 1	386	386	-
Stage 2	587	641	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	231	234	741
Stage 1	637	610	-
Stage 2	496	469	-
Platoon blocked, %			
Mov Cap-1 Maneuver	199	218	741
Mov Cap-2 Maneuver	199	218	-
Stage 1	628	577	-
Stage 2	450	462	-

Approach	SB
HCM Control Delay, s	14.9
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	70	0	410	570	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	6	6	6	6
Mvmt Flow	0	76	0	446	620	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1066	620	620	0	-	0
Stage 1	620	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.16	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	246	488	941	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	645	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	246	488	941	-	-	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	536	-	-	-	-	-
Stage 2	645	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	941	-	488	-	-
HCM Lane V/C Ratio	-	-	0.156	-	-
HCM Control Delay (s)	0	-	13.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	390	20	10	550
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	424	22	11	598

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1055	435	0	0	446	0
Stage 1	435	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	246	613	-	-	1114	-
Stage 1	644	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	242	613	-	-	1114	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	521	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.3	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	303	1114	-
HCM Lane V/C Ratio	-	-	0.108	0.01	-
HCM Control Delay (s)	-	-	18.3	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

DESIGN YEAR 2039 'BUILD OPTION 2' CONDITIONS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	430	50	70	300	70	40	0	90	40	0	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	182.7	182.7	182.7	182.7	186.3	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	43	467	54	76	326	76	43	0	98	43	0	33
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	4	4	2	2	2	2	2	2	2
Cap, veh/h	731	1040	884	599	1077	934	270	0	222	223	0	222
Arrive On Green	0.06	0.57	0.57	0.10	0.78	0.78	0.14	0.00	0.14	0.14	0.00	0.14
Sat Flow, veh/h	1774	1827	1553	1740	1827	1583	1191	0	1583	1292	0	1583
Grp Volume(v), veh/h	43	467	54	76	326	76	43	0	98	43	0	33
Grp Sat Flow(s),veh/h/ln	1774	1827	1553	1740	1827	1583	1192	0	1583	1292	0	1583
Q Serve(g_s), s	0.7	10.4	1.1	1.1	3.5	0.8	2.0	0.0	4.0	2.2	0.0	1.3
Cycle Q Clear(g_c), s	0.7	10.4	1.1	1.1	3.5	0.8	3.3	0.0	4.0	5.5	0.0	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	731	1040	884	599	1077	934	270	0	222	223	0	222
V/C Ratio(X)	0.06	0.45	0.06	0.13	0.30	0.08	0.16	0.00	0.44	0.19	0.00	0.15
Avail Cap(c_a), veh/h	883	1040	884	713	1077	934	370	0	338	318	0	338
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.98	0.98	0.98	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.1	8.8	6.8	5.3	3.5	3.2	28.0	0.0	27.7	29.9	0.0	26.5
Incr Delay (d2), s/veh	0.0	1.4	0.1	0.1	0.7	0.2	0.3	0.0	1.4	0.4	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	5.6	0.5	0.5	2.0	0.4	0.8	0.0	1.8	0.8	0.0	0.6
LnGrp Delay(d),s/veh	5.1	10.2	6.9	5.4	4.2	3.4	28.2	0.0	29.1	30.3	0.0	26.8
LnGrp LOS	A	B	A	A	A	A	C		C	C		C
Approach Vol, veh/h		564			478			141			76	
Approach Delay, s/veh		9.5			4.3			28.8			28.8	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.4	54.7		14.9	9.0	56.2		14.9
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	10.0	40.0		15.0	10.0	40.0		15.0
Max Q Clear Time (g_c+I1), s	3.1	12.4		7.5	2.7	5.5		6.0
Green Ext Time (p_c), s	0.1	2.9		0.4	0.0	2.9		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	510	20	90	420	130	10	0	60	90	0	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	182.7	182.7	190.0	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	33	554	22	98	457	141	11	0	65	98	0	11
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	534	1819	72	702	1507	461	308	0	233	289	0	233
Arrive On Green	0.10	1.00	1.00	0.03	0.19	0.19	0.15	0.00	0.15	0.15	0.00	0.15
Sat Flow, veh/h	1740	3404	135	1740	2619	802	1341	0	1583	1331	0	1583
Grp Volume(v), veh/h	33	282	294	98	302	296	11	0	65	98	0	11
Grp Sat Flow(s),veh/h/ln	1740	1736	1803	1740	1736	1685	1341	0	1583	1331	0	1583
Q Serve(g_s), s	0.5	0.0	0.0	1.5	9.8	9.9	0.4	0.0	2.4	4.5	0.0	0.4
Cycle Q Clear(g_c), s	0.5	0.0	0.0	1.5	9.8	9.9	0.8	0.0	2.4	5.3	0.0	0.4
Prop In Lane	1.00		0.07	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	534	928	964	702	998	969	308	0	233	289	0	233
V/C Ratio(X)	0.06	0.30	0.30	0.14	0.30	0.31	0.04	0.00	0.28	0.34	0.00	0.05
Avail Cap(c_a), veh/h	715	928	964	813	998	969	529	0	484	500	0	484
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	0.0	0.0	5.2	15.2	15.3	24.3	0.0	24.8	26.5	0.0	24.0
Incr Delay (d2), s/veh	0.0	0.8	0.8	0.1	0.8	0.8	0.0	0.0	0.6	0.7	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.2	0.2	0.7	4.9	4.8	0.2	0.0	1.1	1.7	0.0	0.2
LnGrp Delay(d),s/veh	6.0	0.8	0.8	5.3	16.0	16.1	24.4	0.0	25.5	27.1	0.0	24.0
LnGrp LOS	A	A	A	A	B	B	C		C	C		C
Approach Vol, veh/h		609			696			76			109	
Approach Delay, s/veh		1.1			14.5			25.3			26.8	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.8	54.5		14.7	8.2	57.2		14.7
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	10.0	35.0		20.0	10.0	35.0		20.0
Max Q Clear Time (g_c+I1), s	3.5	2.0		7.3	2.5	11.9		4.4
Green Ext Time (p_c), s	0.1	3.8		0.4	0.0	3.6		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	10.5
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	180	480	540	560	430	110
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	179.2	179.2
Adj Flow Rate, veh/h	196	522	587	609	467	120
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	6	6
Cap, veh/h	454	2368	1806	808	601	276
Arrive On Green	0.03	0.23	0.52	0.52	0.18	0.18
Sat Flow, veh/h	1740	3563	3563	1553	3312	1524
Grp Volume(v), veh/h	196	522	587	609	467	120
Grp Sat Flow(s),veh/h/ln	1740	1736	1736	1553	1656	1524
Q Serve(g_s), s	3.3	9.0	7.2	22.7	9.8	5.1
Cycle Q Clear(g_c), s	3.3	9.0	7.2	22.7	9.8	5.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	454	2368	1806	808	601	276
V/C Ratio(X)	0.43	0.22	0.33	0.75	0.78	0.43
Avail Cap(c_a), veh/h	529	2368	1806	808	904	416
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.8	12.5	10.2	13.9	28.6	26.7
Incr Delay (d2), s/veh	0.6	0.2	0.5	6.4	2.5	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	4.4	3.5	11.1	4.7	4.5
LnGrp Delay(d),s/veh	7.5	12.7	10.6	20.3	31.1	27.7
LnGrp LOS	A	B	B	C	C	C
Approach Vol, veh/h		718	1196		587	
Approach Delay, s/veh		11.3	15.6		30.4	
Approach LOS		B	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		61.7		18.3	11.9	49.8		
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		
Max Green Setting (Gmax), s		50.0		20.0	10.0	35.0		
Max Q Clear Time (g_c+I1), s		11.0		11.8	5.3	24.7		
Green Ext Time (p_c), s		7.9		1.4	0.2	5.0		

Intersection Summary	
HCM 2010 Ctrl Delay	17.8
HCM 2010 LOS	B

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	810	0	0	480	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0			5.0				
Lane Util. Factor					0.95			0.95				
Frt					1.00			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3471			3471				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3471			3471				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	880	0	0	522	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	880	0	0	522	0	0	0	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type					NA			NA				
Protected Phases					4			2				
Permitted Phases												
Actuated Green, G (s)					33.0			37.0				
Effective Green, g (s)					33.0			37.0				
Actuated g/C Ratio					0.41			0.46				
Clearance Time (s)					5.0			5.0				
Lane Grp Cap (vph)					1431			1605				
v/s Ratio Prot					c0.25			c0.15				
v/s Ratio Perm												
v/c Ratio					0.61			0.33				
Uniform Delay, d1					18.5			13.6				
Progression Factor					0.69			1.14				
Incremental Delay, d2					2.0			0.5				
Delay (s)					14.7			16.0				
Level of Service					B			B				
Approach Delay (s)		0.0			14.7			16.0			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑			↰	
Volume (vph)	0	480	0	0	20	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	
Lane Util. Factor		0.95			1.00	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		3471			1687	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		3471			1687	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	522	0	0	22	0
RTOR Reduction (vph)	0	0	0	0	13	0
Lane Group Flow (vph)	0	522	0	0	9	0
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type		NA			Prot	
Protected Phases		2 4!			4!	
Permitted Phases						
Actuated Green, G (s)		80.0			33.0	
Effective Green, g (s)		80.0			33.0	
Actuated g/C Ratio		1.00			0.41	
Clearance Time (s)					5.0	
Lane Grp Cap (vph)		3471			695	
v/s Ratio Prot		c0.15			0.01	
v/s Ratio Perm						
v/c Ratio		0.15			0.01	
Uniform Delay, d1		0.0			13.9	
Progression Factor		1.00			1.00	
Incremental Delay, d2		0.1			0.0	
Delay (s)		0.1			13.9	
Level of Service		A			B	
Approach Delay (s)		0.1	0.0		13.9	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	0.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.17		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑			↱
Volume (vph)	0	0	810	0	0	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.0			5.0
Lane Util. Factor			0.95			1.00
Frt			1.00			0.86
Flt Protected			1.00			1.00
Satd. Flow (prot)			3471			1536
Flt Permitted			1.00			1.00
Satd. Flow (perm)			3471			1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	880	0	0	315
RTOR Reduction (vph)	0	0	0	0	0	169
Lane Group Flow (vph)	0	0	880	0	0	146
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type			NA			Prot
Protected Phases			2 4!			2!
Permitted Phases						
Actuated Green, G (s)			80.0			37.0
Effective Green, g (s)			80.0			37.0
Actuated g/C Ratio			1.00			0.46
Clearance Time (s)						5.0
Lane Grp Cap (vph)			3471			710
v/s Ratio Prot			c0.25			0.09
v/s Ratio Perm						
v/c Ratio			0.25			0.21
Uniform Delay, d1			0.0			12.8
Progression Factor			1.00			1.00
Incremental Delay, d2			0.1			0.7
Delay (s)			0.1			13.4
Level of Service			A			B
Approach Delay (s)		0.0	0.1		13.4	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	3.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑									↑↑	
Volume (vph)	0	350	0	0	0	0	0	0	0	0	500	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3471									3471	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3471									3471	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	380	0	0	0	0	0	0	0	0	543	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	380	0	0	0	0	0	0	0	0	543	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA									NA	
Protected Phases		2									4	
Permitted Phases												
Actuated Green, G (s)		35.0									35.0	
Effective Green, g (s)		35.0									35.0	
Actuated g/C Ratio		0.44									0.44	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1518									1518	
v/s Ratio Prot		c0.11									c0.16	
v/s Ratio Perm												
v/c Ratio		0.25									0.36	
Uniform Delay, d1		14.2									15.0	
Progression Factor		0.50									1.00	
Incremental Delay, d2		0.4									0.7	
Delay (s)		7.5									15.7	
Level of Service		A									B	
Approach Delay (s)		7.5			0.0			0.0			15.7	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	0	0	0	500	470	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	
Lane Util. Factor				0.95	0.97	
Frt				1.00	1.00	
Flt Protected				1.00	0.95	
Satd. Flow (prot)				3471	3273	
Flt Permitted				1.00	0.95	
Satd. Flow (perm)				3471	3273	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	543	511	0
RTOR Reduction (vph)	0	0	0	0	287	0
Lane Group Flow (vph)	0	0	0	543	224	0
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type				NA	Prot	
Protected Phases				2 4!	2!	
Permitted Phases						
Actuated Green, G (s)				80.0	35.0	
Effective Green, g (s)				80.0	35.0	
Actuated g/C Ratio				1.00	0.44	
Clearance Time (s)					5.0	
Lane Grp Cap (vph)				3471	1431	
v/s Ratio Prot				c0.16	0.07	
v/s Ratio Perm						
v/c Ratio				0.16	0.16	
Uniform Delay, d1				0.0	13.6	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.1	0.2	
Delay (s)				0.1	13.8	
Level of Service				A	B	
Approach Delay (s)	0.0			0.1	13.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	350	0	0	0	0	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0					5.0
Lane Util. Factor	0.95					1.00
Frt	1.00					0.86
Flt Protected	1.00					1.00
Satd. Flow (prot)	3471					1536
Flt Permitted	1.00					1.00
Satd. Flow (perm)	3471					1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	380	0	0	0	0	196
RTOR Reduction (vph)	0	0	0	0	0	110
Lane Group Flow (vph)	380	0	0	0	0	86
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type	NA					Prot
Protected Phases	2 4!					4!
Permitted Phases						
Actuated Green, G (s)	80.0					35.0
Effective Green, g (s)	80.0					35.0
Actuated g/C Ratio	1.00					0.44
Clearance Time (s)						5.0
Lane Grp Cap (vph)	3471					672
v/s Ratio Prot	c0.11					c0.06
v/s Ratio Perm						
v/c Ratio	0.11					0.13
Uniform Delay, d1	0.0					13.4
Progression Factor	1.00					1.00
Incremental Delay, d2	0.1					0.4
Delay (s)	0.1					13.8
Level of Service	A					B
Approach Delay (s)	0.1			0.0	13.8	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.13		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	510	370	0	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	0	554	402	0	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	402	0	-	0	956	402
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	554	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1146	-	-	-	286	648
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	575	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1146	-	-	-	286	648
Mov Cap-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	575	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1146	-	-	-	397
HCM Lane V/C Ratio	-	-	-	-	0.055
HCM Control Delay (s)	0	-	-	-	14.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	650	10	20	630	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	707	11	22	685	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	717	0	1098	359
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	386	-
Critical Hdwy	-	-	4.18	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.24	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	867	-	207	638
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	656	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	867	-	202	638
Mov Cap-2 Maneuver	-	-	-	-	202	-
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	639	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	307	-	-	867	-
HCM Lane V/C Ratio	0.071	-	-	0.025	-
HCM Control Delay (s)	17.6	-	-	9.3	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	60	390	80	40	440	20	70	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	65	424	87	43	478	22	76	11	33

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	500	0	0	511	0	0	1185	1185	467
Stage 1	-	-	-	-	-	-	598	598	-
Stage 2	-	-	-	-	-	-	587	587	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1054	-	-	1044	-	-	166	189	596
Stage 1	-	-	-	-	-	-	489	491	-
Stage 2	-	-	-	-	-	-	496	497	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1054	-	-	1044	-	-	138	163	596
Mov Cap-2 Maneuver	-	-	-	-	-	-	138	163	-
Stage 1	-	-	-	-	-	-	446	448	-
Stage 2	-	-	-	-	-	-	448	469	-

Approach	EB	WB	NB
HCM Control Delay, s	1	0.7	58.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	178	1054	-	-	1044	-	-	190
HCM Lane V/C Ratio	0.672	0.062	-	-	0.042	-	-	0.172
HCM Control Delay (s)	58.9	8.6	0	-	8.6	0	-	27.8
HCM Lane LOS	F	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	4	0.2	-	-	0.1	-	-	0.6

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	1196	1217	489
Stage 1	576	576	-
Stage 2	620	641	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	163	181	579
Stage 1	503	502	-
Stage 2	476	469	-
Platoon blocked, %			
Mov Cap-1 Maneuver	131	156	579
Mov Cap-2 Maneuver	131	156	-
Stage 1	459	473	-
Stage 2	401	428	-

Approach	SB
HCM Control Delay, s	27.8
HCM LOS	D

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	10	20	720	530	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	6	6	6	6
Mvmt Flow	0	11	22	783	576	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1402	576	576	0	-	0
Stage 1	576	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.16	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	154	517	978	-	-	-
Stage 1	562	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	148	517	978	-	-	-
Mov Cap-2 Maneuver	148	-	-	-	-	-
Stage 1	562	-	-	-	-	-
Stage 2	413	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	978	-	517	-	-
HCM Lane V/C Ratio	0.022	-	0.021	-	-
HCM Control Delay (s)	8.8	0	12.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	30	10	680	30	10	500
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	33	11	739	33	11	543

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1320	755	0	0	772	0
Stage 1	755	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	170	402	-	-	843	-
Stage 1	457	-	-	-	-	-
Stage 2	561	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	167	402	-	-	843	-
Mov Cap-2 Maneuver	167	-	-	-	-	-
Stage 1	457	-	-	-	-	-
Stage 2	550	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.5	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	196	843	-
HCM Lane V/C Ratio	-	-	0.222	0.013	-
HCM Control Delay (s)	-	-	28.5	9.3	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	330	110	130	250	90	70	0	120	70	0	40
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	182.7	182.7	182.7	182.7	186.3	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	54	359	120	141	272	98	76	0	130	76	0	43
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	4	4	2	2	2	2	2	2	2
Cap, veh/h	757	991	842	639	1039	900	289	0	260	211	0	260
Arrive On Green	0.06	0.54	0.54	0.18	1.00	1.00	0.16	0.00	0.16	0.16	0.00	0.16
Sat Flow, veh/h	1774	1827	1553	1740	1827	1583	1165	0	1583	1255	0	1583
Grp Volume(v), veh/h	54	359	120	141	272	98	76	0	130	76	0	43
Grp Sat Flow(s),veh/h/ln	1774	1827	1553	1740	1827	1583	1165	0	1583	1255	0	1583
Q Serve(g_s), s	0.9	8.3	2.8	2.4	0.0	0.0	3.8	0.0	5.5	4.3	0.0	1.7
Cycle Q Clear(g_c), s	0.9	8.3	2.8	2.4	0.0	0.0	5.5	0.0	5.5	9.8	0.0	1.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	757	991	842	639	1039	900	289	0	260	211	0	260
V/C Ratio(X)	0.07	0.36	0.14	0.22	0.26	0.11	0.26	0.00	0.50	0.36	0.00	0.17
Avail Cap(c_a), veh/h	885	991	842	719	1039	900	342	0	322	260	0	322
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.9	9.6	8.4	5.4	0.0	0.0	28.8	0.0	28.0	32.5	0.0	26.5
Incr Delay (d2), s/veh	0.0	1.0	0.4	0.2	0.6	0.2	0.5	0.0	1.5	1.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	4.4	1.3	1.1	0.2	0.1	1.5	0.0	2.5	1.6	0.0	0.8
LnGrp Delay(d),s/veh	5.9	10.6	8.7	5.5	0.6	0.2	29.3	0.0	29.5	33.5	0.0	26.8
LnGrp LOS	A	B	A	A	A	A	C		C	C		C
Approach Vol, veh/h		533			511			206			119	
Approach Delay, s/veh		9.7			1.9			29.4			31.1	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.6	51.3		17.1	9.7	53.2		17.1
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	10.0	40.0		15.0	10.0	40.0		15.0
Max Q Clear Time (g_c+I1), s	4.4	10.3		11.8	2.9	2.0		7.5
Green Ext Time (p_c), s	0.2	2.6		0.3	0.0	2.7		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	470	10	150	430	190	10	0	80	150	0	30
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	182.7	182.7	190.0	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	43	511	11	163	467	207	11	0	87	163	0	33
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	500	1756	38	707	1280	563	329	0	287	309	0	287
Arrive On Green	0.11	1.00	1.00	0.06	0.37	0.37	0.18	0.00	0.18	0.18	0.00	0.18
Sat Flow, veh/h	1740	3475	75	1740	2347	1033	1239	0	1583	1305	0	1583
Grp Volume(v), veh/h	43	255	267	163	344	330	11	0	87	163	0	33
Grp Sat Flow(s),veh/h/ln	1740	1736	1814	1740	1736	1645	1239	0	1583	1305	0	1583
Q Serve(g_s), s	0.7	0.0	0.0	2.9	10.1	10.2	0.5	0.0	3.3	8.3	0.0	1.2
Cycle Q Clear(g_c), s	0.7	0.0	0.0	2.9	10.1	10.2	1.7	0.0	3.3	10.0	0.0	1.2
Prop In Lane	1.00		0.04	1.00		0.63	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	500	877	917	707	946	897	329	0	287	309	0	287
V/C Ratio(X)	0.09	0.29	0.29	0.23	0.36	0.37	0.03	0.00	0.30	0.53	0.00	0.11
Avail Cap(c_a), veh/h	653	877	917	790	946	897	476	0	457	449	0	457
HCM Platoon Ratio	2.00	2.00	2.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.8	0.0	0.0	6.3	13.2	13.2	24.4	0.0	24.6	28.1	0.0	23.7
Incr Delay (d2), s/veh	0.1	0.8	0.8	0.2	1.1	1.2	0.0	0.0	0.6	1.4	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.2	0.2	1.4	5.1	4.9	0.2	0.0	1.5	3.1	0.0	0.5
LnGrp Delay(d),s/veh	6.9	0.8	0.8	6.4	14.3	14.4	24.4	0.0	25.1	29.5	0.0	23.9
LnGrp LOS	A	A	A	A	B	B	C		C	C		C
Approach Vol, veh/h		565			837			98			196	
Approach Delay, s/veh		1.2			12.8			25.1			28.6	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.7	50.7		17.6	8.9	53.5		17.6
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	10.0	35.0		20.0	10.0	35.0		20.0
Max Q Clear Time (g_c+I1), s	4.9	2.0		12.0	2.7	12.2		5.3
Green Ext Time (p_c), s	0.2	3.9		0.6	0.0	3.8		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	200	500	610	330	290	160
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	179.2	179.2
Adj Flow Rate, veh/h	217	543	663	359	315	174
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	6	6
Cap, veh/h	500	2443	1862	833	515	237
Arrive On Green	0.10	0.70	0.54	0.54	0.16	0.16
Sat Flow, veh/h	1740	3563	3563	1553	3312	1524
Grp Volume(v), veh/h	217	543	663	359	315	174
Grp Sat Flow(s),veh/h/ln	1740	1736	1736	1553	1656	1524
Q Serve(g_s), s	3.4	3.9	7.8	9.9	6.3	7.7
Cycle Q Clear(g_c), s	3.4	3.9	7.8	9.9	6.3	7.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	500	2443	1862	833	515	237
V/C Ratio(X)	0.43	0.22	0.36	0.43	0.61	0.74
Avail Cap(c_a), veh/h	576	2443	1862	833	932	429
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.8	3.7	9.4	9.9	28.0	28.6
Incr Delay (d2), s/veh	0.6	0.2	0.5	1.6	1.2	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.9	3.8	4.6	3.0	6.6
LnGrp Delay(d),s/veh	6.4	3.9	10.0	11.6	29.2	33.0
LnGrp LOS	A	A	A	B	C	C
Approach Vol, veh/h		760	1022		489	
Approach Delay, s/veh		4.6	10.5		30.5	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		64.0		16.0	11.9	52.1		
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		
Max Green Setting (Gmax), s		50.0		20.0	10.0	35.0		
Max Q Clear Time (g_c+I1), s		5.9		9.7	5.4	11.9		
Green Ext Time (p_c), s		6.7		1.3	0.2	6.2		

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	0	0	0	720	0	0	500	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0			5.0				
Lane Util. Factor					0.95			0.95				
Frt					1.00			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3471			3471				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3471			3471				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	783	0	0	543	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	783	0	0	543	0	0	0	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type					NA			NA				
Protected Phases					4			2				
Permitted Phases												
Actuated Green, G (s)					39.0			31.0				
Effective Green, g (s)					39.0			31.0				
Actuated g/C Ratio					0.49			0.39				
Clearance Time (s)					5.0			5.0				
Lane Grp Cap (vph)					1692			1345				
v/s Ratio Prot					c0.23			c0.16				
v/s Ratio Perm												
v/c Ratio					0.46			0.40				
Uniform Delay, d1					13.6			17.8				
Progression Factor					0.53			0.58				
Incremental Delay, d2					0.9			0.9				
Delay (s)					8.0			11.3				
Level of Service					A			B				
Approach Delay (s)		0.0			8.0			11.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑			↰	
Volume (vph)	0	500	0	0	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	
Lane Util. Factor		0.95			1.00	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		3471			1687	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		3471			1687	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	543	0	0	11	0
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	543	0	0	5	0
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type		NA			Prot	
Protected Phases		2 4!			4!	
Permitted Phases						
Actuated Green, G (s)		80.0			39.0	
Effective Green, g (s)		80.0			39.0	
Actuated g/C Ratio		1.00			0.49	
Clearance Time (s)					5.0	
Lane Grp Cap (vph)		3471			822	
v/s Ratio Prot		c0.16			0.00	
v/s Ratio Perm						
v/c Ratio		0.16			0.01	
Uniform Delay, d1		0.0			10.5	
Progression Factor		1.00			1.00	
Incremental Delay, d2		0.1			0.0	
Delay (s)		0.1			10.6	
Level of Service		A			B	
Approach Delay (s)		0.1	0.0		10.6	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	0.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑			↱
Volume (vph)	0	0	720	0	0	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.0			5.0
Lane Util. Factor			0.95			1.00
Frt			1.00			0.86
Flt Protected			1.00			1.00
Satd. Flow (prot)			3471			1536
Flt Permitted			1.00			1.00
Satd. Flow (perm)			3471			1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	783	0	0	239
RTOR Reduction (vph)	0	0	0	0	0	146
Lane Group Flow (vph)	0	0	783	0	0	93
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type			NA			Prot
Protected Phases			2 4!			2!
Permitted Phases						
Actuated Green, G (s)			80.0			31.0
Effective Green, g (s)			80.0			31.0
Actuated g/C Ratio			1.00			0.39
Clearance Time (s)						5.0
Lane Grp Cap (vph)			3471			595
v/s Ratio Prot			c0.23			0.06
v/s Ratio Perm						
v/c Ratio			0.23			0.16
Uniform Delay, d1			0.0			16.0
Progression Factor			1.00			1.00
Incremental Delay, d2			0.1			0.6
Delay (s)			0.1			16.5
Level of Service			A			B
Approach Delay (s)		0.0	0.1		16.5	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	4.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑									↑↑	
Volume (vph)	0	340	0	0	0	0	0	0	0	0	440	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3471									3471	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3471									3471	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	370	0	0	0	0	0	0	0	0	478	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	370	0	0	0	0	0	0	0	0	478	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA									NA	
Protected Phases		2									4	
Permitted Phases												
Actuated Green, G (s)		33.0									37.0	
Effective Green, g (s)		33.0									37.0	
Actuated g/C Ratio		0.41									0.46	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1431									1605	
v/s Ratio Prot		c0.11									c0.14	
v/s Ratio Perm												
v/c Ratio		0.26									0.30	
Uniform Delay, d1		15.5									13.4	
Progression Factor		0.78									1.00	
Incremental Delay, d2		0.4									0.5	
Delay (s)		12.4									13.9	
Level of Service		B									B	
Approach Delay (s)		12.4			0.0			0.0			13.9	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	29.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	0	0	0	440	360	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	
Lane Util. Factor				0.95	0.97	
Frt				1.00	1.00	
Flt Protected				1.00	0.95	
Satd. Flow (prot)				3471	3273	
Flt Permitted				1.00	0.95	
Satd. Flow (perm)				3471	3273	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	478	391	0
RTOR Reduction (vph)	0	0	0	0	230	0
Lane Group Flow (vph)	0	0	0	478	161	0
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type				NA	Prot	
Protected Phases				2 4!	2!	
Permitted Phases						
Actuated Green, G (s)				80.0	33.0	
Effective Green, g (s)				80.0	33.0	
Actuated g/C Ratio				1.00	0.41	
Clearance Time (s)					5.0	
Lane Grp Cap (vph)				3471	1350	
v/s Ratio Prot				c0.14	0.05	
v/s Ratio Perm						
v/c Ratio				0.14	0.12	
Uniform Delay, d1				0.0	14.5	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.1	0.2	
Delay (s)				0.1	14.7	
Level of Service				A	B	
Approach Delay (s)	0.0			0.1	14.7	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	340	0	0	0	0	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0					5.0
Lane Util. Factor	0.95					1.00
Frt	1.00					0.86
Flt Protected	1.00					1.00
Satd. Flow (prot)	3471					1536
Flt Permitted	1.00					1.00
Satd. Flow (perm)	3471					1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	370	0	0	0	0	152
RTOR Reduction (vph)	0	0	0	0	0	82
Lane Group Flow (vph)	370	0	0	0	0	70
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type	NA					Prot
Protected Phases	2 4!					4!
Permitted Phases						
Actuated Green, G (s)	80.0					37.0
Effective Green, g (s)	80.0					37.0
Actuated g/C Ratio	1.00					0.46
Clearance Time (s)						5.0
Lane Grp Cap (vph)	3471					710
v/s Ratio Prot	c0.11					0.05
v/s Ratio Perm						
v/c Ratio	0.11					0.10
Uniform Delay, d1	0.0					12.1
Progression Factor	1.00					1.00
Incremental Delay, d2	0.1					0.3
Delay (s)	0.1					12.4
Level of Service	A					B
Approach Delay (s)	0.1			0.0	12.4	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	3.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.12		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	29.9%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	480	350	10	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	522	380	11	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	391	0	-	0	929	386
Stage 1	-	-	-	-	386	-
Stage 2	-	-	-	-	543	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1157	-	-	-	297	662
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	582	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1157	-	-	-	293	662
Mov Cap-2 Maneuver	-	-	-	-	293	-
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	574	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1157	-	-	-	406
HCM Lane V/C Ratio	0.009	-	-	-	0.054
HCM Control Delay (s)	8.1	0	-	-	14.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	690	10	10	760	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	750	11	11	826	11	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	761	0	1190	380
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	435	-
Critical Hdwy	-	-	4.18	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.24	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	834	-	180	618
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	620	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	834	-	178	618
Mov Cap-2 Maneuver	-	-	-	-	178	-
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	612	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	19.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	276	-	-	834	-
HCM Lane V/C Ratio	0.079	-	-	0.013	-
HCM Control Delay (s)	19.2	-	-	9.4	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	420	50	20	380	10	70	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	457	54	22	413	11	76	11	11

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	424	0	0	511	0	0	978	972	484
Stage 1	-	-	-	-	-	-	505	505	-
Stage 2	-	-	-	-	-	-	473	467	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1125	-	-	1044	-	-	230	252	583
Stage 1	-	-	-	-	-	-	549	540	-
Stage 2	-	-	-	-	-	-	572	562	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1125	-	-	1044	-	-	211	242	583
Mov Cap-2 Maneuver	-	-	-	-	-	-	211	242	-
Stage 1	-	-	-	-	-	-	541	532	-
Stage 2	-	-	-	-	-	-	536	546	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0.4	31.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	231	1125	-	-	1044	-	-	284
HCM Lane V/C Ratio	0.423	0.01	-	-	0.021	-	-	0.115
HCM Control Delay (s)	31.6	8.2	0	-	8.5	0	-	19.3
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2	0	-	-	0.1	-	-	0.4

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	10
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	11

Major/Minor	Minor2		
Conflicting Flow All	978	995	418
Stage 1	462	462	-
Stage 2	516	533	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	230	245	635
Stage 1	580	565	-
Stage 2	542	525	-
Platoon blocked, %			
Mov Cap-1 Maneuver	211	235	635
Mov Cap-2 Maneuver	211	235	-
Stage 1	572	549	-
Stage 2	514	518	-

Approach	SB
HCM Control Delay, s	19.3
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	20	20	510	430	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	6	6	6	6
Mvmt Flow	0	22	22	554	467	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1065	467	467	0	-	0
Stage 1	467	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.16	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	246	596	1074	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	239	596	1074	-	-	-
Mov Cap-2 Maneuver	239	-	-	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	533	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1074	-	596	-	-
HCM Lane V/C Ratio	0.02	-	0.036	-	-
HCM Control Delay (s)	8.4	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	500	10	10	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	543	11	11	446

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1016	549	0	0	554	0
Stage 1	549	-	-	-	-	-
Stage 2	467	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	259	528	-	-	1016	-
Stage 1	571	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	255	528	-	-	1016	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	571	-	-	-	-	-
Stage 2	614	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.1	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	308	1016	-
HCM Lane V/C Ratio	-	-	0.106	0.011	-
HCM Control Delay (s)	-	-	18.1	8.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	110	400	200	250	470	190	190	10	260	160	10	100
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	182.7	182.7	182.7	182.7	186.3	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	120	435	217	272	511	207	207	11	283	174	11	109
Adj No. of Lanes	1	1	1	1	1	1	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	4	4	2	2	2	2	2	2	2
Cap, veh/h	439	656	557	430	735	637	422	18	518	225	48	477
Arrive On Green	0.08	0.36	0.36	0.25	0.80	0.80	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1774	1827	1553	1740	1827	1583	1019	54	1583	1081	147	1458
Grp Volume(v), veh/h	120	435	217	272	511	207	218	0	283	174	0	120
Grp Sat Flow(s),veh/h/ln	1774	1827	1553	1740	1827	1583	1073	0	1583	1081	0	1605
Q Serve(g_s), s	3.2	15.9	8.3	7.9	9.8	2.7	11.8	0.0	11.6	9.9	0.0	4.3
Cycle Q Clear(g_c), s	3.2	15.9	8.3	7.9	9.8	2.7	16.1	0.0	11.6	26.0	0.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	0.95		1.00	1.00		0.91
Lane Grp Cap(c), veh/h	439	656	557	430	735	637	439	0	518	225	0	525
V/C Ratio(X)	0.27	0.66	0.39	0.63	0.69	0.32	0.50	0.00	0.55	0.77	0.00	0.23
Avail Cap(c_a), veh/h	450	656	557	452	735	637	439	0	518	225	0	525
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.42	0.42	0.42	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	21.4	19.0	12.7	5.6	4.9	25.3	0.0	21.9	35.9	0.0	19.5
Incr Delay (d2), s/veh	0.3	5.2	2.0	1.1	2.3	0.6	0.9	0.0	1.2	15.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	8.9	3.9	3.8	5.1	1.2	4.3	0.0	5.2	4.7	0.0	1.9
LnGrp Delay(d),s/veh	14.0	26.7	21.0	13.8	7.9	5.5	26.2	0.0	23.1	51.2	0.0	19.7
LnGrp LOS	B	C	C	B	A	A	C		C	D		B
Approach Vol, veh/h		772			990			501			294	
Approach Delay, s/veh		23.1			9.0			24.5			38.4	
Approach LOS		C			A			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.0	34.0		31.0	11.5	37.5		31.0
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	11.0	28.0		26.0	7.0	32.0		26.0
Max Q Clear Time (g_c+I1), s	9.9	17.9		28.0	5.2	11.8		18.1
Green Ext Time (p_c), s	0.1	3.5		0.0	0.0	4.6		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.7
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	740	10	300	820	400	30	10	190	340	10	60
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	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	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	190.0	182.7	182.7	190.0	190.0	186.3	186.3	186.3	186.3	190.0
Adj Flow Rate, veh/h	76	804	11	326	891	435	33	11	207	370	11	65
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	2	2	2	2	2	2
Cap, veh/h	237	1218	17	454	953	460	383	117	503	408	74	440
Arrive On Green	0.10	0.46	0.46	0.19	0.56	0.56	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1740	3506	48	1740	2272	1097	954	368	1583	1158	234	1384
Grp Volume(v), veh/h	76	398	417	326	678	648	44	0	207	370	0	76
Grp Sat Flow(s),veh/h/ln	1740	1736	1818	1740	1736	1633	1321	0	1583	1158	0	1618
Q Serve(g_s), s	2.1	14.0	14.0	9.0	28.3	29.2	0.9	0.0	8.1	21.5	0.0	2.6
Cycle Q Clear(g_c), s	2.1	14.0	14.0	9.0	28.3	29.2	3.5	0.0	8.1	25.0	0.0	2.6
Prop In Lane	1.00		0.03	1.00		0.67	0.75		1.00	1.00		0.86
Lane Grp Cap(c), veh/h	237	603	632	454	728	685	500	0	503	408	0	514
V/C Ratio(X)	0.32	0.66	0.66	0.72	0.93	0.95	0.09	0.00	0.41	0.91	0.00	0.15
Avail Cap(c_a), veh/h	266	603	632	534	728	685	500	0	503	408	0	514
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	0.81	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	17.6	17.6	13.6	16.4	16.5	19.5	0.0	21.1	30.2	0.0	19.2
Incr Delay (d2), s/veh	0.6	4.5	4.3	3.8	20.3	23.3	0.1	0.0	0.5	23.7	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	7.3	7.6	4.7	17.3	17.2	0.7	0.0	3.6	10.6	0.0	1.2
LnGrp Delay(d),s/veh	18.3	22.1	21.9	17.4	36.7	39.8	19.6	0.0	21.6	53.9	0.0	19.3
LnGrp LOS	B	C	C	B	D	D	B		C	D		B
Approach Vol, veh/h		891			1652			251			446	
Approach Delay, s/veh		21.7			34.1			21.2			48.0	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.3	33.7		30.0	10.7	39.3		30.0
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	15.0	25.0		25.0	7.0	33.0		25.0
Max Q Clear Time (g_c+I1), s	11.0	16.0		27.0	4.1	31.2		10.1
Green Ext Time (p_c), s	0.4	5.2		0.0	0.0	1.4		2.5

Intersection Summary	
HCM 2010 Ctrl Delay	31.6
HCM 2010 LOS	C

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	260	1020	1120	400	640	400
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	182.7	182.7	182.7	182.7	179.2	179.2
Adj Flow Rate, veh/h	283	1109	1217	435	696	435
Adj No. of Lanes	1	2	2	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	6	6
Cap, veh/h	305	1964	1353	605	1021	470
Arrive On Green	0.04	0.19	0.39	0.39	0.31	0.31
Sat Flow, veh/h	1740	3563	3563	1553	3312	1524
Grp Volume(v), veh/h	283	1109	1217	435	696	435
Grp Sat Flow(s),veh/h/ln	1740	1736	1736	1553	1656	1524
Q Serve(g_s), s	7.9	23.1	26.2	18.9	14.6	22.0
Cycle Q Clear(g_c), s	7.9	23.1	26.2	18.9	14.6	22.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	305	1964	1353	605	1021	470
V/C Ratio(X)	0.93	0.56	0.90	0.72	0.68	0.93
Avail Cap(c_a), veh/h	305	1964	1353	605	1041	479
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.7	23.4	22.8	20.6	24.1	26.6
Incr Delay (d2), s/veh	33.1	1.2	9.8	7.2	1.8	23.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.0	11.4	14.3	9.3	6.9	19.3
LnGrp Delay(d),s/veh	54.8	24.6	32.6	27.7	25.9	50.5
LnGrp LOS	D	C	C	C	C	D
Approach Vol, veh/h		1392	1652		1131	
Approach Delay, s/veh		30.7	31.3		35.3	
Approach LOS		C	C		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		50.5		29.5	14.0	36.5		
Change Period (Y+Rc), s		5.0		5.0	5.0	5.0		
Max Green Setting (Gmax), s		45.0		25.0	9.0	31.0		
Max Q Clear Time (g_c+I1), s		25.1		24.0	9.9	28.2		
Green Ext Time (p_c), s		12.0		0.5	0.0	2.4		

Intersection Summary	
HCM 2010 Ctrl Delay	32.2
HCM 2010 LOS	C

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations					↑↑			↑↑				
Volume (vph)	0	0	0	0	1200	0	0	990	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0			5.0				
Lane Util. Factor					0.95			0.95				
Frt					1.00			1.00				
Flt Protected					1.00			1.00				
Satd. Flow (prot)					3471			3471				
Flt Permitted					1.00			1.00				
Satd. Flow (perm)					3471			3471				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1304	0	0	1076	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	1304	0	0	1076	0	0	0	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type					NA			NA				
Protected Phases					4			2				
Permitted Phases												
Actuated Green, G (s)					36.0			34.0				
Effective Green, g (s)					36.0			34.0				
Actuated g/C Ratio					0.45			0.42				
Clearance Time (s)					5.0			5.0				
Lane Grp Cap (vph)					1561			1475				
v/s Ratio Prot					c0.38			c0.31				
v/s Ratio Perm												
v/c Ratio					0.84			0.73				
Uniform Delay, d1					19.4			19.2				
Progression Factor					0.78			1.18				
Incremental Delay, d2					5.3			2.6				
Delay (s)					20.3			25.2				
Level of Service					C			C				
Approach Delay (s)		0.0			20.3			25.2			0.0	
Approach LOS		A			C			C			A	

Intersection Summary			
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑			↰	
Volume (vph)	0	990	0	0	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0	
Lane Util. Factor		0.95			1.00	
Frt		1.00			1.00	
Flt Protected		1.00			0.95	
Satd. Flow (prot)		3471			1687	
Flt Permitted		1.00			0.95	
Satd. Flow (perm)		3471			1687	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1076	0	0	11	0
RTOR Reduction (vph)	0	0	0	0	6	0
Lane Group Flow (vph)	0	1076	0	0	5	0
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type		NA			Prot	
Protected Phases		2 4!			4!	
Permitted Phases						
Actuated Green, G (s)		80.0			36.0	
Effective Green, g (s)		80.0			36.0	
Actuated g/C Ratio		1.00			0.45	
Clearance Time (s)					5.0	
Lane Grp Cap (vph)		3471			759	
v/s Ratio Prot		c0.31			0.00	
v/s Ratio Perm						
v/c Ratio		0.31			0.01	
Uniform Delay, d1		0.0			12.1	
Progression Factor		1.00			1.00	
Incremental Delay, d2		0.2			0.0	
Delay (s)		0.2			12.2	
Level of Service		A			B	
Approach Delay (s)		0.2	0.0		12.2	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	0.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations			↑↑			↱
Volume (vph)	0	0	1200	0	0	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)			5.0			5.0
Lane Util. Factor			0.95			1.00
Frt			1.00			0.86
Flt Protected			1.00			1.00
Satd. Flow (prot)			3471			1536
Flt Permitted			1.00			1.00
Satd. Flow (perm)			3471			1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	1304	0	0	348
RTOR Reduction (vph)	0	0	0	0	0	114
Lane Group Flow (vph)	0	0	1304	0	0	234
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type			NA			Prot
Protected Phases			2 4!			2!
Permitted Phases						
Actuated Green, G (s)			80.0			34.0
Effective Green, g (s)			80.0			34.0
Actuated g/C Ratio			1.00			0.42
Clearance Time (s)						5.0
Lane Grp Cap (vph)			3471			652
v/s Ratio Prot			c0.38			0.15
v/s Ratio Perm						
v/c Ratio			0.38			0.36
Uniform Delay, d1			0.0			15.6
Progression Factor			1.00			1.00
Incremental Delay, d2			0.2			1.5
Delay (s)			0.2			17.1
Level of Service			A			B
Approach Delay (s)		0.0	0.2		17.1	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	3.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑									↑↑	
Volume (vph)	0	670	0	0	0	0	0	0	0	0	750	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		0.95									0.95	
Frt		1.00									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		3471									3471	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		3471									3471	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	728	0	0	0	0	0	0	0	0	815	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	728	0	0	0	0	0	0	0	0	815	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA									NA	
Protected Phases		2									4	
Permitted Phases												
Actuated Green, G (s)		34.0									36.0	
Effective Green, g (s)		34.0									36.0	
Actuated g/C Ratio		0.42									0.45	
Clearance Time (s)		5.0									5.0	
Lane Grp Cap (vph)		1475									1561	
v/s Ratio Prot		c0.21									c0.23	
v/s Ratio Perm												
v/c Ratio		0.49									0.52	
Uniform Delay, d1		16.7									15.8	
Progression Factor		0.20									1.00	
Incremental Delay, d2		1.1									1.3	
Delay (s)		4.5									17.1	
Level of Service		A									B	
Approach Delay (s)		4.5			0.0			0.0			17.1	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	0	0	0	750	630	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0	5.0	
Lane Util. Factor				0.95	0.97	
Frt				1.00	1.00	
Flt Protected				1.00	0.95	
Satd. Flow (prot)				3471	3273	
Flt Permitted				1.00	0.95	
Satd. Flow (perm)				3471	3273	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	815	685	0
RTOR Reduction (vph)	0	0	0	0	394	0
Lane Group Flow (vph)	0	0	0	815	291	0
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type				NA	Prot	
Protected Phases				2 4!	2!	
Permitted Phases						
Actuated Green, G (s)				80.0	34.0	
Effective Green, g (s)				80.0	34.0	
Actuated g/C Ratio				1.00	0.42	
Clearance Time (s)					5.0	
Lane Grp Cap (vph)				3471	1391	
v/s Ratio Prot				c0.23	0.09	
v/s Ratio Perm						
v/c Ratio				0.23	0.21	
Uniform Delay, d1				0.0	14.5	
Progression Factor				1.00	1.00	
Incremental Delay, d2				0.1	0.3	
Delay (s)				0.1	14.9	
Level of Service				A	B	
Approach Delay (s)	0.0			0.1	14.9	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑					↱
Volume (vph)	670	0	0	0	0	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0					5.0
Lane Util. Factor	0.95					1.00
Frt	1.00					0.86
Flt Protected	1.00					1.00
Satd. Flow (prot)	3471					1536
Flt Permitted	1.00					1.00
Satd. Flow (perm)	3471					1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	728	0	0	0	0	174
RTOR Reduction (vph)	0	0	0	0	0	96
Lane Group Flow (vph)	728	0	0	0	0	78
Heavy Vehicles (%)	4%	4%	4%	4%	7%	7%
Turn Type	NA					Prot
Protected Phases	2 4!					4!
Permitted Phases						
Actuated Green, G (s)	80.0					36.0
Effective Green, g (s)	80.0					36.0
Actuated g/C Ratio	1.00					0.45
Clearance Time (s)						5.0
Lane Grp Cap (vph)	3471					691
v/s Ratio Prot	c0.21					0.05
v/s Ratio Perm						
v/c Ratio	0.21					0.11
Uniform Delay, d1	0.0					12.8
Progression Factor	1.00					1.00
Incremental Delay, d2	0.1					0.3
Delay (s)	0.1					13.1
Level of Service	A					B
Approach Delay (s)	0.1			0.0	13.1	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	2.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	10	700	740	20	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	11	761	804	22	11	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	826	0	-	0	1598	815
Stage 1	-	-	-	-	815	-
Stage 2	-	-	-	-	783	-
Critical Hdwy	4.14	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.236	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	796	-	-	-	117	377
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	450	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	796	-	-	-	114	377
Mov Cap-2 Maneuver	-	-	-	-	114	-
Stage 1	-	-	-	-	435	-
Stage 2	-	-	-	-	439	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	28.5
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	796	-	-	-	175
HCM Lane V/C Ratio	0.014	-	-	-	0.124
HCM Control Delay (s)	9.6	0	-	-	28.5
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1260	10	10	1510	10	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	1370	11	11	1641	11	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1380	0	2217	690
Stage 1	-	-	-	-	1375	-
Stage 2	-	-	-	-	842	-
Critical Hdwy	-	-	4.18	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.24	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	482	-	37	388
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	383	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	482	-	36	388
Mov Cap-2 Maneuver	-	-	-	-	36	-
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	374	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	65.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	91	-	-	482	-
HCM Lane V/C Ratio	0.358	-	-	0.023	-
HCM Control Delay (s)	65.2	-	-	12.6	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	1.4	-	-	0.1	-

Intersection	
Int Delay, s/veh	46.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	10	680	140	40	630	10	90	10	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	4	4	4	4	4	4	2	2	2
Mvmt Flow	11	739	152	43	685	11	98	11	33

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	696	0	0	891	0	0	1652	1620	815
Stage 1	-	-	-	-	-	-	837	837	-
Stage 2	-	-	-	-	-	-	815	783	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-
Follow-up Hdwy	2.236	-	-	2.236	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	891	-	-	752	-	-	~ 79	103	377
Stage 1	-	-	-	-	-	-	361	382	-
Stage 2	-	-	-	-	-	-	371	404	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	891	-	-	752	-	-	~ 55	91	377
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 55	91	-
Stage 1	-	-	-	-	-	-	352	372	-
Stage 2	-	-	-	-	-	-	279	366	-

Approach	EB	WB	NB
HCM Control Delay, s	0.1	0.6	$ 586.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	71	891	-	-	752	-	-	190
HCM Lane V/C Ratio	1.99	0.012	-	-	0.058	-	-	0.458
HCM Control Delay (s)	$ 586.8	9.1	0	-	10.1	0	-	39
HCM Lane LOS	F	A	A	-	B	A	-	E
HCM 95th %tile Q(veh)	12.9	0	-	-	0.2	-	-	2.2

Notes

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

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	10	10	60
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	2	2	2
Mvmt Flow	11	11	65

Major/Minor	Minor2		
Conflicting Flow All	1636	1690	690
Stage 1	777	777	-
Stage 2	859	913	-
Critical Hdwy	7.12	6.52	6.22
Critical Hdwy Stg 1	6.12	5.52	-
Critical Hdwy Stg 2	6.12	5.52	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	81	93	445
Stage 1	390	407	-
Stage 2	351	352	-
Platoon blocked, %			
Mov Cap-1 Maneuver	61	82	445
Mov Cap-2 Maneuver	61	82	-
Stage 1	380	369	-
Stage 2	303	343	-

Approach	SB
HCM Control Delay, s	39
HCM LOS	E

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	70	0	660	970	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	6	6	6	6
Mvmt Flow	0	76	0	717	1054	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1771	1054	1054	0	-	0
Stage 1	1054	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.16	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	91	275	645	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	484	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	91	275	645	-	-	-
Mov Cap-2 Maneuver	91	-	-	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	484	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	645	-	275	-	-
HCM Lane V/C Ratio	-	-	0.277	-	-
HCM Control Delay (s)	0	-	23	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	1.1	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	20	10	630	20	10	930
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	2	2
Mvmt Flow	22	11	685	22	11	1011

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1729	696	0	0	707	0
Stage 1	696	-	-	-	-	-
Stage 2	1033	-	-	-	-	-
Critical Hdwy	6.46	6.26	-	-	4.12	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.354	-	-	2.218	-
Pot Cap-1 Maneuver	95	435	-	-	891	-
Stage 1	487	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	92	435	-	-	891	-
Mov Cap-2 Maneuver	92	-	-	-	-	-
Stage 1	487	-	-	-	-	-
Stage 2	328	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	43.7	0	0.1
HCM LOS	E		

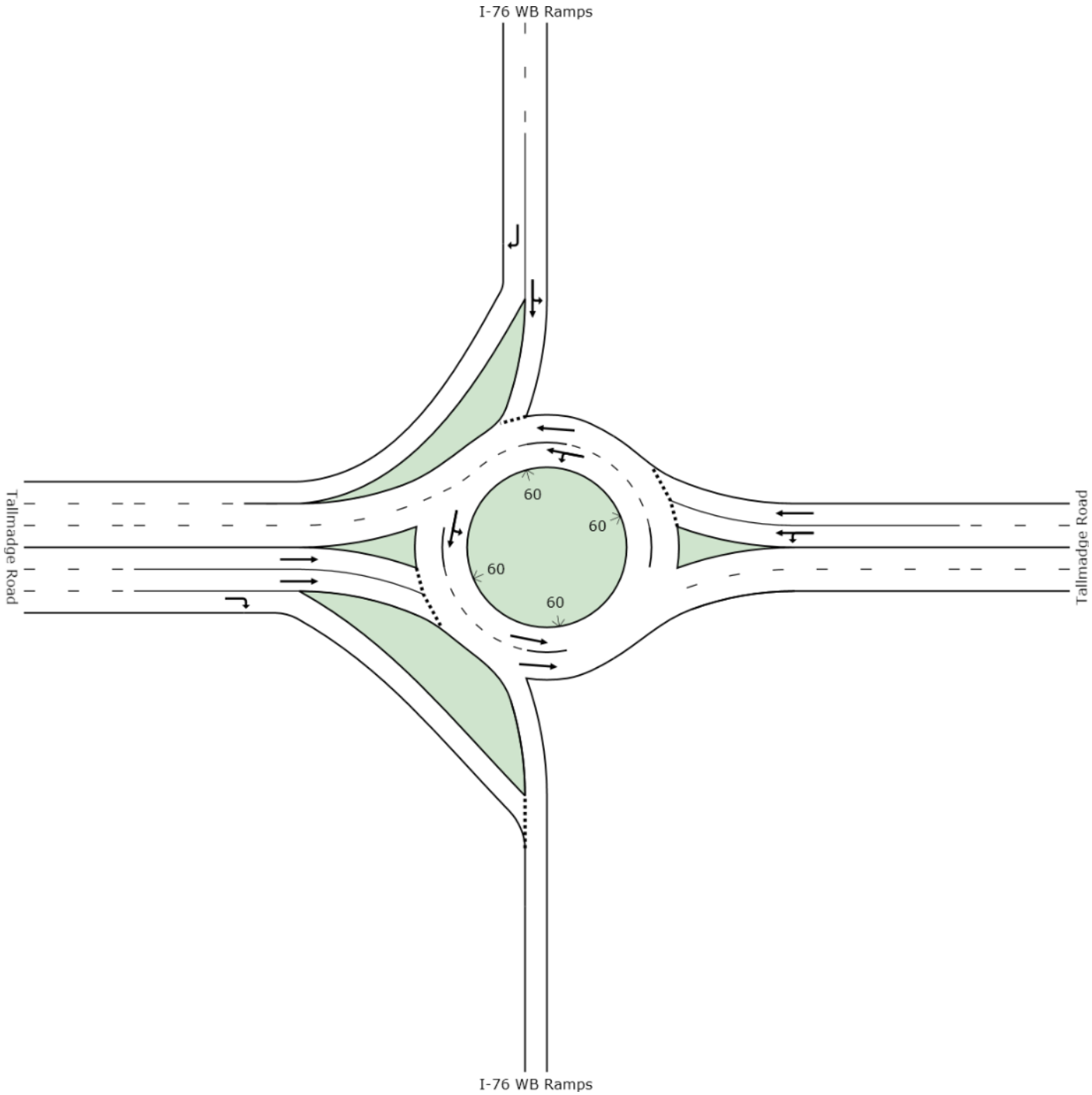
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	125	891	-
HCM Lane V/C Ratio	-	-	0.261	0.012	-
HCM Control Delay (s)	-	-	43.7	9.1	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	1	0	-

APPENDIX L
SIDRA ROUNDABOUT CAPACITY ANALYSIS

SITE LAYOUT

Site: Tallmadge Road / I-76 WB Ramps

Design Year 2039 'Build'
AM Commuter Peak Hour



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MOVEMENT SUMMARY

Site: Tallmadge Road / I-76 WB Ramps

Design Year 2039 'Build'
AM Commuter Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: Tallmadge Road											
1	L2	174	3.0	0.481	8.9	LOS A	0.0	0.0	0.00	0.00	32.0
6	T1	880	3.0	0.481	8.6	LOS A	0.0	0.0	0.00	0.00	33.0
Approach		1054	3.0	0.481	8.7	LOS A	0.0	0.0	0.00	0.00	32.8
North: I-76 WB Ramps											
7	L2	22	3.0	0.044	7.6	LOS A	0.1	2.8	0.54	1.09	26.0
4	T1	1	3.0	0.044	7.6	LOS A	0.1	2.8	0.54	1.09	26.0
14	R2	315	3.0	0.194	0.0	LOS A	0.0	0.0	0.00	0.00	33.0
Approach		338	3.0	0.194	0.5	LOS A	0.1	2.8	0.04	0.04	32.4
West: Tallmadge Road											
2	T1	522	3.0	0.275	6.6	LOS A	0.9	22.7	0.29	0.42	29.1
12	R2	467	3.0	0.483	9.6	LOS A	1.9	49.0	0.34	0.50	26.7
Approach		989	3.0	0.483	8.0	LOS A	1.9	49.0	0.31	0.23	27.9
All Vehicles		2382	3.0	0.483	7.2	LOS A	1.9	49.0	0.13	0.10	30.5

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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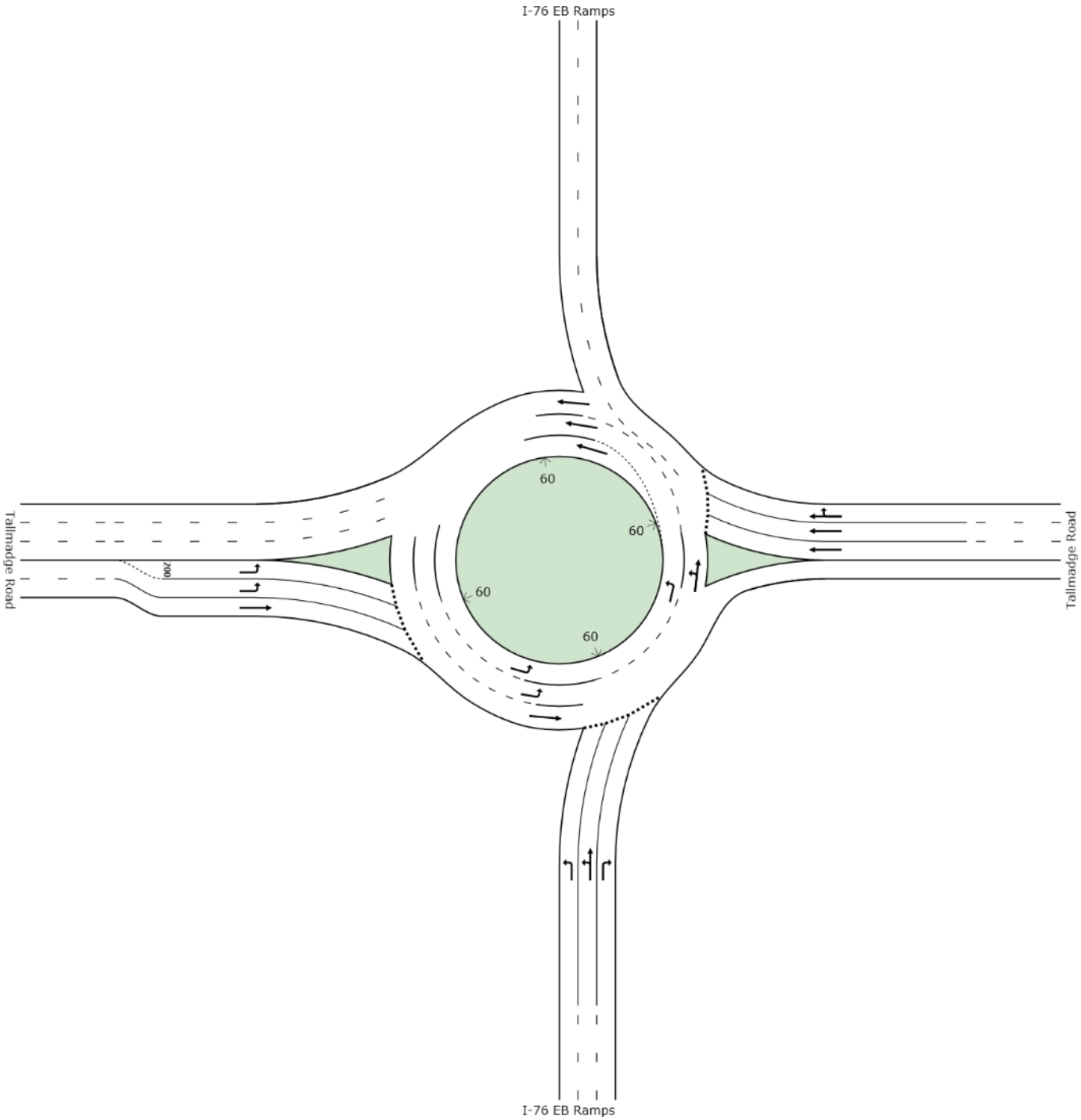
SITE LAYOUT

Site: Tallmadge Road / I-76 EB Ramps

Design Year 2039 'Build'
AM Commuter Peak Hour



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MOVEMENT SUMMARY

Site: Tallmadge Road / I-76 EB Ramps

Design Year 2039 'Build'
AM Commuter Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-76 EB Ramps											
3	L2	511	3.0	0.350	9.3	LOS A	1.2	29.7	0.49	0.98	25.2
8	T1	1	3.0	0.350	9.2	LOS A	1.1	28.3	0.48	0.96	25.2
18	R2	196	3.0	0.271	8.2	LOS A	0.8	21.0	0.47	0.94	27.1
Approach		708	3.0	0.350	9.0	LOS A	1.2	29.7	0.48	0.49	25.7
East: Tallmadge Road											
6	T1	543	3.0	0.286	9.1	LOS A	0.9	22.0	0.50	1.01	27.7
16	R2	22	3.0	0.286	9.2	LOS A	0.9	22.0	0.51	1.03	27.5
Approach		565	3.0	0.286	9.1	LOS A	0.9	22.0	0.51	0.51	27.7
West: Tallmadge Road											
5	L2	163	3.0	0.074	3.9	LOS A	0.0	0.0	0.00	0.00	29.7
2	T1	380	3.0	0.347	6.7	LOS A	0.0	0.0	0.00	0.00	33.5
Approach		543	3.0	0.347	5.9	LOS A	0.0	0.0	0.00	0.00	32.2
All Vehicles		1816	3.0	0.350	8.1	LOS A	1.2	29.7	0.34	0.35	28.0

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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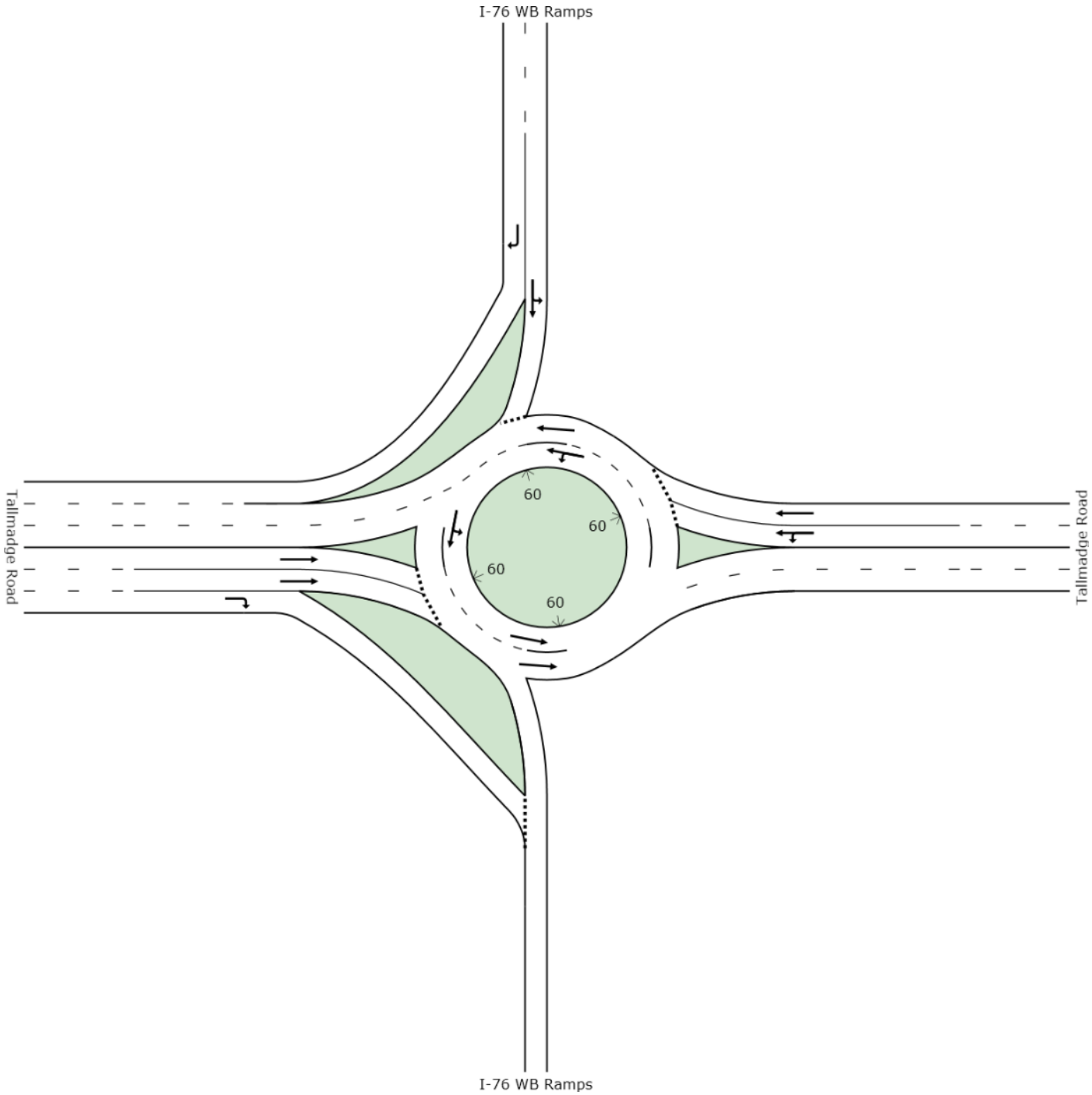
SITE LAYOUT

Site: Tallmadge Road / I-76 WB Ramps

Design Year 2039 'Build'
AM Commercial Peak Hour



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MOVEMENT SUMMARY

Site: Tallmadge Road / I-76 WB Ramps

Design Year 2039 'Build'
AM Commercial Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: Tallmadge Road											
1	L2	87	3.0	0.396	7.6	LOS A	0.0	0.0	0.00	0.00	32.5
6	T1	783	3.0	0.396	7.4	LOS A	0.0	0.0	0.00	0.00	33.2
Approach		870	3.0	0.396	7.4	LOS A	0.0	0.0	0.00	0.00	33.1
North: I-76 WB Ramps											
7	L2	11	3.0	0.020	6.4	LOS A	0.0	1.3	0.47	0.87	26.7
4	T1	1	3.0	0.020	6.4	LOS A	0.0	1.3	0.47	0.87	26.7
14	R2	239	3.0	0.147	0.0	LOS A	0.0	0.0	0.00	0.00	33.0
Approach		251	3.0	0.147	0.3	LOS A	0.0	1.3	0.02	0.02	32.7
West: Tallmadge Road											
2	T1	543	3.0	0.267	6.1	LOS A	0.9	22.2	0.19	0.22	29.3
12	R2	315	3.0	0.306	6.6	LOS A	1.0	25.1	0.19	0.20	28.3
Approach		859	3.0	0.306	6.3	LOS A	1.0	25.1	0.19	0.11	28.9
All Vehicles		1979	3.0	0.396	6.0	LOS A	1.0	25.1	0.09	0.05	31.1

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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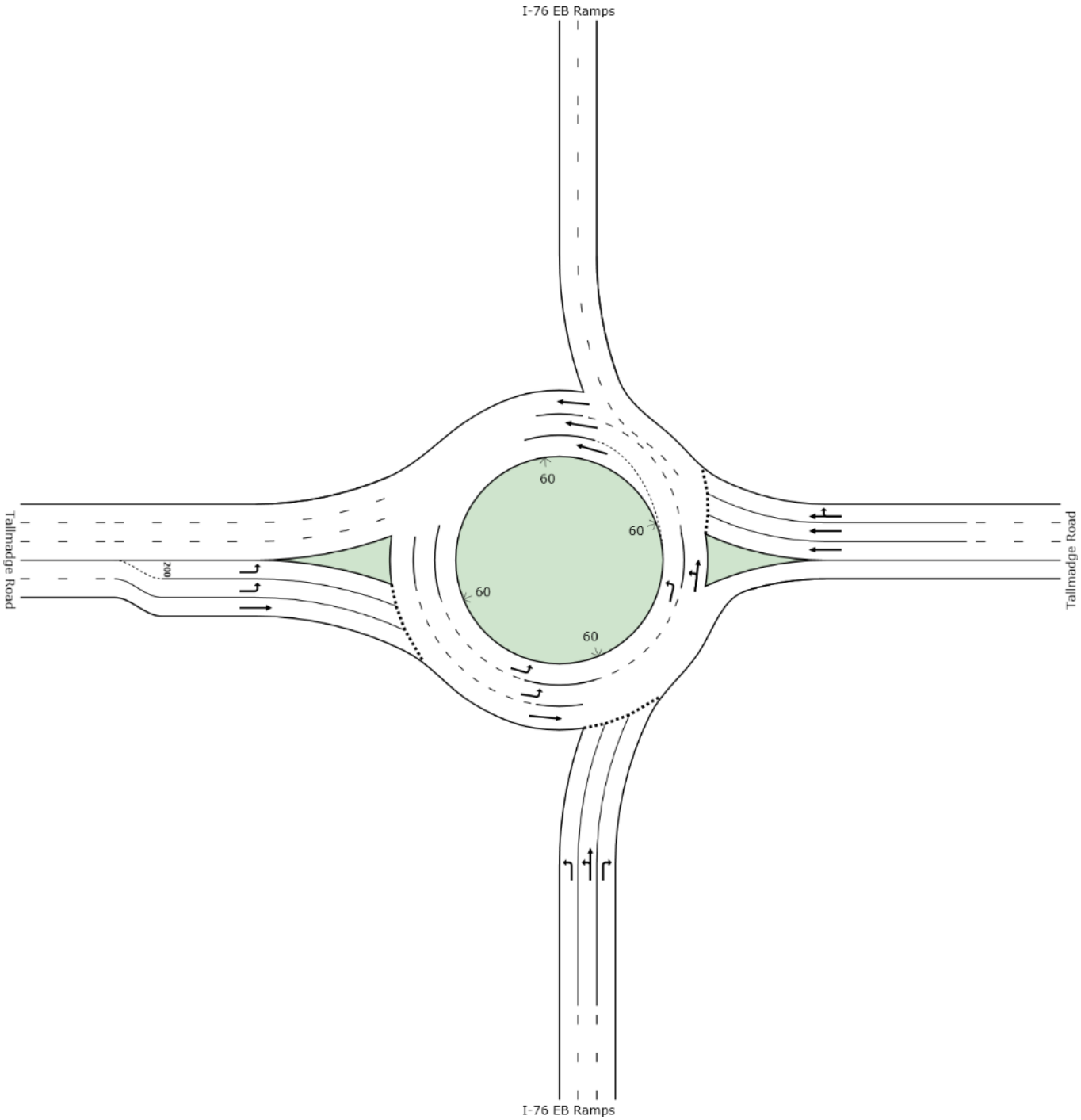
SITE LAYOUT

Site: Tallmadge Road / I-76 EB Ramps

Design Year 2039 'Build'
AM Commercial Peak Hour



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MOVEMENT SUMMARY

Site: Tallmadge Road / I-76 EB Ramps

Design Year 2039 'Build'
AM Commercial Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-76 EB Ramps											
3	L2	391	3.0	0.271	8.1	LOS A	0.8	20.9	0.46	0.92	25.7
8	T1	1	3.0	0.271	8.1	LOS A	0.8	19.9	0.45	0.90	25.7
18	R2	152	3.0	0.213	7.5	LOS A	0.6	15.7	0.45	0.90	27.5
Approach		545	3.0	0.271	8.0	LOS A	0.8	20.9	0.46	0.46	26.1
East: Tallmadge Road											
6	T1	478	3.0	0.235	7.8	LOS A	0.7	17.6	0.46	0.92	28.3
16	R2	22	3.0	0.235	7.9	LOS A	0.7	17.6	0.47	0.93	28.2
Approach		500	3.0	0.235	7.8	LOS A	0.7	17.6	0.46	0.46	28.3
West: Tallmadge Road											
5	L2	185	3.0	0.084	4.0	LOS A	0.0	0.0	0.00	0.00	29.7
2	T1	370	3.0	0.337	6.6	LOS A	0.0	0.0	0.00	0.00	33.5
Approach		554	3.0	0.337	5.8	LOS A	0.0	0.0	0.00	0.00	32.1
All Vehicles		1599	3.0	0.337	7.1	LOS A	0.8	20.9	0.30	0.30	28.6

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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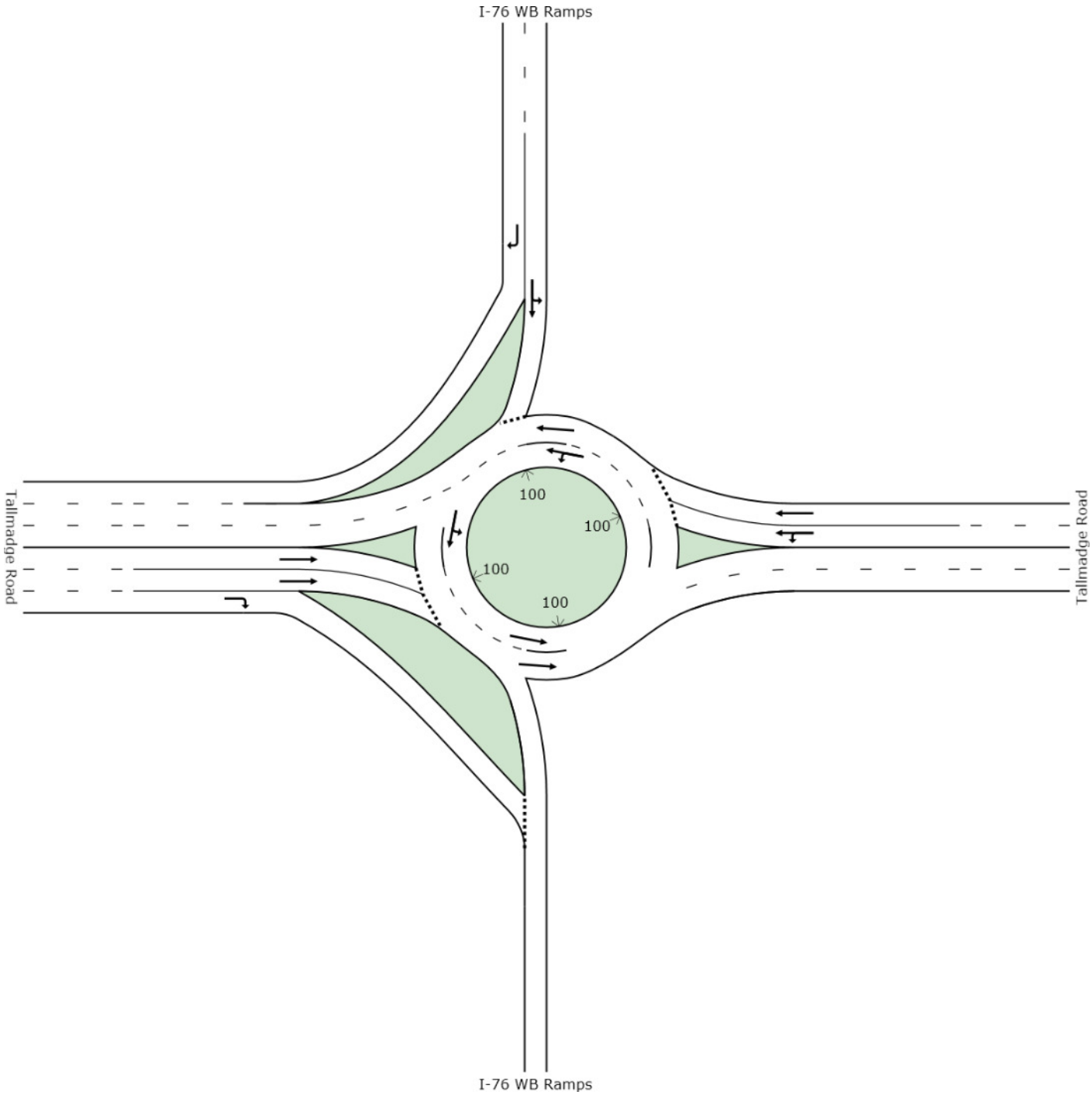
SITE LAYOUT

Site: Tallmadge Road / I-76 WB Ramps

Design Year 2039 'Build'
PM Peak Hour



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MOVEMENT SUMMARY

Site: Tallmadge Road / I-76 WB Ramps

Design Year 2039 'Build'
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: Tallmadge Road											
1	L2	196	3.0	0.684	13.5	LOS B	0.0	0.0	0.00	0.00	33.4
6	T1	1304	3.0	0.684	13.5	LOS B	0.0	0.0	0.00	0.00	34.2
Approach		1500	3.0	0.684	13.5	LOS B	0.0	0.0	0.00	0.00	34.1
North: I-76 WB Ramps											
7	L2	11	3.0	0.032	10.2	LOS B	0.1	2.0	0.67	1.34	25.1
4	T1	1	3.0	0.032	10.2	LOS B	0.1	2.0	0.67	1.34	25.1
14	R2	348	3.0	0.214	0.0	LOS A	0.0	0.0	0.00	0.00	34.1
Approach		360	3.0	0.214	0.4	LOS A	0.1	2.0	0.02	0.02	33.7
West: Tallmadge Road											
2	T1	1076	3.0	0.573	11.7	LOS B	2.8	73.0	0.43	0.71	26.9
12	R2	728	3.0	0.765	18.7	LOS C	6.2	157.9	0.60	1.05	23.0
Approach		1804	3.0	0.765	14.5	LOS B	6.2	157.9	0.50	0.42	25.2
All Vehicles		3664	3.0	0.765	12.7	LOS B	6.2	157.9	0.25	0.21	29.0

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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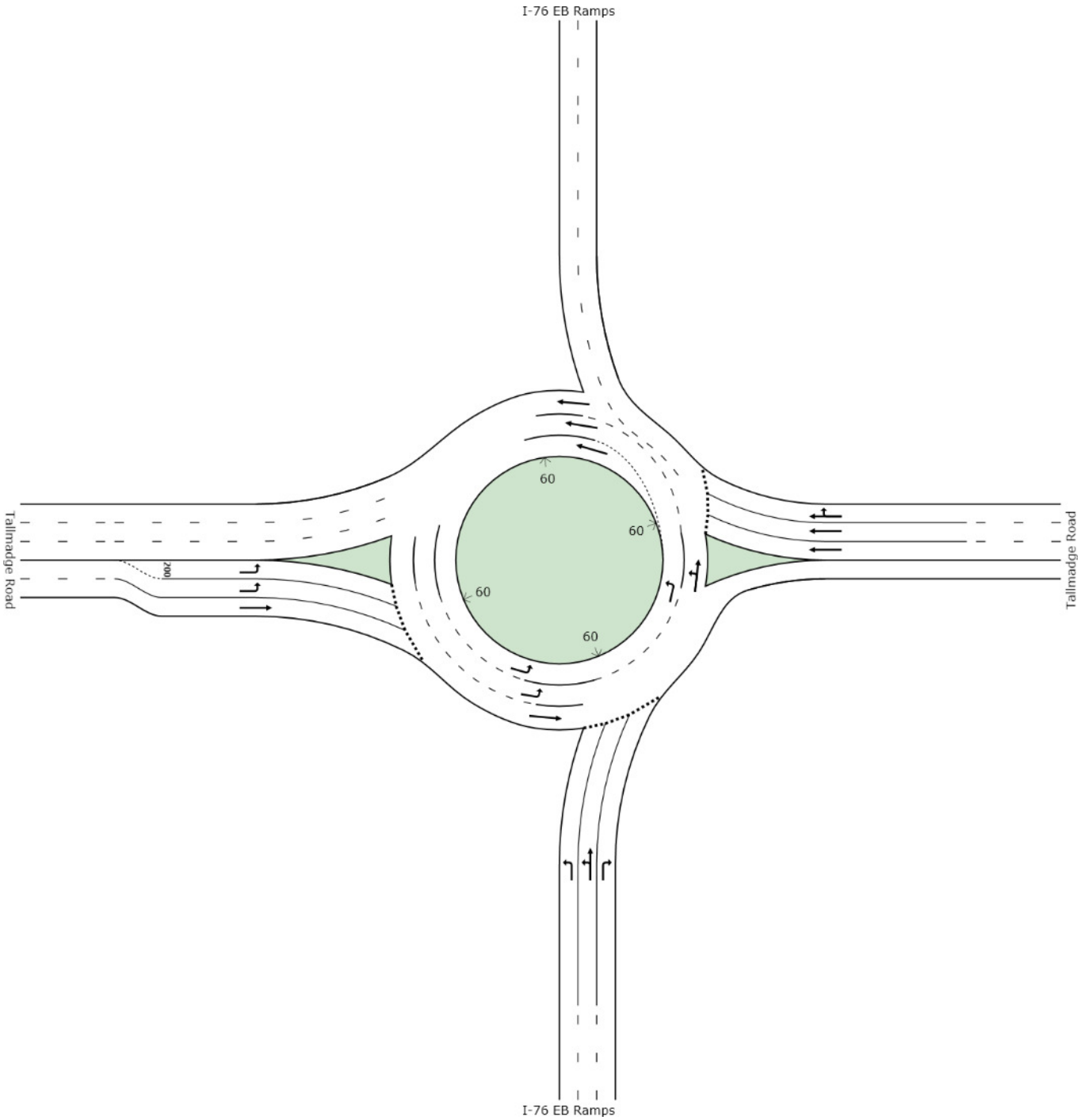
SITE LAYOUT

Site: Tallmadge Road / I-76 EB Ramps

Design Year 2039 'Build'
PM Peak Hour



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MOVEMENT SUMMARY

Site: Tallmadge Road / I-76 EB Ramps

Design Year 2039 'Build'
PM Peak Hour
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: I-76 EB Ramps											
3	L2	685	3.0	0.704	26.6	LOS D	3.3	84.2	0.80	1.84	19.2
8	T1	1	3.0	0.704	26.0	LOS D	3.2	82.0	0.79	1.81	19.4
18	R2	174	3.0	0.367	13.8	LOS B	1.2	29.8	0.67	1.41	24.4
Approach		860	3.0	0.704	24.0	LOS C	3.3	84.2	0.77	0.87	20.0
East: Tallmadge Road											
6	T1	815	3.0	0.567	19.1	LOS C	2.2	57.4	0.73	1.60	22.9
16	R2	33	3.0	0.567	18.5	LOS C	2.2	55.6	0.71	1.57	23.0
Approach		848	3.0	0.567	19.1	LOS C	2.2	57.4	0.73	0.80	22.9
West: Tallmadge Road											
5	L2	359	3.0	0.163	4.7	LOS A	0.0	0.0	0.00	0.00	30.0
2	T1	728	3.0	0.664	12.8	LOS B	0.0	0.0	0.00	0.00	33.7
Approach		1087	3.0	0.664	10.2	LOS B	0.0	0.0	0.00	0.00	32.3
All Vehicles		2795	3.0	0.704	17.1	LOS C	3.3	84.2	0.46	0.51	24.6

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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APPENDIX M
HCM ARTERIAL ANALYSIS

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	11.2	50.4	0.33	23.4	C
Plaza Drive	III	35	13.3	6.6	19.9	0.10	17.9	D
I-76 WB RampS	III	35	37.0	32.0	69.0	0.31	16.1	D
I-76 EB Ramps	III	35	18.7	10.2	28.9	0.15	18.2	C
Total	III		108.2	60.0	168.2	0.88	18.9	C

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	36.1	24.9	61.0	0.30	17.7	D
Mogadore Road	III	35	18.7	46.7	65.4	0.15	8.0	F
Plaza Drive	III	35	37.0	4.1	41.1	0.31	27.0	B
Cascades Boulevard	III	35	13.3	3.4	16.7	0.10	21.3	C
Total	III		105.1	79.1	184.2	0.85	16.7	D

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	11.7	50.9	0.33	23.1	C
Plaza Drive	III	35	13.3	7.5	20.8	0.10	17.1	D
I-76 WB RampS	III	35	37.0	29.0	66.0	0.31	16.8	D
I-76 EB Ramps	III	35	18.7	7.8	26.5	0.15	19.9	C
Total	III		108.2	56.0	164.2	0.88	19.3	C

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	36.1	20.1	56.2	0.30	19.3	C
Mogadore Road	III	35	18.7	41.3	60.0	0.15	8.8	F
Plaza Drive	III	35	37.0	4.1	41.1	0.31	27.0	B
Cascades Boulevard	III	35	13.3	3.4	16.7	0.10	21.3	C
Total	III		105.1	68.9	174.0	0.85	17.7	D

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	17.9	57.1	0.33	20.6	C
Plaza Drive	III	35	13.3	12.2	25.5	0.10	14.0	E
I-76 WB RampS	III	35	37.0	59.4	96.4	0.31	11.5	E
I-76 EB Ramps	III	35	18.7	12.9	31.6	0.15	16.7	D
Total	III		108.2	102.4	210.6	0.88	15.1	D

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	36.1	33.0	69.1	0.30	15.7	D
Mogadore Road	III	35	18.7	84.0	102.7	0.15	5.1	F
Plaza Drive	III	35	37.0	5.4	42.4	0.31	26.2	B
Cascades Boulevard	III	35	13.3	4.1	17.4	0.10	20.5	C
Total	III		105.1	126.5	231.6	0.85	13.3	E

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	11.2	50.4	0.33	23.4	C
Plaza Drive	III	35	13.3	6.6	19.9	0.10	17.9	D
I-76 WB Ramps	III	35	37.0	32.0	69.0	0.31	16.1	D
I-76 EB Ramps	III	35	18.7	10.2	28.9	0.15	18.2	C
Total	III		108.2	60.0	168.2	0.88	18.9	C

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	36.1	24.9	61.0	0.30	17.7	D
Mogadore Road	III	35	18.7	46.7	65.4	0.15	8.0	F
Plaza Drive	III	35	37.0	4.1	41.1	0.31	27.0	B
Cascades Boulevard	III	35	13.3	3.4	16.7	0.10	21.3	C
Total	III		105.1	79.1	184.2	0.85	16.7	D

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	11.7	50.9	0.33	23.1	C
Plaza Drive	III	35	13.3	7.5	20.8	0.10	17.1	D
I-76 WB Ramps	III	35	37.0	29.0	66.0	0.31	16.8	D
I-76 EB Ramps	III	35	18.7	7.8	26.5	0.15	19.9	C
Total	III		108.2	56.0	164.2	0.88	19.3	C

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	36.1	20.1	56.2	0.30	19.3	C
Mogadore Road	III	35	18.7	41.3	60.0	0.15	8.8	F
Plaza Drive	III	35	37.0	4.1	41.1	0.31	27.0	B
Cascades Boulevard	III	35	13.3	3.4	16.7	0.10	21.3	C
Total	III		105.1	68.9	174.0	0.85	17.7	D

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	17.9	57.1	0.33	20.6	C
Plaza Drive	III	35	13.3	12.2	25.5	0.10	14.0	E
I-76 WB Ramps	III	35	37.0	59.4	96.4	0.31	11.5	E
I-76 EB Ramps	III	35	18.7	12.9	31.6	0.15	16.7	D
Total	III		108.2	102.4	210.6	0.88	15.1	D

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	36.1	33.0	69.1	0.30	15.7	D
Mogadore Road	III	35	18.7	84.0	102.7	0.15	5.1	F
Plaza Drive	III	35	37.0	5.4	42.4	0.31	26.2	B
Cascades Boulevard	III	35	13.3	4.1	17.4	0.10	20.5	C
Total	III		105.1	126.5	231.6	0.85	13.3	E

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	9.7	48.9	0.33	24.1	B
Plaza Drive	III	35	13.5	2.4	15.9	0.10	22.6	C
Mogadore Road	III	35	24.6	2.2	26.8	0.21	27.6	B
I-76 WB Ramps	III	35	14.0	2.8	16.8	0.10	22.3	C
I-76 EB Ramps	III	35	18.1	9.3	27.4	0.14	18.6	C
Total	III		109.4	26.4	135.8	0.88	23.3	C

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	40.7	16.3	57.0	0.34	21.4	C
I-76 WB Ramps	III	35	18.1	1.2	19.3	0.14	26.4	B
Mogadore Road	III	35	14.0	13.6	27.6	0.10	13.6	E
Golf Course Drive	III	35	24.6	3.2	27.8	0.21	26.6	B
Cascades Boulevard	III	35	13.5	0.6	14.1	0.10	25.5	B
Total	III		110.9	34.9	145.8	0.89	22.0	C

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	9.3	48.5	0.33	24.3	B
Plaza Drive	III	35	13.5	4.9	18.4	0.10	19.6	C
Mogadore Road	III	35	24.6	2.2	26.8	0.21	27.6	B
I-76 WB Ramps	III	35	14.0	1.8	15.8	0.10	23.7	C
I-76 EB Ramps	III	35	18.1	2.5	20.6	0.14	24.7	B
Total	III		109.4	20.7	130.1	0.88	24.3	B

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	40.7	11.8	52.5	0.34	23.3	C
I-76 WB Ramps	III	35	18.1	1.9	20.0	0.14	25.4	B
Mogadore Road	III	35	14.0	10.3	24.3	0.10	15.4	D
Golf Course Drive	III	35	24.6	1.1	25.7	0.21	28.8	B
Cascades Boulevard	III	35	13.5	1.2	14.7	0.10	24.5	B
Total	III		110.9	26.3	137.2	0.89	23.3	C

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	16.9	56.1	0.33	21.0	C
Plaza Drive	III	35	13.5	6.8	20.3	0.10	17.7	D
Mogadore Road	III	35	24.6	3.1	27.7	0.21	26.7	B
I-76 WB Ramps	III	35	14.0	7.2	21.2	0.10	17.7	D
I-76 EB Ramps	III	35	18.1	5.7	23.8	0.14	21.4	C
Total	III		109.4	39.7	149.1	0.88	21.2	C

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	40.7	20.4	61.1	0.34	20.0	C
I-76 WB Ramps	III	35	18.1	3.9	22.0	0.14	23.1	C
Mogadore Road	III	35	14.0	16.3	30.3	0.10	12.4	E
Golf Course Drive	III	35	24.6	0.9	25.5	0.21	29.0	B
Cascades Boulevard	III	35	13.5	2.4	15.9	0.10	22.6	C
Total	III		110.9	43.9	154.8	0.89	20.7	C

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	IV	35	39.9	9.7	49.6	0.33	23.7	B
Plaza Drive	IV	35	16.5	2.5	19.0	0.10	18.9	C
Mogadore Road	IV	35	26.7	2.0	28.7	0.21	25.8	A
Tallmadge Road	IV	35	13.7	11.4	25.1	0.08	11.9	D
I-76 EB Ramps	IV	35	2.0	2.2	4.2	0.01	10.6	D
Total	IV		98.8	27.8	126.6	0.73	20.7	B

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	IV	35	3.5	2.2	5.7	0.02	13.4	C
Tallmadge Road	IV	35	16.0	10.7	26.7	0.10	13.1	C
Mogadore Road	IV	35	20.3	8.8	29.1	0.12	15.2	C
Golf Course Drive	IV	35	26.7	0.8	27.5	0.21	26.9	A
Cascades Boulevard	IV	35	16.5	0.6	17.1	0.10	21.1	B
Total	IV		83.0	23.1	106.1	0.55	18.5	C

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	IV	35	39.9	9.3	49.2	0.33	23.9	B
Plaza Drive	IV	35	16.5	5.1	21.6	0.10	16.7	C
Mogadore Road	IV	35	26.7	1.7	28.4	0.21	26.0	A
Tallmadge Road	IV	35	13.7	12.2	25.9	0.08	11.6	D
I-76 EB Ramps	IV	35	2.0	0.5	2.5	0.01	17.7	C
Total	IV		98.8	28.8	127.6	0.73	20.5	B

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	IV	35	3.5	1.8	5.3	0.02	14.4	C
Tallmadge Road	IV	35	16.0	6.0	22.0	0.10	15.9	C
Mogadore Road	IV	35	20.3	4.1	24.4	0.12	18.2	C
Golf Course Drive	IV	35	26.7	1.5	28.2	0.21	26.2	A
Cascades Boulevard	IV	35	16.5	0.7	17.2	0.10	20.9	B
Total	IV		83.0	14.1	97.1	0.55	20.3	B

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	IV	35	39.9	16.9	56.8	0.33	20.7	B
Plaza Drive	IV	35	16.5	6.5	23.0	0.10	15.7	C
Mogadore Road	IV	35	26.7	2.6	29.3	0.21	25.2	A
Tallmadge Road	IV	35	13.7	13.9	27.6	0.08	10.8	D
I-76 EB Ramps	IV	35	2.0	2.1	4.1	0.01	10.8	D
Total	IV		98.8	42.0	140.8	0.73	18.6	C

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	IV	35	3.5	2.2	5.7	0.02	13.4	C
Tallmadge Road	IV	35	16.0	12.6	28.6	0.10	12.2	D
Mogadore Road	IV	35	20.3	13.5	33.8	0.12	13.1	C
Golf Course Drive	IV	35	26.7	4.0	30.7	0.21	24.1	B
Cascades Boulevard	IV	35	16.5	1.7	18.2	0.10	19.8	B
Total	IV		83.0	34.0	117.0	0.55	16.8	C

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	10.7	49.9	0.33	23.6	C
Plaza Drive	III	35	13.3	7.3	20.6	0.10	17.3	D
I-76 WB Ramps	III	35	37.0	45.0	82.0	0.31	13.6	E
I-76 EB Ramps	III	35	18.7	12.7	31.4	0.15	16.8	D
Total	III		108.2	75.7	183.9	0.88	17.2	D

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	36.1	35.2	71.3	0.30	15.2	D
Mogadore Road	III	35	18.7	65.3	84.0	0.15	6.3	F
Plaza Drive	III	35	37.0	8.9	45.9	0.31	24.2	B
Cascades Boulevard	III	35	13.3	4.4	17.7	0.10	20.1	C
Total	III		105.1	113.8	218.9	0.85	14.1	D

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	11.5	50.7	0.33	23.2	C
Plaza Drive	III	35	13.3	11.3	24.6	0.10	14.5	D
I-76 WB Ramps	III	35	37.0	40.3	77.3	0.31	14.4	D
I-76 EB Ramps	III	35	18.7	12.3	31.0	0.15	17.0	D
Total	III		108.2	75.4	183.6	0.88	17.3	D

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	36.1	31.7	67.8	0.30	16.0	D
Mogadore Road	III	35	18.7	85.2	103.9	0.15	5.1	F
Plaza Drive	III	35	37.0	11.8	48.8	0.31	22.8	C
Cascades Boulevard	III	35	13.3	4.4	17.7	0.10	20.1	C
Total	III		105.1	133.1	238.2	0.85	12.9	E

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	23.3	62.5	0.33	18.8	C
Plaza Drive	III	35	13.3	57.0	70.3	0.10	5.1	F
I-76 WB RampS	III	35	37.0	248.9	285.9	0.31	3.9	F
I-76 EB Ramps	III	35	18.7	14.2	32.9	0.15	16.0	D
Total	III		108.2	343.4	451.6	0.88	7.0	F

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	36.1	94.1	130.2	0.30	8.3	F
Mogadore Road	III	35	18.7	449.8	468.5	0.15	1.1	F
Plaza Drive	III	35	37.0	55.2	92.2	0.31	12.1	E
Cascades Boulevard	III	35	13.3	15.5	28.8	0.10	12.4	E
Total	III		105.1	614.6	719.7	0.85	4.3	F

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	9.1	48.3	0.33	24.4	B
Plaza Drive	III	35	13.5	7.2	20.7	0.10	17.4	D
Mogadore Road	III	35	24.6	8.2	32.8	0.21	22.5	C
I-76 WB Ramps	III	35	14.0	7.3	21.3	0.10	17.6	D
I-76 EB Ramps	III	35	18.1	8.5	26.6	0.14	19.1	C
Total	III		109.4	40.3	149.7	0.88	21.1	C

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	40.7	24.5	65.2	0.34	18.7	C
I-76 WB Ramps	III	35	18.1	3.6	21.7	0.14	23.4	C
Mogadore Road	III	35	14.0	14.1	28.1	0.10	13.3	E
Plaza Drive	III	35	24.6	1.0	25.6	0.21	28.9	B
Cascades Boulevard	III	35	13.5	1.9	15.4	0.10	23.4	C
Total	III		110.9	45.1	156.0	0.89	20.5	C

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	10.0	49.2	0.33	23.9	C
Plaza Drive	III	35	13.5	10.2	23.7	0.10	15.2	D
Mogadore Road	III	35	24.6	6.8	31.4	0.21	23.5	C
I-76 WB Ramps	III	35	14.0	5.3	19.3	0.10	19.4	C
I-76 EB Ramps	III	35	18.1	10.5	28.6	0.14	17.8	D
Total	III		109.4	42.8	152.2	0.88	20.8	C

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	40.7	18.9	59.6	0.34	20.5	C
I-76 WB Ramps	III	35	18.1	1.7	19.8	0.14	25.7	B
Mogadore Road	III	35	14.0	13.2	27.2	0.10	13.8	E
Plaza Drive	III	35	24.6	1.7	26.3	0.21	28.1	B
Cascades Boulevard	III	35	13.5	2.2	15.7	0.10	22.9	C
Total	III		110.9	37.7	148.6	0.89	21.6	C

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	III	35	39.2	21.5	60.7	0.33	19.4	C
Plaza Drive	III	35	13.5	27.1	40.6	0.10	8.9	F
Mogadore Road	III	35	24.6	10.8	35.4	0.21	20.9	C
I-76 WB Ramps	III	35	14.0	12.3	26.3	0.10	14.2	D
I-76 EB Ramps	III	35	18.1	4.9	23.0	0.14	22.1	C
Total	III		109.4	76.6	186.0	0.88	17.0	D

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	III	35	40.7	54.8	95.5	0.34	12.8	E
I-76 WB Ramps	III	35	18.1	4.8	22.9	0.14	22.2	C
Mogadore Road	III	35	14.0	24.7	38.7	0.10	9.7	F
Plaza Drive	III	35	24.6	11.1	35.7	0.21	20.7	C
Cascades Boulevard	III	35	13.5	5.5	19.0	0.10	18.9	C
Total	III		110.9	100.9	211.8	0.89	15.1	D

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	IV	35	39.9	9.1	49.0	0.33	24.0	B
Plaza Drive	IV	35	16.5	7.2	23.7	0.10	15.2	C
Mogadore Road	IV	35	26.7	8.2	34.9	0.21	21.2	B
Tallmadge Road	IV	35	13.7	16.2	29.9	0.08	10.0	D
I-76 EB Ramps	IV	35	2.0	0.1	2.1	0.01	21.1	B
Total	IV		98.8	40.8	139.6	0.73	18.8	C

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	IV	35	3.5	0.1	3.6	0.02	21.2	B
Tallmadge Road	IV	35	16.0	15.0	31.0	0.10	11.3	D
Mogadore Road	IV	35	20.3	9.3	29.6	0.12	15.0	C
Plaza Drive	IV	35	26.7	1.0	27.7	0.21	26.7	A
Cascades Boulevard	IV	35	16.5	1.8	18.3	0.10	19.7	B
Total	IV		83.0	27.2	110.2	0.55	17.9	C

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	IV	35	39.9	10.0	49.9	0.33	23.6	B
Plaza Drive	IV	35	16.5	10.2	26.7	0.10	13.5	C
Mogadore Road	IV	35	26.7	6.8	33.5	0.21	22.1	B
Tallmadge Road	IV	35	13.7	11.4	25.1	0.08	11.9	D
I-76 EB Ramps	IV	35	2.0	0.1	2.1	0.01	21.1	B
Total	IV		98.8	38.5	137.3	0.73	19.1	B

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	IV	35	3.5	0.1	3.6	0.02	21.2	B
Tallmadge Road	IV	35	16.0	8.2	24.2	0.10	14.4	C
Mogadore Road	IV	35	20.3	12.1	32.4	0.12	13.7	C
Plaza Drive	IV	35	26.7	1.8	28.5	0.21	25.9	A
Cascades Boulevard	IV	35	16.5	2.2	18.7	0.10	19.3	B
Total	IV		83.0	24.4	107.4	0.55	18.3	C

Arterial Level of Service: EB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Cascades Boulevard	IV	35	39.9	21.5	61.4	0.33	19.2	B
Plaza Drive	IV	35	16.5	27.1	43.6	0.10	8.3	E
Mogadore Road	IV	35	26.7	10.8	37.5	0.21	19.7	B
Tallmadge Road	IV	35	13.7	25.6	39.3	0.08	7.6	E
I-76 EB Ramps	IV	35	2.0	0.1	2.1	0.01	21.1	B
Total	IV		98.8	85.1	183.9	0.73	14.2	C

Arterial Level of Service: WB Tallmadge Road

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-76 EB Ramps	IV	35	3.5	0.2	3.7	0.02	20.6	B
Tallmadge Road	IV	35	16.0	20.9	36.9	0.10	9.5	D
Mogadore Road	IV	35	20.3	20.7	41.0	0.12	10.8	D
Plaza Drive	IV	35	26.7	11.1	37.8	0.21	19.6	B
Cascades Boulevard	IV	35	16.5	5.5	22.0	0.10	16.4	C
Total	IV		83.0	58.4	141.4	0.55	13.9	C

APPENDIX N
STORAGE LENGTH CALCULATIONS

STORAGE LENGTH CALCULATIONS

OPENING YEAR 2019 'BUILD' TRAFFIC VOLUMES - AM COMMUTER PEAK HOUR

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / Mogadore Road

ANTICIPATED CYCLE LENGTH: 75 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	80		310		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	80		310		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	2		7		
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				
STORAGE LENGTH:	100		275		
TOTAL TURN LANE LENGTH:	***150***		***275***		
TURN LANE LENGTH PER LANE	***150***		***137.5***		

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			380		380
LANE GROUP:			THRU		RIGHT
LANE GROUP VOLUME:			380		380
NUMBER OF LANES:			1		1
VEHICLES PER CYCLE:			8		8
CONTROLING LANE GROUP:			X		X
DECELERATION LENGTH:					
STORAGE LENGTH:			325		325
TOTAL TURN LANE LENGTH:			***325***		***325***
TURN LANE LENGTH PER LANE			***325***		***325***

NORTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

MOGADORE ROAD SOUTHBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	340				40
LANE GROUP:	LEFT				RIGHT
LANE GROUP VOLUME:	340				40
NUMBER OF LANES:	2				1
VEHICLES PER CYCLE:	8				1
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				50
STORAGE LENGTH:	325				50
TOTAL TURN LANE LENGTH:	***375***				***100***
TURN LANE LENGTH PER LANE	***187.5***				***100***

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

OPENING YEAR 2019 'BUILD' TRAFFIC VOLUMES - AM COMMERCIAL PEAK HOUR

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / Mogadore Road

ANTICIPATED CYCLE LENGTH: 75 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	130		480		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	130		480		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	3		10		
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				
STORAGE LENGTH:	150		375		
TOTAL TURN LANE LENGTH:	***200***		***375***		
TURN LANE LENGTH PER LANE	***200***		***187.5***		

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			670		250
LANE GROUP:			THRU		RIGHT
LANE GROUP VOLUME:			670		250
NUMBER OF LANES:			1		1
VEHICLES PER CYCLE:			14		6
CONTROLING LANE GROUP:			X		X
DECELERATION LENGTH:					
STORAGE LENGTH:			500		250
TOTAL TURN LANE LENGTH:			***500***		***250***
TURN LANE LENGTH PER LANE			***500***		***250***

NORTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

MOGADORE ROAD SOUTHBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	230				130
LANE GROUP:	LEFT				RIGHT
LANE GROUP VOLUME:	230				130
NUMBER OF LANES:	2				1
VEHICLES PER CYCLE:	5				3
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				50
STORAGE LENGTH:	200				150
TOTAL TURN LANE LENGTH:	***250***				***200***
TURN LANE LENGTH PER LANE	***125***				***200***

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

OPENING YEAR 2019 'BUILD' TRAFFIC VOLUMES - PM PEAK HOUR

Tallmadge Road / Mogadore Road

ANTICIPATED CYCLE LENGTH: 90 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	190		1050		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	190		1050		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	5		27		
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				
STORAGE LENGTH:	200		885		
TOTAL TURN LANE LENGTH:	***250***		***885***		
TURN LANE LENGTH PER LANE	***250***		***442.5***		

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			1060		350
LANE GROUP:			THRU		RIGHT
LANE GROUP VOLUME:			1060		350
NUMBER OF LANES:			1		1
VEHICLES PER CYCLE:			23		9
CONTROLING LANE GROUP:			X		X
DECELERATION LENGTH:					
STORAGE LENGTH:			775		350
TOTAL TURN LANE LENGTH:			***775***		***350***
TURN LANE LENGTH PER LANE			***775***		***350***

NORTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

MOGADORE ROAD SOUTHBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	610				280
LANE GROUP:	LEFT				RIGHT
LANE GROUP VOLUME:	610				280
NUMBER OF LANES:	2				1
VEHICLES PER CYCLE:	16				7
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				50
STORAGE LENGTH:	550				275
TOTAL TURN LANE LENGTH:	***600***				***325***
TURN LANE LENGTH PER LANE	***300***				***325***

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

OPENING YEAR 2019 'BUILD' TRAFFIC VOLUMES - AM COMMUTER PEAK HOUR

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / I-76 Westbound Ramps

ANTICIPATED CYCLE LENGTH: 75 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			270		380
LANE GROUP:			THRU/RIGHT		
LANE GROUP VOLUME:				650	
NUMBER OF LANES:				2	
VEHICLES PER CYCLE:				14	
CONTROLING LANE GROUP:				X	
DECELERATION LENGTH:					
STORAGE LENGTH:				500	
TOTAL TURN LANE LENGTH:				***500***	
TURN LANE LENGTH PER LANE				***250***	

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	140		540		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	140		540		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	3		12		
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:	50				
STORAGE LENGTH:	150		450		
TOTAL TURN LANE LENGTH:	***200***		***450***		
TURN LANE LENGTH PER LANE	***200***		***225***		

NORTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

INTERSTATE 76 WESTBOUND EXIT RAMP

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	60		0		350
LANE GROUP:		LEFT/THRU/RIGHT			
LANE GROUP VOLUME:			410		
NUMBER OF LANES:			1		
VEHICLES PER CYCLE:			9		
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:					
STORAGE LENGTH:			350		
TOTAL TURN LANE LENGTH:			***350***		
TURN LANE LENGTH PER LANE			***350***		

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

OPENING YEAR 2019 'BUILD' TRAFFIC VOLUMES - AM COMMERCIAL PEAK HOUR

Tallmadge Road / I-76 Westbound Ramps

ANTICIPATED CYCLE LENGTH:	75	SEC.
DESIGN SPEED:	35	MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			200		100
LANE GROUP:			THRU/RIGHT		
LANE GROUP VOLUME:				300	
NUMBER OF LANES:				2	
VEHICLES PER CYCLE:				7	
CONTROLING LANE GROUP:				X	
DECELERATION LENGTH:					
STORAGE LENGTH:				275	
TOTAL TURN LANE LENGTH:				***275***	
TURN LANE LENGTH PER LANE				***137.5***	

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	80		660		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	80		660		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	2		14		
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:	50				
STORAGE LENGTH:	100		500		
TOTAL TURN LANE LENGTH:	***150***		***500***		
TURN LANE LENGTH PER LANE	***150***		***250***		

NORTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

INTERSTATE 76 WESTBOUND EXIT RAMP

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	30		0		260
LANE GROUP:		LEFT/THRU/RIGHT			
LANE GROUP VOLUME:			290		
NUMBER OF LANES:			1		
VEHICLES PER CYCLE:			7		
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:					
STORAGE LENGTH:			275		
TOTAL TURN LANE LENGTH:			***275***		
TURN LANE LENGTH PER LANE			***275***		

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

OPENING YEAR 2019 'BUILD' TRAFFIC VOLUMES - PM PEAK HOUR

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / I-76 Westbound Ramps

ANTICIPATED CYCLE LENGTH: 90 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			1030		630
LANE GROUP:			THRU/RIGHT		
LANE GROUP VOLUME:				1660	
NUMBER OF LANES:				2	
VEHICLES PER CYCLE:				42	
CONTROLING LANE GROUP:				X	
DECELERATION LENGTH:					
STORAGE LENGTH:				1310	
TOTAL TURN LANE LENGTH:				***1310***	
TURN LANE LENGTH PER LANE				***655***	

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	180		1060		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	180		1060		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	5		27		
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:	50				
STORAGE LENGTH:	200		885		
TOTAL TURN LANE LENGTH:	***250***		***885***		
TURN LANE LENGTH PER LANE	***250***		***442.5***		

NORTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

INTERSTATE 76 WESTBOUND EXIT RAMP

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	20		0		350
LANE GROUP:		LEFT/THRU/RIGHT			
LANE GROUP VOLUME:			370		
NUMBER OF LANES:			1		
VEHICLES PER CYCLE:			10		
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:					
STORAGE LENGTH:			375		
TOTAL TURN LANE LENGTH:			***375***		
TURN LANE LENGTH PER LANE			***375***		

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

OPENING YEAR 2019 'BUILD' TRAFFIC VOLUMES - AM COMMUTER PEAK HOUR

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / I-76 Eastbound Ramps

ANTICIPATED CYCLE LENGTH: 75 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	120		170		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	120		170		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	3		4		
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				
STORAGE LENGTH:	150		175		
TOTAL TURN LANE LENGTH:	***200***		***175***		
TURN LANE LENGTH PER LANE	***200***		***87.5***		

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			340		20
LANE GROUP:			THRU/RIGHT		
LANE GROUP VOLUME:				360	
NUMBER OF LANES:				2	
VEHICLES PER CYCLE:				8	
CONTROLING LANE GROUP:				X	
DECELERATION LENGTH:					
STORAGE LENGTH:				325	
TOTAL TURN LANE LENGTH:				***325***	
TURN LANE LENGTH PER LANE				***162.5***	

INTERSTATE 76 EASTBOUND EXIT RAMP

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	340		0		110
LANE GROUP:		LEFT/THRU			RIGHT
LANE GROUP VOLUME:		340			110
NUMBER OF LANES:		1			1
VEHICLES PER CYCLE:		8			3
CONTROLING LANE GROUP:		X			X
DECELERATION LENGTH:					50
STORAGE LENGTH:		325			150
TOTAL TURN LANE LENGTH:		***325***			***200***
TURN LANE LENGTH PER LANE		***325***			***200***

SOUTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

OPENING YEAR 2019 'BUILD' TRAFFIC VOLUMES - AM COMMERCIAL PEAK HOUR

Tallmadge Road / I-76 Eastbound Ramps

ANTICIPATED CYCLE LENGTH:	75	SEC.
DESIGN SPEED:	35	MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	190		290		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	190		290		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	4		7		
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				
STORAGE LENGTH:	175		275		
TOTAL TURN LANE LENGTH:	***225***		***275***		
TURN LANE LENGTH PER LANE	***225***		***137.5***		

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			410		20
LANE GROUP:			THRU/RIGHT		
LANE GROUP VOLUME:				430	
NUMBER OF LANES:				2	
VEHICLES PER CYCLE:				9	
CONTROLING LANE GROUP:				X	
DECELERATION LENGTH:					
STORAGE LENGTH:				350	
TOTAL TURN LANE LENGTH:				***350***	
TURN LANE LENGTH PER LANE				***175***	

INTERSTATE 76 EASTBOUND EXIT RAMP

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	330		0		110
LANE GROUP:		LEFT/THRU			RIGHT
LANE GROUP VOLUME:		330			110
NUMBER OF LANES:		1			1
VEHICLES PER CYCLE:		7			3
CONTROLING LANE GROUP:		X			X
DECELERATION LENGTH:					50
STORAGE LENGTH:		275			150
TOTAL TURN LANE LENGTH:		***275***			***200***
TURN LANE LENGTH PER LANE		***275***			***200***

SOUTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

OPENING YEAR 2019 'BUILD' TRAFFIC VOLUMES - PM PEAK HOUR

Tallmadge Road / I-76 Eastbound Ramps

ANTICIPATED CYCLE LENGTH: 90 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	410		640		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	410		640		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	11		16		
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				
STORAGE LENGTH:	400		550		
TOTAL TURN LANE LENGTH:	***450***		***550***		
TURN LANE LENGTH PER LANE	***450***		***275***		

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			700		70
LANE GROUP:			THRU/RIGHT		
LANE GROUP VOLUME:				770	
NUMBER OF LANES:				2	
VEHICLES PER CYCLE:				20	
CONTROLING LANE GROUP:				X	
DECELERATION LENGTH:					
STORAGE LENGTH:				675	
TOTAL TURN LANE LENGTH:				***675***	
TURN LANE LENGTH PER LANE				***337.5***	

INTERSTATE 76 EASTBOUND EXIT RAMP

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	540		0		170
LANE GROUP:		LEFT/THRU			RIGHT
LANE GROUP VOLUME:		540			170
NUMBER OF LANES:		1			1
VEHICLES PER CYCLE:		14			5
CONTROLING LANE GROUP:		X			X
DECELERATION LENGTH:					50
STORAGE LENGTH:		500			200
TOTAL TURN LANE LENGTH:		***500***			***250***
TURN LANE LENGTH PER LANE		***500***			***250***

SOUTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

DESIGN YEAR 2039 'BUILD' TRAFFIC VOLUMES - AM COMMUTER PEAK HOUR

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / Mogadore Road

ANTICIPATED CYCLE LENGTH: 80 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	180		480		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	180		480		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	4		11		
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				
STORAGE LENGTH:	175		400		
TOTAL TURN LANE LENGTH:	***225***		***400***		
TURN LANE LENGTH PER LANE	***225***		***200***		

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			540		560
LANE GROUP:			THRU		RIGHT
LANE GROUP VOLUME:			540		560
NUMBER OF LANES:			2		1
VEHICLES PER CYCLE:			12		13
CONTROLING LANE GROUP:					X
DECELERATION LENGTH:					50
STORAGE LENGTH:			450		475
TOTAL TURN LANE LENGTH:			***450***		***525***
TURN LANE LENGTH PER LANE			***225***		***525***

NORTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

MOGADORE ROAD SOUTHBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	430				110
LANE GROUP:	LEFT				RIGHT
LANE GROUP VOLUME:	430				110
NUMBER OF LANES:	2				1
VEHICLES PER CYCLE:	10				3
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				50
STORAGE LENGTH:	375				150
TOTAL TURN LANE LENGTH:	***425***				***200***
TURN LANE LENGTH PER LANE	***212.5***				***200***

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

DESIGN YEAR 2039 'BUILD' TRAFFIC VOLUMES - AM COMMERCIAL PEAK HOUR

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / Mogadore Road

ANTICIPATED CYCLE LENGTH: 80 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	200		500		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	200		500		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	5		12		
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				
STORAGE LENGTH:	200		450		
TOTAL TURN LANE LENGTH:	***250***		***450***		
TURN LANE LENGTH PER LANE	***250***		***225***		

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			610		330
LANE GROUP:			THRU		RIGHT
LANE GROUP VOLUME:			610		330
NUMBER OF LANES:			2		1
VEHICLES PER CYCLE:			14		8
CONTROLING LANE GROUP:					X
DECELERATION LENGTH:					50
STORAGE LENGTH:			500		325
TOTAL TURN LANE LENGTH:			***500***		***375***
TURN LANE LENGTH PER LANE			***250***		***375***

NORTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

MOGADORE ROAD SOUTHBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	290				160
LANE GROUP:	LEFT				RIGHT
LANE GROUP VOLUME:	290				160
NUMBER OF LANES:	2				1
VEHICLES PER CYCLE:	7				4
CONTROLING LANE GROUP:					X
DECELERATION LENGTH:	50				50
STORAGE LENGTH:	275				175
TOTAL TURN LANE LENGTH:	***325***				***225***
TURN LANE LENGTH PER LANE	***162.5***				***225***

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

DESIGN YEAR 2039 'BUILD' TRAFFIC VOLUMES - PM PEAK HOUR

Tallmadge Road / Mogadore Road

ANTICIPATED CYCLE LENGTH: 80 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	260		1020		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	260		1020		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	6		23		
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:	50				
STORAGE LENGTH:	250		775		
TOTAL TURN LANE LENGTH:	***300***		***775***		
TURN LANE LENGTH PER LANE	***300***		***387.5***		

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			1120		400
LANE GROUP:			THRU		RIGHT
LANE GROUP VOLUME:			1120		400
NUMBER OF LANES:			2		1
VEHICLES PER CYCLE:			25		9
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:					50
STORAGE LENGTH:			825		350
TOTAL TURN LANE LENGTH:			***825***		***400***
TURN LANE LENGTH PER LANE			***412.5***		***400***

NORTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

MOGADORE ROAD SOUTHBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	640				400
LANE GROUP:	LEFT				RIGHT
LANE GROUP VOLUME:	640				400
NUMBER OF LANES:	2				1
VEHICLES PER CYCLE:	15				9
CONTROLING LANE GROUP:					X
DECELERATION LENGTH:	50				50
STORAGE LENGTH:	525				350
TOTAL TURN LANE LENGTH:	***575***				***400***
TURN LANE LENGTH PER LANE	***287.5***				***400***

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

DESIGN YEAR 2039 'BUILD' TRAFFIC VOLUMES - AM COMMUTER PEAK HOUR

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / I-76 Westbound Ramps

ANTICIPATED CYCLE LENGTH: 80 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			480		430
LANE GROUP:			THRU		RIGHT
LANE GROUP VOLUME:			480		430
NUMBER OF LANES:			2		1
VEHICLES PER CYCLE:			11		10
CONTROLING LANE GROUP:					X
DECELERATION LENGTH:					50
STORAGE LENGTH:			400		375
TOTAL TURN LANE LENGTH:			***400***		***425***
TURN LANE LENGTH PER LANE			***200***		***425***

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	160		810		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	160		810		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	4		18		
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:	50				
STORAGE LENGTH:	175		625		
TOTAL TURN LANE LENGTH:	***225***		***625***		
TURN LANE LENGTH PER LANE	***225***		***312.5***		

NORTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

INTERSTATE 76 WESTBOUND EXIT RAMP

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	20		0		290
LANE GROUP:		LEFT/THRU			RIGHT
LANE GROUP VOLUME:		20			290
NUMBER OF LANES:		1			1
VEHICLES PER CYCLE:		1			7
CONTROLING LANE GROUP:					X
DECELERATION LENGTH:					50
STORAGE LENGTH:		50			275
TOTAL TURN LANE LENGTH:		***50***			***325***
TURN LANE LENGTH PER LANE		***50***			***325***

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

DESIGN YEAR 2039 'BUILD' TRAFFIC VOLUMES - AM COMMERCIAL PEAK HOUR

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / I-76 Westbound Ramps

ANTICIPATED CYCLE LENGTH:	80	SEC.
DESIGN SPEED:	35	MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			500		290
LANE GROUP:			THRU		RIGHT
LANE GROUP VOLUME:			500		290
NUMBER OF LANES:			2		1
VEHICLES PER CYCLE:			12		7
CONTROLING LANE GROUP:					X
DECELERATION LENGTH:					50
STORAGE LENGTH:			450		275
TOTAL TURN LANE LENGTH:			***450***		***325***
TURN LANE LENGTH PER LANE			***225***		***325***

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	80		720		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	80		720		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	2		16		
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:	50				
STORAGE LENGTH:	100		550		
TOTAL TURN LANE LENGTH:	***150***		***550***		
TURN LANE LENGTH PER LANE	***150***		***275***		

NORTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

INTERSTATE 76 WESTBOUND EXIT RAMP

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	10		0		220
LANE GROUP:		LEFT/THRU			RIGHT
LANE GROUP VOLUME:		10			220
NUMBER OF LANES:		1			1
VEHICLES PER CYCLE:		1			5
CONTROLING LANE GROUP:					X
DECELERATION LENGTH:					50
STORAGE LENGTH:		50			200
TOTAL TURN LANE LENGTH:		***50***			***250***
TURN LANE LENGTH PER LANE		***50***			***250***

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

DESIGN YEAR 2039 'BUILD' TRAFFIC VOLUMES - PM PEAK HOUR

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / I-76 Westbound Ramps

ANTICIPATED CYCLE LENGTH: 80 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			990		670
LANE GROUP:			THRU		RIGHT
LANE GROUP VOLUME:			990		670
NUMBER OF LANES:			2		1
VEHICLES PER CYCLE:			22		15
CONTROLING LANE GROUP:					X
DECELERATION LENGTH:					50
STORAGE LENGTH:			750		525
TOTAL TURN LANE LENGTH:			***750***		***575***
TURN LANE LENGTH PER LANE			***375***		***575***

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	180		1200		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	180		1200		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	4		27		
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:	50				
STORAGE LENGTH:	175		885		
TOTAL TURN LANE LENGTH:	***225***		***885***		
TURN LANE LENGTH PER LANE	***225***		***442.5***		

NORTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

INTERSTATE 76 WESTBOUND EXIT RAMP

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	10		0		320
LANE GROUP:		LEFT/THRU			RIGHT
LANE GROUP VOLUME:		10			320
NUMBER OF LANES:		1			1
VEHICLES PER CYCLE:		1			8
CONTROLING LANE GROUP:					X
DECELERATION LENGTH:					50
STORAGE LENGTH:		50			325
TOTAL TURN LANE LENGTH:		***50***			***375***
TURN LANE LENGTH PER LANE		***50***			***375***

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

DESIGN YEAR 2039 'BUILD' TRAFFIC VOLUMES - AM COMMUTER PEAK HOUR

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / I-76 Eastbound Ramps

ANTICIPATED CYCLE LENGTH: 80 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	150		350		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	150		350		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	4		8		
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				
STORAGE LENGTH:	175		325		
TOTAL TURN LANE LENGTH:	***225***		***325***		
TURN LANE LENGTH PER LANE	***225***		***162.5***		

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			500		20
LANE GROUP:			THRU		RIGHT
LANE GROUP VOLUME:			500		20
NUMBER OF LANES:			2		1
VEHICLES PER CYCLE:			12		1
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:					50
STORAGE LENGTH:			450		50
TOTAL TURN LANE LENGTH:			***450***		***100***
TURN LANE LENGTH PER LANE			***225***		***100***

INTERSTATE 76 EASTBOUND EXIT RAMP

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	470		0		180
LANE GROUP:		LEFT/THRU			RIGHT
LANE GROUP VOLUME:		470			180
NUMBER OF LANES:		1			1
VEHICLES PER CYCLE:		11			4
CONTROLING LANE GROUP:		X			
DECELERATION LENGTH:					50
STORAGE LENGTH:		400			175
TOTAL TURN LANE LENGTH:		***400***			***225***
TURN LANE LENGTH PER LANE		***400***			***225***

SOUTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

DESIGN YEAR 2039 'BUILD' TRAFFIC VOLUMES - AM COMMERCIAL PEAK HOUR

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / I-76 Eastbound Ramps

ANTICIPATED CYCLE LENGTH: 80 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	170		340		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	170		340		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	4		8		
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				
STORAGE LENGTH:	175		325		
TOTAL TURN LANE LENGTH:	***225***		***325***		
TURN LANE LENGTH PER LANE	***225***		***162.5***		

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			440		20
LANE GROUP:			THRU		RIGHT
LANE GROUP VOLUME:			440		20
NUMBER OF LANES:			2		1
VEHICLES PER CYCLE:			10		1
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:					50
STORAGE LENGTH:			375		50
TOTAL TURN LANE LENGTH:			***375***		***100***
TURN LANE LENGTH PER LANE			***187.5***		***100***

INTERSTATE 76 EASTBOUND EXIT RAMP

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	360		0		140
LANE GROUP:		LEFT/THRU			RIGHT
LANE GROUP VOLUME:		360			140
NUMBER OF LANES:		1			1
VEHICLES PER CYCLE:		8			4
CONTROLING LANE GROUP:		X			
DECELERATION LENGTH:					50
STORAGE LENGTH:		325			175
TOTAL TURN LANE LENGTH:		***325***			***225***
TURN LANE LENGTH PER LANE		***325***			***225***

SOUTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER

STORAGE LENGTH CALCULATIONS

DESIGN YEAR 2039 'BUILD' TRAFFIC VOLUMES - PM PEAK HOUR

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Tallmadge Road / I-76 Eastbound Ramps

ANTICIPATED CYCLE LENGTH: 80 SEC.
DESIGN SPEED: 35 MPH

TALLMADGE ROAD EASTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	330		670		
LANE GROUP:	LEFT		THRU		
LANE GROUP VOLUME:	330		670		
NUMBER OF LANES:	1		2		
VEHICLES PER CYCLE:	8		15		
CONTROLING LANE GROUP:	X				
DECELERATION LENGTH:	50				
STORAGE LENGTH:	325		525		
TOTAL TURN LANE LENGTH:	***375***		***525***		
TURN LANE LENGTH PER LANE	***375***		***262.5***		

TALLMADGE ROAD WESTBOUND

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:			750		30
LANE GROUP:			THRU		RIGHT
LANE GROUP VOLUME:			750		30
NUMBER OF LANES:			2		1
VEHICLES PER CYCLE:			17		1
CONTROLING LANE GROUP:			X		
DECELERATION LENGTH:					50
STORAGE LENGTH:			600		50
TOTAL TURN LANE LENGTH:			***600***		***100***
TURN LANE LENGTH PER LANE			***300***		***100***

INTERSTATE 76 EASTBOUND EXIT RAMP

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:	630		0		160
LANE GROUP:		LEFT/THRU			RIGHT
LANE GROUP VOLUME:		630			160
NUMBER OF LANES:		1			1
VEHICLES PER CYCLE:		14			4
CONTROLING LANE GROUP:		X			
DECELERATION LENGTH:					50
STORAGE LENGTH:		500			175
TOTAL TURN LANE LENGTH:		***500***			***225***
TURN LANE LENGTH PER LANE		***500***			***225***

SOUTHBOUND ROAD N/A

MOVEMENT:	LEFT		THRU		RIGHT
VOLUME:					
LANE GROUP:					
LANE GROUP VOLUME:					
NUMBER OF LANES:					
VEHICLES PER CYCLE:					
CONTROLING LANE GROUP:					
DECELERATION LENGTH:					
STORAGE LENGTH:					
TOTAL TURN LANE LENGTH:					
TURN LANE LENGTH PER LANE					

RECOMMENDED STORAGE LENGTHS INCLUDE 50' DIVERGING TAPER