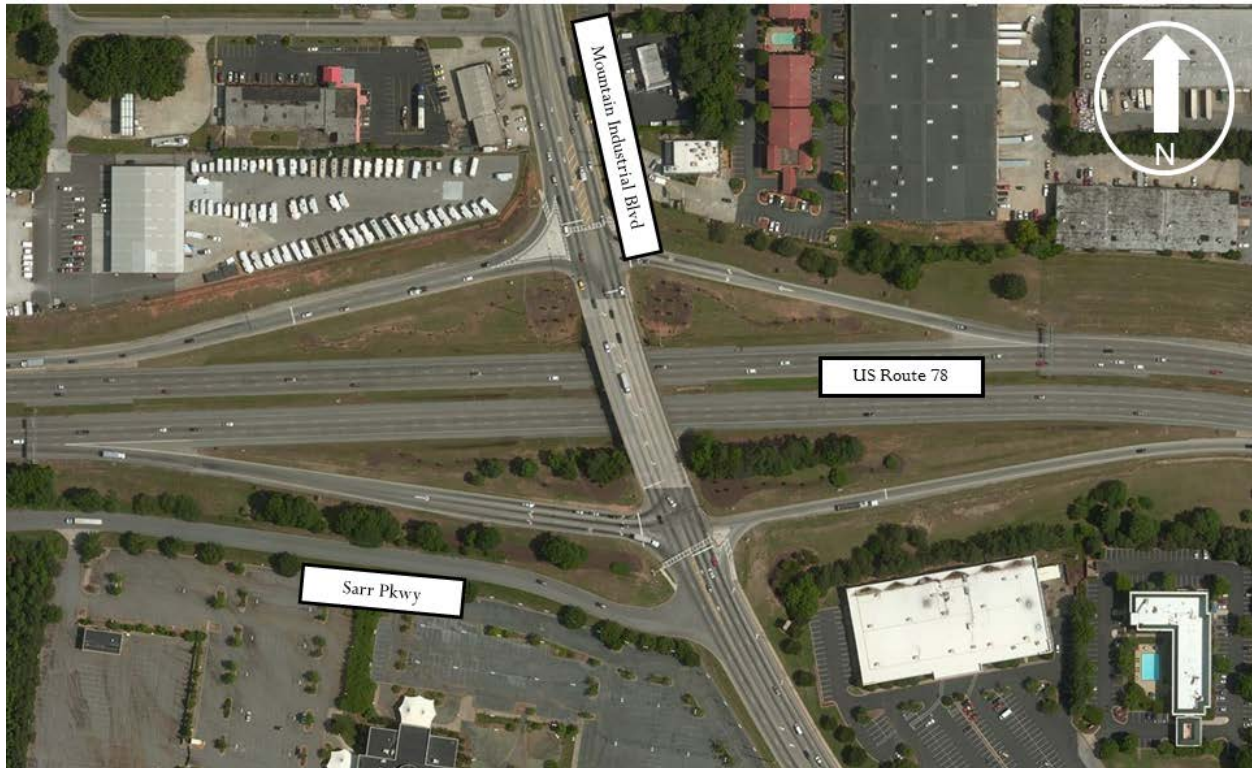


STONE MOUNTAIN COMMUNITY IMPROVEMENT DISTRICT (CID)

TRAFFIC ENGINEERING INVESTIGATION

US 78 AND MOUNTAIN INDUSTRIAL BOULEVARD INTERCHANGE



COUNTY: DeKalb County

CITY: Tucker, GA

PRIMARY ROUTE: Mountain Industrial Boulevard

SECONDARY ROUTE: US Route 78 Ramps

PREPARED BY: Wolverton



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INTRODUCTION

The US 78 and Mountain Industrial Boulevard interchange was evaluated for opportunities to reduce congestion, improve turning movement radii, and improve traffic safety. The Stone Mountain CID also expressed concern about the alignment of the US 78 off-ramps which negatively impacts right turns from the off-ramps due to poor sight distance and left turns onto the on-ramps due to long turning paths.

Mountain Industrial Boulevard roughly parallels I-285 to the east. Although typical existing conditions at the interchange are acceptable, capacity improvements are desired when conditions on I-285 deteriorate and traffic uses Mountain Industrial Boulevard as an alternate route.

After careful observation, W&A has developed three alternatives to improve operations at the interchange.

EXISTING CONDITIONS

US 78 is a road that runs east-west across Georgia from Tallapoosa to Augusta. US 78 is a freeway in the vicinity of the project area with three lanes in both directions. The Mountain Industrial Boulevard exit on US 78 is a signalized four-legged diamond interchange. The posted speed limit is 65 mph on US 78.

Mountain Industrial Boulevard is an Urban Principal Arterial that connects East Ponce De Leon Avenue in Stone Mountain to US-29/SR 8 in Tucker. South of the US-78 Eastbound ramps, Mountain Industrial Boulevard has two lanes in each direction with a center two-way left turn lane. North of the US-78 westbound ramps, Mountain Industrial Boulevard has two lanes in each direction with a center two-way left turn lane. On the bridge, between the US-78 eastbound and westbound ramps, there are two through lanes in each direction, with a left turn lane spanning the full length of the bridge in each direction. The opposing left turn lanes are striped adjacently. The closest signalized intersections are located approximately 750 feet to the north at Hammermill Road and 950 feet to the south at Greer Circle. Sight distance issues were observed on both approaches of the US-78/Stone Mountain Freeway off-ramps due to the bridge abutment. The posted speed limit is 45 mph on Mountain Industrial Boulevard.

Pedestrians are not permitted across the Mountain Industrial Boulevard bridge over US 78. Even if pedestrians were allowed to cross the bridge, there is not sufficient shoulder room to safely cross.

The traffic counts are based on a typical weekday. However, there are numerous days when I-285 will backup and various mobile applications, like Waze, and radio broadcasts will encourage vehicles to use Mountain Industrial Boulevard as an alternative route to I-285. This pattern is especially pronounced on Mountain Industrial Boulevard northbound during the AM peak hour and southbound during the PM peak hour. There were days in 2017 where the actual LOS was much worse than the typical weekday. However, the typical weekday is what is utilized in this report.

METHODOLOGY

The US 78 and Mountain Industrial Boulevard interchange was studied for possible improvement alternatives. Initial evaluations were made to assess the current conditions of the intersection, including AM and PM peak period turning movement counts (TMCs) on a normal weekday between Tuesday and Thursday. The vehicle counts are included in Appendix A. The Existing Year 2016 turning movement counts are shown graphically in Figure 1. Vehicle classification counts were also conducted at six locations: the US 78 westbound on-ramp, the US 78 westbound off-ramp, the US 78 eastbound on-ramp, the US 78 eastbound off-ramp, US 78 east of Mountain Industrial Boulevard, and US 78 west of Mountain Industrial Boulevard. The vehicle classification counts are included in Appendix B. The truck percentages are shown in Figure 4.

Historical traffic data provided by GDOT was used to establish a traffic growth rate. Average Annual Daily Traffic (AADT) values were found at six stations in the project area from the past 10 years. These values were used to establish linear regression equations, calculate AADTs for the years 2025 and 2030, and develop volume growth rates. A weighted average of the growth rates at each AADT station was taken to develop average growth rates to the years 2025 and 2030. The average 2025 growth rate is 1.8% and the average 2030 growth rate is 1.6%. Capacity improvements at the intersection were not assumed to generate additional traffic volume.

In addition to these growth rates, Township Tucker, a large multi-use development located approximately one mile to the north on Mountain Industrial Boulevard, was included in the future traffic projections. Township Tucker was considered a major development that would be outside the typical growth that would otherwise occur and be included in the growth rate calculations determined from historical growth. The traffic data from the Township Tucker traffic study was superimposed on the interchange for each of the 2025 and 2030 analyses.

The Future Year 2025 volumes are shown in Figure 2 and the Future Year 2030 volumes are shown in Figure 3.

Figure 1 – 2016 Existing Volumes

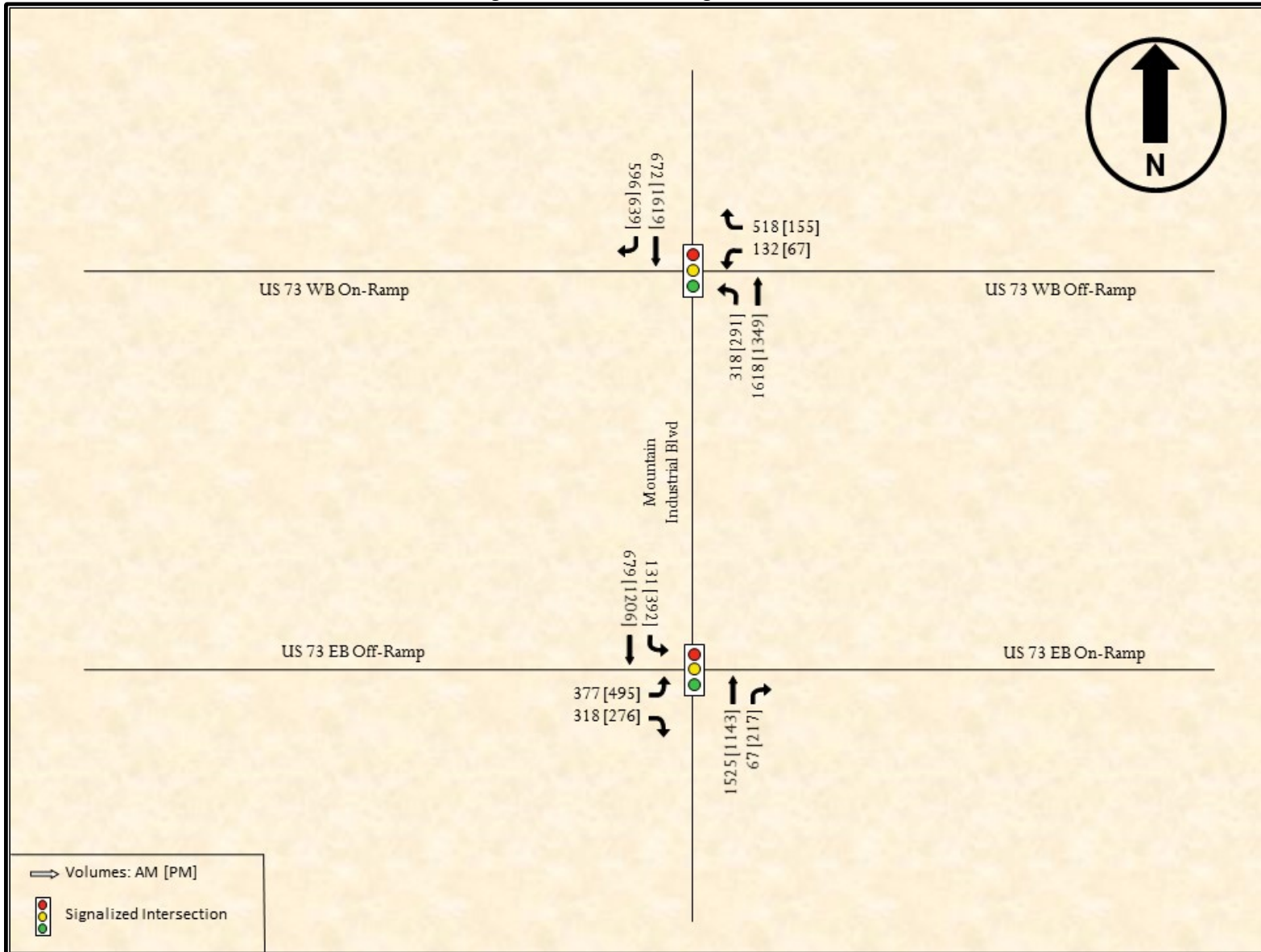


Figure 2 – 2025 Future Volumes

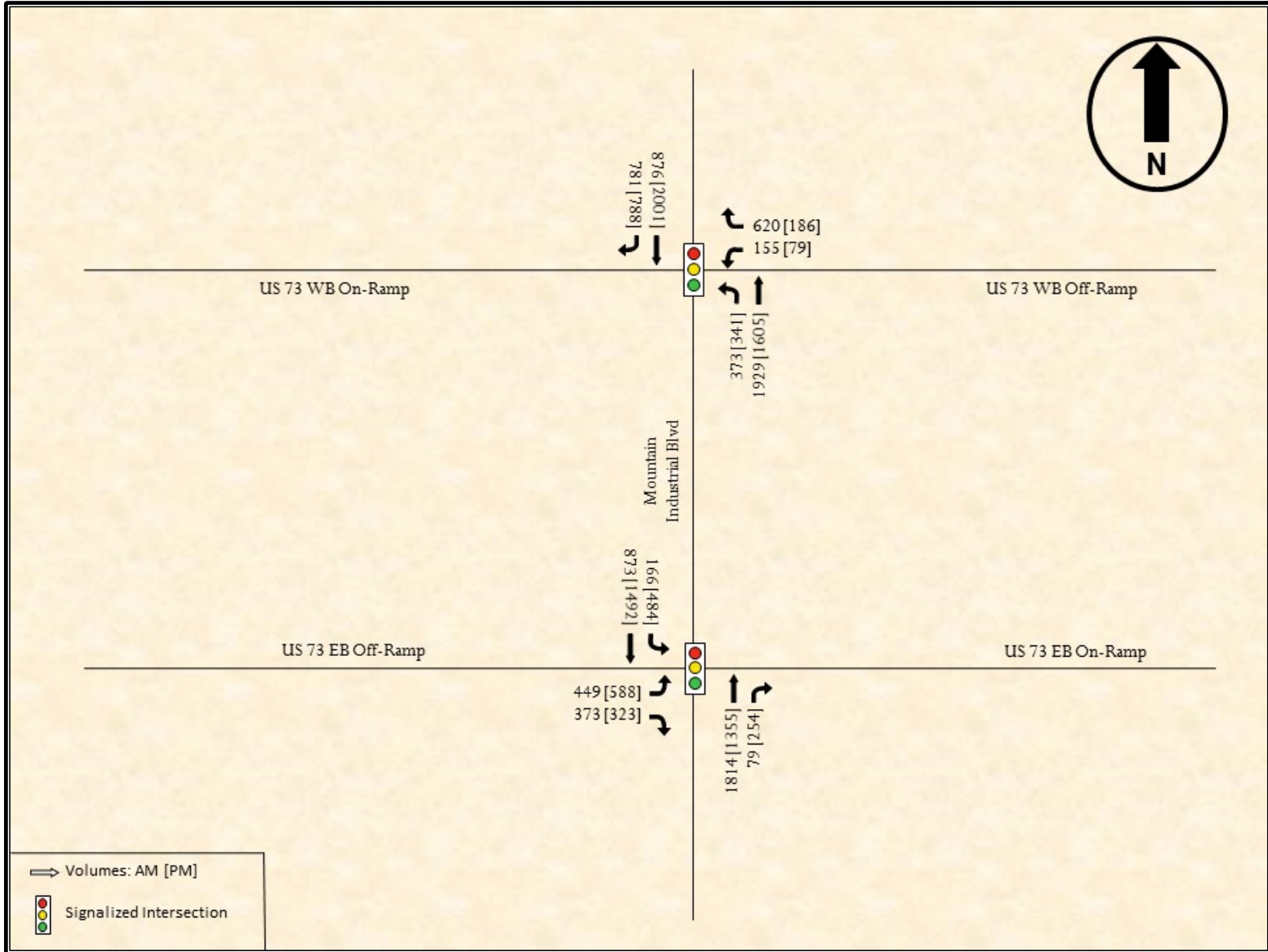


Figure 3 – 2030 Future Volumes

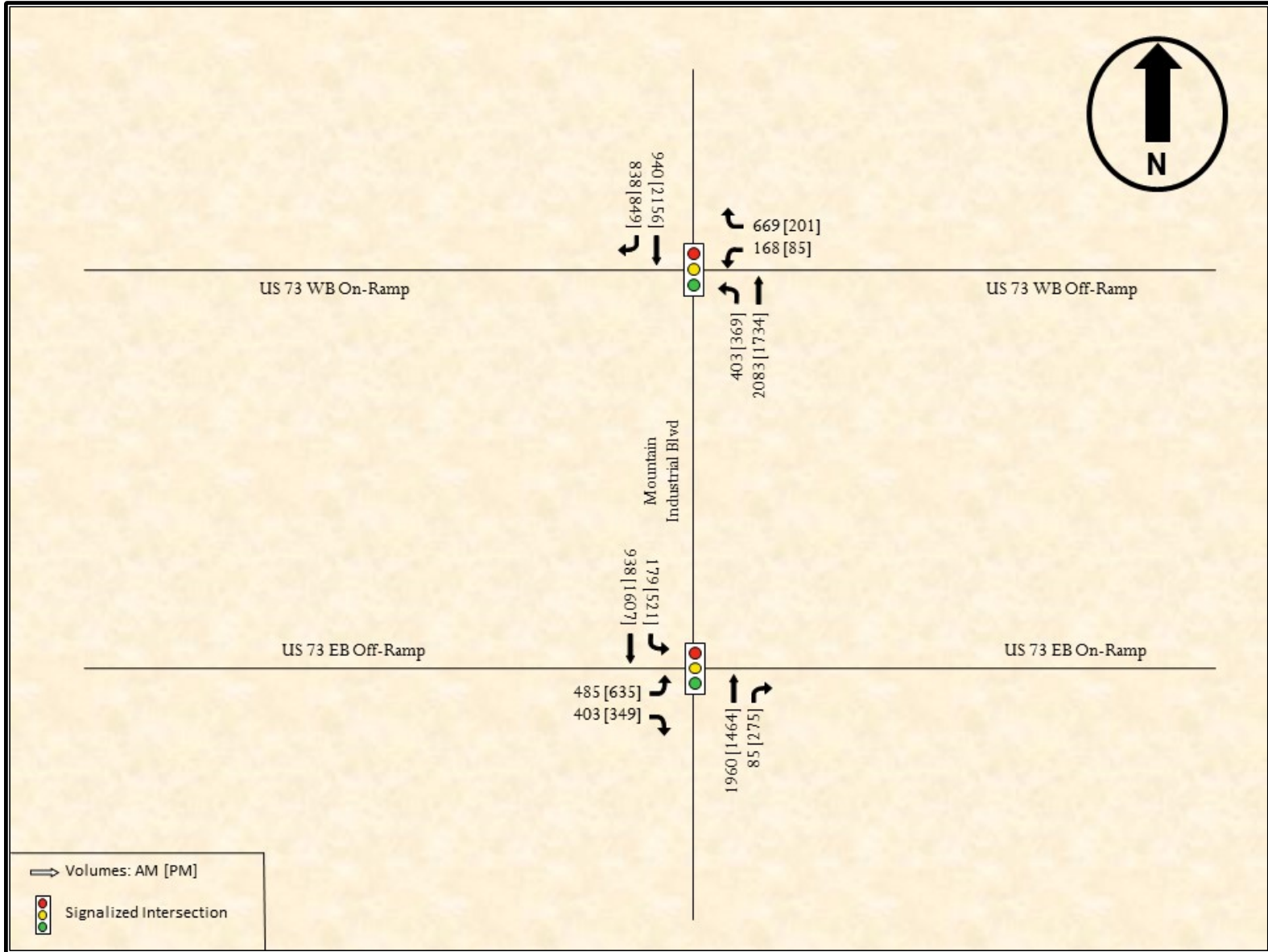
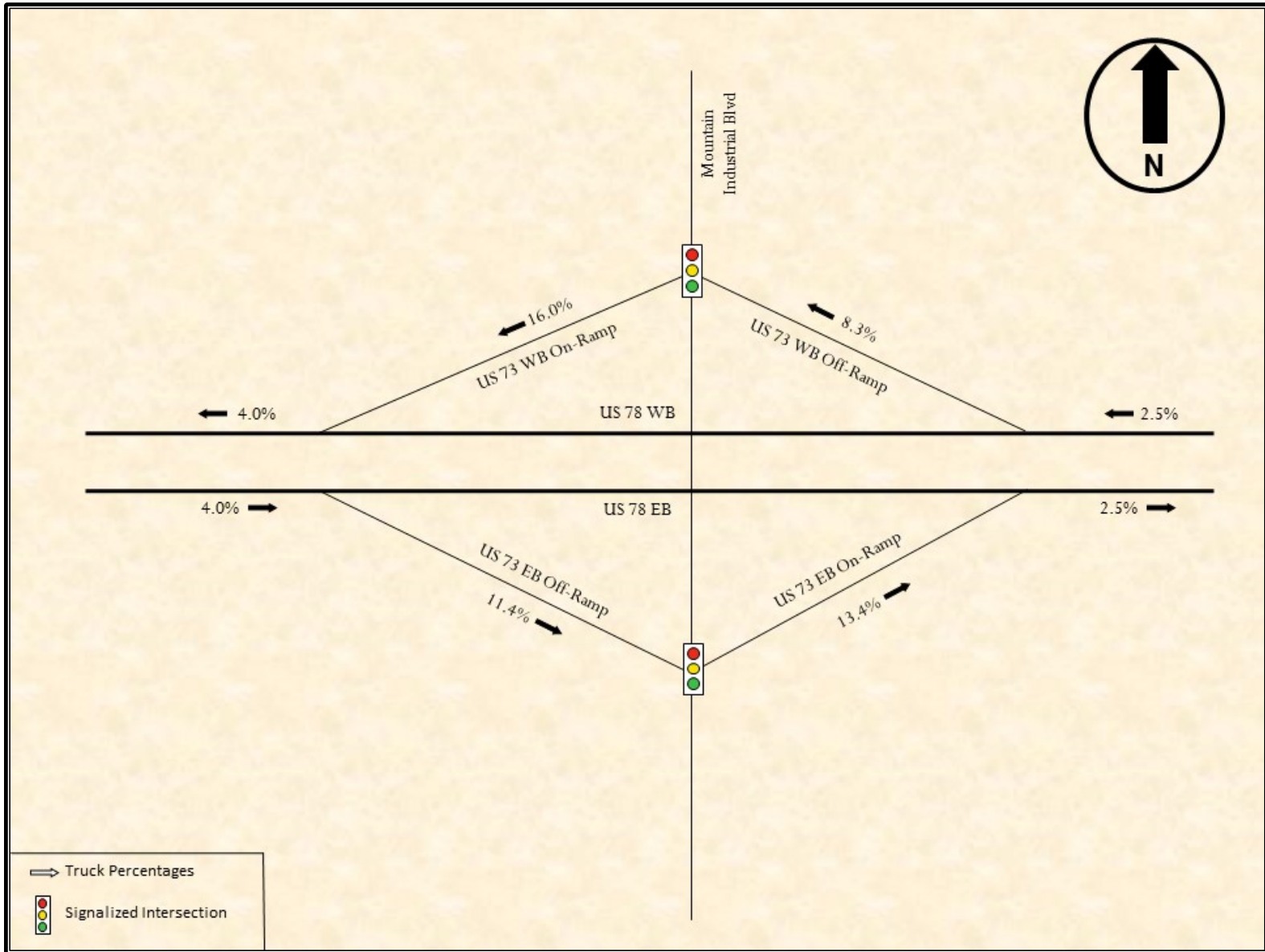


Figure 4 – Truck Percentages



A comparison of alternatives was made with regards to both operational and safety improvements. Operational benefits were analyzed for the Future Year 2025 scenario using Highway Capacity Manual (HCM) Level-of-Service (LOS)/delay, and queue lengths. The safety benefits were analyzed using the Highway Safety Manual (HSM) Crash Modification Factors (CMFs) to determine the expected reduction in crashes.

BENEFIT COST RATIO:

A benefit to cost ratio was calculated by the benefit of operational and safety benefits when compared to the projected project cost.

The reduction in travel time for each of the alternatives is of much greater value than simply reducing driver frustration and inconvenience. The time spent by people in traffic congestion is time that cannot be used for revenue producing activities. The time saved by drivers due to intersection improvements has a dollar value that can be calculated with the following formula:

$$S = R \times D \times O \times C$$

Where:

S = Dollars Saved

R = Average travel time reduction

D = Days timing is in effect

O = Average vehicle occupancy

C = Cost of delay per person

Delay incurs direct costs upon motorists in the form of increased fuel consumption and the value of their time wasted while waiting in traffic. Based on W&A's assumptions of a vehicle occupancy rate of 1.2, \$12.00 per hour for the value of motorists' time, and \$2.00 per gallon for gasoline, the dollar value of the travel time improvement was calculated for each of the alternatives.

A monetary value was also considered for the expected reduction in crashes. First, the CMF values for each alternative were multiplied together to calculate the expected reduction in collisions. This reduction in collisions was used with Table 7-1 of the Highway Safety Manual which lists the comprehensive societal crash costs of various collisions types. Two of the crash types listed are evident injury collisions and property damage only (PDO) collisions which have costs of \$79,000 and \$7,400, respectively. The evident injury crashes and PDO crashes were multiplied by the CMFs to calculate the new societal crash costs.

The cost of implementing the alternatives was then estimated and distributed over a 10-year period at an average annual interest rate of 6% to equate to an average annual cost. Dividing the operation and safety benefit by the annual cost yields the benefit to cost ratio.

CRASH DATA

Crash data at the US 78 and Mountain Industrial Boulevard interchange was obtained from the Georgia Department of Transportation (GDOT) between the years of 2014 and 2015. The results of the crash data are shown in Table 1 and Table 2 below.

Table 1 – Crash Summary (Mountain Industrial Blvd @ US 78 WB Ramps)

YEAR	ANGLE	HEAD ON	NOT A COLLISION WITH MOTOR VEHICLE	REAR END	SIDE SWIPE - OPPOSITE DIRECTION	SIDE SWIPE - SAME DIRECTION	TOTAL	INJURY	FATALITY
2014	4	0	0	13	0	2	19	15	0
2015	1	0	0	3	0	1	5	0	0
Total	5	0	0	16	0	3	24	15	0
%	21%	0%	0%	66%	0%	13%	100%	63%	0%

Table 2 – Crash Summary (Mountain Industrial Blvd @ US 78 EB Ramps)

YEAR	ANGLE	HEAD ON	NOT A COLLISION WITH MOTOR VEHICLE	REAR END	SIDE SWIPE - OPPOSITE DIRECTION	SIDE SWIPE - SAME DIRECTION	TOTAL	INJURY	FATALITY
2014	3	1	0	18	0	0	22	5	0
2015	7	0	1	20	0	4	32	17	0
Total	10	1	1	38	0	4	54	22	0
%	19%	2%	2%	70%	0%	7%	100%	41%	0%

As shown in Table 1 and Table 2, 78 crashes occurred at the interchange over a two-year period with a majority occurring at the US 78 eastbound ramps intersection. The majority of the crashes were rear end collisions which could indicate congested conditions. Angle crashes and same direction side swipes make up most of the remaining collisions. Thirty-nine (39) of 78 crashes resulted in injuries and none of the crashes involved a fatality. The crash data is included in Appendix C.

PROPOSED IMPROVEMENTS

The US 78 and Mountain Industrial Boulevard interchange was evaluated with the existing geometry for Existing Year 2016 volumes and Future Year 2025 and 2030 volumes. The three improvement alternatives were evaluated using Synchro software. The Synchro printouts are included in Appendix D.

Table 12 shows the Highway Capacity Manual (HCM) LOS along with the delay in seconds for the two intersections at the US 78 and Mountain Industrial Boulevard interchange if no improvements are made. LOS D is considered the lower limit of an acceptable LOS, so the interchange currently operates at acceptable levels and is projected to continue to operate at an acceptable LOS in 2025. Future Year 2030 volume increases at the US 78 eastbound ramps intersection are projected to decrease LOS to an E.

NO IMPROVEMENTS:

The No Improvements scenario involves no geometric improvements to the existing intersection. As shown in Table 12, the Existing Year 2016 scenario has a LOS C at the US 78 westbound ramps intersection during both peak hours, and a LOS C at the US 78 eastbound ramps intersection during both peak hours. Typically, AM traffic distribution is heavier on US 78 westbound towards Atlanta and on Mountain Industrial Boulevard northbound towards the northern and eastern Atlanta suburbs. The distribution flips in the PM as traffic distribution is heavier on US 78 eastbound away from Atlanta and on Mountain Industrial Boulevard

southbound. The major reason the higher delay is at the US 78 westbound ramps during the AM peak hour is because the US 78 westbound off-ramp right turn volumes are very high.

With additional traffic volume in the Future Year 2025 scenario, the operations at the interchange are expected to worsen; however, both intersections are projected to operate with acceptable LOS. The Future Year 2030 was also analyzed which shows the US 78 westbound ramps intersection is expected to operate with unacceptable delay during both peak hours. This intersection is expected to operate at a LOS E with 71 seconds of delay during the AM peak hour and a LOS E with 67 seconds of delay during the PM peak hour. This LOS is primarily due to large delays on the US 78 westbound off-ramp.

ALTERNATIVE 1:

Alternative 1 consists of: the modification of the diamond interchange to a diverging diamond interchange (DDI), the realignment of both US 78 off-ramps with Mountain Industrial Boulevard, and the increase in the number of lanes on both US 78 off-ramps.

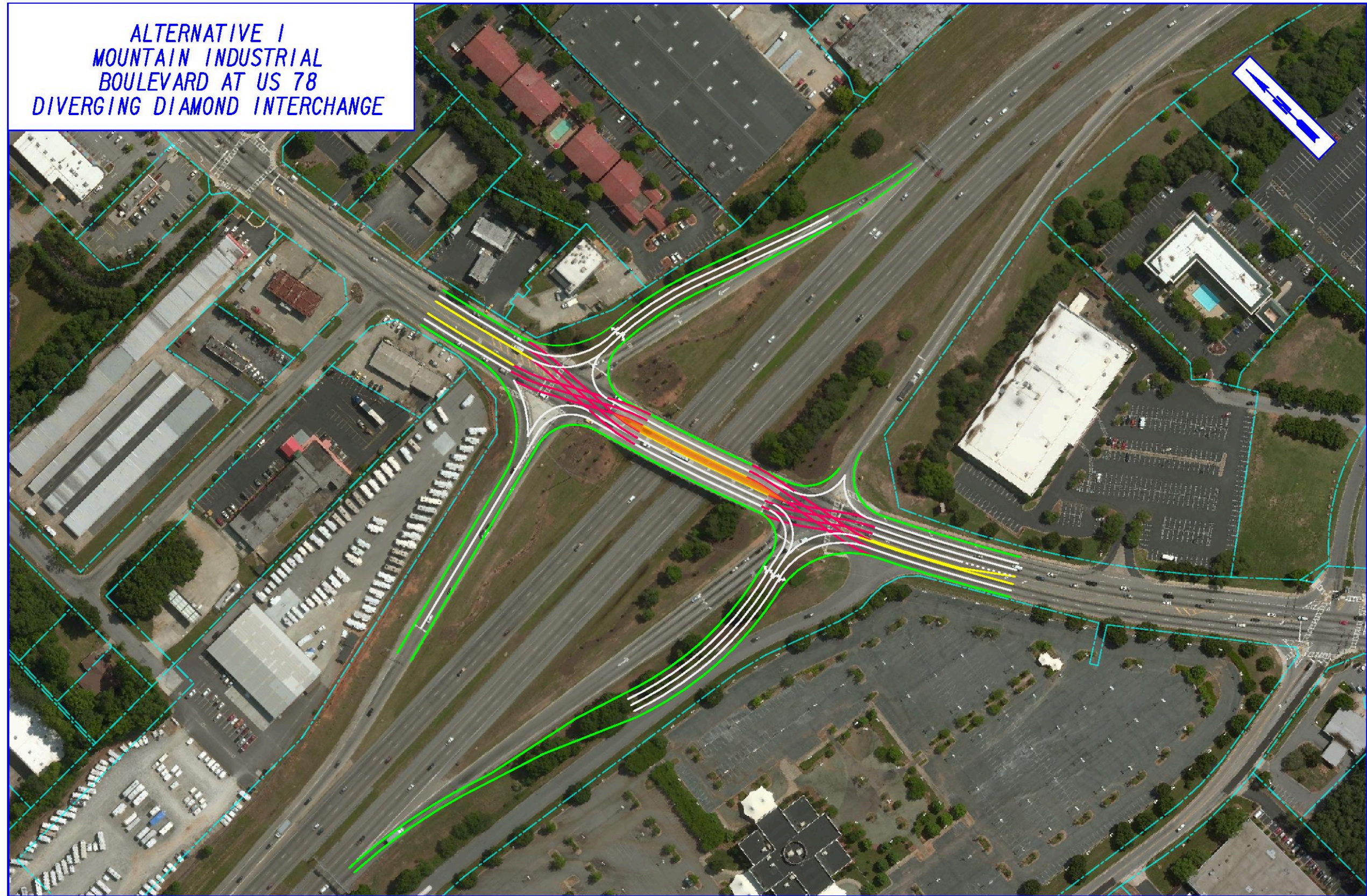
Alternative 1 will modify the diamond interchange to a DDI. The DDI would utilize the existing bridge as the number of travel lanes on the bridge will decrease from six to five, providing sufficient space for pedestrians.

The US 78 eastbound off-ramp currently has three lanes as it approaches Mountain Industrial Boulevard: one right turn lane, one shared right/left turn lane, and one left turn lane. The proposed improvements will add an additional lane and change the lane configuration to two right turn lanes and two left turn lanes. To better align the eastbound off-ramp with Mountain Industrial Boulevard, the Sarr Parkway right of way will be utilized and thus require the closure of Sarr Parkway between Mountain Industrial Boulevard and Greer Circle. Since Sarr Parkway is only a westbound roadway in this section, rerouting the traffic to Greer Circle will not adversely affect the traffic in this area.

The US 78 westbound off-ramp currently has two lanes as it approaches Mountain Industrial Boulevard: one right turn lane and one shared right/left turn lane. The proposed improvements will add an additional lane and change the lane configuration to two right turn lanes and one left turn lane.

Finally, both US 78 off-ramps are proposed to be realigned with Mountain Industrial Boulevard. This realignment will reduce the skew with Mountain Industrial Boulevard and increase the distance of the off-ramps from the Mountain Industrial Boulevard bridge over US 78. The stop bars on the Mountain Industrial Boulevard bridge over US 78 were set using a WB-67 design vehicle. The merge and exit points both to and from US 78 were kept at the current locations so that an Interchange Modification Report was not required. The Alternative 1 concept drawing is shown in Figure 5.

Figure 5 – Alternative 1 Concept Drawing



Operational Impacts

The primary operational advantage to a DDI is a reduction in the number of signal phases from three to two. This can greatly increase the capacity of the interchange as movements which previously conflicted with each other can now operate simultaneously. This can also be a drawback as opposing movements on the main street (Mountain Industrial Boulevard northbound and southbound) can no longer run simultaneously.

Although the DDI will have fewer lanes than the existing diamond interchange, the Future Year 2025 delay is expected to improve at the US 78 westbound ramps in both peak hours and at the US 78 eastbound ramps in the AM peak hour. The primary reason for the LOS improvement is the off-ramp level of service is projected to improve as the ramps will receive additional green time.

The relocation of the ramp intersections on Mountain Industrial Boulevard further apart would likely improve the LOS; however, this impact would be minor. If the ramp intersections were moved farther apart then vehicle storage would increase slightly, but not enough to significantly improve traffic operations.

As shown in Table 12, the Future Year 2030 scenario for the DDI forecasts the operations to worsen, with the US 78 westbound ramps intersection projected to operate with unacceptable delay during the AM peak hour and the US 78 eastbound ramps intersection projected to operate with unacceptable delay during the PM peak hour. The reason for this unacceptable delay is the Mountain Industrial Boulevard through movement delay is expected to increase because the northbound and southbound approaches cannot proceed simultaneously.

One operational disadvantage of a DDI is off-ramp right turns. The off-ramp right turns must look to the far side of the roadway to find suitable gaps in traffic; therefore, it is assumed that right turns on red will be prohibited. Adding a second dedicated right turn lane at both off-ramps should help alleviate this additional delay incurred by prohibiting the right turn on red movements.

Safety Impacts

A DDI is expected to result in fewer crashes than a typical diamond interchange. As there are fewer locations for traffic to cross, merge, and diverge, the number of conflict points is reduced from 26 to 14 which means fewer locations for a potential vehicular crash. The CMF for the conversion of a diamond interchange to a DDI is 0.59, meaning the number of crashes are expected to decrease by 41%.

The realignment of the US 78 off-ramps is projected to have two possible safety benefits. First, the intersections will have a reduced skew to improve sight distance for the off-ramp vehicles turning right.

Second, the Mountain Industrial Boulevard stop bars for left turns onto the US 78 on-ramps are located far from the intersection which creates a long turning path. In addition, guardrail is located adjacent to the curb which vehicles frequently hit while turning left. The realignment of the US 78 off-ramps will allow the Mountain Industrial Boulevard stop bars to be moved forward and reduce the length of the turning paths for left turns onto the on-ramps. This could reduce the number of left turning collisions with the guardrail.

The average reduction of the intersection skew angle of the US 78 off-ramps is approximately 15 degrees. This corresponds to a CMF of 0.94 which means that the number of crashes is expected to reduce by 6% with the realignment of the US 78 off-ramps.

Finally, it is assumed that right turns on red will not be allowed for the US 78 off-ramps. The prohibition of right turns on red has a CMF value of 0.94.

If the CMFs for the conversion of a diamond interchange to a DDI, the reduction of the intersection skew angles, and the prohibition of right turns on red are considered together, the resulting CMF is 0.52 which means the expected number of crashes will decrease by 48%. The list of CMFs is shown in Table 13.

Annual Benefits

Table 3 – Alternative 1 Annual Operational Benefits

Time Period	Travel Time		Fuel Consumption		Total
	Veh-Hrs	Value	Gallons	Value	Dollars
AM Peak	1,806	\$26,002	-2,750	(\$5,500)	\$20,502
PM Peak	9,360	\$134,788	2,500	\$5,000	\$139,788
Total	11,166	\$160,790	-250	(\$500)	\$160,290

Table 4 – Alternative 1 Annual Safety Benefits

CMF	Evident Injury			Property Damage Only			Total
	Existing Crashes	Projected Crashes	Value	Existing Crashes	Projected Crashes	Value	Dollars
0.52	19.5	10.1	\$739,440	19.5	10.1	\$69,264	\$808,704

Table 5 – Alternative 1 Annual Benefits

Operational Benefit	Safety Benefit	Total Benefit
\$160,290	\$808,704	\$968,994

The Alternative 1 annual operational, safety, and total benefits are shown in Table 3, Table 4, and Table 5, respectively, above. After considering changes in travel time and gallons consumed, the annual operational benefit of Alternative 1 is projected to be \$160,300. The annual safety benefit is forecasted to be \$808,700. This value is large because the CMF value of 0.52 is expected to heavily reduce the number of future crashes. The total annual benefit is projected to be \$969,000.

Even though Alternative 1 does have an operational benefit over the No Improvement Alternative, the safety benefit of this alternative is far greater and should be strongly considered in the selection of the preferred alternative.

The total Alternative 1 cost, including engineering, right-of-way, utilities, and construction is projected to be \$3,000,000.

Figure 6 – Alternative 2 Concept Drawing



ALTERNATIVE 2:

Alternative 2 consists of dual left turns on Mountain Industrial Boulevard onto the US 78 on-ramps. The improvements are intended to increase the overall capacity of the US 78 and Mountain Industrial Boulevard interchange.

existing Mountain Industrial Boulevard bridge over US 78 would be widened to accommodate two additional travel lanes and sidewalk on both sides of the bridge for pedestrians. Extra storage for the left turns would be provided both north and south of the interchange to allow left turning vehicles more space to queue. The raised median at both US 78 on-ramps must be modified to accommodate dual left turns. The Alternative 2 concept drawing is shown in Figure 6.

Operational Impacts

As shown in Table 12, Alternative 2 is expected to reduce Future Year 2025 and Future Year 2030 delay during both peak hours at the US 78 and Mountain Industrial Boulevard interchange. Dual left turn lanes on Mountain Industrial Boulevard onto the US 78 on-ramps are intended to increase the number of left turn vehicles that can be serviced. The dual left turns are projected to shorten the green time needed for the left turns; thus, more green time can be redirected to other interchange movements and overall LOS is improved.

The current left turn signal phasing is protected-permissive. The creation of dual left turn lanes on Mountain Industrial Boulevard will require the phasing to be changed to protected-only. Protected-permissive signal phasing provides left turning traffic with a green arrow and with the option to turn left by yielding to opposing through traffic. Protected-only phasing does not allow left turning vehicles to yield to opposing through traffic which can result in increased delay, particularly during off-peak hours when the opposing through volumes are lower.

Safety Impacts

Protected-only signal phasing typically has higher delay than protected-permissive signal phasing; however, protected-only signal phasing can reduce the number of crashes as vehicles do not have the option of yielding to opposing traffic. There is no CMF available for changing the signal phasing from protected-permissive to protected only. However, as shown in Table 13 the CMF for changing the signal phasing from permissive to protected-only is 0.94. The CMF value of 0.94 is a reasonable assumption for this Alternative 2.

Annual Benefits

Table 6 – Alternative 2 Annual Operational Benefits

Time Period	Travel Time		Fuel Consumption		Total
	Veh-Hrs	Value	Gallons	Value	Dollars
AM Peak	2,930	\$42,197	2,000	\$4,000	\$46,197
PM Peak	8,432	\$121,426	9,500	\$19,000	\$140,426
Total	11,363	\$163,623	11,500	\$23,000	\$186,623

Table 7 – Alternative 2 Annual Safety Benefits

CMF	Evident Injury			Property Damage Only			Total
	Existing Crashes	Projected Crashes	Value	Existing Crashes	Projected Crashes	Value	Dollars
0.94	19.5	18.3	\$92,430	19.5	18.3	\$8,658	\$101,088

Table 8 – Alternative 2 Annual Benefits

Operational Benefit	Safety Benefit	Total Benefit
\$186,623	\$101,088	\$287,711

The Alternative 2 annual operational, safety, and total benefits are shown in Table 6, Table 7, and Table 8, respectively, above. After considering changes in travel time and gallons consumed, the annual operation benefit of Alternative 2 is projected to be \$186,600. The CMF of 0.94 is projected to increase annual safety by a value of \$101,100 for a total annual benefit of \$287,700.

The total Alternative 2 cost, including engineering, right-of-way, utilities, and construction is projected to be \$6,000,000.

ALTERNATIVE 3:

Alternative 3 consists of the realignment of both US 78 off-ramps with Mountain Industrial Boulevard, and the increase in the number of lanes on both US 78 off-ramps.

The US 78 eastbound off-ramp currently has three lanes as it approaches Mountain Industrial Boulevard: one right turn lane, one shared right/left turn lane, and one left turn lane. The proposed improvements will add an additional lane and change the lane configuration to two right turn lanes and two left turn lanes. To better align the eastbound off-ramp with Mountain Industrial Boulevard, the Sarr Parkway right of way will be utilized and thus require the closure of Sarr Parkway between Mountain Industrial Boulevard and Greer Circle. Since Sarr Parkway is only a westbound roadway in this section, rerouting the traffic to Greer Circle will not adversely affect the traffic in this area.

The US 78 westbound off-ramp currently has two lanes as it approaches Mountain Industrial Boulevard: one right turn lane and one shared right/left turn lane. The proposed improvements will add an additional lane and change the lane configuration to two right turn lanes and one left turn lane.

Finally, both US 78 off-ramps are proposed to be realigned with Mountain Industrial Boulevard. This realignment will reduce the skew with Mountain Industrial Boulevard and increase the distance of the off-ramps from the Mountain Industrial Boulevard bridge over US 78. The stop bars on the Mountain Industrial Boulevard bridge over US 78 were set using a WB-67 design vehicle. The merge and exit points both to and from US 78 were kept at the current locations so that an Interchange Modification Report was not required.

Since Alternative 3 only improves the ramps there are no improvements made to the Mountain Industrial Boulevard bridge over US 78. Therefore, Alternative 3 does not accommodate pedestrians on the bridge. The Alternative 3 concept drawing is shown in Figure 7.

Figure 7 – Alternative 3 Concept Drawing



Operational Impacts

The US 78 eastbound off-ramp volume is heavy during both peak hours, so an additional lane is projected to increase the capacity of this ramp. The US 78 westbound off-ramp volume is heavy during the AM peak hour, so the additional lane is also projected to increase the capacity of this ramp.

The relocations of the ramp intersections on Mountain Industrial Boulevard further apart would likely improve the LOS; however, this impact would be minor. If the ramp intersections were moved farther apart then vehicle storage would increase slightly, but not enough to significantly improve traffic operations.

Similarly, the realignment of the US 78 off-ramps has a small operational advantage. The reduction of the skew along with the increase in ramp offset will allow the stop bars on the Mountain Industrial Boulevard bridge over US 78 to be moved farther forward. This will increase the storage length on the bridge and allow more US 78 off-ramp vehicles to queue on the bridge, although this effect will be minor.

As shown in Table 12, Alternative 3 is projected to slightly decrease both the Future Year 2025 delay and the Future Year 2030 delay compared to the No Improvements scenario due to the increase in the number of lanes on the US 78 off-ramps. However, the Synchro simulation cannot analyze the operational benefits of reducing the skew of the US 78 off-ramps as the change in radius is not considered in the HCM LOS or delay.

Safety Impacts

The realignment of the US 78 off-ramps is projected to have two possible safety benefits. First, the intersections will have a reduced skew to improve sight distance for the off-ramp vehicles turning right. These right turning vehicles must currently look left at an awkward angle to ensure suitable gaps when turning right on red. A reduction in this skew should make right turns on red easier.

Second, the Mountain Industrial Boulevard stop bars for left turns onto the US 78 on-ramps are located far from the intersection which creates a long turning path. In addition, guardrail is located adjacent to the curb which vehicles frequently hit while turning left. The realignment of the US 78 off-ramps will allow the Mountain Industrial Boulevard stop bars to be moved forward and reduce the length of the turning paths for left turns onto the on-ramps. This could reduce the number of left turning collisions with the guardrail.

The average reduction of the intersection skew angle of the US 78 off-ramps is approximately 15 degrees. This corresponds to a CMF of 0.94 which means that the number of crashes is expected to reduce by 6% with the realignment of the US 78 off-ramps. The complete list of CMF values is shown in Table 13 below.

Annual Benefits

Table 9 – Alternative 3 Annual Operational Benefits

Time Period	Travel Time		Fuel Consumption		Total
	Veh-Hrs	Value	Gallons	Value	Dollars
AM Peak	2,918	\$42,016	3,500	\$7,000	\$49,016
PM Peak	2,631	\$37,879	1,000	\$2,000	\$39,879
Total	5,548	\$79,896	4,500	\$9,000	\$88,896

Table 10 – Alternative 3 Annual Safety Benefits

CMF	Evident Injury			Property Damage Only			Total
	Existing Crashes	Projected Crashes	Value	Existing Crashes	Projected Crashes	Value	Dollars
0.94	19.5	18.3	\$92,430	19.5	18.3	\$8,658	\$101,088

Table 11 – Alternative 3 Annual Benefits

Operational Benefit	Safety Benefit	Total Benefit
\$88,896	\$101,088	\$189,984

The Alternative 3 annual operational, safety, and total benefits are shown in Table 9, Table 10, and Table 11, respectively, above. After considering changes in travel time and gallons consumed, the annual operational benefit of Alternative 3 is projected to be \$88,900. The CMF of 0.94 is projected to increase annual safety by a value of \$101,100 for a total annual benefit of \$190,000.

The total Alternative 3 cost, including engineering, right-of-way, utilities, and construction, is projected to be \$1,500,000.

SUMMARY OF ALTERNATIVES:

As discussed in the list of proposed improvements, each of the alternatives was analyzed for its operational and safety impacts. The operational impacts considered the change in travel time and fuel consumed while the safety impacts considered the expected change in crashes.

Table 12 – Capacity Analysis (HCM LOS and Delay in seconds)

Alternative		Intersection	2016		Future 2025		Future 2030	
Name	Number		AM	PM	AM	PM	AM	PM
No Improvements	-	Mtn Ind Blvd & US 78 WB ramps	C (34.0)	C (23.7)	D (49.7)	D (45.2)	E (71.2)	E (67.2)
		Mtn Ind Blvd & US 78 EB ramps	C (27.0)	C (31.8)	C (30.3)	D (42.3)	C (32.8)	D (53.2)
DDI (3 Lanes NB, 2 Lanes SB on Bridge)	1	Mtn Ind Blvd & US 78 WB ramps	--	--	D (47.3)	A (9.7)	E (67.9)	B (11.0)
		Mtn Ind Blvd & US 78 EB ramps	--	--	C (26.4)	D (51.8)	C (29.2)	E (67.0)
Dual Lefts on Bridge (8 lanes)	2	Mtn Ind Blvd & US 78 WB ramps	--	--	D (41.5)	C (26.4)	D (50.4)	C (29.7)
		Mtn Ind Blvd & US 78 EB ramps	--	--	C (29.4)	D (36.2)	C (30.9)	D (38.2)
Only Ramp Improvements (1 WBL, 2 WBR, 2 EBL, 2 EBR)	3	Mtn Ind Blvd & US 78 WB ramps	--	--	D (43.6)	D (42.3)	E (61.5)	E (63.5)
		Mtn Ind Blvd & US 78 EB ramps	--	--	C (26.8)	D (37.1)	C (28.7)	D (46.4)

Table 12 above shows the LOS and delay at the US 78 and Mountain Industrial Boulevard interchange. The No Improvements scenario is expected to have acceptable LOS during Existing Year 2016 and Future Year 2025. All three alternatives are expected to reduce delay with Alternatives 1 and 2 projected to have the greatest improvement.

Future Year 2030 was also analyzed for all three alternatives. The No Improvements scenario is projected to have unacceptable delay at the US 78 westbound ramps intersection during both peak hours. Alternative 1 is expected to reduce delay compared to the No Improvements scenario except at the US 78 eastbound ramps intersection during the PM peak hour. Alternative 2 is forecasted to reduce delay and to have acceptable delay during both peak hours. Alternative 3 is projected to reduce delay at both intersections during both peak hours, but the US 78 westbound ramps intersection is projected to have unacceptable delay during both peak hours.

Table 13 – Crash Modification Factors (CMFs)

Alternative	CMF ID	Recommendation	CMF	Crash Type	Crash Severity
1	6981	Convert diamond interchange to DDI	0.59	All	All
1	4580	Prohibit right-turn-on-red	0.93	All	All
1,3	5188	Change intersection skew angle (Assume average skew reduction of 15 degrees)	0.94	All	All
2	4653	Change from permitted to protected on major street	0.94	All	All

Table 13 above shows Crash Modification Factors included in the safety analysis. The CMF with the greatest impact is the conversion of a diamond interchange to a DDI with a value of 0.59. When multiplied by the CMF for reducing an intersection skew angle and by the CMF for prohibiting right turns on red, Alternative 1 is expected to reduce the number of crashes by 48%. Note that although right turns on red are assumed to be prohibited for Alternative 1, this CMF was not included in the safety analysis because most DDIs do not allow right turns on red. Alternative 2 is expected have 6% fewer crashes by changing the left turn phasing from protected-permitted to protected-only. Alternative 3 is expected to have a 6% reduction in crashes due to the reduction of the average intersection skew angle.

RECOMMENDATION

Three alternatives were developed for the US 78 and Mountain Industrial Boulevard intersection. Table 14 below shows the annual benefits, costs, and benefit to cost (B/C) ratios for each alternative.

Table 14 – Comparison of Benefit to Cost Ratios

Alternative		Annual Benefit	10-Year Annualized Cost	B/C Ratio
Number	Description			
1	DDI	\$968,994	\$407,700	2.4
2	Dual Lefts on Bridge	\$287,711	\$815,400	0.4
3	Only Ramp Improvements	\$189,984	\$203,850	0.9

As shown in Table 14 above, Alternative 1 is projected to have a B/C ratio of 2.4 which is the highest of the alternatives considered. Alternative 1 is projected to reduce vehicular delay, but it has the highest B/C ratio because it provides the greatest safety benefit. Diverging diamond interchanges are projected to significantly reduce the number of crashes at an interchange; thus, this benefit is a significant reason for the high B/C ratio. Also, Alternatives 1 and 2 provide pedestrian access on the Mountain Industrial Boulevard bridge over US 78 which is not considered in their B/C ratios.

W&A recommends that Alternative 1 be constructed because it is projected to reduce the interchange delay, it does not require widening the bridge over US 78, and it is expected to reduce the number of crashes at the interchange.

References:

1. Highway Capacity Manual, HCM 2010, Transportation Research Board, Washington, DC, 2010.
2. Synchro, Version 9, Trafficware Ltd., Sugar Land, TX, 2014
3. Highway Safety Manual, HSM 2010. American Associate of State Highway and Transportation Officials, Washington, DC, 2010
4. “Crash Modification Factors Clearinghouse”. University of North Carolina Highway Safety Research Center, <cmfclearinghouse.org> 2016. Web. 15 Feb 2017.

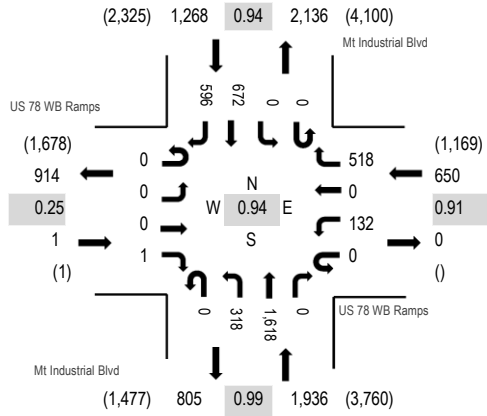
Appendix A – Traffic Counts



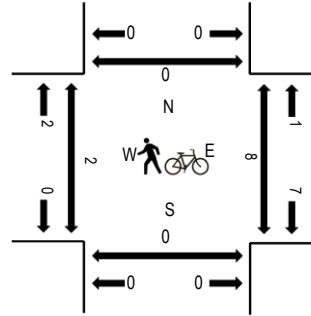
(303) 216-2439
www.alltrafficdata.net

Location: 1 Mt Industrial Blvd & US 78 WB Ramps AM
Date and Start Time: Thursday, December 15, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	US 78 WB Ramps Eastbound				US 78 WB Ramps Westbound				Mt Industrial Blvd Northbound				Mt Industrial Blvd Southbound				Total	Rolling Hour	Pedestrian Crossings				
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North	
6:30 AM	0	0	0	0	0	12	0	87	0	82	372	0	0	0	0	107	83	743	3,424	0	0	0	0
6:45 AM	0	0	0	0	0	33	0	103	0	69	418	0	0	0	0	142	129	894	3,702	0	0	0	0
7:00 AM	0	0	0	0	0	28	0	94	0	69	423	0	0	0	0	155	107	876	3,772	0	2	0	0
7:15 AM	0	0	0	0	0	22	0	118	0	87	414	0	0	0	0	135	135	911	3,855	2	0	0	0
7:30 AM	0	0	0	1	0	33	0	151	0	77	404	0	0	0	0	194	161	1,021	3,831	0	4	0	0
7:45 AM	0	0	0	0	0	36	0	111	0	76	424	0	0	0	0	181	136	964		0	1	0	0
8:00 AM	0	0	0	0	0	41	0	138	0	78	376	0	0	0	0	162	164	959		0	1	0	0
8:15 AM	0	0	0	0	0	29	0	133	0	57	334	0	0	0	0	166	168	887		0	0	0	0

Peak Rolling Hour Flow Rates

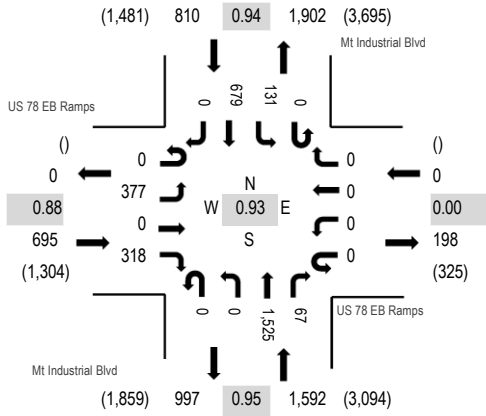
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total	
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
Articulated Trucks	0	0	0	0	0	1	0	0	0	16	24	0	0	0	0	12	12	65
Lights	0	0	0	1	0	129	0	511	0	284	1,529	0	0	0	0	618	540	3,612
Mediums	0	0	0	0	0	2	0	7	0	18	65	0	0	0	0	42	44	178
Total	0	0	0	1	0	132	0	518	0	318	1,618	0	0	0	0	672	596	3,855



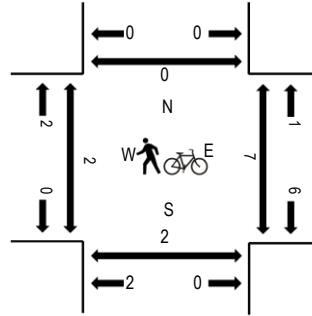
(303) 216-2439
www.alltrafficdata.net

Location: 2 Mt Industrial Blvd & US 78 EB Ramps AM
Date and Start Time: Thursday, December 15, 2016
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	US 78 EB Ramps Eastbound				US 78 EB Ramps Westbound				Mt Industrial Blvd Northbound				Mt Industrial Blvd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
6:30 AM	0	57	0	60	0	0	0	0	0	0	350	4	0	22	102	0	595	2,838	0	2	0	0
6:45 AM	0	84	0	77	0	0	0	0	0	0	418	8	0	24	156	0	767	3,072	0	0	0	0
7:00 AM	0	77	0	70	0	0	0	0	0	0	416	10	0	19	155	0	747	3,093	0	2	0	0
7:15 AM	0	95	0	69	0	0	0	0	0	0	381	14	0	28	142	0	729	3,097	2	0	2	0
7:30 AM	0	86	0	87	0	0	0	0	0	0	422	23	0	23	188	0	829	3,041	0	2	0	0
7:45 AM	0	115	0	89	0	0	0	0	0	0	344	18	0	46	176	0	788		0	3	0	0
8:00 AM	0	81	0	73	0	0	0	0	0	0	378	12	0	34	173	0	751		0	2	0	0
8:15 AM	0	111	0	73	0	0	0	0	0	0	280	16	0	24	169	0	673		0	0	0	0

Peak Rolling Hour Flow Rates

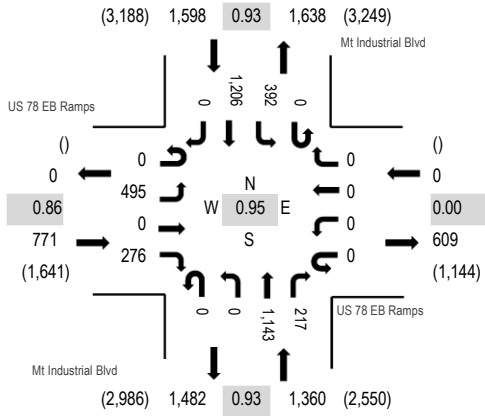
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	9	0	12	0	0	0	0	0	0	28	6	0	3	10	0	68
Lights	0	352	0	292	0	0	0	0	0	0	1,427	59	0	119	635	0	2,884
Mediums	0	16	0	14	0	0	0	0	0	0	70	2	0	9	34	0	145
Total	0	377	0	318	0	0	0	0	0	0	1,525	67	0	131	679	0	3,097



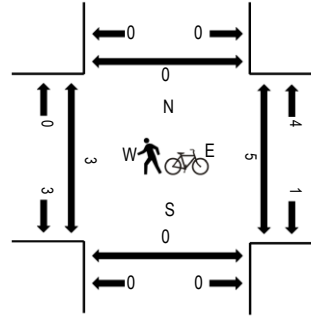
(303) 216-2439
www.alltrafficdata.net

Location: 2 Mt Industrial Blvd & US 78 EB Ramps PM
Date and Start Time: Thursday, December 15, 2016
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - All Vehicles



Peak Hour - Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

Interval Start Time	US 78 EB Ramps Eastbound				US 78 EB Ramps Westbound				Mt Industrial Blvd Northbound				Mt Industrial Blvd Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	126	0	73	0	0	0	0	0	0	273	46	0	97	319	0	934	3,651	2	0	0	0
4:15 PM	0	157	0	88	0	0	0	0	0	0	262	42	0	90	267	0	906	3,695	1	3	1	0
4:30 PM	0	146	0	86	0	0	0	0	0	0	275	71	0	96	270	0	944	3,729	2	1	0	0
4:45 PM	0	93	0	67	0	0	0	0	0	0	282	48	0	85	292	0	867	3,707	0	3	0	0
5:00 PM	0	139	0	70	0	0	0	0	0	0	299	66	0	108	296	0	978	3,728	0	0	0	0
5:15 PM	0	117	0	53	0	0	0	0	0	0	287	32	0	103	348	0	940		0	1	0	0
5:30 PM	0	158	0	62	0	0	0	0	0	0	244	40	0	94	324	0	922		0	1	0	0
5:45 PM	0	149	0	57	0	0	0	0	0	0	242	41	0	85	314	0	888		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	7	0	13	0	0	0	0	0	0	25	1	0	1	13	0	60
Lights	0	466	0	215	0	0	0	0	0	0	1,088	213	0	385	1,156	0	3,523
Mediums	0	22	0	48	0	0	0	0	0	0	30	3	0	6	37	0	146
Total	0	495	0	276	0	0	0	0	0	0	1,143	217	0	392	1,206	0	3,729

Appendix B – Vehicle Classification Counts

All Traffic Data Services, Inc

alltrafficdata.net

Site Code: 1
Station ID: 1
US78 EB ON RAMP

Latitude: 0' 0.0000 Undefined

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07:20/17	0	3	7	0	2	0	0	0	0	0	0	0	0	12
00:15	0	8	5	0	1	0	0	0	0	0	0	0	0	14
00:30	0	10	6	0	2	0	0	0	0	0	0	0	0	18
00:45	0	8	11	0	1	0	0	0	0	0	0	0	0	20
01:00	0	29	29	0	6	0	0	0	0	0	0	0	0	64
01:15	0	8	4	0	1	0	0	0	0	0	0	0	0	13
01:30	0	8	7	0	1	0	0	0	0	0	0	0	0	16
01:45	0	3	1	0	1	0	0	0	0	0	0	0	0	5
02:00	0	0	2	0	2	0	0	0	0	0	0	0	0	4
02:15	0	19	14	0	5	0	0	0	0	0	0	0	0	38
02:30	0	5	2	0	0	0	0	0	0	0	0	0	0	7
02:45	0	4	2	0	0	0	0	0	0	0	0	0	0	6
03:00	0	3	3	0	1	0	0	0	0	0	0	0	0	7
03:15	0	4	1	0	0	0	0	0	0	0	0	0	0	5
03:30	0	16	8	0	1	0	0	0	0	0	0	0	0	25
03:45	0	5	5	0	0	0	0	0	0	0	0	0	0	10
04:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1
04:15	0	4	1	0	0	0	0	0	0	0	0	0	0	10
04:30	0	4	1	0	0	0	0	0	0	0	0	0	0	5
04:45	0	4	1	0	1	1	0	0	0	0	0	0	0	7
05:00	0	15	6	0	1	1	0	0	0	0	0	0	0	23
05:15	0	4	4	0	1	0	0	0	0	0	0	0	0	9
05:30	0	5	3	1	1	1	0	1	0	0	0	0	0	12
05:45	0	7	3	1	1	0	0	0	0	0	0	0	0	12
06:00	0	4	4	0	2	0	0	0	0	0	0	0	0	10
06:15	0	20	14	2	5	1	0	1	0	0	0	0	0	43
06:30	0	11	6	0	1	0	0	0	0	0	0	0	0	18
06:45	0	7	3	0	5	0	0	0	0	0	0	0	0	15
07:00	0	7	8	0	3	1	0	0	0	0	0	0	0	19
07:15	1	10	7	2	8	1	0	1	1	0	0	0	0	31
07:30	1	35	24	2	17	2	0	1	1	0	0	0	0	83
07:45	0	8	8	0	6	0	0	0	0	0	0	0	0	22
08:00	0	9	9	0	4	0	0	0	0	0	0	0	0	22
08:15	0	13	8	1	3	0	0	0	0	0	0	0	0	25
08:30	0	18	10	1	14	0	0	1	0	0	0	0	0	44
08:45	0	48	35	2	27	0	0	1	0	0	0	0	0	113
09:00	0	20	11	1	7	0	0	2	0	0	0	0	0	41
09:15	0	21	16	2	8	0	0	1	0	0	0	0	0	48
09:30	0	19	4	1	4	0	0	1	0	0	0	0	0	29
09:45	0	19	10	1	8	1	0	1	0	0	0	0	0	40
10:00	0	79	41	5	27	1	0	5	0	0	0	0	0	158
10:15	0	16	6	0	8	0	0	0	1	0	0	0	0	31
10:30	1	21	9	1	13	2	0	0	1	0	0	0	0	48
10:45	0	24	12	0	7	0	0	1	0	0	0	0	0	44
11:00	0	31	9	1	3	0	0	0	0	0	0	0	0	44
11:15	1	92	36	2	31	2	0	1	2	0	0	0	0	167
11:30	0	16	13	2	0	0	0	0	0	0	0	0	0	31
11:45	0	17	18	2	4	0	0	1	2	0	0	0	0	44
12:00	0	22	3	0	1	0	0	1	0	0	0	0	0	27
12:15	1	21	14	0	4	1	0	1	1	0	0	0	0	43
12:30	1	76	48	4	9	1	0	3	3	0	0	0	0	145
12:45	0	27	9	1	2	0	0	0	1	0	0	0	0	40
13:00	0	17	15	0	5	0	0	3	0	0	0	0	0	40
13:15	0	40	12	0	2	0	0	0	0	0	0	0	0	54
13:30	0	40	13	1	1	0	0	1	0	0	0	0	0	56
13:45	0	124	49	2	10	0	0	4	1	0	0	0	0	190
Total	3	566	311	20	140	8	0	16	7	0	0	0	0	1071
Percent	0.3%	52.8%	29.0%	1.9%	13.1%	0.7%	0.0%	1.5%	0.7%	0.0%	0.0%	0.0%	0.0%	

All Traffic Data Services, Inc

alltrafficdata.net

Site Code: 1
Station ID: 1
US78 EB ON RAMP

Latitude: 0' 0.0000 Undefined

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12 PM	0	34	18	1	5	0	0	0	0	0	0	0	0	58
12:15	0	33	10	1	6	0	0	2	0	0	0	0	0	52
12:30	0	40	7	1	13	0	0	1	1	0	0	0	0	63
12:45	1	39	17	1	5	1	0	3	1	0	0	0	0	68
	1	146	52	4	29	1	0	6	2	0	0	0	0	241
13:00	0	39	19	0	5	0	0	0	0	0	0	0	0	63
13:15	0	33	11	1	3	0	0	2	0	0	0	0	0	50
13:30	0	31	15	0	3	0	0	1	0	0	0	0	0	50
13:45	1	33	20	0	6	1	0	0	2	0	0	0	0	63
	1	136	65	1	17	1	0	3	2	0	0	0	0	226
14:00	0	46	19	0	6	0	0	1	1	0	0	0	0	73
14:15	0	47	20	1	9	1	0	0	0	0	0	0	0	78
14:30	0	41	26	1	7	1	0	1	0	0	0	0	0	77
14:45	0	46	30	1	11	0	0	1	2	0	0	0	0	91
	0	180	95	3	33	2	0	3	3	0	0	0	0	319
15:00	1	64	31	2	7	1	0	1	2	0	0	0	0	109
15:15	0	53	24	0	4	0	0	2	0	0	0	0	0	83
15:30	0	65	33	0	15	0	0	1	0	0	0	0	0	114
15:45	1	59	43	0	18	1	0	0	0	0	0	0	0	122
	2	241	131	2	44	2	0	4	2	0	0	0	0	428
16:00	0	68	36	0	21	0	0	1	0	0	0	0	0	126
16:15	0	65	31	1	11	0	0	2	0	0	0	0	0	110
16:30	0	88	34	0	14	0	0	0	0	0	0	0	0	136
16:45	0	65	38	0	13	0	0	0	2	0	0	0	0	118
	0	286	139	1	59	0	0	3	2	0	0	0	0	490
17:00	1	90	46	0	19	2	0	2	0	0	0	0	0	160
17:15	1	67	28	0	18	1	0	1	0	0	0	0	0	116
17:30	0	75	32	0	15	0	0	0	0	0	0	0	0	122
17:45	1	70	27	0	10	1	0	1	0	0	0	0	0	110
	3	302	133	0	62	4	0	4	0	0	0	0	0	508
18:00	0	60	29	0	6	0	0	0	1	0	0	0	0	96
18:15	0	69	21	2	5	0	0	2	0	0	0	0	0	99
18:30	0	49	22	0	4	0	0	2	0	0	0	0	0	77
18:45	0	50	26	0	5	0	0	1	1	0	0	0	0	83
	0	228	98	2	20	0	0	5	2	0	0	0	0	355
19:00	0	51	28	0	6	0	0	2	0	0	0	0	0	87
19:15	0	63	36	0	3	0	0	2	0	0	0	0	0	104
19:30	0	23	24	0	11	0	0	0	0	0	0	0	0	58
19:45	0	44	20	0	6	0	0	0	0	0	0	0	0	70
	0	181	108	0	26	0	0	4	0	0	0	0	0	319
20:00	0	34	23	0	8	0	0	0	1	0	0	0	0	66
20:15	0	26	21	0	7	0	0	0	0	0	0	0	0	54
20:30	0	28	20	0	7	0	0	0	0	0	0	0	0	55
20:45	0	31	19	0	4	0	0	0	0	0	0	0	0	54
	0	119	83	0	26	0	0	0	1	0	0	0	0	229
21:00	0	26	11	0	5	0	0	0	0	0	0	0	0	42
21:15	0	22	20	0	6	0	0	0	0	0	0	0	0	48
21:30	1	28	14	0	4	0	0	0	0	0	0	0	0	47
21:45	0	23	11	1	4	0	0	0	0	0	0	0	0	39
	1	99	56	1	19	0	0	0	0	0	0	0	0	176
22:00	0	27	7	0	3	0	0	0	0	0	0	0	0	37
22:15	0	17	11	0	3	0	0	0	0	0	0	0	0	31
22:30	0	13	9	1	2	0	0	0	0	0	0	0	0	25
22:45	0	11	13	0	4	0	0	0	0	0	0	0	0	28
	0	68	40	1	12	0	0	0	0	0	0	0	0	121
23:00	0	13	7	0	2	0	0	0	0	0	0	0	0	22
23:15	0	18	8	0	1	0	0	0	1	0	0	0	0	28
23:30	0	10	5	0	1	0	0	0	0	0	0	0	0	16
23:45	0	18	9	0	1	0	0	0	0	0	0	0	0	28
	0	59	29	0	5	0	0	0	1	0	0	0	0	94
Total	8	2045	1029	15	352	10	0	32	15	0	0	0	0	3506
Percent	0.2%	58.3%	29.3%	0.4%	10.0%	0.3%	0.0%	0.9%	0.4%	0.0%	0.0%	0.0%	0.0%	
Grand Total	11	2611	1340	35	492	18	0	48	22	0	0	0	0	4577
Percent	0.2%	57.0%	29.3%	0.8%	10.7%	0.4%	0.0%	1.0%	0.5%	0.0%	0.0%	0.0%	0.0%	

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Site Code: 2
Station ID: 2
US78 WB OFF RAMP

Latitude: 0' 0.0000 Undefined

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/18/17	0	12	3	0	0	0	0	0	0	0	0	0	0	15
00:15	0	10	0	0	0	0	0	0	0	0	0	0	0	10
00:30	0	6	1	0	0	0	0	0	0	0	0	0	0	7
00:45	0	10	0	0	0	0	0	0	0	0	0	0	0	10
01:00	0	38	4	0	0	0	0	0	0	0	0	0	0	42
01:15	0	2	0	0	1	0	0	1	0	0	0	0	0	4
01:30	0	8	0	0	0	0	0	0	0	0	0	0	0	8
01:45	0	4	0	0	0	0	0	0	0	0	0	0	0	4
02:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7
02:15	0	20	1	0	1	0	0	1	0	0	0	0	0	23
02:30	0	4	0	0	0	0	0	0	0	0	0	0	0	4
02:45	0	0	3	0	0	0	0	0	0	0	0	0	0	3
03:00	2	6	2	0	0	1	0	0	0	0	0	0	0	11
03:15	2	13	6	0	0	1	0	0	0	0	0	0	0	22
03:30	0	5	1	0	0	0	0	0	0	0	0	0	0	6
03:45	0	4	2	0	1	0	0	0	0	0	0	0	0	7
04:00	1	4	0	0	1	1	0	0	0	0	0	0	0	7
04:15	2	4	6	0	1	0	0	0	0	0	0	0	0	13
04:30	3	17	9	0	3	1	0	0	0	0	0	0	0	33
04:45	0	4	2	0	1	0	0	0	0	0	0	0	0	7
05:00	0	6	3	1	1	0	0	0	0	0	0	0	0	11
05:15	0	15	4	1	1	0	0	0	0	0	0	0	0	21
05:30	0	6	9	1	0	0	0	0	0	0	0	0	0	16
05:45	0	31	18	3	3	0	0	0	0	0	0	0	0	55
06:00	0	16	9	0	2	1	0	0	0	0	0	0	0	28
06:15	0	25	6	0	3	0	0	1	0	0	0	0	0	35
06:30	0	27	12	0	16	0	0	1	0	0	0	0	0	56
06:45	0	37	13	0	5	0	0	0	0	0	0	0	0	55
07:00	0	105	40	0	26	1	0	2	0	0	0	0	0	174
07:15	0	33	22	0	9	0	0	1	0	0	0	0	0	65
07:30	0	54	27	0	7	1	0	0	1	0	0	0	0	90
07:45	0	56	23	0	7	0	0	0	1	0	1	0	0	88
08:00	0	85	38	1	14	1	0	1	0	0	0	0	0	140
08:15	0	228	110	1	37	2	0	2	2	0	1	0	0	383
08:30	0	96	30	0	6	1	0	1	1	0	0	0	0	135
08:45	1	82	28	0	11	1	1	0	1	0	0	0	0	125
09:00	0	131	36	0	7	0	0	0	1	0	0	0	0	175
09:15	7	126	36	0	8	3	0	1	1	0	0	0	0	182
09:30	8	435	130	0	32	5	1	2	4	0	0	0	0	617
09:45	0	77	25	0	9	1	0	3	0	1	0	0	0	116
10:00	1	114	24	1	5	0	0	0	1	0	0	0	0	146
10:15	0	81	32	0	8	1	0	1	0	0	0	0	0	123
10:30	2	78	34	0	5	1	0	2	0	0	0	0	0	122
10:45	3	350	115	1	27	3	0	6	1	1	0	0	0	507
11:00	1	59	16	0	7	1	0	1	0	0	0	0	0	85
11:15	0	59	21	1	6	0	0	0	1	0	0	0	0	88
11:30	1	54	23	1	4	1	0	1	0	0	0	0	0	85
11:45	0	54	24	3	7	0	0	0	0	0	0	0	0	88
12:00	2	226	84	5	24	2	0	2	1	0	0	0	0	346
12:15	1	58	13	0	7	0	0	0	1	0	0	0	0	80
12:30	0	51	20	1	1	1	0	2	1	0	0	0	0	77
12:45	0	51	16	2	6	1	0	0	0	0	0	0	0	76
13:00	0	44	14	0	6	0	0	2	0	0	0	0	0	66
13:15	1	204	63	3	20	2	0	4	2	0	0	0	0	299
13:30	0	46	12	0	2	0	0	0	1	0	0	0	0	61
13:45	0	46	9	0	3	0	0	1	0	0	0	0	0	59
14:00	0	60	12	1	5	0	0	3	1	0	0	0	0	82
14:15	0	56	11	0	3	1	0	0	0	0	0	0	0	71
14:30	0	208	44	1	13	1	0	4	2	0	0	0	0	273
Total	19	1875	624	14	186	18	1	23	12	1	1	0	0	2774
Percent	0.7%	67.6%	22.5%	0.5%	6.7%	0.6%	0.0%	0.8%	0.4%	0.0%	0.0%	0.0%	0.0%	

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Site Code: 2
Station ID: 2
US78 WB OFF RAMP

Latitude: 0' 0.0000 Undefined

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12 PM	0	51	22	0	2	0	0	1	0	0	0	0	0	76
12:15	0	48	17	0	4	0	0	0	0	0	0	0	0	69
12:30	0	44	10	4	3	1	0	0	1	0	0	0	0	63
12:45	0	48	18	1	1	0	0	1	1	0	0	0	0	70
	0	191	67	5	10	1	0	2	2	0	0	0	0	278
13:00	1	49	22	0	3	1	0	2	0	0	0	0	0	78
13:15	0	55	17	1	3	0	0	0	0	0	0	0	0	76
13:30	0	43	9	0	5	0	0	1	0	1	0	0	0	59
13:45	0	42	16	1	7	2	0	1	0	0	0	0	0	69
	1	189	64	2	18	3	0	4	0	1	0	0	0	282
14:00	1	55	14	1	3	1	0	0	0	0	0	0	0	75
14:15	0	59	14	2	6	0	0	0	1	0	0	0	0	82
14:30	0	45	11	0	4	0	0	0	0	0	0	0	0	60
14:45	0	40	11	0	0	0	0	1	2	0	0	0	0	54
	1	199	50	3	13	1	0	1	3	0	0	0	0	271
15:00	0	49	10	0	4	0	0	1	0	0	0	0	0	64
15:15	1	48	17	2	2	1	0	0	0	0	0	0	0	71
15:30	0	40	17	0	5	0	0	0	0	0	0	0	0	62
15:45	0	41	8	1	6	0	0	1	0	0	0	0	0	57
	1	178	52	3	17	1	0	2	0	0	0	0	0	254
16:00	0	38	13	0	7	2	0	0	0	0	0	0	0	60
16:15	0	46	13	2	4	1	0	1	0	0	0	0	0	67
16:30	0	39	14	0	2	0	0	2	0	0	0	0	0	57
16:45	2	55	14	1	3	0	0	0	1	0	0	0	0	76
	2	178	54	3	16	3	0	3	1	0	0	0	0	260
17:00	1	45	17	2	1	1	0	2	0	0	0	0	0	69
17:15	2	40	11	0	4	1	0	0	0	0	0	0	0	58
17:30	0	47	11	2	2	0	0	0	0	0	0	0	0	62
17:45	0	51	11	1	0	0	0	0	0	0	0	0	0	63
	3	183	50	5	7	2	0	2	0	0	0	0	0	252
18:00	0	42	10	1	2	0	0	1	0	0	0	0	0	56
18:15	0	48	9	0	3	0	0	1	0	0	0	0	0	61
18:30	0	48	11	0	2	0	0	0	0	0	0	0	0	61
18:45	0	44	15	0	2	0	0	0	0	0	0	0	0	61
	0	182	45	1	9	0	0	2	0	0	0	0	0	239
19:00	0	46	7	0	2	0	0	0	0	0	0	0	0	55
19:15	0	38	6	1	3	0	0	0	1	0	0	0	0	49
19:30	0	36	10	0	3	0	0	0	0	0	0	0	0	49
19:45	1	35	10	0	4	0	0	0	0	0	0	0	0	50
	1	155	33	1	12	0	0	0	1	0	0	0	0	203
20:00	0	25	7	0	0	0	0	0	0	0	0	0	0	32
20:15	0	32	5	2	1	0	0	0	0	0	0	0	0	40
20:30	0	26	11	1	1	0	0	0	1	0	0	0	0	40
20:45	0	36	10	1	1	0	0	0	0	0	0	0	0	48
	0	119	33	4	3	0	0	0	1	0	0	0	0	160
21:00	1	28	3	0	1	1	0	0	0	0	0	0	0	34
21:15	0	28	10	0	0	1	0	0	0	0	0	0	0	39
21:30	0	30	6	1	1	0	0	0	0	0	0	0	0	38
21:45	0	25	11	0	2	0	0	0	1	0	0	0	0	39
	1	111	30	1	4	2	0	0	1	0	0	0	0	150
22:00	0	29	2	0	2	0	0	0	0	1	0	0	0	34
22:15	1	13	8	0	1	0	0	0	1	0	0	0	0	24
22:30	0	35	9	0	1	0	0	0	0	0	0	0	0	45
22:45	1	33	7	0	1	0	0	0	0	0	0	0	0	42
	2	110	26	0	5	0	0	0	1	1	0	0	0	145
23:00	0	16	3	0	0	1	0	0	0	0	0	0	0	20
23:15	0	11	7	0	0	0	0	0	0	0	0	0	0	18
23:30	1	22	3	1	0	0	0	0	0	0	0	0	0	27
23:45	0	9	2	0	0	0	0	0	0	0	0	0	0	11
	1	58	15	1	0	1	0	0	0	0	0	0	0	76
Total	13	1853	519	29	114	14	0	16	10	2	0	0	0	2570
Percent	0.5%	72.1%	20.2%	1.1%	4.4%	0.5%	0.0%	0.6%	0.4%	0.1%	0.0%	0.0%	0.0%	
Grand Total	32	3728	1143	43	300	32	1	39	22	3	1	0	0	5344
Percent	0.6%	69.8%	21.4%	0.8%	5.6%	0.6%	0.0%	0.7%	0.4%	0.1%	0.0%	0.0%	0.0%	

All Traffic Data Services, Inc

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Site Code: 3
Station ID: 3
US78 WB ON RAMP

Latitude: 0' 0.0000 Undefined

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07:18/17	1	23	19	0	2	2	0	0	2	0	0	0	0	49
00:15	2	20	16	0	1	2	0	0	1	0	0	0	0	42
00:30	3	13	10	0	1	4	0	0	1	0	0	0	0	32
00:45	1	9	5	0	4	1	0	0	0	0	0	0	0	20
01:00	7	65	50	0	8	9	0	0	4	0	0	0	0	143
01:15	0	19	11	2	4	0	0	0	1	0	0	0	0	37
01:30	1	17	5	0	1	2	0	0	0	0	0	0	0	26
01:45	1	17	7	0	2	1	0	0	0	0	0	0	0	28
02:00	1	6	12	0	2	1	0	0	0	0	0	0	0	22
02:15	3	59	35	2	9	4	0	0	1	0	0	0	0	113
02:30	2	11	9	1	4	2	0	0	3	0	0	0	0	32
02:45	2	13	10	0	5	2	0	1	1	0	0	0	0	34
03:00	1	6	7	0	2	0	0	1	0	0	0	0	0	17
03:15	1	10	12	0	2	2	0	0	0	0	0	0	0	27
03:30	6	40	38	1	13	6	0	2	4	0	0	0	0	110
03:45	0	11	9	0	3	0	0	0	1	0	0	0	0	24
04:00	2	16	7	0	0	1	0	0	1	0	0	0	0	27
04:15	1	5	14	3	4	1	0	1	0	0	0	0	0	29
04:30	2	5	19	0	2	2	0	0	2	0	0	0	0	32
04:45	5	37	49	3	9	4	0	1	4	0	0	0	0	112
05:00	2	12	13	3	8	1	0	0	0	0	0	0	0	39
05:15	1	1	28	0	6	2	0	0	0	0	0	0	0	38
05:30	2	6	36	4	6	2	0	1	0	0	0	0	0	57
05:45	1	12	38	4	1	1	0	2	1	0	0	0	0	60
06:00	6	31	115	11	21	6	0	3	1	0	0	0	0	194
06:15	1	21	29	0	13	3	0	0	1	0	0	0	0	68
06:30	4	31	37	4	9	2	0	1	1	0	0	0	0	89
06:45	2	39	55	0	8	2	0	3	2	0	0	0	0	111
07:00	0	49	54	2	17	4	0	7	1	0	0	0	0	134
07:15	7	140	175	6	47	11	0	11	5	0	0	0	0	402
07:30	1	68	57	1	17	1	0	3	1	0	0	0	0	149
07:45	2	62	45	4	24	6	0	9	2	0	0	0	0	154
08:00	5	104	55	1	24	6	0	8	2	0	0	0	0	205
08:15	3	83	72	8	22	4	0	5	4	2	0	0	0	203
08:30	11	317	229	14	87	17	0	25	9	2	0	0	0	711
08:45	1	91	60	0	21	3	0	8	4	0	0	0	0	188
09:00	1	112	55	4	15	2	0	3	3	0	0	0	0	195
09:15	3	98	63	6	22	5	0	6	3	0	0	0	1	207
09:30	1	45	97	7	53	4	0	12	3	1	0	0	0	223
09:45	6	346	275	17	111	14	0	29	13	1	0	0	1	813
10:00	1	95	91	2	25	4	0	3	4	0	0	0	0	225
10:15	3	131	67	3	28	2	0	4	3	0	0	0	0	241
10:30	5	130	61	4	20	4	0	3	1	1	0	0	0	229
10:45	4	115	61	10	24	9	0	8	3	0	0	0	1	235
11:00	13	471	280	19	97	19	0	18	11	1	0	0	1	930
11:15	2	121	43	1	18	4	0	3	8	0	0	0	0	200
11:30	0	127	48	2	9	1	0	4	8	0	0	0	0	199
11:45	1	134	51	4	20	1	0	4	6	0	0	0	1	222
12:00	2	133	45	2	18	2	0	4	5	0	0	0	0	211
12:15	5	515	187	9	65	8	0	15	27	0	0	0	1	832
12:30	2	115	46	3	20	4	0	4	9	1	0	0	0	204
12:45	2	125	57	5	14	2	0	2	5	0	0	0	0	212
13:00	4	117	66	5	31	4	0	7	4	0	0	0	0	238
13:15	3	103	50	3	16	4	0	5	5	0	0	0	0	189
13:30	11	460	219	16	81	14	0	18	23	1	0	0	0	843
13:45	5	157	62	2	22	7	0	5	5	1	0	0	0	266
14:00	2	127	43	4	14	5	0	9	3	0	0	0	0	207
14:15	7	101	60	8	31	5	0	2	3	0	0	0	0	217
14:30	4	112	56	7	21	5	0	4	4	0	0	0	0	213
14:45	18	497	221	21	88	22	0	20	15	1	0	0	0	903
Total	98	2978	1873	119	636	134	0	142	117	6	0	0	3	6106
Percent	1.6%	48.8%	30.7%	1.9%	10.4%	2.2%	0.0%	2.3%	1.9%	0.1%	0.0%	0.0%	0.0%	

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Site Code: 3
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US78 WB ON RAMP

Latitude: 0' 0.0000 Undefined

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12 PM	5	114	63	3	16	5	0	7	6	0	0	0	0	219
12:15	3	132	60	11	11	3	0	9	3	0	0	0	0	232
12:30	5	111	43	8	18	5	0	5	2	0	0	0	0	197
12:45	5	110	45	6	12	5	0	2	6	0	0	0	0	191
	18	467	211	28	57	18	0	23	17	0	0	0	0	839
13:00	4	129	56	7	12	1	0	3	5	0	0	0	0	217
13:15	5	115	51	8	18	8	0	9	6	0	0	0	0	220
13:30	5	125	43	6	19	6	0	5	4	0	0	0	0	213
13:45	2	121	53	6	18	3	0	9	4	0	0	0	0	216
	16	490	203	27	67	18	0	26	19	0	0	0	0	866
14:00	3	101	47	5	14	3	0	5	6	0	0	0	0	184
14:15	2	143	62	11	23	3	0	6	5	0	1	0	0	256
14:30	3	144	52	2	18	6	0	8	4	0	0	0	0	237
14:45	6	159	62	5	9	5	0	5	8	1	0	0	0	260
	14	547	223	23	64	17	0	24	23	1	1	0	0	937
15:00	3	132	63	4	24	5	1	5	4	0	0	0	0	241
15:15	5	144	61	6	18	5	0	10	7	0	0	0	0	256
15:30	2	163	62	5	17	4	0	5	2	0	0	0	0	260
15:45	5	150	51	7	14	4	0	7	1	0	0	0	0	239
	15	589	237	22	73	18	1	27	14	0	0	0	0	996
16:00	3	160	73	3	19	4	0	4	1	1	0	0	0	268
16:15	4	128	53	2	17	4	0	3	3	0	0	0	0	214
16:30	8	128	64	2	22	4	0	6	2	1	0	0	0	237
16:45	4	134	56	2	20	6	0	5	3	0	0	0	0	230
	19	550	246	9	78	18	0	18	9	2	0	0	0	949
17:00	2	119	55	2	17	3	0	1	1	0	0	0	0	200
17:15	5	140	66	5	12	6	0	4	2	0	0	0	0	240
17:30	4	136	67	3	12	4	0	6	3	0	0	0	0	235
17:45	4	148	42	3	15	2	0	5	2	0	0	0	0	221
	15	543	230	13	56	15	0	16	8	0	0	0	0	896
18:00	4	124	58	3	14	4	0	3	2	0	0	0	0	212
18:15	4	134	49	1	12	3	0	6	2	0	0	0	0	211
18:30	5	128	52	3	9	1	0	4	1	0	0	0	0	203
18:45	2	139	39	3	10	2	0	6	3	0	0	0	0	204
	15	525	198	10	45	10	0	19	8	0	0	0	0	830
19:00	8	108	49	2	12	4	0	2	2	0	0	0	0	187
19:15	2	98	41	3	14	1	0	3	1	0	0	0	0	163
19:30	1	97	33	2	8	2	0	1	1	0	0	0	0	145
19:45	1	99	42	2	8	2	0	4	1	0	0	0	0	159
	12	402	165	9	42	9	0	10	5	0	0	0	0	654
20:00	2	102	27	2	11	1	0	2	1	0	0	0	0	148
20:15	2	81	40	2	7	2	0	1	1	0	0	0	0	136
20:30	2	94	32	2	10	4	0	2	3	0	0	0	0	149
20:45	1	80	23	2	4	1	0	2	2	0	0	0	0	115
	7	357	122	8	32	8	0	7	7	0	0	0	0	548
21:00	2	62	24	2	7	2	0	4	3	0	0	0	0	106
21:15	1	66	32	1	9	2	0	4	1	0	0	0	0	116
21:30	1	61	24	0	9	0	0	0	2	0	0	0	0	97
21:45	1	74	24	0	7	2	0	1	1	0	0	0	0	110
	5	263	104	3	32	6	0	9	7	0	0	0	0	429
22:00	5	65	23	4	5	2	0	1	4	0	0	0	0	109
22:15	0	64	23	1	5	1	0	0	2	0	0	0	0	96
22:30	1	54	18	0	4	1	0	0	0	0	0	0	0	78
22:45	2	59	23	1	1	2	0	1	1	0	0	0	0	90
	8	242	87	6	15	6	0	2	7	0	0	0	0	373
23:00	0	40	20	1	0	1	0	0	0	0	0	0	0	62
23:15	2	38	11	0	2	3	0	0	0	1	0	0	0	57
23:30	0	37	21	0	2	0	0	0	1	0	0	0	0	61
23:45	1	25	14	1	2	0	0	0	0	0	0	0	0	43
	3	140	66	2	6	4	0	0	1	1	0	0	0	223
Total	147	5115	2092	160	567	147	1	181	125	4	1	0	0	8540
Percent	1.7%	59.9%	24.5%	1.9%	6.6%	1.7%	0.0%	2.1%	1.5%	0.0%	0.0%	0.0%	0.0%	
Grand Total	245	8093	3965	279	1203	281	1	323	242	10	1	0	3	14646
Percent	1.7%	55.3%	27.1%	1.9%	8.2%	1.9%	0.0%	2.2%	1.7%	0.1%	0.0%	0.0%	0.0%	

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Site Code: 4
Station ID: 4
US78 EB OFF RAMP

Latitude: 0' 0.0000 Undefined

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07:18/17	0	36	4	1	1	1	0	0	2	0	0	0	0	45
00:15	1	27	5	0	1	1	0	0	1	0	0	0	0	36
00:30	1	28	4	0	0	1	0	0	2	0	0	0	0	36
00:45	2	27	12	1	1	2	0	0	0	0	0	0	0	45
	4	118	25	2	3	5	0	0	5	0	0	0	0	162
01:00	2	29	7	1	1	3	0	0	2	0	0	0	0	45
01:15	2	23	5	0	0	3	0	0	2	0	0	0	0	35
01:30	1	24	4	0	0	1	0	1	1	0	0	0	0	32
01:45	0	22	4	0	8	0	0	1	0	0	0	0	0	35
	5	98	20	1	9	7	0	2	5	0	0	0	0	147
02:00	0	21	6	0	5	0	0	0	1	0	0	0	0	33
02:15	0	19	4	1	1	0	0	0	0	0	0	0	0	25
02:30	0	19	4	0	0	0	0	2	1	0	0	0	0	26
02:45	0	10	6	0	0	0	0	2	0	0	0	0	0	18
	0	69	20	1	6	0	0	4	2	0	0	0	0	102
03:00	0	30	3	1	2	0	0	2	0	0	0	0	0	38
03:15	0	17	5	0	1	1	0	0	1	0	0	0	0	25
03:30	0	13	5	0	1	1	0	0	2	0	0	0	0	22
03:45	0	14	3	1	0	0	0	0	3	0	0	0	0	21
	0	74	16	2	4	2	0	2	6	0	0	0	0	106
04:00	0	19	8	0	1	0	0	0	1	0	0	0	0	29
04:15	1	22	7	1	3	2	0	1	0	0	0	0	0	37
04:30	2	26	9	4	2	2	0	1	1	0	0	0	0	47
04:45	0	33	10	2	1	1	0	1	0	0	0	0	0	48
	3	100	34	7	7	5	0	3	2	0	0	0	0	161
05:00	2	34	14	1	2	1	0	1	1	0	0	0	0	56
05:15	0	48	18	2	5	0	0	1	2	0	0	0	0	76
05:30	0	79	29	1	7	1	0	1	4	0	0	0	0	122
05:45	2	122	37	4	6	1	0	0	1	0	0	0	0	173
	4	283	98	8	20	3	0	3	8	0	0	0	0	427
06:00	0	91	19	1	5	2	0	2	2	0	0	0	0	122
06:15	0	83	30	2	8	0	0	0	7	0	0	0	0	130
06:30	1	113	27	0	2	1	0	1	5	0	0	0	0	150
06:45	2	132	23	0	1	2	0	1	3	0	0	0	0	164
	3	419	99	3	16	5	0	4	17	0	0	0	0	566
07:00	2	108	21	1	8	4	0	3	5	0	0	0	0	152
07:15	2	140	23	1	4	4	0	1	4	0	0	0	0	179
07:30	5	163	31	4	9	4	0	4	2	0	0	0	0	222
07:45	2	187	31	1	6	1	0	1	3	0	0	0	0	232
	11	598	106	7	27	13	0	9	14	0	0	0	0	785
08:00	2	177	26	2	11	3	0	3	4	0	0	0	0	228
08:15	0	150	32	2	3	2	0	5	5	0	0	0	0	199
08:30	2	134	32	0	5	5	0	1	5	0	1	1	0	186
08:45	3	132	21	1	4	2	1	5	4	0	0	0	0	173
	7	593	111	5	23	12	1	14	18	0	1	1	0	786
09:00	0	115	25	1	3	2	0	4	3	0	0	0	0	153
09:15	1	108	22	7	9	3	0	2	6	0	0	0	0	158
09:30	1	117	19	1	9	4	0	1	7	0	0	0	0	159
09:45	4	109	21	8	10	3	0	3	8	0	0	0	0	166
	6	449	87	17	31	12	0	10	24	0	0	0	0	636
10:00	4	82	23	2	6	4	0	5	7	0	0	0	0	133
10:15	1	110	23	5	8	3	0	3	3	0	0	0	0	156
10:30	3	111	22	4	11	5	0	4	13	0	0	0	0	173
10:45	3	117	37	4	15	8	0	6	8	0	0	0	0	198
	11	420	105	15	40	20	0	18	31	0	0	0	0	660
11:00	0	118	34	3	9	3	0	3	8	0	0	0	0	178
11:15	3	115	33	4	11	3	0	3	6	0	0	0	0	178
11:30	1	132	40	5	9	4	0	7	5	0	0	0	1	204
11:45	4	121	33	5	9	3	0	3	4	0	0	0	0	182
	8	486	140	17	38	13	0	16	23	0	0	0	1	742
Total	62	3707	861	85	224	97	1	85	155	0	1	1	1	5280
Percent	1.2%	70.2%	16.3%	1.6%	4.2%	1.8%	0.0%	1.6%	2.9%	0.0%	0.0%	0.0%	0.0%	

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Site Code: 4
Station ID: 4
US78 EB OFF RAMP

Latitude: 0' 0.0000 Undefined

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12 PM	2	120	36	5	9	5	1	1	13	0	0	0	0	192
12:15	2	133	36	4	6	3	0	4	9	1	0	0	0	198
12:30	5	119	36	4	7	4	0	1	3	0	0	0	0	179
12:45	1	122	43	3	7	3	0	2	8	0	0	0	0	189
	10	494	151	16	29	15	1	8	33	1	0	0	0	758
13:00	2	128	38	3	7	5	0	0	7	0	0	0	0	190
13:15	3	115	39	2	2	5	0	2	10	0	0	0	0	178
13:30	5	119	37	2	17	7	0	6	7	0	0	0	0	200
13:45	1	142	35	3	12	4	0	4	6	1	0	0	0	208
	11	504	149	10	38	21	0	12	30	1	0	0	0	776
14:00	3	129	32	3	17	6	0	1	6	0	0	0	0	197
14:15	2	134	28	1	11	3	0	3	10	0	0	0	0	192
14:30	2	116	40	6	13	4	0	4	11	0	0	0	0	196
14:45	0	152	28	3	7	2	0	0	6	0	0	0	0	198
	7	531	128	13	48	15	0	8	33	0	0	0	0	783
15:00	4	131	37	3	8	10	0	1	1	0	0	0	0	195
15:15	2	162	29	7	8	3	0	4	2	0	0	0	0	217
15:30	0	139	39	11	7	2	0	6	4	0	1	0	0	209
15:45	9	130	41	6	9	3	0	3	5	0	0	0	0	206
	15	562	146	27	32	18	0	14	12	0	1	0	0	827
16:00	2	155	35	1	11	1	0	6	4	0	0	0	0	215
16:15	3	148	38	2	15	6	0	4	2	0	0	0	0	218
16:30	2	155	33	3	8	1	0	1	5	0	0	0	0	208
16:45	1	181	25	5	6	5	0	4	4	0	0	0	0	231
	8	639	131	11	40	13	0	15	15	0	0	0	0	872
17:00	1	169	44	4	8	1	0	4	1	0	0	0	0	232
17:15	1	182	30	5	5	0	0	1	2	0	0	0	0	226
17:30	0	172	35	2	7	3	0	3	2	0	0	0	0	224
17:45	0	174	37	0	3	2	0	0	2	0	0	0	0	218
	2	697	146	11	23	6	0	8	7	0	0	0	0	900
18:00	2	194	25	2	9	3	0	3	0	0	0	0	0	238
18:15	2	160	29	2	7	3	0	1	3	0	0	0	0	207
18:30	0	108	53	3	16	0	0	2	1	0	0	0	0	183
18:45	2	113	48	1	15	4	0	3	3	0	0	0	1	190
	6	575	155	8	47	10	0	9	7	0	0	0	1	818
19:00	1	99	39	2	20	2	0	2	0	0	0	0	0	165
19:15	1	113	41	4	11	1	0	3	3	0	0	0	0	177
19:30	3	118	30	1	5	3	0	2	3	0	0	0	0	165
19:45	0	116	25	2	6	0	0	2	0	0	0	0	0	151
	5	446	135	9	42	6	0	9	6	0	0	0	0	658
20:00	1	113	30	3	9	4	0	0	6	0	0	0	0	166
20:15	4	133	35	1	7	4	0	1	2	0	0	0	0	187
20:30	3	105	33	1	6	1	0	1	4	0	0	0	0	154
20:45	2	94	23	1	3	1	0	2	6	0	0	0	0	132
	10	445	121	6	25	10	0	4	18	0	0	0	0	639
21:00	0	99	32	1	3	0	0	0	3	0	0	0	0	138
21:15	2	85	15	1	8	1	0	0	2	0	0	0	0	114
21:30	0	79	24	2	1	2	0	1	1	0	0	0	0	110
21:45	0	93	13	0	0	1	0	1	0	0	0	0	0	108
	2	356	84	4	12	4	0	2	6	0	0	0	0	470
22:00	0	64	21	1	4	0	0	0	1	0	0	0	0	91
22:15	3	79	13	1	4	3	0	0	1	0	0	0	0	104
22:30	1	74	18	0	1	2	0	0	1	0	0	0	0	97
22:45	2	85	20	0	7	1	0	2	2	0	0	0	0	119
	6	302	72	2	16	6	0	2	5	0	0	0	0	411
23:00	1	68	13	0	3	1	0	1	0	0	0	0	0	87
23:15	0	69	6	0	1	1	0	1	3	0	0	0	0	81
23:30	0	45	7	0	0	0	0	2	1	0	0	0	0	55
23:45	0	74	6	0	2	0	0	0	6	0	0	0	0	88
	1	256	32	0	6	2	0	4	10	0	0	0	0	311
Total	83	5807	1450	117	358	126	1	95	182	2	1	0	1	8223
Percent	1.0%	70.6%	17.6%	1.4%	4.4%	1.5%	0.0%	1.2%	2.2%	0.0%	0.0%	0.0%	0.0%	
Grand Total	145	9514	2311	202	582	223	2	180	337	2	2	1	2	13503
Percent	1.1%	70.5%	17.1%	1.5%	4.3%	1.7%	0.0%	1.3%	2.5%	0.0%	0.0%	0.0%	0.0%	

Study Name 17772 - East of Mountain Ind Blvd @ US 78 - B ATR
 Start Date 07/18/2017
 Start Time 12:00 AM
 Site Code B

Direction Classification	Westbound			Eastbound		
	Light Vehicles	Medium Trucks	Articulated Trucks	Light Vehicles	Medium Trucks	Articulated Trucks
12:00 AM	76	0	2	224	1	3
12:15 AM	74	0	1	193	1	0
12:30 AM	62	2	2	177	2	2
12:45 AM	59	2	2	147	0	2
1:00 AM	62	2	0	138	0	3
1:15 AM	40	0	2	86	0	3
1:30 AM	47	0	0	98	2	0
1:45 AM	40	0	0	80	2	1
2:00 AM	36	3	1	61	1	2
2:15 AM	36	1	2	69	3	2
2:30 AM	32	1	2	55	0	2
2:45 AM	37	1	2	50	1	1
3:00 AM	49	1	1	47	0	0
3:15 AM	75	0	1	39	4	0
3:30 AM	90	0	2	41	3	0
3:45 AM	77	0	5	54	3	0
4:00 AM	127	2	1	48	1	0
4:15 AM	167	1	1	59	3	1
4:30 AM	236	3	3	64	2	1
4:45 AM	259	3	0	63	4	1
5:00 AM	359	5	3	63	2	4
5:15 AM	572	6	2	84	6	2
5:30 AM	777	5	3	99	4	2
5:45 AM	969	7	2	150	7	6
6:00 AM	1135	10	4	163	10	3
6:15 AM	1470	19	2	183	11	5
6:30 AM	1514	20	9	178	15	4
6:45 AM	1427	24	3	237	12	6
7:00 AM	1263	13	2	193	7	3
7:15 AM	1427	17	5	233	10	4
7:30 AM	1347	13	4	310	12	6
7:45 AM	1299	7	7	329	8	3
8:00 AM	1379	17	3	335	10	4
8:15 AM	1309	18	3	318	10	3
8:30 AM	1176	26	6	217	12	2
8:45 AM	1127	21	7	329	12	5
9:00 AM	1035	23	11	300	14	3
9:15 AM	1009	12	10	341	12	9
9:30 AM	921	19	5	337	19	3
9:45 AM	859	20	8	329	14	8
10:00 AM	667	16	5	315	13	6
10:15 AM	766	17	5	362	15	6
10:30 AM	668	22	4	382	13	7
10:45 AM	596	18	10	398	22	3
11:00 AM	595	32	7	430	15	4
11:15 AM	582	23	9	441	12	5
11:30 AM	573	10	6	445	17	3
11:45 AM	562	19	3	475	17	6
12:00 PM	549	20	7	482	12	7
12:15 PM	671	18	5	500	10	5
12:30 PM	606	8	11	550	12	4
12:45 PM	623	13	4	490	17	3

Study Name 17772 - East of Mountain Ind Blvd @ US 78 - B ATR
 Start Date 07/18/2017
 Start Time 12:00 AM
 Site Code B

Direction Classification	Westbound			Eastbound		
	Light Vehicles	Medium Trucks	Articulated Trucks	Light Vehicles	Medium Trucks	Articulated Trucks
1:00 PM	571	12	6	504	10	8
1:15 PM	606	18	4	517	20	0
1:30 PM	575	22	5	561	25	4
1:45 PM	568	15	3	593	20	5
2:00 PM	579	17	11	622	7	6
2:15 PM	555	9	2	651	14	5
2:30 PM	551	20	12	772	19	3
2:45 PM	488	18	4	818	17	5
3:00 PM	471	12	5	866	14	6
3:15 PM	490	17	1	919	18	2
3:30 PM	456	13	1	1047	11	6
3:45 PM	479	16	3	1139	20	2
4:00 PM	488	15	3	1149	15	5
4:15 PM	481	8	2	1308	25	5
4:30 PM	437	10	1	1257	23	3
4:45 PM	428	17	4	1278	16	3
5:00 PM	487	11	2	1309	20	2
5:15 PM	474	9	0	1135	17	5
5:30 PM	460	7	5	1179	18	3
5:45 PM	480	6	2	1241	22	7
6:00 PM	471	5	7	1178	16	4
6:15 PM	521	7	3	1013	8	5
6:30 PM	516	5	5	1083	22	4
6:45 PM	432	5	2	1087	10	6
7:00 PM	452	6	3	947	5	1
7:15 PM	390	7	4	931	8	4
7:30 PM	418	11	2	868	2	1
7:45 PM	338	4	2	756	5	1
8:00 PM	384	6	1	671	2	2
8:15 PM	337	8	3	704	3	3
8:30 PM	353	5	2	672	2	1
8:45 PM	292	2	2	620	3	2
9:00 PM	326	2	6	605	6	1
9:15 PM	325	3	0	543	2	4
9:30 PM	322	3	0	516	4	2
9:45 PM	278	2	4	424	1	1
10:00 PM	218	4	1	400	5	3
10:15 PM	268	2	4	373	3	0
10:30 PM	402	5	2	412	3	1
10:45 PM	257	7	2	316	4	1
11:00 PM	157	3	0	323	3	1
11:15 PM	143	6	0	353	0	1
11:30 PM	115	3	0	260	2	1
11:45 PM	102	2	1	276	1	1

Study Name 17772 - West of Mountain Ind Blvd @ US 78 - B ATR
 Start Date 07/18/2017
 Start Time 12:00 AM
 Site Code B

Direction Classification	Westbound			Eastbound		
	Light Vehicles	Medium Trucks	Articulated Trucks	Light Vehicles	Medium Trucks	Articulated Trucks
12:00 AM	118	2	5	246	2	5
12:15 AM	99	2	2	202	3	2
12:30 AM	84	3	5	197	1	6
12:45 AM	60	4	2	179	0	7
1:00 AM	93	3	2	159	1	6
1:15 AM	61	0	2	112	0	6
1:30 AM	67	0	3	117	1	3
1:45 AM	59	2	1	99	3	1
2:00 AM	50	3	7	85	5	5
2:15 AM	65	3	4	97	3	2
2:30 AM	38	0	5	64	1	3
2:45 AM	60	0	2	64	0	3
3:00 AM	61	2	4	71	3	1
3:15 AM	84	1	2	58	3	3
3:30 AM	118	3	6	49	2	3
3:45 AM	93	1	8	63	2	6
4:00 AM	134	7	3	70	1	3
4:15 AM	190	2	1	85	3	6
4:30 AM	254	8	5	88	5	7
4:45 AM	287	7	4	96	1	9
5:00 AM	401	11	4	120	9	5
5:15 AM	627	8	7	149	5	6
5:30 AM	857	10	9	231	3	7
5:45 AM	991	19	6	299	12	8
6:00 AM	1172	12	10	270	12	7
6:15 AM	1450	46	11	284	10	14
6:30 AM	1528	32	14	309	12	8
6:45 AM	1306	51	13	365	6	12
7:00 AM	1445	17	10	307	15	14
7:15 AM	1383	18	10	375	10	10
7:30 AM	1359	22	10	477	21	11
7:45 AM	1440	34	15	522	15	6
8:00 AM	1477	23	6	501	17	12
8:15 AM	1317	29	8	492	10	8
8:30 AM	1364	40	11	400	16	14
8:45 AM	1301	38	18	404	12	11
9:00 AM	1138	23	19	404	20	11
9:15 AM	1114	18	15	427	19	17
9:30 AM	1086	25	15	434	20	13
9:45 AM	952	36	12	430	32	17
10:00 AM	800	33	22	383	15	20
10:15 AM	887	19	15	474	21	10
10:30 AM	831	37	12	502	18	22
10:45 AM	700	24	18	503	29	19
11:00 AM	759	46	19	541	23	11
11:15 AM	705	29	19	555	20	16
11:30 AM	695	26	17	595	23	12
11:45 AM	663	30	11	581	27	14
12:00 PM	672	31	17	596	27	25
12:15 PM	832	36	17	602	21	18
12:30 PM	720	27	13	648	17	10
12:45 PM	691	26	18	597	31	10

Study Name 17772 - West of Mountain Ind Blvd @ US 78 - B ATR
 Start Date 07/18/2017
 Start Time 12:00 AM
 Site Code B

Direction Classification	Westbound			Eastbound		
	Light Vehicles	Medium Trucks	Articulated Trucks	Light Vehicles	Medium Trucks	Articulated Trucks
1:00 PM	702	21	16	616	19	14
1:15 PM	721	26	18	633	21	14
1:30 PM	680	23	17	667	43	17
1:45 PM	697	25	16	752	30	17
2:00 PM	653	24	14	721	21	20
2:15 PM	743	26	19	768	27	18
2:30 PM	714	23	23	851	37	17
2:45 PM	651	21	21	932	16	13
3:00 PM	625	30	11	947	27	14
3:15 PM	656	29	16	1060	35	7
3:30 PM	633	20	7	1106	31	15
3:45 PM	624	21	14	1211	37	8
4:00 PM	670	26	6	1270	23	9
4:15 PM	611	19	9	1373	42	9
4:30 PM	607	14	13	1361	28	12
4:45 PM	579	22	13	1141	27	8
5:00 PM	607	17	7	1356	27	4
5:15 PM	664	15	5	1342	27	6
5:30 PM	638	13	12	1289	22	8
5:45 PM	617	12	10	1289	28	4
6:00 PM	641	9	8	1217	14	7
6:15 PM	666	7	12	1100	13	5
6:30 PM	645	4	12	1189	20	5
6:45 PM	587	10	8	1137	18	12
7:00 PM	554	6	10	1029	11	2
7:15 PM	505	8	8	1010	10	11
7:30 PM	497	14	2	942	7	6
7:45 PM	468	6	4	841	7	3
8:00 PM	451	8	3	750	13	11
8:15 PM	444	11	2	794	7	7
8:30 PM	443	9	9	765	7	8
8:45 PM	380	2	3	668	5	9
9:00 PM	381	7	12	683	6	3
9:15 PM	383	9	5	604	3	7
9:30 PM	403	2	4	571	6	6
9:45 PM	343	6	8	504	6	2
10:00 PM	293	9	12	441	5	4
10:15 PM	315	6	5	440	5	3
10:30 PM	417	5	5	495	5	3
10:45 PM	347	7	5	376	11	5
11:00 PM	198	5	1	353	4	3
11:15 PM	169	7	3	393	5	6
11:30 PM	165	3	1	284	3	4
11:45 PM	132	2	2	331	3	5

Appendix C – Crash Data

US-78 WB Ramps

AccidentNo	MnvrVeh1	MnvrVeh2	PrivateProperty	U1Factors	U2Factors	U1TrafficControl	U2TrafficControl
14-015812	Straight	Stopped	N	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-030022	Straight	Stopped	N	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-036744	Straight	Stopped	N	Following too Close	No Contributing Factors	Lanes	Lanes
14-061966	Straight	Stopped	N	Following too Close	No Contributing Factors	Stop or Yield Sign	Stop or Yield Sign
14-069526	Turning Left	Straight	N	Failed to Yield	No Contributing Factors	Traffic Signal	Traffic Signal
14-070584	Turning Left	Straight	N	Failed to Yield	No Contributing Factors	Traffic Signal	Traffic Signal
14-070901	Turning Right	Stopped	N	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-084956	Straight	Stopped	N	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-095701	Straight	Stopped	N	Following too Close	No Contributing Factors	Lanes	Lanes
14-108960	Turning Left	Straight	N	Failed to Yield	No Contributing Factors	Traffic Signal	Traffic Signal
14-109128	Changing Lanes	Straight	N	Changed Lanes Improperly	No Contributing Factors	Traffic Signal	Traffic Signal
14-109165	Changing Lanes	Stopped	N	Changed Lanes Improperly	No Contributing Factors	Lanes	Traffic Signal
14-111348	Straight	Straight	N	Following too Close	No Contributing Factors	Lanes	Lanes
14-115293	Straight	Stopped	N	Following too Close	No Contributing Factors	Lanes	Lanes
14-116162	Straight	Stopped	N	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-116950	Straight	Stopped	N	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-118899	Straight	Stopped	N	Following too Close	No Contributing Factors	Stop or Yield Sign	Stop or Yield Sign
14-121323	Stopped	Stopped	N	Following too Close	No Contributing Factors	Lanes	Stop or Yield Sign
14-123841	Turning Right	Turning Right	N	Failure to Maintain Lane	No Contributing Factors	Lanes	Stop or Yield Sign
15-093085	Changing Lanes	Straight	N	Changed Lanes Improperly	No Contributing Factors	Traffic Signal	Traffic Signal
15-098595	Turning Left	Straight	N	Failed to Yield	No Contributing Factors	Traffic Signal	Traffic Signal
15-101277	Straight	Stopped	N	Following too Close	No Contributing Factors	Stop or Yield Sign	Stop or Yield Sign
15-126260	Straight	Stopped	N	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
15-044888	Straight	Stopped	N	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
15-033593							

US 78 EB Ramps

AccidentNo	AgencyName	Date	Time	County	RouteType	Route	IntersectingRoute	DirectionFrom	Injuries	Fatalities	MannerOfCollision	LocationOfImpact
14-023528		440200	3/11/2014	17:08	DEKALB	Stone Mountain Fwy	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
14-028862		440200	3/26/2014	11:42	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
14-031024		440200	4/1/2014	13:08	DEKALB	Stone Mountain Fwy	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
14-031066		440200	4/1/2014	15:01	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
14-031571		440200	4/2/2014	19:31	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Angle	On Roadway
14-034330		440200	4/10/2014	15:56	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	North	0	0	Rear End	On Roadway
14-035197		440200	4/12/2014	22:15	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Head On	On Roadway
14-037214		440200	4/18/2014	15:30	DEKALB	Stone Mountain Fwy	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
14-045313		440200	5/9/2014	7:35	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
14-049283		440200	5/19/2014	17:16	DEKALB	Stone Mountain Fwy	Mountain Industrial Blvd	South-West	1	0	Rear End	On Roadway
14-054860		440200	6/3/2014	15:54	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Angle	On Roadway
14-079360		440200	8/7/2014	12:11	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
14-085068		440200	8/22/2014	13:36	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
14-092761		440200	9/12/2014	15:09	DEKALB	Mountain Industrial Blvd	US 78	South	0	0	Rear End	On Roadway
14-095617		440200	9/20/2014	16:51	DEKALB	SR 78	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
14-103010		440200	10/11/2014	20:39	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
14-108954		440200	10/28/2014	19:05	DEKALB	Stone Mountain Fwy	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
14-112602		440200	11/7/2014	20:35	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
14-113372		440200	11/10/2014	12:55	DEKALB	Highway 78	Mountain Industrial Blvd	North	1	0	Rear End	On Roadway
14-118306		440200	11/24/2014	18:05	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
14-119774		440200	11/29/2014	19:28	DEKALB	Stone Mountain Fwy	Mountain Industrial Blvd	West	1	0	Rear End	On Roadway
14-120834		440200	12/2/2014	19:44	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	North	2	0	Angle	On Roadway
14-127060		440200	12/20/2014	14:50	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
15-007463		440200	1/23/2015	11:26	DEKALB	Mountain Industrial BLVD	US 78	South-West	0	0	Rear End	On Roadway
15-013949		440200	2/11/2015	12:45	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
15-015925		440200	2/17/2015	16:49	Dekalb	Mountain Industrial BLVD	US 78	West	1	0	Rear End	On Roadway
15-017027		440200	2/21/2015	12:00	DEKALB	Stone Mountain FWY	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
15-019995		440200	3/2/2015	13:32	DEKALB	US 78	Mountain Industrial Blvd	West	0	0	Rear End	Ramp
15-037525		440200	4/20/2015	19:00	DEKALB	I 78	Mountain Industrial Blvd	West	1	0	Rear End	On Roadway
15-042147		440200	5/3/2015	17:18	DEKALB	SR 410 Eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Daylight	On Roadway
15-047227		440200	5/17/2015	16:15	DEKALB	Mountain Industrial BLVD	US 78	West	2	0	Angle	On Roadway
15-053467		440200	6/4/2015	0:05	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
15-057275		440200	6/14/2015	15:20	DEKALB	78 HWY	Mountain Industrial Blvd	South	0	0	Angle	On Roadway
15-065526		440200	7/7/2015	3:45	DEKALB	Mountain Industrial BLVD	US 78	North	0	0	Rear End	On Roadway
15-070473		440200	7/20/2015	11:15	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	South	0	0	Sideswipe-Same Direction	On Roadway
15-077006		440200	8/6/2015	15:15	DEKALB	78 HWY	Mountain Industrial Blvd	East	0	0	Rear End	On Roadway
15-087006		440200	9/2/2015	18:20	DEKALB	SR 78 E	Mountain Industrial Blvd	West	1	0	Rear End	On Roadway
15-087049		440200	9/2/2015	21:01	Dekalb	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
15-088306		440200	9/6/2015	12:16	DEKALB	US 78 E	Mountain Industrial Blvd	West	0	0	Not a Collision With Motor Vehicle	Off Roadway
15-099695		440200	10/7/2015	20:24	DEKALB	US 78 E	Mountain Industrial Blvd	West	0	0	Sideswipe-Same Direction	On Roadway
15-105540		440200	10/24/2015	16:11	DEKALB	SR 78 E RP	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
15-114108		440200	11/16/2015	19:40	DEKALB	SR 78 E	Mountain Industrial Blvd	West	0	0	Rear End	On Roadway
15-114629		440200	11/18/2015	6:46	DEKALB	Highway 78 eastbound Exit Ramp	Mountain Industrial Blvd	North	1	0	Rear End	On Roadway
15-080395	0440200		8/15/2015	14:55:00	DEKALB	78 HWY	Mountain Industrial Blvd	East	2	0	Rear End	On Roadway
15-069969	0440200		7/18/2015	19:45:00	DEKALB	Mountain Industrial Blvd	US 78	North	0	0	Rear End	On Roadway
15-066686	0440200		7/10/2015	2:05:00	DEKALB	Mountain Industrial Blvd	US 78	East	2	0	Angle	On Roadway
15-058771	0440200		6/18/2015	11:40:00	DEKALB	Mountain Industrial Blvd	US 78	South	0	0	Sideswipe-Same Direction	On Roadway
15-033593	0440200		4/9/2015	16:22	DeKalb	Stone Mountain Fwy	Mountain Industrial Blvd	East	0	0	Rear End	On Roadway
15-021698	0440200		3/6/2015	17:22:00	DEKALB	Mountain Industrial Blvd	US 78	Unknown	1	0	Angle	On Roadway
15-020376	0440200		3/3/2015	12:08:00	DEKALB	Mountain Industrial Blvd	US 78	East	0	0	Angle	On Roadway
15-016885	440200		2/20/2015	12:50:00	DEKALB	HWY 78 RP	Mountain Industrial Blvd	East	0	0	Rear End	On Roadway
15-015757	0440200		2/17/2015	8:00:00	DEKALB	Stone Mountain Fwy	Mountain Industrial Blvd	East	0	0	Rear End	On Roadway
15-014106	0440200		2/11/2015	19:45:00	DEKALB	Mountain Industrial Blvd	US 78	East	3	0	Angle	On Roadway
15-011550	0440200		2/4/2015	8:14:00	DEKALB	HWY 78 RP	Mountain Industrial Blvd	East	0	0	Rear End	On Roadway
15-008372	0440200		1/26/2015	7:58:00	DEKALB	HWY 78 WB EXIT	Mountain Industrial Blvd	East	0	0	Sideswipe-Same Direction	On Roadway
15-000818	0440200		1/3/2015	17:38:00	DEKALB	Mountain Industrial Blvd	US 78	East	3	0	Angle	On Roadway

US 78 EB Ramps

AccidentNo	FirstHarmfulEvent	Light	Surface	DriverAge1	DriverAge2	DriverSafetyEquip1	DriverSafetyEquip2	VehType1	VehType2	DirVeh1	DirVeh2	MnvrVeh1
14-023528	Motor Vehicle In Motion	Daylight	Dry	40	46	Lap and Shoulder Belt	Lap and Shoulder Belt	Single Unit Truck	Passenger Car	East	East	Turning Right
14-028862	Motor Vehicle In Motion	Daylight	Dry	26	31	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	East	Straight
14-031024	Motor Vehicle In Motion	Daylight	Dry	42	39	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	East	Straight
14-031066	Motor Vehicle In Motion	Daylight	Dry	54	33	Lap and Shoulder Belt	Lap and Shoulder Belt	Utility Passenger Vehicle	Passenger Car	East	East	Straight
14-031571	Motor Vehicle In Motion	Daylight	Dry	39	50	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	South	Turning Left
14-034330	Motor Vehicle In Motion	Daylight	Dry	48	43	Lap and Shoulder Belt	Lap and Shoulder Belt	Utility Passenger Vehicle	Passenger Car	South	South	Turning Right
14-035197	Motor Vehicle In Motion	Dark-Lighted	Dry	55	32	Unknown	Unknown	Passenger Car	Passenger Car	East	East	Turning Right
14-037214	Motor Vehicle In Motion	Daylight	Wet	70	36	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Utility Passenger Vehicle	East	East	Straight
14-045313	Motor Vehicle In Motion	Daylight	Dry	38	53	Lap and Shoulder Belt	Lap and Shoulder Belt	Van	Passenger Car	East	East	Straight
14-049283	Motor Vehicle In Motion	Daylight	Dry	0	42	Unknown	Unknown	Passenger Car	Passenger Car	North-East	North-East	Turning Right
14-054860	Motor Vehicle In Motion	Daylight	Dry	25	46	Lap and Shoulder Belt	Lap and Shoulder Belt	Tractor/Trailer	Pickup Truck	East	East	Turning Right
14-079360	Motor Vehicle In Motion	Daylight	Dry	17	41	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	East	Straight
14-085068	Motor Vehicle In Motion	Daylight	Dry	21	57	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Utility Passenger Vehicle	East	East	Straight
14-092761	Motor Vehicle In Motion	Daylight	Dry	21	20	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	North	North	Straight
14-095617	Motor Vehicle In Motion	Daylight	Dry	63	44	Lap and Shoulder Belt	Lap and Shoulder Belt	Pickup Truck	Passenger Car	East	East	Turning Right
14-103010	Motor Vehicle In Motion	Dark-Lighted	Dry	32	35	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	East	Straight
14-108954	Motor Vehicle In Motion	Dark-Lighted	Dry	25	34	Unknown	Unknown	Utility Passenger Vehicle	Utility Passenger Vehicle	East	East	Straight
14-112602	Motor Vehicle In Motion	Dark-Lighted	Dry	23	26	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	East	Straight
14-113372	Motor Vehicle In Motion	Daylight	Dry	18	48	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Pickup Truck	South	South	Turning Right
14-118306	Motor Vehicle In Motion	Daylight	Dry	22	61	Lap and Shoulder Belt	Lap and Shoulder Belt	Single Unit Truck	Passenger Car	East	East	Straight
14-119774	Motor Vehicle In Motion	Dark-Lighted	Dry	22	49	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	East	Straight
14-120834	Motor Vehicle In Motion	Dark-Lighted	Dry	44	23	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	South	North-East	Straight
14-127060	Motor Vehicle In Motion	Daylight	Dry	25	56	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Utility Passenger Vehicle	East	East	Straight
15-007463	Motor Vehicle In Motion	Daylight	Wet	33	40	Lap and Shoulder Belt	Lap and Shoulder Belt	Pickup Truck	Utility Passenger Vehicle	North-East	North-East	Turning left
15-013949	Motor Vehicle In Motion	Daylight	Dry	49	19	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	East	Straight
15-015925	Motor Vehicle In Motion	Daylight	Dry	35	39	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	East	Straight
15-017027	Motor Vehicle In Motion	Daylight	Dry	36	36	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	East	Straight
15-019995	Motor Vehicle In Motion	Daylight	Dry	37	57	Lap and Shoulder Belt	Lap and Shoulder Belt	Utility Passenger Vehicle	Other	East	East	Turning Right
15-037525	Motor Vehicle In Motion	Daylight	Dry	50	49	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	East	Turning Right
15-042147	Motor Vehicle In Motion	Daylight	Dry	26	41	Lap and Shoulder Belt	Lap and Shoulder Belt	Ambulance	Passenger Car	East	East	Turning Right
15-047227	Motor Vehicle In Motion	Daylight	Dry	27	50	Unknown	Unknown	Pickup Truck	Pickup Truck	East	East	Turning Left
15-053467	Motor Vehicle In Motion	Dark-Lighted	Dry	48	24	Lap and Shoulder Belt	Lap and Shoulder Belt	Utility Passenger Vehicle	Passenger Car	East	East	Straight
15-057275	Motor Vehicle In Motion	Daylight	Dry	46	19	Lap and Shoulder Belt	Lap and Shoulder Belt	All Terrain Vehicle	Passenger Car	North	North	Turning Left
15-065526	Motor Vehicle In Motion	Dark-Not Lighted	Dry	57	22	Lap and Shoulder Belt	Lap and Shoulder Belt			South	South	Straight
15-070473	Motor Vehicle In Motion	Daylight	Dry	48	17	Lap and Shoulder Belt	Lap and Shoulder Belt	Tractor/trailer	Passenger Car	North	West	Turning left
15-077006	Motor Vehicle In Motion	Daylight	Wet	52	58	Lap and Shoulder Belt	Lap and Shoulder Belt	Pickup Truck	Pickup Truck	West	East	Straight
15-087006	Motor Vehicle In Motion	Daylight	Dry	34	46	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	East	Straight
15-087049	Motor Vehicle In Motion	Dark-Lighted	Dry	28	50	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	East	Turning Right
15-088306	Ditch	Daylight	Dry	27		Lap and Shoulder Belt		Van		East		Straight
15-099695	Motor Vehicle In Motion	Dark-Lighted	Dry	57 (Hit and Run)		Lap and Shoulder Belt		Passenger Car	Passenger Car	East	East	Straight
15-105540	Motor Vehicle In Motion	Daylight	Dry	28	41	Lap and Shoulder Belt	Lap and Shoulder Belt	Utility Passenger Vehicle	Passenger Car	East	East	Turning Right
15-114108	Motor Vehicle In Motion	Dark-Lighted	Dry	37	27	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	East	East	Straight
15-114629	Motor Vehicle In Motion	Daylight	Wet	29	58	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Utility Passenger Vehicle	South	South	Straight
15-080395	Motor Vehicle In Motion	Daylight	Dry	56	43	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	West	West	Straight
15-069969	Motor Vehicle In Motion	Daylight	Dry	53	46	Lap and Shoulder Belt	Motorcycle Helmet	Passenger Car	Motorcycle/Scooter,Minibike	South	South	Straight
15-066686	Motor Vehicle In Motion	Dark-Lighted	Dry	42	48	Lap and Shoulder Belt	Lap and Shoulder Belt	Utility Passenger Vehicle	Passenger Car	West	South	Turning Left
15-058771	Motor Vehicle In Motion	Daylight	Dry	25	22	Lap and Shoulder Belt	Lap and Shoulder Belt	Pickup Truck	Passenger Car	North	North	Changing lanes
15-033593	Motor Vehicle In Motion	Daylight	Dry	29	47	Lap and Shoulder Belt	Lap and Shoulder Belt	Pickup Truck	Passenger Car	West	West	Straight
15-021698	Motor Vehicle In Motion	Dark-Lighted	Dry		50		Lap and Shoulder Belt		Passenger Car		South	
15-020376	Motor Vehicle In Motion	Daylight	Wet	36	30	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Utility Passenger Vehicle	West	North	Turning Left
15-016885	Motor Vehicle In Motion	Daylight	Dry	28	24	Unknown	Unknown	Utility Passenger Vehicle	Passenger Car	West	West	Straight
15-015757	Motor Vehicle In Motion	Dawn	Icy	19	28	Lap and Shoulder Belt	Lap and Shoulder Belt	Pickup Truck	Passenger Car	West	West	Straight
15-014106	Motor Vehicle In Motion	Dark-Not Lighted	Dry	27	31	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	West	South	Turning Left
15-011550	Motor Vehicle In Motion	Daylight	Dry	25	44	Unknown	Unknown	Passenger Car	Utility Passenger Vehicle	West	West	Straight
15-008372	Motor Vehicle In Motion	Daylight	Wet	61	35	Unknown	Unknown	Pickup Truck	Pickup Truck	West	West	Straight
15-000818	Motor Vehicle In Motion	Dark-Lighted	Wet	24	50	Lap and Shoulder Belt	Lap and Shoulder Belt	Passenger Car	Passenger Car	West	South	Turning Left

US 78 EB Ramps

AccidentNo	MnvrVeh2	PrivateProperty	U1Factors	U2Factors	U1TrafficControl	U2TrafficControl
14-023528	Turning Right	No	Following too Close	No Contributing Factors	Lanes	Lanes
14-028862	Stopped	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-031024	Stopped	No	Following too Close	No Contributing Factors	Stop or Yield Sign	Stop or Yield Sign
14-031066	Stopped	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-031571	Stopped	No	Failed to Yield	Failed to Yield	Traffic Signal	Traffic Signal
14-034330	Turning Right	No	Following too Close	No Contributing Factors	Lanes	Lanes
14-035197	Turning Right	No	Following too Close	No Contributing Factors	Stop or Yield Sign	Stop or Yield Sign
14-037214	Stopped	No	Following too Close	No Contributing Factors	Lanes	Traffic Signal
14-045313	Stopped	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-049283	Turning Right	No	Following too Close	No Contributing Factors	Lanes	Stop or Yield Sign
14-054860	Turning Left	No	Misjudged Clearance	No Contributing Factors	Traffic Signal	Traffic Signal
14-079360	Stopped	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-085068	Stopped	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-092761	Straight	NO	Following too Close	No Contributing Factors	Lanes	Lanes
14-095617	Turning Right	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-103010	Stopped	NO	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-108954	Stopped	No	Following too Close	No Contributing Factors	Lanes	Lanes
14-112602	Stopped	No	Following too Close	No Contributing Factors	Lanes	Lanes
14-113372	Turning Right	No	Following too Close	No Contributing Factors	Lanes	Lanes
14-118306	Stopped	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-119774	Stopped	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
14-120834	Turning Left	NO	Other	Other	Traffic Signal	Traffic Signal
14-127060	Stopped	No	Distracted	No Contributing Factors	Traffic Signal	Traffic Signal
15-007463	Turning Left	No	Weather Conditions	No Contributing Factors	Traffic Signal	Traffic Signal
15-013949	Stopped	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
15-015925	Straight	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
15-017027	Straight	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
15-019995	Turning Right	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
15-037525	Turning Right	No	Failed to Yield	No Contributing Factors	Traffic Signal	Traffic Signal
15-042147	Turning Right	No	Following too Close	No Contributing Factors	Stop Or Yield Sign	Stop Or Yield Sign
15-047227	Straight	No	Failed to Yield	No Contributing Factors	Traffic Signal	Traffic Signal
15-053467	Stopped	No	Following too Close	No Contributing Factors	Lanes	Lanes
15-057275	Turning Left	No	Inattentive	No Contributing Factors	Lanes	Lanes
15-065526	Stopped	No	No Contributing Factors	No Contributing Factors	Traffic Signal	Traffic Signal
15-070473	Stopped	No	Misjudged Clearance	No Contributing Factors	Traffic Signal	Traffic Signal
15-077006	Stopped	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
15-087006	Stopped	No	Failed to Yield	No Contributing Factors	Traffic Signal	Traffic Signal
15-087049	Turning Right	No	Following too Close	No Contributing Factors	Lanes	Lanes
15-088306		No	Other		Lanes	
15-099695	Stopped	No	Inattentive	No Contributing Factors	Traffic Signal	Traffic Signal
15-105540	Turning Right	No	Following too Close	No Contributing Factors	Lanes	Lanes
15-114108	Stopped	No	Following too Close	No Contributing Factors	Lanes	Lanes
15-114629	Straight	No	Following too Close	No Contributing Factors	Lanes	Lanes
15-080395	stopped	No	Following too Close	No Contributing Factors	Lanes	Lanes
15-069969	Stopped	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
15-066686	Straight	No	Failed to Yield, Misjudged Clearance	No Contributing Factors	Traffic Signal	Traffic Signal
15-058771	Straight	No	Changed Lanes Improperly	No Contributing Factors	Lanes	Lanes
15-033593	Straight	No	No Contributing Factors	Following too Close	Traffic Signal	Traffic Signal
15-021698	Straight	No	Failed to Yield	No Contributing Factors	Traffic Signal	Traffic Signal
15-020376	Straight	No	Failed to yield	No Contributing Factors	Traffic Signal	Traffic Signal
15-016885	Stopped	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
15-015757	Stopped	No	Following too Close	No Contributing Factors	Traffic Signal	Traffic Signal
15-014106	Straight	No	Failed to Yield	No Contributing Factors	Traffic Signal	Traffic Signal
15-011550	stopped	No	Following too Close	No Contributing Factors	Stop or Yield Sign	Stop or Yield Sign
15-008372	Stopped	No	Misjudged Clearance	No Contributing Factors	Traffic Signal	Traffic Signal
15-000818	Straight	No	Failed to yield	No Contributing Factors	Traffic Signal	Traffic Signal

Appendix D – Synchro Printouts

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

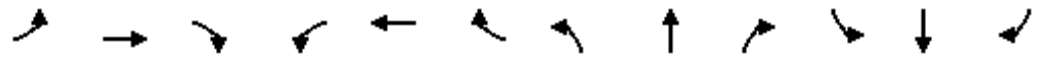


Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	355	336	338	1721	1349
v/c Ratio	0.88	0.86	0.82	0.72	0.62
Control Delay	71.4	69.5	69.2	10.4	31.5
Queue Delay	0.0	0.0	0.4	0.2	0.0
Total Delay	71.4	69.5	69.5	10.6	31.5
Queue Length 50th (ft)	321	298	250	164	348
Queue Length 95th (ft)	431	408	393	247	477
Internal Link Dist (ft)	448			410	382
Turn Bay Length (ft)		175			
Base Capacity (vph)	490	471	486	2384	2173
Starvation Cap Reductn	0	0	16	136	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.72	0.71	0.72	0.77	0.62

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

2016 Existing AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔	↗	↘	↑↑			↑↑↑	
Traffic Volume (vph)	0	0	0	132	0	518	318	1618	0	0	672	596
Future Volume (vph)	0	0	0	132	0	518	318	1618	0	0	672	596
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	
Frt					0.91	0.85	1.00	1.00			0.93	
Flt Protected					0.98	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1587	1519	1626	3406			4445	
Flt Permitted					0.98	1.00	0.12	1.00			1.00	
Satd. Flow (perm)					1587	1519	197	3406			4445	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	140	0	551	338	1721	0	0	715	634
RTOR Reduction (vph)	0	0	0	0	47	47	0	0	0	0	83	0
Lane Group Flow (vph)	0	0	0	0	308	289	338	1721	0	0	1266	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	1%	11%	6%	0%	0%	8%	9%
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		1	6			2	
Permitted Phases				4		4	6					
Actuated Green, G (s)					36.0	36.0	112.0	112.0			75.2	
Effective Green, g (s)					36.0	36.0	112.0	112.0			75.2	
Actuated g/C Ratio					0.22	0.22	0.70	0.70			0.47	
Clearance Time (s)					6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)					357	341	412	2384			2089	
v/s Ratio Prot							c0.16	0.51			0.28	
v/s Ratio Perm					0.19	0.19	c0.42					
v/c Ratio					0.86	0.85	0.82	0.72			0.61	
Uniform Delay, d1					59.6	59.4	36.2	14.6			31.4	
Progression Factor					1.00	1.00	1.76	0.55			1.00	
Incremental Delay, d2					18.8	17.3	10.5	1.6			1.3	
Delay (s)					78.4	76.7	74.4	9.6			32.7	
Level of Service					E	E	E	A			C	
Approach Delay (s)		0.0			77.6			20.2			32.7	
Approach LOS		A			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			34.0		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			160.0		Sum of lost time (s)				18.0			
Intersection Capacity Utilization			76.9%		ICU Level of Service				D			
Analysis Period (min)			15									
c Critical Lane Group												

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	259	252	236	1640	72	141	730
v/c Ratio	0.80	0.73	0.50	0.57	0.08	0.51	0.30
Control Delay	77.5	56.2	9.7	22.8	5.5	27.4	2.7
Queue Delay	0.1	0.1	0.0	0.0	0.0	0.0	0.2
Total Delay	77.6	56.3	9.7	22.8	5.5	27.4	3.0
Queue Length 50th (ft)	274	210	5	379	5	47	28
Queue Length 95th (ft)	357	300	81	498	33	m117	51
Internal Link Dist (ft)		783		382			410
Turn Bay Length (ft)	475		305				
Base Capacity (vph)	500	500	602	2858	867	275	2457
Starvation Cap Reductn	0	0	0	0	0	0	954
Spillback Cap Reductn	15	13	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.52	0.39	0.57	0.08	0.51	0.49

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp

2016 Existing AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	377	0	318	0	0	0	0	1525	67	131	679	0
Future Volume (vph)	377	0	318	0	0	0	0	1525	67	131	679	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.91	1.00	1.00	0.95	
Frt	1.00	0.94	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.97	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1603	1466	1421					4893	1442	1656	3406	
Flt Permitted	0.95	0.97	1.00					1.00	1.00	0.10	1.00	
Satd. Flow (perm)	1603	1466	1421					4893	1442	177	3406	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	405	0	342	0	0	0	0	1640	72	141	730	0
RTOR Reduction (vph)	0	49	183	0	0	0	0	0	25	0	0	0
Lane Group Flow (vph)	259	203	53	0	0	0	0	1640	47	141	730	0
Heavy Vehicles (%)	7%	0%	8%	0%	0%	0%	0%	6%	12%	9%	6%	0%
Turn Type	Perm	NA	Perm					NA	Perm	pm+pt	NA	
Protected Phases		4						6		5	2	
Permitted Phases	4		4						6		2	
Actuated Green, G (s)	32.5	32.5	32.5					93.5	93.5	115.5	115.5	
Effective Green, g (s)	32.5	32.5	32.5					93.5	93.5	115.5	115.5	
Actuated g/C Ratio	0.20	0.20	0.20					0.58	0.58	0.72	0.72	
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	325	297	288					2859	842	275	2458	
v/s Ratio Prot								c0.34		c0.05	0.21	
v/s Ratio Perm	c0.16	0.14	0.04						0.03	0.32		
v/c Ratio	0.80	0.68	0.18					0.57	0.06	0.51	0.30	
Uniform Delay, d1	60.6	59.0	52.8					20.8	14.3	32.6	7.9	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.71	0.29	
Incremental Delay, d2	12.7	6.4	0.3					0.8	0.1	1.3	0.2	
Delay (s)	73.3	65.4	53.1					21.6	14.4	24.6	2.5	
Level of Service	E	E	D					C	B	C	A	
Approach Delay (s)		64.3			0.0			21.3			6.1	
Approach LOS		E			A			C			A	

Intersection Summary

HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Network Totals

Number of Intersections	2
Total Delay (hr)	55
Stops (#)	3660
Average Speed (mph)	10
Total Travel Time (hr)	70
Distance Traveled (mi)	684
Fuel Consumed (gal)	115
Fuel Economy (mpg)	5.9
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	158
Performance Index	65.7

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp





















Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	122	112	306	1420	2377
v/c Ratio	0.70	0.61	0.70	0.49	0.83
Control Delay	56.4	37.3	47.9	4.0	29.2
Queue Delay	0.0	0.0	0.0	0.1	0.1
Total Delay	56.4	37.3	47.9	4.1	29.3
Queue Length 50th (ft)	66	33	225	77	683
Queue Length 95th (ft)	137	104	349	136	833
Internal Link Dist (ft)	448			410	382
Turn Bay Length (ft)		175			
Base Capacity (vph)	369	364	436	2925	2877
Starvation Cap Reductn	0	0	0	311	0
Spillback Cap Reductn	0	0	0	0	26
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.33	0.31	0.70	0.54	0.83

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

2016 Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	67	0	155	291	1349	0	0	1619	639
Future Volume (vph)	0	0	0	67	0	155	291	1349	0	0	1619	639
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	
Frt					0.94	0.85	1.00	1.00			0.96	
Flt Protected					0.97	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1603	1504	1736	3438			4829	
Flt Permitted					0.97	1.00	0.04	1.00			1.00	
Satd. Flow (perm)					1603	1504	73	3438			4829	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	71	0	163	306	1420	0	0	1704	673
RTOR Reduction (vph)	0	0	0	0	57	74	0	0	0	0	34	0
Lane Group Flow (vph)	0	0	0	0	65	38	306	1420	0	0	2343	0
Heavy Vehicles (%)	0%	0%	0%	3%	0%	2%	4%	5%	0%	0%	2%	5%
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		1	5				2
Permitted Phases				4		4	5					
Actuated Green, G (s)					11.8	11.8	136.2	136.2				94.2
Effective Green, g (s)					11.8	11.8	136.2	136.2				94.2
Actuated g/C Ratio					0.07	0.07	0.85	0.85				0.59
Clearance Time (s)					6.0	6.0	6.0	6.0				6.0
Vehicle Extension (s)					3.0	3.0	3.0	3.0				3.0
Lane Grp Cap (vph)					118	110	436	2926				2843
v/s Ratio Prot							c0.16	0.41				c0.49
v/s Ratio Perm					0.04	0.03	0.44					
v/c Ratio					0.56	0.34	0.70	0.49				0.82
Uniform Delay, d1					71.6	70.4	37.6	3.0				26.3
Progression Factor					1.00	1.00	0.83	1.03				1.00
Incremental Delay, d2					5.6	1.9	4.3	0.5				2.9
Delay (s)					77.1	72.3	35.7	3.6				29.1
Level of Service					E	E	D	A				C
Approach Delay (s)		0.0			74.8			9.3				29.1
Approach LOS		A			E			A				C
Intersection Summary												
HCM 2000 Control Delay			23.7		HCM 2000 Level of Service							C
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			160.0		Sum of lost time (s)						18.0	
Intersection Capacity Utilization			83.6%		ICU Level of Service						E	
Analysis Period (min)			15									
c Critical Lane Group												

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	281	278	253	1203	228	413	1269
v/c Ratio	0.84	0.77	0.76	0.48	0.25	0.89	0.51
Control Delay	81.7	60.6	52.4	27.8	3.6	62.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.3
Total Delay	81.7	60.6	52.4	27.8	3.6	63.3	1.1
Queue Length 50th (ft)	296	239	173	318	0	199	10
Queue Length 95th (ft)	401	349	278	378	50	m#404	15
Internal Link Dist (ft)		783		382			410
Turn Bay Length (ft)	475		305				
Base Capacity (vph)	404	420	382	2514	917	493	2490
Starvation Cap Reductn	0	0	0	0	0	6	515
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.66	0.66	0.48	0.25	0.85	0.64

Intersection Summary

























95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp

2016 Existing PM

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations								  			 	 		
Traffic Volume (vph)	495	0	276	0	0	0	0	1143	217	392	1206	0		
Future Volume (vph)	495	0	276	0	0	0	0	1143	217	392	1206	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0			
Lane Util. Factor	0.95	0.91	0.95					0.91	1.00	1.00	0.95			
Frt	1.00	0.98	0.85					1.00	0.85	1.00	1.00			
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00			
Satd. Flow (prot)	1618	1501	1258					4940	1583	1770	3471			
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.16	1.00			
Satd. Flow (perm)	1618	1501	1258					4940	1583	293	3471			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
Adj. Flow (vph)	521	0	291	0	0	0	0	1203	228	413	1269	0		
RTOR Reduction (vph)	0	48	71	0	0	0	0	0	112	0	0	0		
Lane Group Flow (vph)	281	230	182	0	0	0	0	1203	116	413	1269	0		
Heavy Vehicles (%)	6%	0%	22%	0%	0%	0%	0%	5%	2%	2%	4%	0%		
Turn Type	Perm	NA	Perm					NA	Perm	pm+pt	NA			
Protected Phases		4						6		5	2			
Permitted Phases	4		4						6	2				
Actuated Green, G (s)	33.2	33.2	33.2					81.4	81.4	114.8	114.8			
Effective Green, g (s)	33.2	33.2	33.2					81.4	81.4	114.8	114.8			
Actuated g/C Ratio	0.21	0.21	0.21					0.51	0.51	0.72	0.72			
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0			
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	335	311	261					2513	805	463	2490			
v/s Ratio Prot								0.24		c0.15	0.37			
v/s Ratio Perm	c0.17	0.15	0.14						0.07	c0.49				
v/c Ratio	0.84	0.74	0.70					0.48	0.14	0.89	0.51			
Uniform Delay, d1	60.8	59.3	58.7					25.5	20.8	30.2	10.1			
Progression Factor	1.00	1.00	1.00					1.00	1.00	2.00	0.04			
Incremental Delay, d2	16.6	8.8	7.8					0.7	0.4	12.0	0.4			
Delay (s)	77.4	68.2	66.6					26.2	21.2	72.5	0.8			
Level of Service	E	E	E					C	C	E	A			
Approach Delay (s)		70.9			0.0			25.4			18.4			
Approach LOS		E			A			C			B			
Intersection Summary														
HCM 2000 Control Delay			31.8									HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio			0.90											
Actuated Cycle Length (s)			160.0								18.0		Sum of lost time (s)	
Intersection Capacity Utilization			83.6%										ICU Level of Service	E
Analysis Period (min)			15											
c Critical Lane Group														

Network Totals

Number of Intersections	2
Total Delay (hr)	57
Stops (#)	4041
Average Speed (mph)	10
Total Travel Time (hr)	73
Distance Traveled (mi)	765
Fuel Consumed (gal)	122
Fuel Economy (mpg)	6.3
Unserviced Vehicles (#)	0
Vehicles in dilemma zone (#)	175
Performance Index	68.2

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	422	403	397	2052	1763
v/c Ratio	0.93	0.92	0.95	0.90	1.19dr
Control Delay	76.2	75.5	97.7	20.6	53.4
Queue Delay	0.0	0.0	8.0	2.1	0.0
Total Delay	76.2	75.5	105.7	22.6	53.4
Queue Length 50th (ft)	388	367	384	366	~679
Queue Length 95th (ft)	#586	#562	#575	581	#775
Internal Link Dist (ft)	448			410	382
Turn Bay Length (ft)		175			
Base Capacity (vph)	490	471	437	2270	1869
Starvation Cap Reductn	0	0	27	116	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.86	0.86	0.97	0.95	0.94

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

2025 Background AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔	↗	↘	↑↑			↑↑↑	
Traffic Volume (vph)	0	0	0	155	0	620	373	1929	0	0	876	781
Future Volume (vph)	0	0	0	155	0	620	373	1929	0	0	876	781
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	
Frt					0.91	0.85	1.00	1.00			0.93	
Flt Protected					0.98	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1587	1519	1626	3406			4444	
Flt Permitted					0.98	1.00	0.06	1.00			1.00	
Satd. Flow (perm)					1587	1519	98	3406			4444	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	165	0	660	397	2052	0	0	932	831
RTOR Reduction (vph)	0	0	0	0	45	45	0	0	0	0	95	0
Lane Group Flow (vph)	0	0	0	0	377	358	397	2052	0	0	1668	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	1%	11%	6%	0%	0%	8%	9%
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		1	6			2	
Permitted Phases				4		4	6					
Actuated Green, G (s)					41.3	41.3	106.7	106.7			64.0	
Effective Green, g (s)					41.3	41.3	106.7	106.7			64.0	
Actuated g/C Ratio					0.26	0.26	0.67	0.67			0.40	
Clearance Time (s)					6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)					409	392	415	2271			1777	
v/s Ratio Prot							0.22	c0.60			0.38	
v/s Ratio Perm					0.24	0.24	c0.42					
v/c Ratio					0.92	0.91	0.96	0.90			1.19dr	
Uniform Delay, d1					57.8	57.6	52.2	22.3			46.1	
Progression Factor					1.00	1.00	1.47	0.65			1.00	
Incremental Delay, d2					25.9	25.1	26.5	4.8			11.1	
Delay (s)					83.7	82.7	103.3	19.4			57.2	
Level of Service					F	F	F	B			E	
Approach Delay (s)		0.0			83.2			33.0			57.2	
Approach LOS		A			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	49.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
 c Critical Lane Group

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	304	299	281	1951	85	178	939
v/c Ratio	0.82	0.77	0.64	0.72	0.10	0.79	0.40
Control Delay	74.4	57.7	31.4	29.7	7.6	48.9	3.3
Queue Delay	1.9	1.5	0.0	0.0	0.0	0.0	0.5
Total Delay	76.3	59.2	31.4	29.7	7.6	48.9	3.8
Queue Length 50th (ft)	318	261	136	541	11	124	44
Queue Length 95th (ft)	404	357	226	699	45	m151	m61
Internal Link Dist (ft)		783		382			410
Turn Bay Length (ft)	475		305				
Base Capacity (vph)	500	501	543	2711	826	224	2355
Starvation Cap Reductn	0	0	0	0	0	0	908
Spillback Cap Reductn	88	81	0	29	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.71	0.52	0.73	0.10	0.79	0.65

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp

2025 Background AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	449	0	373	0	0	0	0	1814	79	166	873	0
Future Volume (vph)	449	0	373	0	0	0	0	1814	79	166	873	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.91	1.00	1.00	0.95	
Frt	1.00	0.94	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.97	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1603	1469	1421					4893	1442	1656	3406	
Flt Permitted	0.95	0.97	1.00					1.00	1.00	0.06	1.00	
Satd. Flow (perm)	1603	1469	1421					4893	1442	99	3406	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	483	0	401	0	0	0	0	1951	85	178	939	0
RTOR Reduction (vph)	0	47	111	0	0	0	0	0	27	0	0	0
Lane Group Flow (vph)	304	252	170	0	0	0	0	1951	58	178	939	0
Heavy Vehicles (%)	7%	0%	8%	0%	0%	0%	0%	6%	12%	9%	6%	0%
Turn Type	Perm	NA	Perm					NA	Perm	pm+pt	NA	
Protected Phases		4						6		5	2	
Permitted Phases	4		4						6		2	
Actuated Green, G (s)	37.3	37.3	37.3					88.7	88.7	110.7	110.7	
Effective Green, g (s)	37.3	37.3	37.3					88.7	88.7	110.7	110.7	
Actuated g/C Ratio	0.23	0.23	0.23					0.55	0.55	0.69	0.69	
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	373	342	331					2712	799	224	2356	
v/s Ratio Prot								0.40		c0.08	0.28	
v/s Ratio Perm	c0.19	0.17	0.12						0.04	c0.47		
v/c Ratio	0.82	0.74	0.51					0.72	0.07	0.79	0.40	
Uniform Delay, d1	58.1	56.8	53.4					26.4	16.6	43.9	10.5	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.71	0.27	
Incremental Delay, d2	12.8	8.1	1.3					1.7	0.2	7.5	0.2	
Delay (s)	70.9	64.9	54.8					28.1	16.7	38.8	3.0	
Level of Service	E	E	D					C	B	D	A	
Approach Delay (s)		63.7			0.0			27.6			8.7	
Approach LOS		E			A			C			A	

Intersection Summary

HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Network Totals

Number of Intersections	2
Total Delay (hr)	95
Stops (#)	5314
Average Speed (mph)	7
Total Travel Time (hr)	113
Distance Traveled (mi)	833
Fuel Consumed (gal)	172
Fuel Economy (mpg)	4.9
Unserviced Vehicles (#)	0
Vehicles in dilemma zone (#)	201
Performance Index	109.9

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	144	135	359	1689	2935
v/c Ratio	0.74	0.72	0.82	0.59	1.04
Control Delay	61.7	59.0	53.7	5.8	62.0
Queue Delay	0.5	0.0	3.3	0.1	23.8
Total Delay	62.1	59.0	57.0	5.9	85.8
Queue Length 50th (ft)	90	80	286	126	~1200
Queue Length 95th (ft)	168	155	m#465	173	#1359
Internal Link Dist (ft)	448			410	382
Turn Bay Length (ft)		175			
Base Capacity (vph)	369	349	436	2879	2813
Starvation Cap Reductn	0	0	30	322	0
Spillback Cap Reductn	52	0	0	0	184
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.45	0.39	0.88	0.66	1.12

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

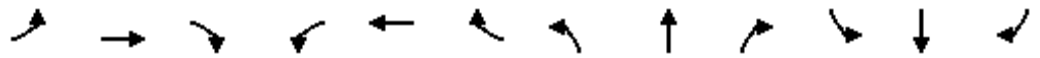
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

2025 Background PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↔	↗	↘	↑↑			↑↑↑		
Traffic Volume (vph)	0	0	0	79	0	186	341	1605	0	0	2001	788	
Future Volume (vph)	0	0	0	79	0	186	341	1605	0	0	2001	788	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					6.0	6.0	6.0	6.0			6.0		
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91		
Frt					0.94	0.85	1.00	1.00			0.96		
Flt Protected					0.97	1.00	0.95	1.00			1.00		
Satd. Flow (prot)					1602	1504	1736	3438			4830		
Flt Permitted					0.97	1.00	0.04	1.00			1.00		
Satd. Flow (perm)					1602	1504	75	3438			4830		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	0	0	0	83	0	196	359	1689	0	0	2106	829	
RTOR Reduction (vph)	0	0	0	0	56	56	0	0	0	0	35	0	
Lane Group Flow (vph)	0	0	0	0	88	79	359	1689	0	0	2900	0	
Heavy Vehicles (%)	0%	0%	0%	3%	0%	2%	4%	5%	0%	0%	2%	5%	
Turn Type				Perm	NA	Perm	pm+pt	NA			NA		
Protected Phases					4		1	5			2		
Permitted Phases				4		4	5						
Actuated Green, G (s)					14.0	14.0	134.0	134.0			92.0		
Effective Green, g (s)					14.0	14.0	134.0	134.0			92.0		
Actuated g/C Ratio					0.09	0.09	0.84	0.84			0.58		
Clearance Time (s)					6.0	6.0	6.0	6.0			6.0		
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0		
Lane Grp Cap (vph)					140	131	436	2879			2777		
v/s Ratio Prot							c0.19	0.49			c0.60		
v/s Ratio Perm					0.06	0.05	0.51						
v/c Ratio					0.63	0.61	0.82	0.59			1.04		
Uniform Delay, d1					70.5	70.3	54.5	4.2			34.0		
Progression Factor					1.00	1.00	0.82	1.09			1.00		
Incremental Delay, d2					8.9	7.7	8.8	0.6			30.1		
Delay (s)					79.4	78.0	53.3	5.2			64.1		
Level of Service					E	E	D	A			E		
Approach Delay (s)		0.0			78.8			13.6			64.1		
Approach LOS		A			E			B			E		
Intersection Summary													
HCM 2000 Control Delay			45.2		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			0.95										
Actuated Cycle Length (s)			160.0		Sum of lost time (s)						18.0		
Intersection Capacity Utilization			98.3%		ICU Level of Service						F		
Analysis Period (min)			15										
c Critical Lane Group													

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	334	329	296	1426	267	509	1571
v/c Ratio	0.89	0.83	0.88	0.64	0.32	1.13	0.65
Control Delay	84.8	65.5	72.0	35.7	5.9	116.3	0.6
Queue Delay	1.7	1.0	0.0	0.0	0.0	0.1	0.8
Total Delay	86.5	66.5	72.0	35.7	5.9	116.4	1.4
Queue Length 50th (ft)	350	294	252	418	22	~550	19
Queue Length 95th (ft)	#516	#441	#418	470	80	m#510	m14
Internal Link Dist (ft)		783		382			410
Turn Bay Length (ft)	475		305				
Base Capacity (vph)	404	421	360	2223	838	449	2405
Starvation Cap Reductn	0	0	0	0	0	3	490
Spillback Cap Reductn	16	15	0	19	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.81	0.82	0.65	0.32	1.14	0.82

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp

2025 Background PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	588	0	323	0	0	0	0	1355	254	484	1492	0
Future Volume (vph)	588	0	323	0	0	0	0	1355	254	484	1492	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.91	1.00	1.00	0.95	
Frt	1.00	0.98	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1618	1502	1258					4940	1583	1770	3471	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.09	1.00	
Satd. Flow (perm)	1618	1502	1258					4940	1583	176	3471	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	619	0	340	0	0	0	0	1426	267	509	1571	0
RTOR Reduction (vph)	0	47	47	0	0	0	0	0	127	0	0	0
Lane Group Flow (vph)	334	282	249	0	0	0	0	1426	141	509	1571	0
Heavy Vehicles (%)	6%	0%	22%	0%	0%	0%	0%	5%	2%	2%	4%	0%
Turn Type	Perm	NA	Perm					NA	Perm	pm+pt	NA	
Protected Phases		4						6		5	2	
Permitted Phases	4		4						6		2	
Actuated Green, G (s)	37.1	37.1	37.1					72.0	72.0	110.9	110.9	
Effective Green, g (s)	37.1	37.1	37.1					72.0	72.0	110.9	110.9	
Actuated g/C Ratio	0.23	0.23	0.23					0.45	0.45	0.69	0.69	
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	375	348	291					2223	712	449	2405	
v/s Ratio Prot								0.29		c0.23	0.45	
v/s Ratio Perm	c0.21	0.19	0.20						0.09	c0.55		
v/c Ratio	0.89	0.81	0.86					0.64	0.20	1.13	0.65	
Uniform Delay, d1	59.5	58.1	58.9					34.0	26.6	47.0	13.8	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.47	0.03	
Incremental Delay, d2	22.2	13.3	21.1					1.4	0.6	63.1	0.1	
Delay (s)	81.7	71.5	80.0					35.5	27.2	132.0	0.5	
Level of Service	F	E	E					D	C	F	A	
Approach Delay (s)		77.7			0.0			34.2			32.7	
Approach LOS		E			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Network Totals

Number of Intersections	2
Total Delay (hr)	128
Stops (#)	5516
Average Speed (mph)	6
Total Travel Time (hr)	148
Distance Traveled (mi)	924
Fuel Consumed (gal)	199
Fuel Economy (mpg)	4.6
Unserved Vehicles (#)	173
Vehicles in dilemma zone (#)	207
Performance Index	143.4

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	457	434	429	2216	1891
v/c Ratio	0.96	0.95	0.98	1.00	1.35dr
Control Delay	80.7	78.8	97.5	34.1	90.7
Queue Delay	0.0	0.0	24.6	27.4	0.0
Total Delay	80.7	78.8	122.0	61.5	90.7
Queue Length 50th (ft)	440	412	429	~525	~783
Queue Length 95th (ft)	#673	#637	#645	#1379	#876
Internal Link Dist (ft)	448			410	382
Turn Bay Length (ft)		175			
Base Capacity (vph)	490	471	438	2220	1746
Starvation Cap Reductn	0	0	35	160	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.93	0.92	1.06	1.08	1.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

2030 Background AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔	↗	↘	↑↑			↑↑↑	
Traffic Volume (vph)	0	0	0	168	0	669	403	2083	0	0	940	838
Future Volume (vph)	0	0	0	168	0	669	403	2083	0	0	940	838
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91	
Frt					0.91	0.85	1.00	1.00			0.93	
Flt Protected					0.98	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1587	1519	1626	3406			4444	
Flt Permitted					0.98	1.00	0.06	1.00			1.00	
Satd. Flow (perm)					1587	1519	105	3406			4444	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	179	0	712	429	2216	0	0	1000	891
RTOR Reduction (vph)	0	0	0	0	44	44	0	0	0	0	99	0
Lane Group Flow (vph)	0	0	0	0	413	390	429	2216	0	0	1792	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	1%	11%	6%	0%	0%	8%	9%
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					4		1	6			2	
Permitted Phases				4		4	6					
Actuated Green, G (s)					43.7	43.7	104.3	104.3			59.3	
Effective Green, g (s)					43.7	43.7	104.3	104.3			59.3	
Actuated g/C Ratio					0.27	0.27	0.65	0.65			0.37	
Clearance Time (s)					6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)					433	414	439	2220			1647	
v/s Ratio Prot							0.24	c0.65			c0.40	
v/s Ratio Perm					0.26	0.26	0.40					
v/c Ratio					0.95	0.94	0.98	1.00			1.35dr	
Uniform Delay, d1					57.1	56.9	52.4	27.8			50.4	
Progression Factor					1.00	1.00	1.45	0.68			1.00	
Incremental Delay, d2					31.3	29.7	27.8	14.6			50.3	
Delay (s)					88.4	86.6	103.5	33.3			100.7	
Level of Service					F	F	F	C			F	
Approach Delay (s)		0.0			87.5			44.7			100.7	
Approach LOS		A			F			D			F	

Intersection Summary

HCM 2000 Control Delay	71.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	97.3%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	334	322	299	2108	91	192	1009
v/c Ratio	0.83	0.78	0.67	0.80	0.11	0.92	0.44
Control Delay	73.8	57.4	37.2	34.3	8.6	50.0	3.6
Queue Delay	16.7	8.5	0.0	0.1	0.0	0.0	0.8
Total Delay	90.6	65.9	37.2	34.4	8.6	50.0	4.4
Queue Length 50th (ft)	349	285	176	645	15	155	54
Queue Length 95th (ft)	445	390	272	806	51	m153	m58
Internal Link Dist (ft)		783		382			410
Turn Bay Length (ft)	475		305				
Base Capacity (vph)	500	500	529	2625	801	209	2296
Starvation Cap Reductn	0	0	0	0	0	0	887
Spillback Cap Reductn	153	140	0	30	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.89	0.57	0.81	0.11	0.92	0.72

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp

2030 Background AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	485	0	403	0	0	0	0	1960	85	179	938	0
Future Volume (vph)	485	0	403	0	0	0	0	1960	85	179	938	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.91	1.00	1.00	0.95	
Frt	1.00	0.94	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.97	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1603	1466	1421					4893	1442	1656	3406	
Flt Permitted	0.95	0.97	1.00					1.00	1.00	0.04	1.00	
Satd. Flow (perm)	1603	1466	1421					4893	1442	76	3406	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	522	0	433	0	0	0	0	2108	91	192	1009	0
RTOR Reduction (vph)	0	46	93	0	0	0	0	0	28	0	0	0
Lane Group Flow (vph)	334	276	206	0	0	0	0	2108	63	192	1009	0
Heavy Vehicles (%)	7%	0%	8%	0%	0%	0%	0%	6%	12%	9%	6%	0%
Turn Type	Perm	NA	Perm					NA	Perm	pm+pt	NA	
Protected Phases		4						6		5	2	
Permitted Phases	4		4						6	2		
Actuated Green, G (s)	40.1	40.1	40.1					85.9	85.9	107.9	107.9	
Effective Green, g (s)	40.1	40.1	40.1					85.9	85.9	107.9	107.9	
Actuated g/C Ratio	0.25	0.25	0.25					0.54	0.54	0.67	0.67	
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	401	367	356					2626	774	209	2296	
v/s Ratio Prot								0.43		c0.09	0.30	
v/s Ratio Perm	c0.21	0.19	0.15						0.04	c0.53		
v/c Ratio	0.83	0.75	0.58					0.80	0.08	0.92	0.44	
Uniform Delay, d1	56.8	55.4	52.5					30.2	17.9	50.7	12.1	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.72	0.27	
Incremental Delay, d2	13.8	8.5	2.3					2.7	0.2	6.4	0.1	
Delay (s)	70.5	63.8	54.8					32.9	18.1	42.6	3.3	
Level of Service	E	E	D					C	B	D	A	
Approach Delay (s)		63.4			0.0			32.3			9.6	
Approach LOS		E			A			C			A	

Intersection Summary

HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	97.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Network Totals

Number of Intersections	2
Total Delay (hr)	151
Stops (#)	5917
Average Speed (mph)	5
Total Travel Time (hr)	170
Distance Traveled (mi)	898
Fuel Consumed (gal)	223
Fuel Economy (mpg)	4.0
Unserviced Vehicles (#)	135
Vehicles in dilemma zone (#)	223
Performance Index	167.8

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	155	146	388	1825	3163
v/c Ratio	0.75	0.74	0.89	0.64	1.14
Control Delay	63.6	61.8	59.7	6.6	98.8
Queue Delay	2.1	0.0	5.6	0.2	0.2
Total Delay	65.8	61.8	65.3	6.8	99.0
Queue Length 50th (ft)	103	92	329	150	~1396
Queue Length 95th (ft)	182	170	m#518	185	#1552
Internal Link Dist (ft)	448			410	382
Turn Bay Length (ft)		175			
Base Capacity (vph)	369	349	436	2855	2781
Starvation Cap Reductn	0	0	25	306	0
Spillback Cap Reductn	113	0	0	0	245
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.42	0.94	0.72	1.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

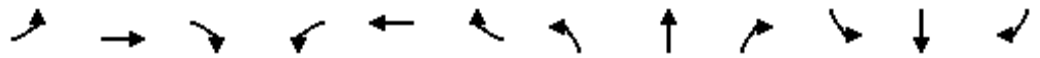
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

2030 Background PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↔	↗	↖	↑↑			↑↑↑		
Traffic Volume (vph)	0	0	0	85	0	201	369	1734	0	0	2156	849	
Future Volume (vph)	0	0	0	85	0	201	369	1734	0	0	2156	849	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					6.0	6.0	6.0	6.0			6.0		
Lane Util. Factor					0.95	0.95	1.00	0.95			0.91		
Frt					0.94	0.85	1.00	1.00			0.96		
Flt Protected					0.97	1.00	0.95	1.00			1.00		
Satd. Flow (prot)					1601	1504	1736	3438			4830		
Flt Permitted					0.97	1.00	0.04	1.00			1.00		
Satd. Flow (perm)					1601	1504	75	3438			4830		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	0	0	0	89	0	212	388	1825	0	0	2269	894	
RTOR Reduction (vph)	0	0	0	0	55	55	0	0	0	0	36	0	
Lane Group Flow (vph)	0	0	0	0	100	91	388	1825	0	0	3127	0	
Heavy Vehicles (%)	0%	0%	0%	3%	0%	2%	4%	5%	0%	0%	2%	5%	
Turn Type				Perm	NA	Perm	pm+pt	NA			NA		
Protected Phases					4		1	5			2		
Permitted Phases				4		4	5						
Actuated Green, G (s)					15.1	15.1	132.9	132.9			90.9		
Effective Green, g (s)					15.1	15.1	132.9	132.9			90.9		
Actuated g/C Ratio					0.09	0.09	0.83	0.83			0.57		
Clearance Time (s)					6.0	6.0	6.0	6.0			6.0		
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0		
Lane Grp Cap (vph)					151	141	436	2855			2744		
v/s Ratio Prot							c0.20	0.53			c0.65		
v/s Ratio Perm					0.06	0.06	0.54						
v/c Ratio					0.66	0.64	0.89	0.64			1.14		
Uniform Delay, d1					70.0	69.9	55.7	4.9			34.5		
Progression Factor					1.00	1.00	0.82	1.06			1.00		
Incremental Delay, d2					10.3	9.7	13.7	0.7			67.8		
Delay (s)					80.3	79.5	59.3	5.9			102.3		
Level of Service					F	E	E	A			F		
Approach Delay (s)		0.0			79.9			15.3			102.3		
Approach LOS		A			E			B			F		
Intersection Summary													
HCM 2000 Control Delay			67.2		HCM 2000 Level of Service				E				
HCM 2000 Volume to Capacity ratio			1.03										
Actuated Cycle Length (s)			160.0		Sum of lost time (s)				18.0				
Intersection Capacity Utilization			104.9%		ICU Level of Service				G				
Analysis Period (min)			15										
c Critical Lane Group													

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	361	355	319	1541	289	548	1692
v/c Ratio	0.93	0.87	0.91	0.69	0.34	1.32	0.71
Control Delay	89.1	69.4	77.6	37.2	7.3	193.8	0.9
Queue Delay	3.7	1.9	0.0	0.1	0.0	0.1	1.9
Total Delay	92.9	71.3	77.6	37.3	7.3	193.8	2.7
Queue Length 50th (ft)	387	331	284	467	34	~673	20
Queue Length 95th (ft)	#583	#519	#476	522	99	m#542	m14
Internal Link Dist (ft)		783		382			410
Turn Bay Length (ft)	475		305				
Base Capacity (vph)	404	421	360	2223	839	416	2373
Starvation Cap Reductn	0	0	0	0	0	3	490
Spillback Cap Reductn	16	16	0	62	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.88	0.89	0.71	0.34	1.33	0.90

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp

2030 Background PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	635	0	349	0	0	0	0	1464	275	521	1607	0
Future Volume (vph)	635	0	349	0	0	0	0	1464	275	521	1607	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.91	1.00	1.00	0.95	
Frt	1.00	0.98	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1618	1501	1258					4940	1583	1770	3471	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.08	1.00	
Satd. Flow (perm)	1618	1501	1258					4940	1583	140	3471	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	668	0	367	0	0	0	0	1541	289	548	1692	0
RTOR Reduction (vph)	0	46	46	0	0	0	0	0	127	0	0	0
Lane Group Flow (vph)	361	309	273	0	0	0	0	1541	162	548	1692	0
Heavy Vehicles (%)	6%	0%	22%	0%	0%	0%	0%	5%	2%	2%	4%	0%
Turn Type	Perm	NA	Perm					NA	Perm	pm+pt	NA	
Protected Phases		4						6		5	2	
Permitted Phases	4		4						6		2	
Actuated Green, G (s)	38.6	38.6	38.6					72.0	72.0	109.4	109.4	
Effective Green, g (s)	38.6	38.6	38.6					72.0	72.0	109.4	109.4	
Actuated g/C Ratio	0.24	0.24	0.24					0.45	0.45	0.68	0.68	
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	390	362	303					2223	712	415	2373	
v/s Ratio Prot								0.31		c0.26	0.49	
v/s Ratio Perm	c0.22	0.21	0.22						0.10	c0.64		
v/c Ratio	0.93	0.85	0.90					0.69	0.23	1.32	0.71	
Uniform Delay, d1	59.3	58.0	58.8					35.2	27.0	50.3	15.6	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.44	0.04	
Incremental Delay, d2	27.5	17.4	27.8					1.8	0.7	145.8	0.2	
Delay (s)	86.8	75.3	86.6					37.0	27.7	218.1	0.8	
Level of Service	F	E	F					D	C	F	A	
Approach Delay (s)		82.8			0.0			35.5			54.0	
Approach LOS		F			A			D			D	

Intersection Summary

HCM 2000 Control Delay	53.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Network Totals

Number of Intersections	2
Total Delay (hr)	165
Stops (#)	6014
Average Speed (mph)	5
Total Travel Time (hr)	186
Distance Traveled (mi)	997
Fuel Consumed (gal)	236
Fuel Economy (mpg)	4.2
Unserved Vehicles (#)	488
Vehicles in dilemma zone (#)	216
Performance Index	181.5

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Lane Group	EBR	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	165	660	2092	357	932	927
v/c Ratio	0.16	0.88	1.02	0.38	1.05	0.91
Control Delay	9.5	56.6	38.4	1.3	85.7	18.8
Queue Delay	0.0	0.0	32.8	0.3	0.0	0.0
Total Delay	9.5	56.6	71.2	1.6	85.7	18.8
Queue Length 50th (ft)	49	278	~958	7	~412	46
Queue Length 95th (ft)	79	#390	#1109	m12	#543	#404
Internal Link Dist (ft)			410		382	
Turn Bay Length (ft)						
Base Capacity (vph)	1020	750	2059	944	891	1018
Starvation Cap Reductn	0	0	178	195	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.88	1.11	0.48	1.05	0.91

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

2025 AM DDI



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations			↗			↗↗		↕↗	↗		↕↕	↗	
Traffic Volume (vph)	0	0	155	0	0	620	0	1929	373	0	876	871	
Future Volume (vph)	0	0	155	0	0	620	0	1929	373	0	876	871	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)			6.0			6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor			1.00			0.88		0.91	0.91		0.95	1.00	
Frt			0.86			0.85		1.00	0.85		1.00	0.85	
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00	
Satd. Flow (prot)			1611			2814		3250	1324		3343	1482	
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00	
Satd. Flow (perm)			1611			2814		3250	1324		3343	1482	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	0	0	165	0	0	660	0	2052	397	0	932	927	
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	106	0	0	623	
Lane Group Flow (vph)	0	0	165	0	0	660	0	2091	251	0	932	304	
Heavy Vehicles (%)	0%	0%	2%	0%	0%	1%	0%	6%	11%	0%	8%	9%	
Turn Type			Perm			Perm		NA	Perm		NA	Perm	
Protected Phases								2			1		
Permitted Phases			2			1			2			1	
Actuated Green, G (s)			76.0			32.0		76.0	76.0		32.0	32.0	
Effective Green, g (s)			76.0			32.0		76.0	76.0		32.0	32.0	
Actuated g/C Ratio			0.63			0.27		0.63	0.63		0.27	0.27	
Clearance Time (s)			6.0			6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)			1020			750		2058	838		891	395	
v/s Ratio Prot								c0.64			c0.28		
v/s Ratio Perm			0.10			0.23			0.19			0.20	
v/c Ratio			0.16			0.88		1.02	0.30		1.05	0.77	
Uniform Delay, d1			9.0			42.2		22.0	10.0		44.0	40.6	
Progression Factor			1.00			1.00		0.75	0.21		1.00	1.00	
Incremental Delay, d2			0.3			11.7		20.7	0.6		42.9	8.7	
Delay (s)			9.3			53.9		37.2	2.8		86.9	49.3	
Level of Service			A			D		D	A		F	D	
Approach Delay (s)		9.3			53.9			32.2			68.1		
Approach LOS		A			D			C			E		
Intersection Summary													
HCM 2000 Control Delay			47.3									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			1.02										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			89.0%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBR	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	401	483	1951	85	1117
v/c Ratio	0.29	0.48	0.77	0.11	0.88
Control Delay	17.4	29.7	25.9	4.1	32.0
Queue Delay	0.0	0.0	1.1	0.0	0.0
Total Delay	17.4	29.7	27.0	4.1	32.0
Queue Length 50th (ft)	98	156	437	2	182
Queue Length 95th (ft)	136	210	501	28	m174
Internal Link Dist (ft)			382		410
Turn Bay Length (ft)					
Base Capacity (vph)	1366	1040	2540	787	1308
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	332	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.46	0.88	0.11	0.85

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
 2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp

2025 AM DDI



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗↘			↗↘		↑↑↑	↗		↑↔	
Traffic Volume (vph)	0	0	373	0	0	449	0	1814	79	0	873	166
Future Volume (vph)	0	0	373	0	0	449	0	1814	79	0	873	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.0			6.0		6.0	6.0		6.0	
Lane Util. Factor			0.88			0.88		0.91	1.00		0.95	
Frt			0.85			0.85		1.00	0.85		0.98	
Flt Protected			1.00			1.00		1.00	1.00		1.00	
Satd. Flow (prot)			2632			2656		4893	1442		3309	
Flt Permitted			1.00			1.00		1.00	1.00		1.00	
Satd. Flow (perm)			2632			2656		4893	1442		3309	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	401	0	0	483	0	1951	85	0	939	178
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	38	0	13	0
Lane Group Flow (vph)	0	0	401	0	0	483	0	1951	47	0	1104	0
Heavy Vehicles (%)	0%	0%	8%	0%	0%	7%	0%	6%	12%	0%	6%	9%
Turn Type			Perm			Perm		NA	Perm		NA	
Protected Phases								2				1
Permitted Phases			2			1			2			
Actuated Green, G (s)			62.3			45.7		62.3	62.3		45.7	
Effective Green, g (s)			62.3			45.7		62.3	62.3		45.7	
Actuated g/C Ratio			0.52			0.38		0.52	0.52		0.38	
Clearance Time (s)			6.0			6.0		6.0	6.0		6.0	
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)			1366			1011		2540	748		1260	
v/s Ratio Prot								c0.40			c0.33	
v/s Ratio Perm			0.15			0.18			0.03			
v/c Ratio			0.29			0.48		0.77	0.06		0.88	
Uniform Delay, d1			16.4			28.1		23.1	14.3		34.5	
Progression Factor			1.00			1.00		1.00	1.00		0.82	
Incremental Delay, d2			0.5			0.4		2.3	0.2		3.2	
Delay (s)			16.9			28.5		25.4	14.5		31.5	
Level of Service			B			C		C	B		C	
Approach Delay (s)		16.9			28.5			24.9			31.5	
Approach LOS		B			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			26.4			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			60.8%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

Network Totals

Number of Intersections	2
Total Delay (hr)	103
Stops (#)	5846
Average Speed (mph)	7
Total Travel Time (hr)	120
Distance Traveled (mi)	811
Fuel Consumed (gal)	183
Fuel Economy (mpg)	4.4
Unserved Vehicles (#)	70
Vehicles in dilemma zone (#)	320
Performance Index	119.3

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Lane Group	EBR	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	83	196	1725	323	2106	829
v/c Ratio	0.50	0.67	0.64	0.27	0.73	0.59
Control Delay	73.0	75.9	6.1	0.3	8.6	2.1
Queue Delay	0.0	0.0	1.7	0.6	47.7	0.0
Total Delay	73.0	75.9	7.8	0.9	56.3	2.1
Queue Length 50th (ft)	78	106	170	0	414	0
Queue Length 95th (ft)	132	151	138	m0	572	25
Internal Link Dist (ft)			410		382	
Turn Bay Length (ft)						
Base Capacity (vph)	212	371	2677	1211	2885	1406
Starvation Cap Reductn	0	0	730	533	0	0
Spillback Cap Reductn	0	0	0	0	1146	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.53	0.89	0.48	1.21	0.59

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2025 PM DDI

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗↗		↕↗	↗		↕↕	↗
Traffic Volume (vph)	0	0	79	0	0	186	0	1605	341	0	2001	788
Future Volume (vph)	0	0	79	0	0	186	0	1605	341	0	2001	788
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.0			6.0		6.0	6.0		6.0	6.0
Lane Util. Factor			1.00			0.88		0.91	0.91		0.95	1.00
Frt			0.86			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1596			2787		3284	1413		3539	1538
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1596			2787		3284	1413		3539	1538
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	83	0	0	196	0	1689	359	0	2106	829
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	60	0	0	153
Lane Group Flow (vph)	0	0	83	0	0	196	0	1724	263	0	2106	676
Heavy Vehicles (%)	0%	0%	3%	0%	0%	2%	0%	5%	4%	0%	2%	5%
Turn Type			Perm			Perm		NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)			15.7			15.7		122.3	122.3		122.3	122.3
Effective Green, g (s)			15.7			15.7		122.3	122.3		122.3	122.3
Actuated g/C Ratio			0.10			0.10		0.82	0.82		0.82	0.82
Clearance Time (s)			6.0			6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)			167			291		2677	1152		2885	1253
v/s Ratio Prot								0.53			c0.60	
v/s Ratio Perm			0.05			c0.07			0.19			0.44
v/c Ratio			0.50			0.67		0.64	0.23		0.73	0.54
Uniform Delay, d1			63.4			64.7		5.4	3.1		6.3	4.6
Progression Factor			1.00			1.00		0.92	0.00		1.00	1.00
Incremental Delay, d2			2.3			6.0		0.8	0.3		1.7	1.7
Delay (s)			65.7			70.7		5.7	0.3		8.0	6.2
Level of Service			E			E		A	A		A	A
Approach Delay (s)		65.7			70.7			4.9			7.5	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.7			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			70.2%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBR	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	340	619	1426	267	2080
v/c Ratio	0.46	0.38	0.90	0.42	1.02
Control Delay	43.0	16.5	57.7	12.7	59.6
Queue Delay	0.0	0.0	0.0	0.0	31.3
Total Delay	43.0	16.5	57.7	12.7	90.9
Queue Length 50th (ft)	151	171	489	47	~1152
Queue Length 95th (ft)	205	217	554	127	#1275
Internal Link Dist (ft)			382		410
Turn Bay Length (ft)					
Base Capacity (vph)	745	1609	1580	641	2036
Starvation Cap Reductn	0	0	0	0	312
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.46	0.38	0.90	0.42	1.21

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp

2025 PM DDI



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗↘			↗↘		↑↑↑	↗		↑↘	
Traffic Volume (vph)	0	0	323	0	0	588	0	1355	254	0	1492	484
Future Volume (vph)	0	0	323	0	0	588	0	1355	254	0	1492	484
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.0			6.0		6.0	6.0		6.0	
Lane Util. Factor			0.88			0.88		0.91	1.00		0.95	
Frt			0.85			0.85		1.00	0.85		0.96	
Flt Protected			1.00			1.00		1.00	1.00		1.00	
Satd. Flow (prot)			2330			2682		4940	1583		3360	
Flt Permitted			1.00			1.00		1.00	1.00		1.00	
Satd. Flow (perm)			2330			2682		4940	1583		3360	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	340	0	0	619	0	1426	267	0	1571	509
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	135	0	21	0
Lane Group Flow (vph)	0	0	340	0	0	619	0	1426	132	0	2059	0
Heavy Vehicles (%)	0%	0%	22%	0%	0%	6%	0%	5%	2%	0%	4%	2%
Turn Type			Perm			Perm		NA	Perm		NA	
Protected Phases								2				1
Permitted Phases			2			1			2			
Actuated Green, G (s)			48.0			90.0		48.0	48.0		90.0	
Effective Green, g (s)			48.0			90.0		48.0	48.0		90.0	
Actuated g/C Ratio			0.32			0.60		0.32	0.32		0.60	
Clearance Time (s)			6.0			6.0		6.0	6.0		6.0	
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)			745			1609		1580	506		2016	
v/s Ratio Prot								c0.29			c0.61	
v/s Ratio Perm			0.15			0.23			0.08			
v/c Ratio			0.46			0.38		0.90	0.26		1.02	
Uniform Delay, d1			40.6			15.6		48.8	37.8		30.0	
Progression Factor			1.00			1.00		1.00	1.00		1.32	
Incremental Delay, d2			2.0			0.2		8.8	1.2		22.2	
Delay (s)			42.6			15.8		57.6	39.1		61.8	
Level of Service			D			B		E	D		E	
Approach Delay (s)		42.6			15.8			54.6			61.8	
Approach LOS		D			B			D			E	
Intersection Summary												
HCM 2000 Control Delay			51.8								HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			150.0								Sum of lost time (s)	12.0
Intersection Capacity Utilization			78.0%								ICU Level of Service	D
Analysis Period (min)			15									
c Critical Lane Group												

Network Totals

Number of Intersections	2
Total Delay (hr)	120
Stops (#)	5279
Average Speed (mph)	6
Total Travel Time (hr)	139
Distance Traveled (mi)	887
Fuel Consumed (gal)	189
Fuel Economy (mpg)	4.7
Unserviced Vehicles (#)	42
Vehicles in dilemma zone (#)	133
Performance Index	134.6

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Lane Group	EBR	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	179	712	2259	386	1000	891
v/c Ratio	0.17	0.98	1.08	0.40	1.16	0.95
Control Delay	9.2	73.6	60.3	1.2	124.6	26.9
Queue Delay	0.0	0.0	7.5	0.4	0.0	0.0
Total Delay	9.2	73.6	67.8	1.6	124.6	26.9
Queue Length 50th (ft)	52	312	~1091	7	~482	120
Queue Length 95th (ft)	83	#452	#1241	m8	#615	#460
Internal Link Dist (ft)			410		382	
Turn Bay Length (ft)						
Base Capacity (vph)	1033	726	2086	955	863	942
Starvation Cap Reductn	0	0	184	204	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.98	1.19	0.51	1.16	0.95

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

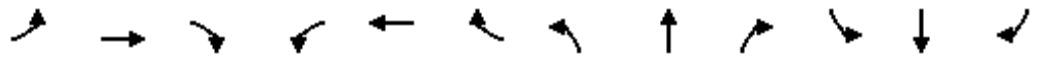
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2030 AM DDI

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations			↗			↗↗		↕↗	↗		↕↕	↗		
Traffic Volume (vph)	0	0	168	0	0	669	0	2083	403	0	940	838		
Future Volume (vph)	0	0	168	0	0	669	0	2083	403	0	940	838		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)			6.0			6.0		6.0	6.0		6.0	6.0		
Lane Util. Factor			1.00			0.88		0.91	0.91		0.95	1.00		
Frt			0.86			0.85		1.00	0.85		1.00	0.85		
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00		
Satd. Flow (prot)			1611			2814		3250	1324		3343	1482		
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00		
Satd. Flow (perm)			1611			2814		3250	1324		3343	1482		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94		
Adj. Flow (vph)	0	0	179	0	0	712	0	2216	429	0	1000	891		
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	106	0	0	559		
Lane Group Flow (vph)	0	0	179	0	0	712	0	2258	280	0	1000	332		
Heavy Vehicles (%)	0%	0%	2%	0%	0%	1%	0%	6%	11%	0%	8%	9%		
Turn Type			Perm			Perm		NA	Perm		NA	Perm		
Protected Phases								2			1			
Permitted Phases			2			1			2			1		
Actuated Green, G (s)			77.0			31.0		77.0	77.0		31.0	31.0		
Effective Green, g (s)			77.0			31.0		77.0	77.0		31.0	31.0		
Actuated g/C Ratio			0.64			0.26		0.64	0.64		0.26	0.26		
Clearance Time (s)			6.0			6.0		6.0	6.0		6.0	6.0		
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)			1033			726		2085	849		863	382		
v/s Ratio Prot								c0.69			c0.30			
v/s Ratio Perm			0.11			0.25			0.21			0.22		
v/c Ratio			0.17			0.98		1.08	0.33		1.16	0.87		
Uniform Delay, d1			8.7			44.2		21.5	9.8		44.5	42.6		
Progression Factor			1.00			1.00		0.68	0.18		1.00	1.00		
Incremental Delay, d2			0.4			28.5		43.3	0.6		84.3	18.4		
Delay (s)			9.0			72.7		58.0	2.4		128.8	61.0		
Level of Service			A			E		E	A		F	E		
Approach Delay (s)		9.0			72.7			49.9			96.9			
Approach LOS		A			E			D			F			
Intersection Summary														
HCM 2000 Control Delay			67.9									HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio			1.10											
Actuated Cycle Length (s)			120.0								12.0		Sum of lost time (s)	
Intersection Capacity Utilization			95.3%										ICU Level of Service	F
Analysis Period (min)			15											
c Critical Lane Group														

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBR	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	433	522	2108	91	1201
v/c Ratio	0.32	0.51	0.84	0.12	0.93
Control Delay	18.1	30.0	29.2	4.6	35.6
Queue Delay	0.0	0.0	5.3	0.0	0.0
Total Delay	18.1	30.0	34.5	4.6	35.6
Queue Length 50th (ft)	108	172	499	4	232
Queue Length 95th (ft)	148	229	571	31	m182
Internal Link Dist (ft)			382		410
Turn Bay Length (ft)					
Base Capacity (vph)	1346	1040	2503	776	1309
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	344	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.32	0.50	0.98	0.12	0.92

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp

2030 AM DDI



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			TT			TT		TTT	T		TT	
Traffic Volume (vph)	0	0	403	0	0	485	0	1960	85	0	938	179
Future Volume (vph)	0	0	403	0	0	485	0	1960	85	0	938	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.0			6.0		6.0	6.0		6.0	
Lane Util. Factor			0.88			0.88		0.91	1.00		0.95	
Frt			0.85			0.85		1.00	0.85		0.98	
Flt Protected			1.00			1.00		1.00	1.00		1.00	
Satd. Flow (prot)			2632			2656		4893	1442		3309	
Flt Permitted			1.00			1.00		1.00	1.00		1.00	
Satd. Flow (perm)			2632			2656		4893	1442		3309	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	433	0	0	522	0	2108	91	0	1009	192
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	39	0	13	0
Lane Group Flow (vph)	0	0	433	0	0	522	0	2108	52	0	1188	0
Heavy Vehicles (%)	0%	0%	8%	0%	0%	7%	0%	6%	12%	0%	6%	9%
Turn Type			Perm			Perm		NA	Perm		NA	
Protected Phases								2				1
Permitted Phases			2			1			2			
Actuated Green, G (s)			61.4			46.6		61.4	61.4		46.6	
Effective Green, g (s)			61.4			46.6		61.4	61.4		46.6	
Actuated g/C Ratio			0.51			0.39		0.51	0.51		0.39	
Clearance Time (s)			6.0			6.0		6.0	6.0		6.0	
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)			1346			1031		2503	737		1284	
v/s Ratio Prot								c0.43			c0.36	
v/s Ratio Perm			0.16			0.20			0.04			
v/c Ratio			0.32			0.51		0.84	0.07		0.92	
Uniform Delay, d1			17.1			27.9		25.1	14.8		35.0	
Progression Factor			1.00			1.00		1.00	1.00		0.91	
Incremental Delay, d2			0.6			0.4		3.7	0.2		3.4	
Delay (s)			17.8			28.3		28.8	15.0		35.3	
Level of Service			B			C		C	B		D	
Approach Delay (s)		17.8			28.3			28.2			35.3	
Approach LOS		B			C			C			D	
Intersection Summary												
HCM 2000 Control Delay			29.2									
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			120.0						12.0			
Intersection Capacity Utilization			64.8%									
Analysis Period (min)			15									
c Critical Lane Group												

Network Totals

Number of Intersections	2
Total Delay (hr)	129
Stops (#)	6320
Average Speed (mph)	6
Total Travel Time (hr)	147
Distance Traveled (mi)	866
Fuel Consumed (gal)	210
Fuel Economy (mpg)	4.1
Unserviced Vehicles (#)	290
Vehicles in dilemma zone (#)	344
Performance Index	146.6

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Lane Group	EBR	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	89	212	1864	349	2269	894
v/c Ratio	0.51	0.70	0.70	0.29	0.79	0.63
Control Delay	73.0	76.6	7.5	0.3	10.6	2.4
Queue Delay	0.0	0.0	3.2	0.6	47.5	0.0
Total Delay	73.0	76.6	10.8	1.0	58.1	2.4
Queue Length 50th (ft)	83	115	164	0	525	0
Queue Length 95th (ft)	142	161	m200	m0	698	25
Internal Link Dist (ft)			410		382	
Turn Bay Length (ft)						
Base Capacity (vph)	212	371	2663	1211	2870	1416
Starvation Cap Reductn	0	0	679	521	0	0
Spillback Cap Reductn	0	0	0	0	1135	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.57	0.94	0.51	1.31	0.63

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2030 PM DDI

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗↗		↕↗	↗		↕↕	↗
Traffic Volume (vph)	0	0	85	0	0	201	0	1734	369	0	2156	849
Future Volume (vph)	0	0	85	0	0	201	0	1734	369	0	2156	849
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.0			6.0		6.0	6.0		6.0	6.0
Lane Util. Factor			1.00			0.88		0.91	0.91		0.95	1.00
Frt			0.86			0.85		1.00	0.85		1.00	0.85
Flt Protected			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)			1596			2787		3284	1413		3539	1538
Flt Permitted			1.00			1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)			1596			2787		3284	1413		3539	1538
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	89	0	0	212	0	1825	388	0	2269	894
RTOR Reduction (vph)	0	0	0	0	0	0	0	1	66	0	0	169
Lane Group Flow (vph)	0	0	89	0	0	212	0	1863	283	0	2269	725
Heavy Vehicles (%)	0%	0%	3%	0%	0%	2%	0%	5%	4%	0%	2%	5%
Turn Type			Perm			Perm		NA	Perm		NA	Perm
Protected Phases								2			6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)			16.4			16.4		121.6	121.6		121.6	121.6
Effective Green, g (s)			16.4			16.4		121.6	121.6		121.6	121.6
Actuated g/C Ratio			0.11			0.11		0.81	0.81		0.81	0.81
Clearance Time (s)			6.0			6.0		6.0	6.0		6.0	6.0
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)			174			304		2662	1145		2868	1246
v/s Ratio Prot								0.57			c0.64	
v/s Ratio Perm			0.06			c0.08			0.20			0.47
v/c Ratio			0.51			0.70		0.70	0.25		0.79	0.58
Uniform Delay, d1			63.0			64.4		6.2	3.4		7.5	5.1
Progression Factor			1.00			1.00		0.99	0.00		1.00	1.00
Incremental Delay, d2			2.5			6.8		0.9	0.3		2.3	2.0
Delay (s)			65.5			71.2		7.0	0.3		9.8	7.1
Level of Service			E			E		A	A		A	A
Approach Delay (s)		65.5			71.2			6.0			9.0	
Approach LOS		E			E			A			A	
Intersection Summary												
HCM 2000 Control Delay			11.0									B
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			150.0								12.0	
Intersection Capacity Utilization			74.9%									D
Analysis Period (min)			15									
c Critical Lane Group												

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBR	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	367	668	1541	289	2240
v/c Ratio	0.49	0.42	0.98	0.45	1.10
Control Delay	43.9	17.0	67.6	14.8	85.9
Queue Delay	0.0	0.0	0.0	0.0	0.5
Total Delay	43.9	17.0	67.6	14.8	86.3
Queue Length 50th (ft)	164	189	546	64	~112
Queue Length 95th (ft)	222	237	#654	151	#647
Internal Link Dist (ft)			382		410
Turn Bay Length (ft)					
Base Capacity (vph)	745	1609	1580	641	2036
Starvation Cap Reductn	0	0	0	0	310
Spillback Cap Reductn	0	21	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.49	0.42	0.98	0.45	1.30

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp

2030 PM DDI



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↔↔			↔↔		↑↑↑	↔		↑↔	
Traffic Volume (vph)	0	0	349	0	0	635	0	1464	275	0	1607	521
Future Volume (vph)	0	0	349	0	0	635	0	1464	275	0	1607	521
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			6.0			6.0		6.0	6.0		6.0	
Lane Util. Factor			0.88			0.88		0.91	1.00		0.95	
Frt			0.85			0.85		1.00	0.85		0.96	
Flt Protected			1.00			1.00		1.00	1.00		1.00	
Satd. Flow (prot)			2330			2682		4940	1583		3360	
Flt Permitted			1.00			1.00		1.00	1.00		1.00	
Satd. Flow (perm)			2330			2682		4940	1583		3360	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	367	0	0	668	0	1541	289	0	1692	548
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	135	0	21	0
Lane Group Flow (vph)	0	0	367	0	0	668	0	1541	154	0	2219	0
Heavy Vehicles (%)	0%	0%	22%	0%	0%	6%	0%	5%	2%	0%	4%	2%
Turn Type			Perm			Perm		NA	Perm		NA	
Protected Phases								2				1
Permitted Phases			2			1			2			
Actuated Green, G (s)			48.0			90.0		48.0	48.0		90.0	
Effective Green, g (s)			48.0			90.0		48.0	48.0		90.0	
Actuated g/C Ratio			0.32			0.60		0.32	0.32		0.60	
Clearance Time (s)			6.0			6.0		6.0	6.0		6.0	
Vehicle Extension (s)			3.0			3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)			745			1609		1580	506		2016	
v/s Ratio Prot								c0.31			c0.66	
v/s Ratio Perm			0.16			0.25			0.10			
v/c Ratio			0.49			0.42		0.98	0.30		1.10	
Uniform Delay, d1			41.2			16.0		50.4	38.4		30.0	
Progression Factor			1.00			1.00		1.00	1.00		1.27	
Incremental Delay, d2			2.3			0.2		17.5	1.5		50.6	
Delay (s)			43.5			16.2		67.9	40.0		88.9	
Level of Service			D			B		E	D		F	
Approach Delay (s)		43.5			16.2			63.5			88.9	
Approach LOS		D			B			E			F	
Intersection Summary												
HCM 2000 Control Delay			67.0			HCM 2000 Level of Service		E				
HCM 2000 Volume to Capacity ratio			1.06									
Actuated Cycle Length (s)			150.0			Sum of lost time (s)		12.0				
Intersection Capacity Utilization			83.3%			ICU Level of Service		E				
Analysis Period (min)			15									
c Critical Lane Group												

Network Totals

Number of Intersections	2
Total Delay (hr)	134
Stops (#)	5903
Average Speed (mph)	6
Total Travel Time (hr)	154
Distance Traveled (mi)	957
Fuel Consumed (gal)	209
Fuel Economy (mpg)	4.6
Unserved Vehicles (#)	194
Vehicles in dilemma zone (#)	142
Performance Index	150.0

Queues

2025 AM (New Bridge, Conventional)

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	422	403	397	2052	1763
v/c Ratio	0.93	0.92	0.79	0.90	1.05dr
Control Delay	76.2	75.5	91.3	24.0	31.7
Queue Delay	0.0	0.0	0.0	2.1	0.0
Total Delay	76.2	75.5	91.3	26.1	31.7
Queue Length 50th (ft)	388	367	214	367	387
Queue Length 95th (ft)	#586	#562	266	581	461
Internal Link Dist (ft)	448			410	382
Turn Bay Length (ft)		175			
Base Capacity (vph)	490	471	769	2270	2714
Starvation Cap Reductn	0	0	0	116	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.86	0.86	0.52	0.95	0.65

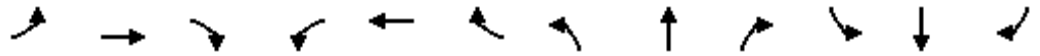
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis 2025 AM (New Bridge, Conventional)
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔	↗	↖↗	↕			↕↖	
Traffic Volume (vph)	0	0	0	155	0	620	373	1929	0	0	876	781
Future Volume (vph)	0	0	0	155	0	620	373	1929	0	0	876	781
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor					0.95	0.95	0.97	0.95			0.86	
Frt					0.91	0.85	1.00	1.00			0.93	
Flt Protected					0.98	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1587	1519	3155	3406			5600	
Flt Permitted					0.98	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1587	1519	3155	3406			5600	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	165	0	660	397	2052	0	0	932	831
RTOR Reduction (vph)	0	0	0	0	45	45	0	0	0	0	84	0
Lane Group Flow (vph)	0	0	0	0	377	358	397	2052	0	0	1679	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	1%	11%	6%	0%	0%	8%	9%
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					4		1	6			2	
Permitted Phases				4		4						
Actuated Green, G (s)					41.3	41.3	25.5	106.7			75.2	
Effective Green, g (s)					41.3	41.3	25.5	106.7			75.2	
Actuated g/C Ratio					0.26	0.26	0.16	0.67			0.47	
Clearance Time (s)					6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)					409	392	502	2271			2632	
v/s Ratio Prot							0.13	c0.60			0.30	
v/s Ratio Perm					0.24	0.24						
v/c Ratio					0.92	0.91	0.79	0.90			1.05dr	
Uniform Delay, d1					57.8	57.6	64.7	22.3			32.1	
Progression Factor					1.00	1.00	1.26	0.77			1.00	
Incremental Delay, d2					25.9	25.1	6.9	5.4			1.2	
Delay (s)					83.7	82.7	88.7	22.8			33.3	
Level of Service					F	F	F	C			C	
Approach Delay (s)		0.0			83.2			33.4			33.3	
Approach LOS		A			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	41.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Queues

2025 AM (New Bridge, Conventional)

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp






















Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	304	299	281	1951	85	178	939
v/c Ratio	0.82	0.77	0.64	0.57	0.10	0.55	0.40
Control Delay	74.4	57.7	31.4	25.1	6.1	67.9	3.4
Queue Delay	1.2	1.0	0.0	0.0	0.0	0.0	0.3
Total Delay	75.6	58.7	31.4	25.1	6.1	67.9	3.8
Queue Length 50th (ft)	318	261	136	377	6	96	44
Queue Length 95th (ft)	404	357	226	481	39	m137	61
Internal Link Dist (ft)		783		382			410
Turn Bay Length (ft)	475		305				
Base Capacity (vph)	500	501	543	3416	830	321	2355
Starvation Cap Reductn	0	0	0	0	0	0	767
Spillback Cap Reductn	66	62	0	99	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.68	0.52	0.59	0.10	0.55	0.59

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2025 AM (New Bridge, Conventional)
 2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	449	0	373	0	0	0	0	1814	79	166	873	0	
Future Volume (vph)	449	0	373	0	0	0	0	1814	79	166	873	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.86	1.00	0.97	0.95		
Frt	1.00	0.94	0.85					1.00	0.85	1.00	1.00		
Flt Protected	0.95	0.97	1.00					1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1603	1469	1421					6166	1442	3213	3406		
Flt Permitted	0.95	0.97	1.00					1.00	1.00	0.95	1.00		
Satd. Flow (perm)	1603	1469	1421					6166	1442	3213	3406		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	483	0	401	0	0	0	0	1951	85	178	939	0	
RTOR Reduction (vph)	0	47	111	0	0	0	0	0	32	0	0	0	
Lane Group Flow (vph)	304	252	170	0	0	0	0	1951	53	178	939	0	
Heavy Vehicles (%)	7%	0%	8%	0%	0%	0%	0%	6%	12%	9%	6%	0%	
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA		
Protected Phases		4						6		5	2		
Permitted Phases	4		4						6				
Actuated Green, G (s)	37.3	37.3	37.3					88.7	88.7	16.0	110.7		
Effective Green, g (s)	37.3	37.3	37.3					88.7	88.7	16.0	110.7		
Actuated g/C Ratio	0.23	0.23	0.23					0.55	0.55	0.10	0.69		
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	373	342	331					3418	799	321	2356		
v/s Ratio Prot								c0.32		c0.06	0.28		
v/s Ratio Perm	c0.19	0.17	0.12						0.04				
v/c Ratio	0.82	0.74	0.51					0.57	0.07	0.55	0.40		
Uniform Delay, d1	58.1	56.8	53.4					23.2	16.5	68.6	10.5		
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.91	0.27		
Incremental Delay, d2	12.8	8.1	1.3					0.7	0.2	1.5	0.4		
Delay (s)	70.9	64.9	54.8					23.9	16.7	64.1	3.2		
Level of Service	E	E	D					C	B	E	A		
Approach Delay (s)		63.7			0.0			23.6			12.9		
Approach LOS		E			A			C			B		
Intersection Summary													
HCM 2000 Control Delay			29.4									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.63										
Actuated Cycle Length (s)			160.0									Sum of lost time (s)	18.0
Intersection Capacity Utilization			88.9%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Network Totals

Number of Intersections	2
Total Delay (hr)	84
Stops (#)	5372
Average Speed (mph)	8
Total Travel Time (hr)	102
Distance Traveled (mi)	833
Fuel Consumed (gal)	164
Fuel Economy (mpg)	5.1
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	193
Performance Index	98.9

Queues

2025 PM (New Bridge, Conventional)

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

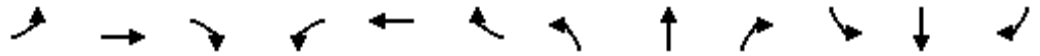


Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	144	135	359	1689	2935
v/c Ratio	0.74	0.72	0.47	0.59	0.89dr
Control Delay	61.7	59.0	50.3	7.5	30.2
Queue Delay	0.0	0.0	0.0	0.1	0.0
Total Delay	61.7	59.0	50.3	7.6	30.2
Queue Length 50th (ft)	90	80	169	214	687
Queue Length 95th (ft)	168	155	m226	206	817
Internal Link Dist (ft)	448			410	382
Turn Bay Length (ft)		175			
Base Capacity (vph)	369	349	757	2879	3535
Starvation Cap Reductn	0	0	0	305	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.39	0.39	0.47	0.66	0.83

Intersection Summary

- m Volume for 95th percentile queue is metered by upstream signal.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis 2025 PM (New Bridge, Conventional)
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔	↗	↖↗	↕			↑↑↑	
Traffic Volume (vph)	0	0	0	79	0	186	341	1605	0	0	2001	788
Future Volume (vph)	0	0	0	79	0	186	341	1605	0	0	2001	788
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					6.0	6.0	6.0	6.0				6.0
Lane Util. Factor					0.95	0.95	0.97	0.95				0.86
Frt					0.94	0.85	1.00	1.00				0.96
Flt Protected					0.97	1.00	0.95	1.00				1.00
Satd. Flow (prot)					1602	1504	3367	3438				6086
Flt Permitted					0.97	1.00	0.95	1.00				1.00
Satd. Flow (perm)					1602	1504	3367	3438				6086
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	83	0	196	359	1689	0	0	2106	829
RTOR Reduction (vph)	0	0	0	0	56	56	0	0	0	0	35	0
Lane Group Flow (vph)	0	0	0	0	88	79	359	1689	0	0	2900	0
Heavy Vehicles (%)	0%	0%	0%	3%	0%	2%	4%	5%	0%	0%	2%	5%
Turn Type				Perm	NA	Perm	Prot	NA				NA
Protected Phases					4		1	5				2
Permitted Phases				4		4						
Actuated Green, G (s)					14.0	14.0	36.0	134.0				92.0
Effective Green, g (s)					14.0	14.0	36.0	134.0				92.0
Actuated g/C Ratio					0.09	0.09	0.22	0.84				0.58
Clearance Time (s)					6.0	6.0	6.0	6.0				6.0
Vehicle Extension (s)					3.0	3.0	3.0	3.0				3.0
Lane Grp Cap (vph)					140	131	757	2879				3499
v/s Ratio Prot							0.11	c0.49				c0.48
v/s Ratio Perm					0.06	0.05						
v/c Ratio					0.63	0.61	0.47	0.59				0.89dr
Uniform Delay, d1					70.5	70.3	53.8	4.2				27.6
Progression Factor					1.00	1.00	0.90	1.42				1.00
Incremental Delay, d2					8.9	7.7	0.4	0.7				2.4
Delay (s)					79.4	78.0	48.6	6.6				30.0
Level of Service					E	E	D	A				C
Approach Delay (s)		0.0			78.8			14.0				30.0
Approach LOS		A			E			B				C

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	334	329	296	1426	267	509	1571
v/c Ratio	0.89	0.83	0.88	0.47	0.30	0.86	0.65
Control Delay	84.8	65.5	72.0	29.1	3.5	97.2	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	84.8	65.5	72.0	29.1	3.5	97.2	1.4
Queue Length 50th (ft)	350	294	252	301	0	234	18
Queue Length 95th (ft)	#516	#441	#418	341	54	m311	14
Internal Link Dist (ft)		783		382			410
Turn Bay Length (ft)	475		305				
Base Capacity (vph)	404	421	360	3009	903	643	2405
Starvation Cap Reductn	0	0	0	0	0	0	198
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.78	0.82	0.47	0.30	0.79	0.71

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2025 PM (New Bridge, Conventional)
 2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	588	0	323	0	0	0	0	1355	254	484	1492	0	
Future Volume (vph)	588	0	323	0	0	0	0	1355	254	484	1492	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.86	1.00	0.97	0.95		
Frt	1.00	0.98	0.85					1.00	0.85	1.00	1.00		
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1618	1502	1258					6225	1583	3433	3471		
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00		
Satd. Flow (perm)	1618	1502	1258					6225	1583	3433	3471		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	619	0	340	0	0	0	0	1426	267	509	1571	0	
RTOR Reduction (vph)	0	47	47	0	0	0	0	0	138	0	0	0	
Lane Group Flow (vph)	334	282	249	0	0	0	0	1426	129	509	1571	0	
Heavy Vehicles (%)	6%	0%	22%	0%	0%	0%	0%	5%	2%	2%	4%	0%	
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA		
Protected Phases		4						6		5	2		
Permitted Phases	4		4						6				
Actuated Green, G (s)	37.1	37.1	37.1					77.4	77.4	27.5	110.9		
Effective Green, g (s)	37.1	37.1	37.1					77.4	77.4	27.5	110.9		
Actuated g/C Ratio	0.23	0.23	0.23					0.48	0.48	0.17	0.69		
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	375	348	291					3011	765	590	2405		
v/s Ratio Prot								0.23		c0.15	c0.45		
v/s Ratio Perm	c0.21	0.19	0.20						0.08				
v/c Ratio	0.89	0.81	0.86					0.47	0.17	0.86	0.65		
Uniform Delay, d1	59.5	58.1	58.9					27.7	23.2	64.4	13.8		
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.37	0.03		
Incremental Delay, d2	22.2	13.3	21.1					0.5	0.5	7.4	0.8		
Delay (s)	81.7	71.5	80.0					28.2	23.7	95.6	1.2		
Level of Service	F	E	E					C	C	F	A		
Approach Delay (s)		77.7			0.0			27.5			24.3		
Approach LOS		E			A			C			C		
Intersection Summary													
HCM 2000 Control Delay			36.2									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.77										
Actuated Cycle Length (s)			160.0									Sum of lost time (s)	18.0
Intersection Capacity Utilization			75.1%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

Network Totals

Number of Intersections	2
Total Delay (hr)	80
Stops (#)	5295
Average Speed (mph)	9
Total Travel Time (hr)	99
Distance Traveled (mi)	924
Fuel Consumed (gal)	161
Fuel Economy (mpg)	5.7
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	214
Performance Index	94.3

Queues

2030 AM (New Bridge, Conventional)

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

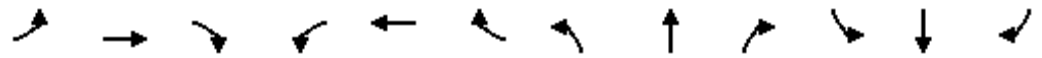


Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	457	434	429	2216	1891
v/c Ratio	0.96	0.95	0.80	1.00	1.18dr
Control Delay	80.7	78.8	90.0	39.1	36.1
Queue Delay	0.0	0.0	0.0	27.4	0.0
Total Delay	80.7	78.8	90.0	66.5	36.1
Queue Length 50th (ft)	440	412	231	~526	441
Queue Length 95th (ft)	#673	#637	286	#768	523
Internal Link Dist (ft)	448			410	382
Turn Bay Length (ft)		175			
Base Capacity (vph)	490	471	769	2220	2580
Starvation Cap Reductn	0	0	0	160	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.93	0.92	0.56	1.08	0.73

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis 2030 AM (New Bridge, Conventional)
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔	↗	↖↗	↕			↕↖	
Traffic Volume (vph)	0	0	0	168	0	669	403	2083	0	0	940	838
Future Volume (vph)	0	0	0	168	0	669	403	2083	0	0	940	838
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor					0.95	0.95	0.97	0.95			0.86	
Frt					0.91	0.85	1.00	1.00			0.93	
Flt Protected					0.98	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1587	1519	3155	3406			5600	
Flt Permitted					0.98	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1587	1519	3155	3406			5600	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	179	0	712	429	2216	0	0	1000	891
RTOR Reduction (vph)	0	0	0	0	44	44	0	0	0	0	87	0
Lane Group Flow (vph)	0	0	0	0	413	390	429	2216	0	0	1804	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	1%	11%	6%	0%	0%	8%	9%
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					4		1	6			2	
Permitted Phases				4		4						
Actuated Green, G (s)					43.7	43.7	27.1	104.3			71.2	
Effective Green, g (s)					43.7	43.7	27.1	104.3			71.2	
Actuated g/C Ratio					0.27	0.27	0.17	0.65			0.45	
Clearance Time (s)					6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)					433	414	534	2220			2492	
v/s Ratio Prot							0.14	c0.65			0.32	
v/s Ratio Perm					0.26	0.26						
v/c Ratio					0.95	0.94	0.80	1.00			1.18dr	
Uniform Delay, d1					57.1	56.9	63.9	27.8			36.4	
Progression Factor					1.00	1.00	1.27	0.80			1.00	
Incremental Delay, d2					31.3	29.7	6.7	16.3			1.9	
Delay (s)					88.4	86.6	87.6	38.6			38.2	
Level of Service					F	F	F	D			D	
Approach Delay (s)		0.0			87.5			46.6			38.2	
Approach LOS		A			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	50.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
 c Critical Lane Group

Queues

2030 AM (New Bridge, Conventional)

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	334	322	299	2108	91	192	1009
v/c Ratio	0.83	0.78	0.67	0.64	0.11	0.60	0.44
Control Delay	73.8	57.4	37.2	28.2	7.2	66.3	3.9
Queue Delay	9.7	6.0	0.0	0.1	0.0	0.0	0.5
Total Delay	83.5	63.4	37.2	28.3	7.2	66.3	4.3
Queue Length 50th (ft)	349	285	176	443	10	105	53
Queue Length 95th (ft)	445	390	272	546	45	m140	m65
Internal Link Dist (ft)		783		382			410
Turn Bay Length (ft)	475		305				
Base Capacity (vph)	500	500	529	3308	806	321	2296
Starvation Cap Reductn	0	0	0	0	0	0	754
Spillback Cap Reductn	134	126	0	196	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.86	0.57	0.68	0.11	0.60	0.65

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2030 AM (New Bridge, Conventional)
2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	485	0	403	0	0	0	0	1960	85	179	938	0	
Future Volume (vph)	485	0	403	0	0	0	0	1960	85	179	938	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0		
Lane Util. Factor	0.95	0.91	0.95					0.86	1.00	0.97	0.95		
Frt	1.00	0.94	0.85					1.00	0.85	1.00	1.00		
Flt Protected	0.95	0.97	1.00					1.00	1.00	0.95	1.00		
Satd. Flow (prot)	1603	1466	1421					6166	1442	3213	3406		
Flt Permitted	0.95	0.97	1.00					1.00	1.00	0.95	1.00		
Satd. Flow (perm)	1603	1466	1421					6166	1442	3213	3406		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	522	0	433	0	0	0	0	2108	91	192	1009	0	
RTOR Reduction (vph)	0	46	93	0	0	0	0	0	32	0	0	0	
Lane Group Flow (vph)	334	276	206	0	0	0	0	2108	59	192	1009	0	
Heavy Vehicles (%)	7%	0%	8%	0%	0%	0%	0%	6%	12%	9%	6%	0%	
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA		
Protected Phases		4						6		5	2		
Permitted Phases	4		4						6				
Actuated Green, G (s)	40.1	40.1	40.1					85.9	85.9	16.0	107.9		
Effective Green, g (s)	40.1	40.1	40.1					85.9	85.9	16.0	107.9		
Actuated g/C Ratio	0.25	0.25	0.25					0.54	0.54	0.10	0.67		
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0		
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	401	367	356					3310	774	321	2296		
v/s Ratio Prot								c0.34		c0.06	0.30		
v/s Ratio Perm	c0.21	0.19	0.15						0.04				
v/c Ratio	0.83	0.75	0.58					0.64	0.08	0.60	0.44		
Uniform Delay, d1	56.8	55.4	52.5					26.1	17.9	68.9	12.1		
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.88	0.26		
Incremental Delay, d2	13.8	8.5	2.3					0.9	0.2	1.9	0.4		
Delay (s)	70.5	63.8	54.8					27.0	18.1	62.6	3.6		
Level of Service	E	E	D					C	B	E	A		
Approach Delay (s)		63.4			0.0			26.7			13.0		
Approach LOS		E			A			C			B		
Intersection Summary													
HCM 2000 Control Delay			30.9									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.69										
Actuated Cycle Length (s)			160.0									Sum of lost time (s)	18.0
Intersection Capacity Utilization			95.2%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

Network Totals

Number of Intersections	2
Total Delay (hr)	120
Stops (#)	6119
Average Speed (mph)	6
Total Travel Time (hr)	139
Distance Traveled (mi)	898
Fuel Consumed (gal)	203
Fuel Economy (mpg)	4.4
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	210
Performance Index	137.3

Queues

2030 PM (New Bridge, Conventional)

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	155	146	388	1825	3163
v/c Ratio	0.75	0.74	0.51	0.64	0.97dr
Control Delay	63.6	61.8	50.5	8.8	35.0
Queue Delay	0.0	0.0	0.0	0.2	0.0
Total Delay	63.6	61.8	50.5	9.0	35.0
Queue Length 50th (ft)	103	92	187	253	815
Queue Length 95th (ft)	182	170	m238	237	#993
Internal Link Dist (ft)	448			410	382
Turn Bay Length (ft)		175			
Base Capacity (vph)	369	349	757	2855	3494
Starvation Cap Reductn	0	0	0	306	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.42	0.51	0.72	0.91

Intersection Summary

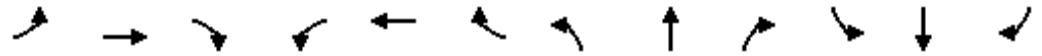
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis 2030 PM (New Bridge, Conventional)
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔	↗	↖↗	↕			↑↑↑	
Traffic Volume (vph)	0	0	0	85	0	201	369	1734	0	0	2156	849
Future Volume (vph)	0	0	0	85	0	201	369	1734	0	0	2156	849
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					6.0	6.0	6.0	6.0			6.0	
Lane Util. Factor					0.95	0.95	0.97	0.95			0.86	
Frt					0.94	0.85	1.00	1.00			0.96	
Flt Protected					0.97	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1601	1504	3367	3438			6086	
Flt Permitted					0.97	1.00	0.95	1.00			1.00	
Satd. Flow (perm)					1601	1504	3367	3438			6086	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	89	0	212	388	1825	0	0	2269	894
RTOR Reduction (vph)	0	0	0	0	55	55	0	0	0	0	36	0
Lane Group Flow (vph)	0	0	0	0	100	91	388	1825	0	0	3127	0
Heavy Vehicles (%)	0%	0%	0%	3%	0%	2%	4%	5%	0%	0%	2%	5%
Turn Type				Perm	NA	Perm	Prot	NA			NA	
Protected Phases					4		1	5			2	
Permitted Phases				4		4						
Actuated Green, G (s)					15.1	15.1	36.0	132.9			90.9	
Effective Green, g (s)					15.1	15.1	36.0	132.9			90.9	
Actuated g/C Ratio					0.09	0.09	0.22	0.83			0.57	
Clearance Time (s)					6.0	6.0	6.0	6.0			6.0	
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)					151	141	757	2855			3457	
v/s Ratio Prot							0.12	c0.53			c0.51	
v/s Ratio Perm					0.06	0.06						
v/c Ratio					0.66	0.64	0.51	0.64			0.97dr	
Uniform Delay, d1					70.0	69.9	54.3	4.9			30.7	
Progression Factor					1.00	1.00	0.89	1.41			1.00	
Incremental Delay, d2					10.3	9.7	0.5	0.9			4.5	
Delay (s)					80.3	79.5	48.8	7.7			35.2	
Level of Service					F	E	D	A			D	
Approach Delay (s)		0.0			79.9			14.9			35.2	
Approach LOS		A			E			B			D	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Queues

2030 PM (New Bridge, Conventional)

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	361	355	319	1541	289	548	1692
v/c Ratio	0.93	0.87	0.91	0.53	0.32	0.89	0.71
Control Delay	89.1	69.4	77.6	31.4	3.6	95.2	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Total Delay	89.1	69.4	77.6	31.4	3.6	95.2	1.8
Queue Length 50th (ft)	387	331	284	338	0	259	18
Queue Length 95th (ft)	#583	#519	#476	375	55	m313	15
Internal Link Dist (ft)		783		382			410
Turn Bay Length (ft)	475		305				
Base Capacity (vph)	404	421	360	2909	893	643	2373
Starvation Cap Reductn	0	0	0	0	0	0	199
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.84	0.89	0.53	0.32	0.85	0.78

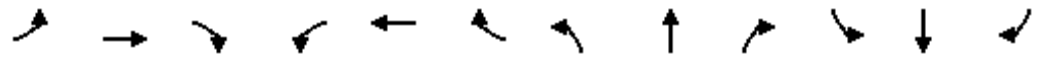
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2030 PM (New Bridge, Conventional)
2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	635	0	349	0	0	0	0	1464	275	521	1607	0
Future Volume (vph)	635	0	349	0	0	0	0	1464	275	521	1607	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.95	0.91	0.95					0.86	1.00	0.97	0.95	
Frt	1.00	0.98	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1618	1501	1258					6225	1583	3433	3471	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1618	1501	1258					6225	1583	3433	3471	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	668	0	367	0	0	0	0	1541	289	548	1692	0
RTOR Reduction (vph)	0	46	46	0	0	0	0	0	154	0	0	0
Lane Group Flow (vph)	361	309	273	0	0	0	0	1541	135	548	1692	0
Heavy Vehicles (%)	6%	0%	22%	0%	0%	0%	0%	5%	2%	2%	4%	0%
Turn Type	Perm	NA	Perm					NA	Perm	Prot	NA	
Protected Phases		4						6		5	2	
Permitted Phases	4		4						6			
Actuated Green, G (s)	38.6	38.6	38.6					74.8	74.8	28.6	109.4	
Effective Green, g (s)	38.6	38.6	38.6					74.8	74.8	28.6	109.4	
Actuated g/C Ratio	0.24	0.24	0.24					0.47	0.47	0.18	0.68	
Clearance Time (s)	6.0	6.0	6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	390	362	303					2910	740	613	2373	
v/s Ratio Prot								0.25		c0.16	c0.49	
v/s Ratio Perm	c0.22	0.21	0.22						0.09			
v/c Ratio	0.93	0.85	0.90					0.53	0.18	0.89	0.71	
Uniform Delay, d1	59.3	58.0	58.8					30.1	24.8	64.2	15.6	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.35	0.04	
Incremental Delay, d2	27.5	17.4	27.8					0.7	0.5	7.7	0.8	
Delay (s)	86.8	75.3	86.6					30.8	25.3	94.7	1.5	
Level of Service	F	E	F					C	C	F	A	
Approach Delay (s)		82.8			0.0			30.0			24.3	
Approach LOS		F			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	38.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Network Totals

Number of Intersections	2
Total Delay (hr)	93
Stops (#)	5952
Average Speed (mph)	9
Total Travel Time (hr)	114
Distance Traveled (mi)	997
Fuel Consumed (gal)	182
Fuel Economy (mpg)	5.5
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	226
Performance Index	109.4

Queues

2025 AM (Spot Improvements, Ramps)

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

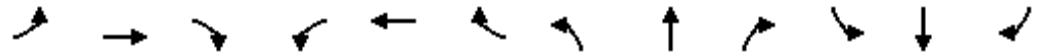


Lane Group	WBL	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	165	660	397	2052	1763
v/c Ratio	0.38	0.89	0.94	0.89	1.18dr
Control Delay	51.7	67.5	91.8	15.7	51.0
Queue Delay	0.0	0.0	8.1	0.2	0.0
Total Delay	51.7	67.5	99.9	15.9	51.0
Queue Length 50th (ft)	143	347	349	368	~669
Queue Length 95th (ft)	209	421	#566	439	#775
Internal Link Dist (ft)				410	382
Turn Bay Length (ft)		300			
Base Capacity (vph)	497	835	445	2309	1898
Starvation Cap Reductn	0	0	32	21	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.33	0.79	0.96	0.90	0.93

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis 2025 AM (Spot Improvements, Ramps)
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙		↗↗	↙	↑↑			↑↑↑	
Traffic Volume (vph)	0	0	0	155	0	620	373	1929	0	0	876	781
Future Volume (vph)	0	0	0	155	0	620	373	1929	0	0	876	781
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0		6.0	6.0	6.0			6.0	
Lane Util. Factor				1.00		0.88	1.00	0.95			0.91	
Frt				1.00		0.85	1.00	1.00			0.93	
Flt Protected				0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1770		2814	1626	3406			4444	
Flt Permitted				0.95		1.00	0.06	1.00			1.00	
Satd. Flow (perm)				1770		2814	96	3406			4444	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	165	0	660	397	2052	0	0	932	831
RTOR Reduction (vph)	0	0	0	0	0	46	0	0	0	0	94	0
Lane Group Flow (vph)	0	0	0	165	0	614	397	2052	0	0	1669	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	1%	11%	6%	0%	0%	8%	9%
Turn Type				Perm		Perm	pm+pt	NA			NA	
Protected Phases							1	6			2	
Permitted Phases				4		4	6					
Actuated Green, G (s)				39.5		39.5	108.5	108.5			65.0	
Effective Green, g (s)				39.5		39.5	108.5	108.5			65.0	
Actuated g/C Ratio				0.25		0.25	0.68	0.68			0.41	
Clearance Time (s)				6.0		6.0	6.0	6.0			6.0	
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)				436		694	423	2309			1805	
v/s Ratio Prot							0.22	c0.60			0.38	
v/s Ratio Perm				0.09		c0.22	c0.41					
v/c Ratio				0.38		0.88	0.94	0.89			1.18dr	
Uniform Delay, d1				50.1		58.1	51.6	20.9			45.2	
Progression Factor				1.00		1.00	1.39	0.49			1.00	
Incremental Delay, d2				0.6		12.9	24.1	4.5			9.6	
Delay (s)				50.6		70.9	95.6	14.6			54.7	
Level of Service				D		E	F	B			D	
Approach Delay (s)		0.0			66.9			27.7			54.7	
Approach LOS		A			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	43.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Queues

2025 AM (Spot Improvements, Ramps)

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp

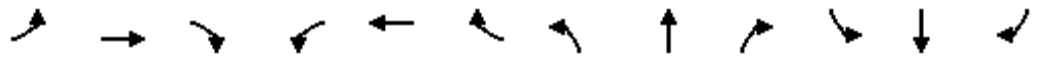


Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	483	401	1951	85	178	939
v/c Ratio	0.79	0.57	0.66	0.10	0.75	0.37
Control Delay	71.1	23.4	23.4	5.7	42.4	1.4
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.4
Total Delay	71.3	23.4	23.4	5.7	42.4	1.7
Queue Length 50th (ft)	251	77	479	10	127	21
Queue Length 95th (ft)	300	132	595	39	m148	m27
Internal Link Dist (ft)			382			410
Turn Bay Length (ft)	475	305				
Base Capacity (vph)	1022	997	2934	889	236	2510
Starvation Cap Reductn	0	0	0	0	0	918
Spillback Cap Reductn	105	0	4	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.40	0.67	0.10	0.75	0.59

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2025 AM (Spot Improvements, Ramps)
2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	449	0	373	0	0	0	0	1814	79	166	873	0	
Future Volume (vph)	449	0	373	0	0	0	0	1814	79	166	873	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	6.0		6.0					6.0	6.0	6.0	6.0		
Lane Util. Factor	0.97		0.88					0.91	1.00	1.00	0.95		
Frt	1.00		0.85					1.00	0.85	1.00	1.00		
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00		
Satd. Flow (prot)	3273		2632					4893	1442	1656	3406		
Flt Permitted	0.95		1.00					1.00	1.00	0.06	1.00		
Satd. Flow (perm)	3273		2632					4893	1442	112	3406		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	483	0	401	0	0	0	0	1951	85	178	939	0	
RTOR Reduction (vph)	0	0	207	0	0	0	0	0	24	0	0	0	
Lane Group Flow (vph)	483	0	194	0	0	0	0	1951	61	178	939	0	
Heavy Vehicles (%)	7%	0%	8%	0%	0%	0%	0%	6%	12%	9%	6%	0%	
Turn Type	Perm		Perm					NA	Perm	pm+pt	NA		
Protected Phases								6		5	2		
Permitted Phases	4		4						6	2			
Actuated Green, G (s)	30.1		30.1					95.9	95.9	117.9	117.9		
Effective Green, g (s)	30.1		30.1					95.9	95.9	117.9	117.9		
Actuated g/C Ratio	0.19		0.19					0.60	0.60	0.74	0.74		
Clearance Time (s)	6.0		6.0					6.0	6.0	6.0	6.0		
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	615		495					2932	864	236	2509		
v/s Ratio Prot								0.40		c0.08	0.28		
v/s Ratio Perm	c0.15		0.07						0.04	c0.48			
v/c Ratio	0.79		0.39					0.67	0.07	0.75	0.37		
Uniform Delay, d1	61.9		56.9					21.4	13.4	37.8	7.6		
Progression Factor	1.00		1.00					1.00	1.00	0.65	0.14		
Incremental Delay, d2	6.5		0.5					1.2	0.2	7.2	0.2		
Delay (s)	68.4		57.4					22.6	13.6	31.7	1.3		
Level of Service	E		E					C	B	C	A		
Approach Delay (s)		63.4			0.0			22.2			6.1		
Approach LOS		E			A			C			A		
Intersection Summary													
HCM 2000 Control Delay			26.8									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.78										
Actuated Cycle Length (s)			160.0									Sum of lost time (s)	18.0
Intersection Capacity Utilization			85.0%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

Network Totals

Number of Intersections	2
Total Delay (hr)	82
Stops (#)	5023
Average Speed (mph)	8
Total Travel Time (hr)	99
Distance Traveled (mi)	833
Fuel Consumed (gal)	158
Fuel Economy (mpg)	5.3
Unserviced Vehicles (#)	0
Vehicles in dilemma zone (#)	161
Performance Index	95.8

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp
























Lane Group	WBL	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	83	196	359	1689	2935
v/c Ratio	0.59	0.65	0.83	0.58	1.03
Control Delay	86.8	50.1	53.2	5.6	57.8
Queue Delay	0.2	0.0	0.0	0.1	26.0
Total Delay	87.0	50.1	53.2	5.7	83.7
Queue Length 50th (ft)	85	64	279	123	~1187
Queue Length 95th (ft)	143	111	#471	169	#1316
Internal Link Dist (ft)				410	382
Turn Bay Length (ft)		300			
Base Capacity (vph)	350	624	435	2901	2844
Starvation Cap Reductn	0	0	0	307	0
Spillback Cap Reductn	54	0	0	0	164
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.28	0.31	0.83	0.65	1.10

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis 2025 PM (Spot Improvements, Ramps)
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations						 		 			  	
Traffic Volume (vph)	0	0	0	79	0	186	341	1605	0	0	2001	788
Future Volume (vph)	0	0	0	79	0	186	341	1605	0	0	2001	788
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0		6.0	6.0	6.0			6.0	
Lane Util. Factor				1.00		0.88	1.00	0.95			0.91	
Frt				1.00		0.85	1.00	1.00			0.96	
Flt Protected				0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1752		2787	1736	3438			4830	
Flt Permitted				0.95		1.00	0.04	1.00			1.00	
Satd. Flow (perm)				1752		2787	74	3438			4830	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	83	0	196	359	1689	0	0	2106	829
RTOR Reduction (vph)	0	0	0	0	0	77	0	0	0	0	34	0
Lane Group Flow (vph)	0	0	0	83	0	119	359	1689	0	0	2901	0
Heavy Vehicles (%)	0%	0%	0%	3%	0%	2%	4%	5%	0%	0%	2%	5%
Turn Type				Perm		Perm	pm+pt	NA			NA	
Protected Phases							1	5			2	
Permitted Phases				4		4	5					
Actuated Green, G (s)				12.9		12.9	135.1	135.1			93.1	
Effective Green, g (s)				12.9		12.9	135.1	135.1			93.1	
Actuated g/C Ratio				0.08		0.08	0.84	0.84			0.58	
Clearance Time (s)				6.0		6.0	6.0	6.0			6.0	
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)				141		224	436	2902			2810	
v/s Ratio Prot							c0.19	0.49			c0.60	
v/s Ratio Perm				c0.05		0.04	0.51					
v/c Ratio				0.59		0.53	0.82	0.58			1.03	
Uniform Delay, d1				71.0		70.6	54.5	3.8			33.5	
Progression Factor				1.00		1.00	0.80	1.19			1.00	
Incremental Delay, d2				6.2		2.4	9.0	0.6			26.0	
Delay (s)				77.1		73.0	52.4	5.2			59.4	
Level of Service				E		E	D	A			E	
Approach Delay (s)		0.0			74.3			13.4			59.4	
Approach LOS		A			E			B			E	
Intersection Summary												
HCM 2000 Control Delay			42.3									D
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			160.0						18.0			
Intersection Capacity Utilization			94.5%									F
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2025 PM (Spot Improvements, Ramps)

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	619	340	1426	267	509	1571
v/c Ratio	0.85	0.59	0.64	0.32	1.08	0.64
Control Delay	71.9	45.4	35.7	5.9	95.0	0.4
Queue Delay	0.4	0.0	0.0	0.0	6.7	0.8
Total Delay	72.3	45.4	35.7	5.9	101.7	1.2
Queue Length 50th (ft)	322	137	418	22	~501	6
Queue Length 95th (ft)	384	192	470	80	m#526	m15
Internal Link Dist (ft)			382			410
Turn Bay Length (ft)	475	305				
Base Capacity (vph)	825	645	2223	838	470	2448
Starvation Cap Reductn	0	0	0	0	10	517
Spillback Cap Reductn	33	0	6	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.53	0.64	0.32	1.11	0.81

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

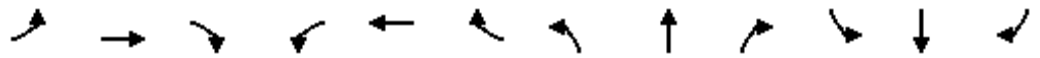
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2025 PM (Spot Improvements, Ramps)
 2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗		↖↗					↑↑↑	↖	↖	↑↑	
Traffic Volume (vph)	588	0	323	0	0	0	0	1355	254	484	1492	0
Future Volume (vph)	588	0	323	0	0	0	0	1355	254	484	1492	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97		0.88					0.91	1.00	1.00	0.95	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3303		2330					4940	1583	1770	3471	
Flt Permitted	0.95		1.00					1.00	1.00	0.09	1.00	
Satd. Flow (perm)	3303		2330					4940	1583	176	3471	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	619	0	340	0	0	0	0	1426	267	509	1571	0
RTOR Reduction (vph)	0	0	66	0	0	0	0	0	127	0	0	0
Lane Group Flow (vph)	619	0	274	0	0	0	0	1426	141	509	1571	0
Heavy Vehicles (%)	6%	0%	22%	0%	0%	0%	0%	5%	2%	2%	4%	0%
Turn Type	Perm		Perm					NA	Perm	pm+pt	NA	
Protected Phases								6		5	2	
Permitted Phases	4		4						6	2		
Actuated Green, G (s)	35.1		35.1					72.0	72.0	112.9	112.9	
Effective Green, g (s)	35.1		35.1					72.0	72.0	112.9	112.9	
Actuated g/C Ratio	0.22		0.22					0.45	0.45	0.71	0.71	
Clearance Time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	724		511					2223	712	471	2449	
v/s Ratio Prot								0.29		c0.24	0.45	
v/s Ratio Perm	c0.19		0.12						0.09	c0.53		
v/c Ratio	0.85		0.54					0.64	0.20	1.08	0.64	
Uniform Delay, d1	60.0		55.3					34.0	26.6	46.9	12.7	
Progression Factor	1.00		1.00					1.00	1.00	1.43	0.02	
Incremental Delay, d2	9.7		1.1					1.4	0.6	40.4	0.1	
Delay (s)	69.7		56.3					35.5	27.2	107.5	0.4	
Level of Service	E		E					D	C	F	A	
Approach Delay (s)		65.0			0.0			34.2			26.6	
Approach LOS		E			A			C			C	

Intersection Summary		
HCM 2000 Control Delay	37.1	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	1.04	D
Actuated Cycle Length (s)	160.0	Sum of lost time (s)
Intersection Capacity Utilization	94.5%	18.0
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		F

Network Totals

Number of Intersections	2
Total Delay (hr)	121
Stops (#)	5588
Average Speed (mph)	7
Total Travel Time (hr)	141
Distance Traveled (mi)	924
Fuel Consumed (gal)	195
Fuel Economy (mpg)	4.7
Unserviced Vehicles (#)	122
Vehicles in dilemma zone (#)	208
Performance Index	136.4

Queues

2030 AM (Spot Improvements, Ramps)

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

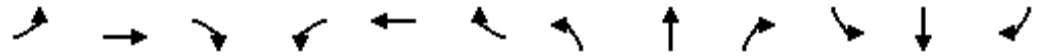


Lane Group	WBL	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	179	712	429	2216	1891
v/c Ratio	0.39	0.91	0.96	0.98	1.34dr
Control Delay	50.6	69.0	90.7	25.9	85.5
Queue Delay	0.0	0.0	13.0	2.8	0.0
Total Delay	50.6	69.0	103.8	28.7	85.5
Queue Length 50th (ft)	152	376	388	~1220	~783
Queue Length 95th (ft)	226	465	#650	#1382	#876
Internal Link Dist (ft)				410	382
Turn Bay Length (ft)		300			
Base Capacity (vph)	497	835	450	2261	1769
Starvation Cap Reductn	0	0	27	36	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.36	0.85	1.01	1.00	1.07

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- dr Defacto Right Lane. Recode with 1 though lane as a right lane.

HCM Signalized Intersection Capacity Analysis 2030 AM (Spot Improvements, Ramps)
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙		↗↗	↙	↕↕			↕↕↕	
Traffic Volume (vph)	0	0	0	168	0	669	403	2083	0	0	940	838
Future Volume (vph)	0	0	0	168	0	669	403	2083	0	0	940	838
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0		6.0	6.0	6.0			6.0	
Lane Util. Factor				1.00		0.88	1.00	0.95			0.91	
Frt				1.00		0.85	1.00	1.00			0.93	
Flt Protected				0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1770		2814	1626	3406			4444	
Flt Permitted				0.95		1.00	0.06	1.00			1.00	
Satd. Flow (perm)				1770		2814	103	3406			4444	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	179	0	712	429	2216	0	0	1000	891
RTOR Reduction (vph)	0	0	0	0	0	45	0	0	0	0	98	0
Lane Group Flow (vph)	0	0	0	179	0	667	429	2216	0	0	1793	0
Heavy Vehicles (%)	0%	0%	0%	2%	0%	1%	11%	6%	0%	0%	8%	9%
Turn Type				Perm		Perm	pm+pt	NA			NA	
Protected Phases							1	6				2
Permitted Phases				4		4	6					
Actuated Green, G (s)				41.8		41.8	106.2	106.2			60.2	
Effective Green, g (s)				41.8		41.8	106.2	106.2			60.2	
Actuated g/C Ratio				0.26		0.26	0.66	0.66			0.38	
Clearance Time (s)				6.0		6.0	6.0	6.0			6.0	
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)				462		735	449	2260			1672	
v/s Ratio Prot							0.24	c0.65			c0.40	
v/s Ratio Perm				0.10		c0.24	0.39					
v/c Ratio				0.39		0.91	0.96	0.98			1.34dr	
Uniform Delay, d1				48.6		57.2	51.6	25.9			49.9	
Progression Factor				1.00		1.00	1.38	0.48			1.00	
Incremental Delay, d2				0.5		14.9	25.2	12.1			44.3	
Delay (s)				49.1		72.1	96.2	24.5			94.2	
Level of Service				D		E	F	C			F	
Approach Delay (s)		0.0			67.5			36.1			94.2	
Approach LOS		A			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	61.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	E
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
 c Critical Lane Group

Queues

2030 AM (Spot Improvements, Ramps)

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



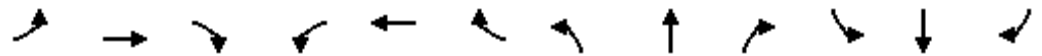
Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	522	433	2108	91	192	1009
v/c Ratio	0.80	0.62	0.73	0.10	0.88	0.41
Control Delay	70.3	31.5	26.6	6.6	51.5	1.4
Queue Delay	0.2	0.0	0.1	0.0	0.0	0.5
Total Delay	70.5	31.5	26.6	6.6	51.5	1.9
Queue Length 50th (ft)	271	117	565	13	156	25
Queue Length 95th (ft)	320	173	697	44	m155	m27
Internal Link Dist (ft)			382			410
Turn Bay Length (ft)	475	305				
Base Capacity (vph)	1022	972	2876	872	218	2470
Starvation Cap Reductn	0	0	0	0	0	896
Spillback Cap Reductn	99	0	57	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.45	0.75	0.10	0.88	0.64

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2030 AM (Spot Improvements, Ramps)

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔		↔↔					↑↑↑	↔	↔	↑↑	
Traffic Volume (vph)	485	0	403	0	0	0	0	1960	85	179	938	0
Future Volume (vph)	485	0	403	0	0	0	0	1960	85	179	938	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97		0.88					0.91	1.00	1.00	0.95	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3273		2632					4893	1442	1656	3406	
Flt Permitted	0.95		1.00					1.00	1.00	0.05	1.00	
Satd. Flow (perm)	3273		2632					4893	1442	83	3406	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	522	0	433	0	0	0	0	2108	91	192	1009	0
RTOR Reduction (vph)	0	0	174	0	0	0	0	0	25	0	0	0
Lane Group Flow (vph)	522	0	259	0	0	0	0	2108	66	192	1009	0
Heavy Vehicles (%)	7%	0%	8%	0%	0%	0%	0%	6%	12%	9%	6%	0%
Turn Type	Perm		Perm					NA	Perm	pm+pt	NA	
Protected Phases								6		5	2	
Permitted Phases	4		4						6	2		
Actuated Green, G (s)	32.0		32.0					94.0	94.0	116.0	116.0	
Effective Green, g (s)	32.0		32.0					94.0	94.0	116.0	116.0	
Actuated g/C Ratio	0.20		0.20					0.59	0.59	0.72	0.72	
Clearance Time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	654		526					2874	847	217	2469	
v/s Ratio Prot								0.43		c0.09	0.30	
v/s Ratio Perm	c0.16		0.10						0.05	c0.55		
v/c Ratio	0.80		0.49					0.73	0.08	0.88	0.41	
Uniform Delay, d1	60.9		56.8					23.9	14.3	43.8	8.6	
Progression Factor	1.00		1.00					1.00	1.00	0.62	0.14	
Incremental Delay, d2	6.7		0.7					1.7	0.2	13.7	0.2	
Delay (s)	67.7		57.5					25.6	14.4	40.9	1.4	
Level of Service	E		E					C	B	D	A	
Approach Delay (s)		63.1			0.0			25.2			7.7	
Approach LOS		E			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	91.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Network Totals

Number of Intersections	2
Total Delay (hr)	116
Stops (#)	5737
Average Speed (mph)	7
Total Travel Time (hr)	135
Distance Traveled (mi)	898
Fuel Consumed (gal)	196
Fuel Economy (mpg)	4.6
Unserved Vehicles (#)	115
Vehicles in dilemma zone (#)	178
Performance Index	132.3

Queues

2030 PM (Spot Improvements, Ramps)

1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp

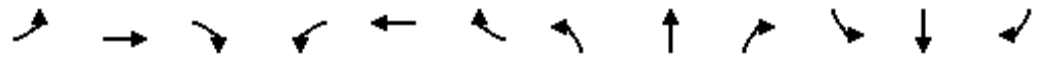


Lane Group	WBL	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	89	212	388	1825	3163
v/c Ratio	0.58	0.70	0.89	0.63	1.12
Control Delay	84.5	61.4	59.5	6.5	93.1
Queue Delay	0.9	0.0	7.8	0.2	0.2
Total Delay	85.3	61.4	67.3	6.6	93.3
Queue Length 50th (ft)	91	86	318	147	~1383
Queue Length 95th (ft)	150	134	m#534	192	#1508
Internal Link Dist (ft)				410	382
Turn Bay Length (ft)		300			
Base Capacity (vph)	350	608	436	2878	2813
Starvation Cap Reductn	0	0	31	284	0
Spillback Cap Reductn	114	0	0	0	246
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.38	0.35	0.96	0.70	1.23

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2030 PM (Spot Improvements, Ramps)
 1: Mountain Industrial Blvd & US 78/Stone Mountain Fwy WB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙		↗↗	↙	↑↑			↑↑↑	
Traffic Volume (vph)	0	0	0	85	0	201	369	1734	0	0	2156	849
Future Volume (vph)	0	0	0	85	0	201	369	1734	0	0	2156	849
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0		6.0	6.0	6.0			6.0	
Lane Util. Factor				1.00		0.88	1.00	0.95			0.91	
Frt				1.00		0.85	1.00	1.00			0.96	
Flt Protected				0.95		1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1752		2787	1736	3438			4830	
Flt Permitted				0.95		1.00	0.04	1.00			1.00	
Satd. Flow (perm)				1752		2787	75	3438			4830	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	89	0	212	388	1825	0	0	2269	894
RTOR Reduction (vph)	0	0	0	0	0	58	0	0	0	0	35	0
Lane Group Flow (vph)	0	0	0	89	0	154	388	1825	0	0	3128	0
Heavy Vehicles (%)	0%	0%	0%	3%	0%	2%	4%	5%	0%	0%	2%	5%
Turn Type				Perm		Perm	pm+pt	NA			NA	
Protected Phases							1	5				2
Permitted Phases				4		4	5					
Actuated Green, G (s)				14.0		14.0	134.0	134.0			92.0	
Effective Green, g (s)				14.0		14.0	134.0	134.0			92.0	
Actuated g/C Ratio				0.09		0.09	0.84	0.84			0.58	
Clearance Time (s)				6.0		6.0	6.0	6.0			6.0	
Vehicle Extension (s)				3.0		3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)				153		243	436	2879			2777	
v/s Ratio Prot							c0.20	0.53			c0.65	
v/s Ratio Perm				0.05		c0.06	0.55					
v/c Ratio				0.58		0.63	0.89	0.63			1.13	
Uniform Delay, d1				70.2		70.5	55.7	4.5			34.0	
Progression Factor				1.00		1.00	0.81	1.16			1.00	
Incremental Delay, d2				5.5		5.3	14.1	0.7			62.1	
Delay (s)				75.7		75.8	59.3	5.9			96.1	
Level of Service				E		E	E	A			F	
Approach Delay (s)		0.0			75.8			15.3			96.1	
Approach LOS		A			E			B			F	
Intersection Summary												
HCM 2000 Control Delay			63.5									E
HCM 2000 Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			160.0						18.0			
Intersection Capacity Utilization			100.8%									G
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2030 PM (Spot Improvements, Ramps)

2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	668	367	1541	289	548	1692
v/c Ratio	0.88	0.63	0.69	0.34	1.25	0.70
Control Delay	73.6	50.0	37.2	7.3	166.6	0.5
Queue Delay	0.8	0.0	0.1	0.0	0.1	1.6
Total Delay	74.4	50.0	37.3	7.3	166.7	2.1
Queue Length 50th (ft)	347	161	467	34	-651	11
Queue Length 95th (ft)	419	222	522	99	m#555	m15
Internal Link Dist (ft)			382			410
Turn Bay Length (ft)	475	305				
Base Capacity (vph)	825	631	2223	839	437	2414
Starvation Cap Reductn	0	0	0	0	3	509
Spillback Cap Reductn	33	0	57	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.58	0.71	0.34	1.26	0.89

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 2030 PM (Spot Improvements, Ramps)
2: Mountain Industrial Blvd & US 78/Stone Mountain Fwy EB ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↖		↗↗					↕↕↕	↗	↘	↕↕	
Traffic Volume (vph)	635	0	349	0	0	0	0	1464	275	521	1607	0
Future Volume (vph)	635	0	349	0	0	0	0	1464	275	521	1607	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Lane Util. Factor	0.97		0.88					0.91	1.00	1.00	0.95	
Frt	1.00		0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95		1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3303		2330					4940	1583	1770	3471	
Flt Permitted	0.95		1.00					1.00	1.00	0.08	1.00	
Satd. Flow (perm)	3303		2330					4940	1583	140	3471	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	668	0	367	0	0	0	0	1541	289	548	1692	0
RTOR Reduction (vph)	0	0	50	0	0	0	0	0	127	0	0	0
Lane Group Flow (vph)	668	0	317	0	0	0	0	1541	162	548	1692	0
Heavy Vehicles (%)	6%	0%	22%	0%	0%	0%	0%	5%	2%	2%	4%	0%
Turn Type	Perm		Perm					NA	Perm	pm+pt	NA	
Protected Phases								6		5	2	
Permitted Phases	4		4						6	2		
Actuated Green, G (s)	36.7		36.7					72.0	72.0	111.3	111.3	
Effective Green, g (s)	36.7		36.7					72.0	72.0	111.3	111.3	
Actuated g/C Ratio	0.23		0.23					0.45	0.45	0.70	0.70	
Clearance Time (s)	6.0		6.0					6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	757		534					2223	712	436	2414	
v/s Ratio Prot								0.31		c0.26	0.49	
v/s Ratio Perm	c0.20		0.14						0.10	c0.61		
v/c Ratio	0.88		0.59					0.69	0.23	1.26	0.70	
Uniform Delay, d1	59.6		55.0					35.2	27.0	50.1	14.5	
Progression Factor	1.00		1.00					1.00	1.00	1.40	0.02	
Incremental Delay, d2	11.8		1.8					1.8	0.7	117.4	0.2	
Delay (s)	71.4		56.8					37.0	27.7	187.5	0.5	
Level of Service	E		E					D	C	F	A	
Approach Delay (s)		66.2			0.0			35.5			46.2	
Approach LOS		E			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	100.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Network Totals

Number of Intersections	2
Total Delay (hr)	152
Stops (#)	6151
Average Speed (mph)	6
Total Travel Time (hr)	174
Distance Traveled (mi)	997
Fuel Consumed (gal)	229
Fuel Economy (mpg)	4.4
Unserved Vehicles (#)	438
Vehicles in dilemma zone (#)	213
Performance Index	169.3