ALDRIDGE TRANSPORTATION CONSULTANTS, LLC

Advanced Transportation Planning and Traffic Engineering

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January 29, 2020

Keenan Whitt
Project Manager
Summit Housing Group
283 W. Front Street Suite 001
Missoula, MT 59802

Re: Traffic Impact Study - Revised

Dear Ms. Whitt:

Aldridge Transportation Consultants (ATC) is pleased to present this traffic impact study regarding the Lyons Valley Park residential development in Lyons, Colorado.

ATC is professional service firm specializing in traffic engineering and transportation planning. ATC's principal, John M.W. Aldridge, is a Colorado licensed professional engineer. In the past 20 years, ATC has prepared over 1,000 traffic impact studies, designed over 100 traffic signals, and has provided expert witness testimony on engineering design and access issues on multi-million dollar interchange and highway projects in Kansas and Colorado.

ATC appreciates the opportunity to be of service. Please call if you have any questions. We can be reached at 303-703-9112.

Respectfully submitted,
Aldridge Transportation Consultants, LLC

John M.W. Aldridge, P.E.
Principal

1. INTRODUCTION/PROJECT DESCRIPTION

Summit Housing Group is proposing to develop affordable housing in the southeast area of Lyons. The development plan presents 21 townhomes and 19 single-family homes located on the southeast side of McConnell Drive and on a new street to be named Carter Drive. The site location, site plan, and the adjacent streets and intersections are shown on Figure 1. This is a revised study that addresses comments from the Town Engineer dated December 26, 2018.

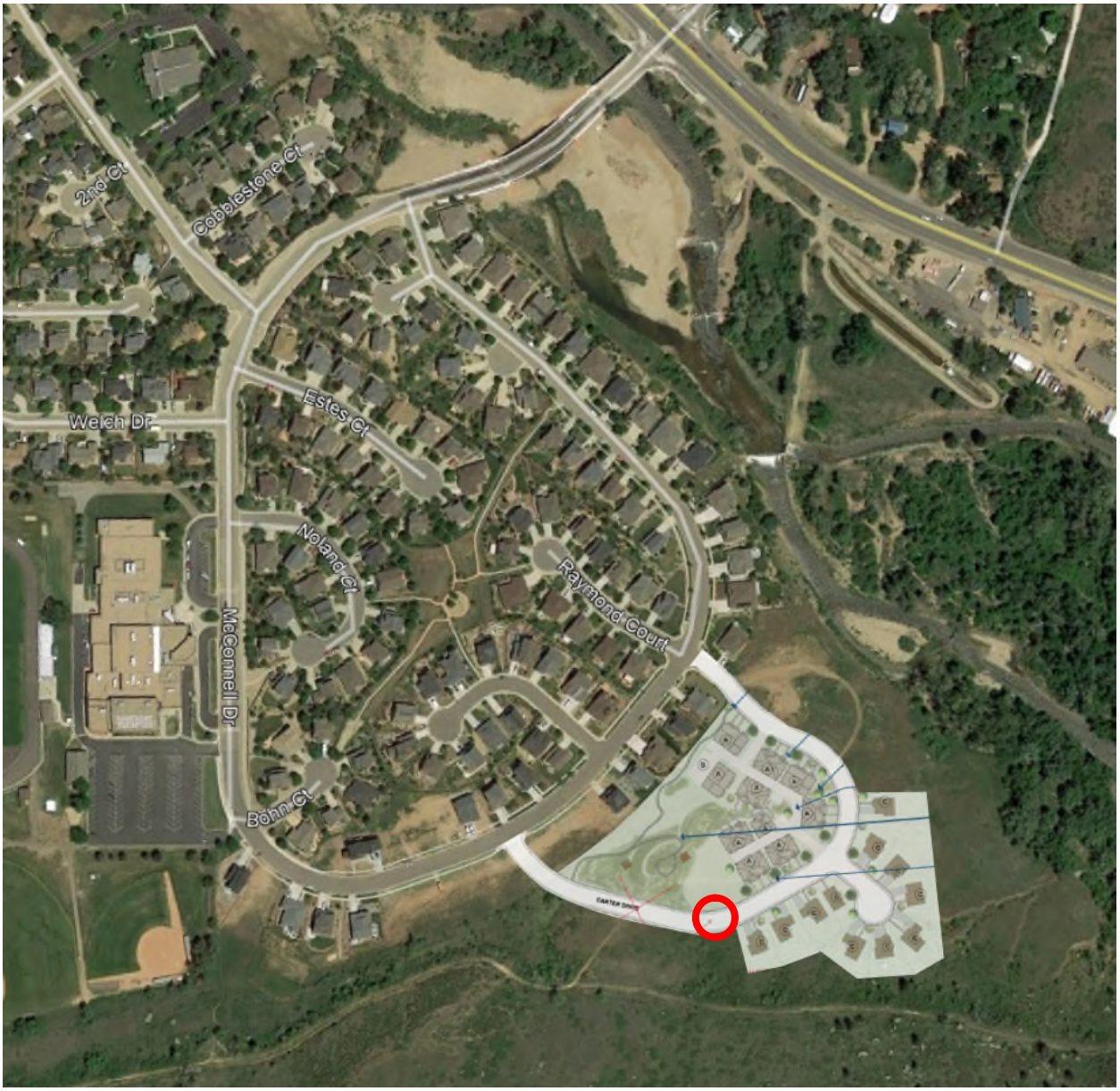


Figure 1 Site Location and Adjacent Streets and Intersections.

a. Study Area
The study area is generally defined as the property boundaries, McConnell Dr. and the intersection of McConnell Dr. and US-36.

b. Study Horizon Year
The study will examine the three-year and 2040 design horizons.

c. Analysis Time Periods
The study examines daily and the AM and PM peak hour conditions.

2. EXISTING CONDITIONS

The following data was collected in accord with ITE and County standards

a. Intersection Traffic Volumes
All Traffic Data counted the AM and PM peak hour traffic movement at the intersection of McConnell Dr. and the Ute Highway on December 11, 2018. The appendix contains the count report.

b. Roadway Traffic Volumes
Per the CDOT OTIS website, US-36 is a four-lane undivided highway classified as an R-A (Regional Highway). It carries about 17,000 daily trips and is posted at 50 mph. McConnell Dr. at the intersection carries approximately 1,600 ADT.

c. Roadway and Intersection Geometrics
McConnell Dr. is a two-lane Collector roadway. US-36 in this area is a four-lane Regional Highway. The intersection is traffic signal controlled and features left turns lanes on each approach and right turn lanes on the major street approaches and shared right and through lanes on the minor street approaches. The eastbound to southbound right turn lane includes an acceleration lane.

d. Bike Lanes and Sidewalks
McConnell Dr. features sidewalks on both sides of the street. At the intersection there are marked bike lanes on all approaches except the westbound.

3. PROJECTED SITE GENERATED TRAFFIC

The trip generation rates and values presented in Table 1 are from the **ITE Trip Generation Manual, 10th Edition.** The tables show the Average Daily Traffic and the AM and PM peak hour trip generation

Table 1 Trip Generation

Trip Generation Worksheet										
					Weekday AM			Weekday PM		
ITE Code	Land Use	Unit	Quantity	ADT	In	Out	Total	In	Out	Total
210	Single Family	DU	19.0	*9.44*	*0.19*	*0.55*		*0.63*	*0.37*	
				179	**4**	**10**	**14**	**12**	**7**	**19**
220	Multi-Family	DU	21.0	*5.44*	*0.09*	*0.27*		*0.27*	*0.17*	
				114	**2**	**6**	**8**	**6**	**4**	**9**
	Total Trips			**294**	**6**	**16**	**22**	**18**	**11**	**28**

4. TRIP DISTRIBUTION AND ASSIGNMENT

The trips were distributed and assigned to the McConnell Dr./US-36 based on the existing percentage of each movement. The trip assignment is quite light. In the AM peak hour 3 will enter from the south, 3 from the north. 5 will exit to the north and 11 to the south. In the PM peak hour, 14 will enter from the south and 4 from the north. 3 will exit to the north and 8 to the south.

5. FUTURE CONDITIONS

A review of the DRCOG FOCUS travel model assigned volumes on US-36 in this area for 2015 and 2040 showed annual growth rate of 1.23 percent. Consequently, the 2021 analysis assumed a growth factor of 1.04 and for 2038 a growth factor of 1.28.

6. TRAFFIC OPERATIONS

ATC uses Synchro v.10 for operations analyses. The Synchro v.10 methodologies are based on the **Highway Capacity Manual, 6th Edition** (HCM). The Synchro HCM reports in the appendix are for reference. LOS is letter rating from A to F. LOS A indicates free-flow traffic conditions and no delay at intersections. LOS F is heavy traffic congestion with significant delay. LOS is provided for the overall operations at signalized intersections. LOS D is generally the benchmark for acceptable signalized intersection operations during the weekday peak hours. The critical movement, not the overall, provides the LOS rating for unsignalized intersections. The critical movement is generally a left turn from the minor approach. Caution is advised when evaluating the LOS at unsignalized intersections particularly when LOS F shows. In cases of a LOS F, the HCM suggests that other evaluation measures should be considered such as the volume over capacity ratio and the 95th percentile queue length to make the most effective traffic control decision. LOS F at unsignalized intersections is considered normal for the weekday peak hour particularly when the v/c ratio and the 95th percentile queue length are acceptable.

The following table 2 summarizes the LOS and vehicle seconds of delay for the existing, 2021 and 2038 conditions. The signalized intersection LOS is the overall delay. Specific movements are reported in the Synchro reports in the appendix.

Table 2 Peak Hour Intersection Level of Service Summary

Level of Service Summary *LOS/Delay in Seconds*										
	Existing		2021 Background		2021 Total		2038 Background		2038 Total	
Intersection	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
McConnell/US-36	A/7.7	A/4.5	A/7.7	A/4.6	A/7.9	A/4.6	A/9.4	A/4.8	A/7.8	A/4.9

The signal currently operates at LOS A/A in the AM and PM peak hours, respectively. It will continue to do in all 2021 and 2038 background and total conditions.

In their comments dated December 26, 2018, the Town Engineer requested an analysis at the High/Middle school for an average weekday with school in and matching their peak arrival and departure times. The impact of the traffic generated by Lyons Valley Park will be negligible and

immeasurable however as the volume of traffic that would impact the school is too low at less than 5 vehicles per hour, if that, as the proximity of the schools to the development is in easy walking/biking distance of about 1,500 feet. Moreover, McConnell Dr., features detached sidewalks on both sides and there are two controlled pedestrian crossings. Lyons Valley Park will tie into the current pedestrian/bikeway system with sidewalks and trail connections.

The Town Engineer also requested an analysis of the summer weekend midday traffic. To do this would require traffic counts at the intersection during that time which is obviously six months away from the date of this study. We can speculate, however, given that the intersection is equipped with modern, fully actuated traffic signal control and features protected/permissive left turn phasing on the northbound approach and left turn lanes on all approaches, that the impact of the additional traffic from the development will be negligible and insignificant.

7. PROPOSED IMPROVEMENTS

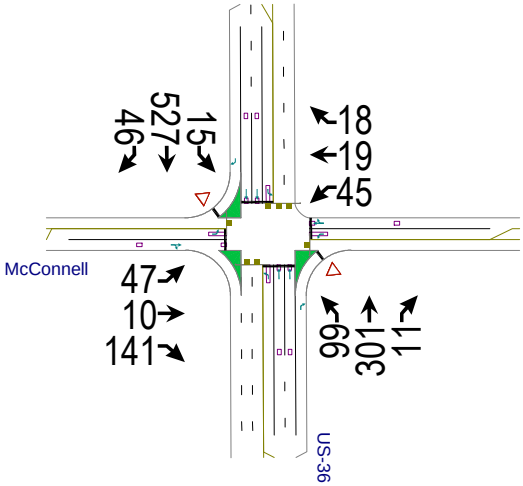
Carter Dr. should be constructed a two-lane local type roadway with approximately 32 feet of pavement and attached sidewalks. Additionally, although not shown on the site plan, instead of a continuous loop the road could be constructed with two cul-de-sacs like Raymond Ct. etc. that extend inward from McConnell Dr.

The Town Engineer wanted additional discussion on the cul-de-sac option as the proposed cul-de-sac is longer than what is typical. For emergency access purposes, a gravel access road will be extended from the cul-de-sac to the existing driveway cut on McConnell Dr. Ultimately the two cul-de-sacs will be connected with an emergency access gate (Knox box type) or a ped/bike path. The red circle on Figure 1 shows an approximate location of a cul-de-sac.

8. RECOMMENDATIONS AND CONCLUSIONS

Based on the analysis herein and in our professional opinion, the traffic generated by the development of affordable housing can blend harmoniously with the existing and future traffic on the adjacent streets and intersections and not cause a significant operational or safety problem.

APPENDIX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McConnell
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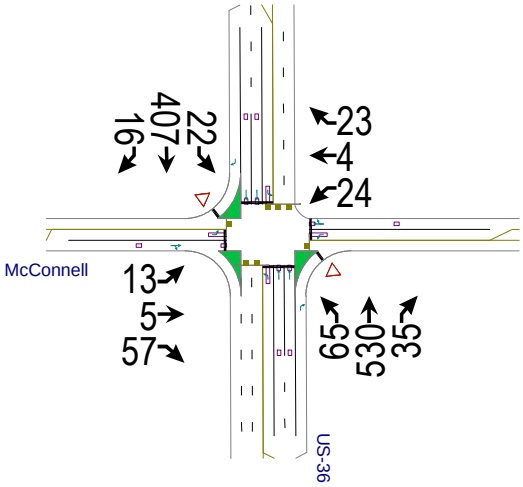
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	10	141	45	19	18	99	301	11	15	527	46
Future Volume (veh/h)	47	10	141	45	19	18	99	301	11	15	527	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	11	0	49	21	20	108	327	0	16	573	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	177	156		203	73	70	720	2842		812	2426	
Arrive On Green	0.08	0.08	0.00	0.08	0.08	0.08	0.06	0.80	0.00	0.68	0.68	0.00
Sat Flow, veh/h	1366	1870	0	1404	881	839	1781	3554	1585	1053	3554	1585
Grp Volume(v), veh/h	51	11	0	49	0	41	108	327	0	16	573	0
Grp Sat Flow(s),veh/h/ln	1366	1870	0	1404	0	1719	1781	1777	1585	1053	1777	1585
Q Serve(g_s), s	2.8	0.4	0.0	2.6	0.0	1.7	1.2	1.6	0.0	0.4	4.7	0.0
Cycle Q Clear(g_c), s	4.5	0.4	0.0	3.0	0.0	1.7	1.2	1.6	0.0	0.4	4.7	0.0
Prop In Lane	1.00		0.00	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	177	156		203	0	143	720	2842		812	2426	
V/C Ratio(X)	0.29	0.07		0.24	0.00	0.29	0.15	0.12		0.02	0.24	
Avail Cap(c_a), veh/h	587	717		624	0	660	928	2842		812	2426	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.2	32.5	0.0	33.9	0.0	33.1	2.6	1.7	0.0	3.9	4.6	0.0
Incr Delay (d2), s/veh	0.9	0.2	0.0	0.6	0.0	1.1	0.1	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.2	0.0	0.9	0.0	0.7	0.3	0.3	0.0	0.1	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.1	32.7	0.0	34.5	0.0	34.2	2.6	1.8	0.0	4.0	4.8	0.0
LnGrp LOS	D	C		C	A	C	A	A		A	A	
Approach Vol, veh/h		62	A		90			435	A		589	A
Approach Delay, s/veh		35.5			34.4			2.0			4.8	
Approach LOS		D			C			A			A	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		66.0		10.9	9.0	57.0		10.9				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		61.5		29.5	13.5	43.5		29.5				
Max Q Clear Time (g_c+I1), s		3.6		6.5	3.2	6.7		5.0				
Green Ext Time (p_c), s		2.4		0.1	0.2	4.5		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	7.7
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.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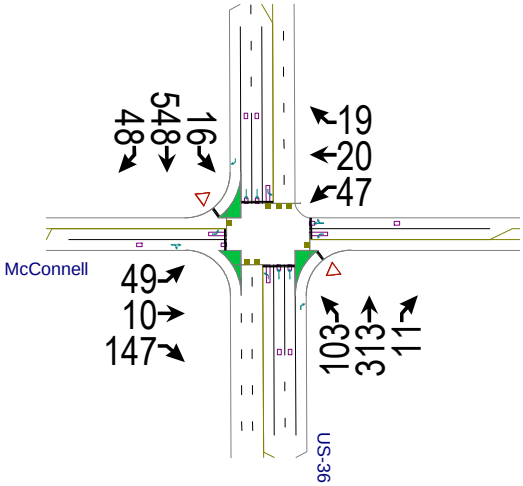
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	5	57	24	4	23	65	530	35	22	407	16
Future Volume (veh/h)	13	5	57	24	4	23	65	530	35	22	407	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	5	0	26	4	25	71	576	0	24	442	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	142	97		164	12	72	830	2951		698	2561	
Arrive On Green	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.83	0.00	0.72	0.72	0.00
Sat Flow, veh/h	1381	1870	0	1411	223	1396	1781	3554	1585	837	3554	1585
Grp Volume(v), veh/h	14	5	0	26	0	29	71	576	0	24	442	0
Grp Sat Flow(s),veh/h/ln	1381	1870	0	1411	0	1619	1781	1777	1585	837	1777	1585
Q Serve(g_s), s	0.8	0.2	0.0	1.4	0.0	1.3	0.6	2.5	0.0	0.6	3.0	0.0
Cycle Q Clear(g_c), s	2.1	0.2	0.0	1.6	0.0	1.3	0.6	2.5	0.0	0.6	3.0	0.0
Prop In Lane	1.00		0.00	1.00		0.86	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	142	97		164	0	84	830	2951		698	2561	
V/C Ratio(X)	0.10	0.05		0.16	0.00	0.35	0.09	0.20		0.03	0.17	
Avail Cap(c_a), veh/h	567	673		598	0	582	1100	2951		698	2561	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.0	34.5	0.0	35.2	0.0	35.0	1.8	1.3	0.0	3.1	3.4	0.0
Incr Delay (d2), s/veh	0.3	0.2	0.0	0.4	0.0	2.4	0.0	0.1	0.0	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.0	0.5	0.0	0.6	0.1	0.3	0.0	0.1	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.3	34.7	0.0	35.7	0.0	37.4	1.9	1.5	0.0	3.2	3.6	0.0
LnGrp LOS	D	C		D	A	D	A	A		A	A	
Approach Vol, veh/h		19	A		55			647	A		466	A
Approach Delay, s/veh		35.9			36.6			1.5			3.5	
Approach LOS		D			D			A			A	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		68.0		8.5	8.4	59.6		8.5				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		63.5		27.5	15.5	43.5		27.5				
Max Q Clear Time (g_c+I1), s		4.5		4.1	2.6	5.0		3.6				
Green Ext Time (p_c), s		4.6		0.0	0.1	3.4		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	4.5
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.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US-36

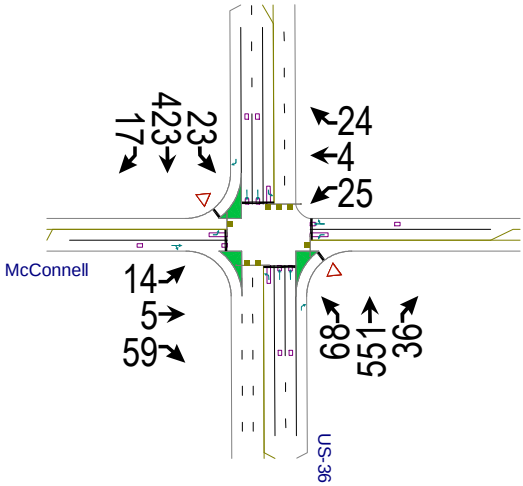
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	10	141	45	19	18	99	301	11	15	527	46
Future Volume (veh/h)	47	10	141	45	19	18	99	301	11	15	527	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	11	0	51	21	20	112	340	0	17	596	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	177	158		203	75	71	706	2843		804	2431	
Arrive On Green	0.08	0.08	0.00	0.08	0.08	0.08	0.06	0.80	0.00	0.68	0.68	0.00
Sat Flow, veh/h	1366	1870	0	1404	881	839	1781	3554	1585	1040	3554	1585
Grp Volume(v), veh/h	53	11	0	51	0	41	112	340	0	17	596	0
Grp Sat Flow(s),veh/h/ln	1366	1870	0	1404	0	1719	1781	1777	1585	1040	1777	1585
Q Serve(g_s), s	3.0	0.4	0.0	2.7	0.0	1.7	1.2	1.7	0.0	0.4	5.0	0.0
Cycle Q Clear(g_c), s	4.7	0.4	0.0	3.1	0.0	1.7	1.2	1.7	0.0	0.4	5.0	0.0
Prop In Lane	1.00		0.00	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	177	158		203	0	146	706	2843		804	2431	
V/C Ratio(X)	0.30	0.07		0.25	0.00	0.28	0.16	0.12		0.02	0.25	
Avail Cap(c_a), veh/h	560	682		597	0	627	956	2843		804	2431	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.7	32.9	0.0	34.4	0.0	33.5	2.6	1.7	0.0	4.0	4.7	0.0
Incr Delay (d2), s/veh	0.9	0.2	0.0	0.6	0.0	1.0	0.1	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.2	0.0	0.9	0.0	0.8	0.3	0.3	0.0	0.1	1.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.7	33.1	0.0	35.0	0.0	34.6	2.7	1.8	0.0	4.0	4.9	0.0
LnGrp LOS	D	C		C	A	C	A	A		A	A	
Approach Vol, veh/h		64	A		92			452	A		613	A
Approach Delay, s/veh		36.0			34.8			2.0			4.9	
Approach LOS		D			C			A			A	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		67.0		11.1	9.1	57.9		11.1				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		62.5		28.5	15.5	42.5		28.5				
Max Q Clear Time (g_c+I1), s		3.7		6.7	3.2	7.0		5.1				
Green Ext Time (p_c), s		2.5		0.1	0.2	4.7		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	7.7
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.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McConnell

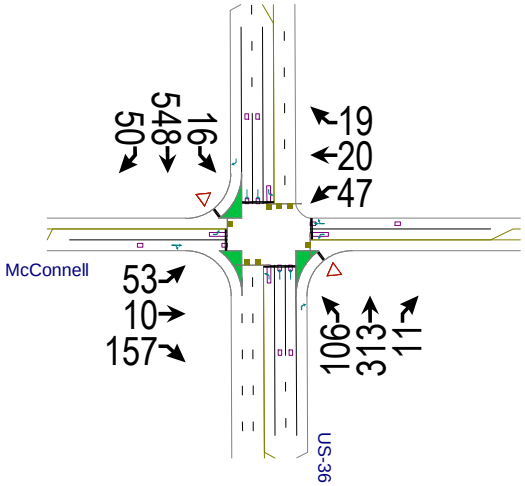
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	5	57	24	4	23	65	530	35	22	407	16
Future Volume (veh/h)	13	5	57	24	4	23	65	530	35	22	407	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	6	0	27	5	26	73	599	0	25	460	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	142	99		165	14	72	817	2947		683	2555	
Arrive On Green	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.83	0.00	0.72	0.72	0.00
Sat Flow, veh/h	1378	1870	0	1410	262	1363	1781	3554	1585	820	3554	1585
Grp Volume(v), veh/h	15	6	0	27	0	31	73	599	0	25	460	0
Grp Sat Flow(s),veh/h/ln	1378	1870	0	1410	0	1625	1781	1777	1585	820	1777	1585
Q Serve(g_s), s	0.8	0.2	0.0	1.4	0.0	1.4	0.7	2.6	0.0	0.7	3.2	0.0
Cycle Q Clear(g_c), s	2.2	0.2	0.0	1.7	0.0	1.4	0.7	2.6	0.0	0.7	3.2	0.0
Prop In Lane	1.00		0.00	1.00		0.84	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	142	99		165	0	86	817	2947		683	2555	
V/C Ratio(X)	0.11	0.06		0.16	0.00	0.36	0.09	0.20		0.04	0.18	
Avail Cap(c_a), veh/h	564	672		596	0	584	1086	2947		683	2555	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.1	34.4	0.0	35.2	0.0	35.0	1.8	1.3	0.0	3.1	3.5	0.0
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.5	0.0	2.5	0.0	0.2	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.0	0.5	0.0	0.6	0.1	0.3	0.0	0.1	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.4	34.7	0.0	35.7	0.0	37.5	1.9	1.5	0.0	3.2	3.6	0.0
LnGrp LOS	D	C		D	A	D	A	A		A	A	
Approach Vol, veh/h		21	A		58			672	A		485	A
Approach Delay, s/veh		35.9			36.6			1.5			3.6	
Approach LOS		D			D			A			A	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		68.0		8.6	8.4	59.6		8.6				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		63.5		27.5	15.5	43.5		27.5				
Max Q Clear Time (g_c+I1), s		4.6		4.2	2.7	5.2		3.7				
Green Ext Time (p_c), s		4.8		0.0	0.1	3.6		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	4.6
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.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McConnell
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US-36

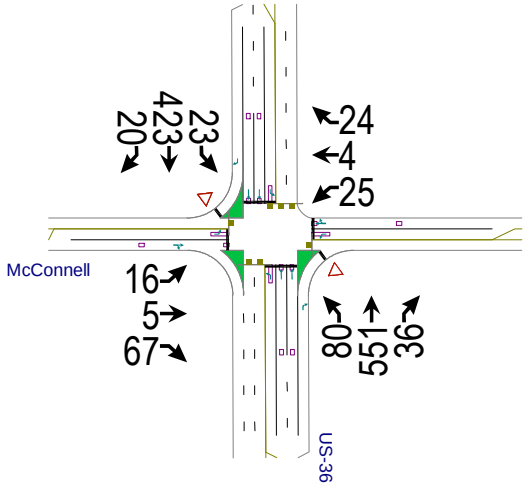
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	10	151	45	19	18	102	301	11	15	527	48
Future Volume (veh/h)	51	10	151	45	19	18	102	301	11	15	527	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	58	11	0	51	21	20	115	340	0	17	596	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	165		208	78	74	703	2832		800	2420	
Arrive On Green	0.09	0.09	0.00	0.09	0.09	0.09	0.06	0.80	0.00	0.68	0.68	0.00
Sat Flow, veh/h	1366	1870	0	1404	881	839	1781	3554	1585	1040	3554	1585
Grp Volume(v), veh/h	58	11	0	51	0	41	115	340	0	17	596	0
Grp Sat Flow(s),veh/h/ln	1366	1870	0	1404	0	1719	1781	1777	1585	1040	1777	1585
Q Serve(g_s), s	3.2	0.4	0.0	2.7	0.0	1.7	1.3	1.7	0.0	0.4	5.0	0.0
Cycle Q Clear(g_c), s	5.0	0.4	0.0	3.1	0.0	1.7	1.3	1.7	0.0	0.4	5.0	0.0
Prop In Lane	1.00		0.00	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	182	165		208	0	152	703	2832		800	2420	
V/C Ratio(X)	0.32	0.07		0.24	0.00	0.27	0.16	0.12		0.02	0.25	
Avail Cap(c_a), veh/h	558	680		594	0	625	951	2832		800	2420	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.7	32.8	0.0	34.2	0.0	33.4	2.7	1.8	0.0	4.1	4.8	0.0
Incr Delay (d2), s/veh	1.0	0.2	0.0	0.6	0.0	0.9	0.1	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.2	0.0	0.9	0.0	0.8	0.3	0.3	0.0	0.1	1.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.7	32.9	0.0	34.8	0.0	34.3	2.8	1.9	0.0	4.1	5.0	0.0
LnGrp LOS	D	C		C	A	C	A	A		A	A	
Approach Vol, veh/h		69	A		92			455	A		613	A
Approach Delay, s/veh		36.1			34.6			2.1			5.0	
Approach LOS		D			C			A			A	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		67.0		11.4	9.1	57.9		11.4				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		62.5		28.5	15.5	42.5		28.5				
Max Q Clear Time (g_c+I1), s		3.7		7.0	3.3	7.0		5.1				
Green Ext Time (p_c), s		2.5		0.2	0.2	4.7		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	7.9
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.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423
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McConnell
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US-36

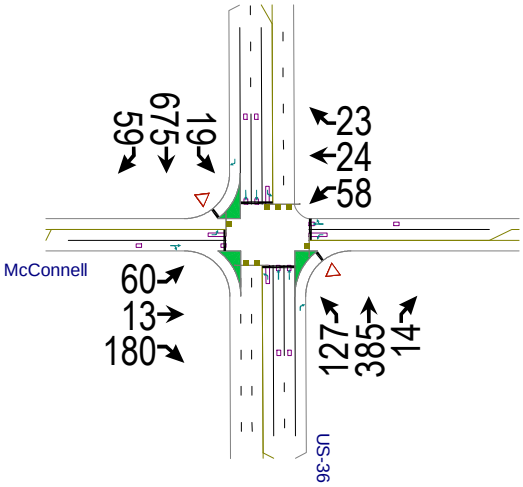
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	5	64	24	4	23	77	530	35	22	407	19
Future Volume (veh/h)	15	5	64	24	4	23	77	530	35	22	407	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	6	0	27	5	26	87	599	0	25	460	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	143	100		165	14	73	819	2946		680	2541	
Arrive On Green	0.05	0.05	0.00	0.05	0.05	0.05	0.06	0.83	0.00	0.72	0.72	0.00
Sat Flow, veh/h	1378	1870	0	1410	262	1363	1781	3554	1585	820	3554	1585
Grp Volume(v), veh/h	17	6	0	27	0	31	87	599	0	25	460	0
Grp Sat Flow(s),veh/h/ln	1378	1870	0	1410	0	1625	1781	1777	1585	820	1777	1585
Q Serve(g_s), s	0.9	0.2	0.0	1.4	0.0	1.4	0.8	2.7	0.0	0.7	3.2	0.0
Cycle Q Clear(g_c), s	2.3	0.2	0.0	1.7	0.0	1.4	0.8	2.7	0.0	0.7	3.2	0.0
Prop In Lane	1.00		0.00	1.00		0.84	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	143	100		165	0	87	819	2946		680	2541	
V/C Ratio(X)	0.12	0.06		0.16	0.00	0.36	0.11	0.20		0.04	0.18	
Avail Cap(c_a), veh/h	563	671		596	0	583	1081	2946		680	2541	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.1	34.4	0.0	35.2	0.0	35.0	1.9	1.3	0.0	3.2	3.6	0.0
Incr Delay (d2), s/veh	0.4	0.2	0.0	0.5	0.0	2.4	0.1	0.2	0.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.0	0.5	0.0	0.6	0.1	0.3	0.0	0.1	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.5	34.7	0.0	35.7	0.0	37.4	1.9	1.5	0.0	3.3	3.7	0.0
LnGrp LOS	D	C		D	A	D	A	A		A	A	
Approach Vol, veh/h		23	A		58			686	A		485	A
Approach Delay, s/veh		36.0			36.6			1.6			3.7	
Approach LOS		D			D			A			A	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		68.0		8.6	8.7	59.3		8.6				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		63.5		27.5	15.5	43.5		27.5				
Max Q Clear Time (g_c+I1), s		4.7		4.3	2.8	5.2		3.7				
Green Ext Time (p_c), s		4.8		0.0	0.1	3.6		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	4.6
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.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675
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60
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180
McConnell
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24
58
127
385
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US-36

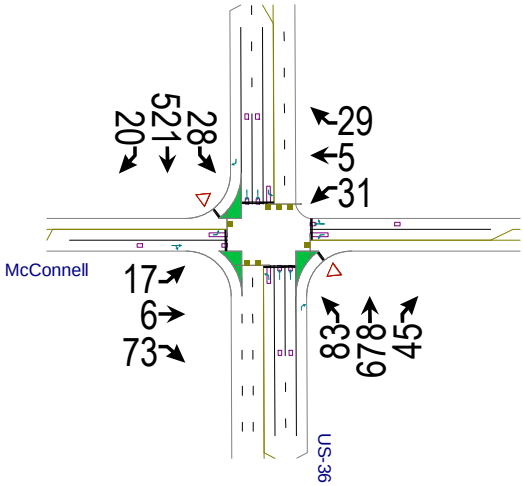
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	10	141	45	19	18	99	301	11	15	527	46
Future Volume (veh/h)	47	10	141	45	19	18	99	301	11	15	527	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	14	0	63	26	25	138	419	0	21	733	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	184	186		217	87	84	622	2814		745	2415	
Arrive On Green	0.10	0.10	0.00	0.10	0.10	0.10	0.06	0.79	0.00	0.68	0.68	0.00
Sat Flow, veh/h	1354	1870	0	1400	876	843	1781	3554	1585	968	3554	1585
Grp Volume(v), veh/h	65	14	0	63	0	51	138	419	0	21	733	0
Grp Sat Flow(s),veh/h/ln	1354	1870	0	1400	0	1719	1781	1777	1585	968	1777	1585
Q Serve(g_s), s	3.9	0.6	0.0	3.5	0.0	2.3	1.7	2.3	0.0	0.6	6.9	0.0
Cycle Q Clear(g_c), s	6.2	0.6	0.0	4.1	0.0	2.3	1.7	2.3	0.0	0.6	6.9	0.0
Prop In Lane	1.00		0.00	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	184	186		217	0	171	622	2814		745	2415	
V/C Ratio(X)	0.35	0.08		0.29	0.00	0.30	0.22	0.15		0.03	0.30	
Avail Cap(c_a), veh/h	467	577		509	0	530	852	2814		745	2415	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.4	33.8	0.0	35.7	0.0	34.6	3.1	2.0	0.0	4.3	5.4	0.0
Incr Delay (d2), s/veh	1.1	0.2	0.0	0.7	0.0	1.0	0.2	0.1	0.0	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.3	0.0	1.2	0.0	1.0	0.4	0.5	0.0	0.1	2.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.6	34.0	0.0	36.4	0.0	35.5	3.3	2.1	0.0	4.4	5.7	0.0
LnGrp LOS	D	C		D	A	D	A	A		A	A	
Approach Vol, veh/h		79	A		114			557	A		754	A
Approach Delay, s/veh		37.8			36.0			2.4			5.6	
Approach LOS		D			D			A			A	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		70.0		12.7	9.3	60.7		12.7				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		65.5		25.5	15.5	45.5		25.5				
Max Q Clear Time (g_c+I1), s		4.3		8.2	3.7	8.9		6.1				
Green Ext Time (p_c), s		3.2		0.2	0.3	6.1		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	8.4
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.


US-36
83
678
45
29
5
31
McConnell
17
6
73
28
521
20

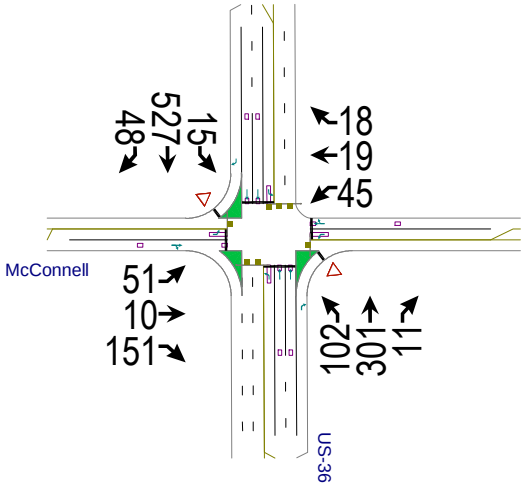
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	5	57	24	4	23	65	530	35	22	407	16
Future Volume (veh/h)	13	5	57	24	4	23	65	530	35	22	407	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	18	7	0	33	6	32	90	737	0	31	566	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	105		167	14	77	749	2943		608	2542	
Arrive On Green	0.06	0.06	0.00	0.06	0.06	0.06	0.06	0.83	0.00	0.72	0.72	0.00
Sat Flow, veh/h	1370	1870	0	1409	256	1368	1781	3554	1585	721	3554	1585
Grp Volume(v), veh/h	18	7	0	33	0	38	90	737	0	31	566	0
Grp Sat Flow(s),veh/h/ln	1370	1870	0	1409	0	1624	1781	1777	1585	721	1777	1585
Q Serve(g_s), s	1.0	0.3	0.0	1.8	0.0	1.8	0.8	3.5	0.0	1.0	4.2	0.0
Cycle Q Clear(g_c), s	2.8	0.3	0.0	2.0	0.0	1.8	0.8	3.5	0.0	1.0	4.2	0.0
Prop In Lane	1.00		0.00	1.00		0.84	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	105		167	0	91	749	2943		608	2542	
V/C Ratio(X)	0.13	0.07		0.20	0.00	0.42	0.12	0.25		0.05	0.22	
Avail Cap(c_a), veh/h	528	636		567	0	553	960	2943		608	2542	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.9	34.8	0.0	35.8	0.0	35.5	2.0	1.4	0.0	3.3	3.8	0.0
Incr Delay (d2), s/veh	0.4	0.3	0.0	0.6	0.0	3.0	0.1	0.2	0.0	0.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.0	0.6	0.0	0.8	0.2	0.5	0.0	0.1	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.3	35.1	0.0	36.4	0.0	38.5	2.1	1.7	0.0	3.5	4.0	0.0
LnGrp LOS	D	D		D	A	D	A	A		A	A	
Approach Vol, veh/h		25	A		71			827	A		597	A
Approach Delay, s/veh		36.7			37.5			1.7			3.9	
Approach LOS		D			D			A			A	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		69.0		8.9	8.8	60.2		8.9				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		64.5		26.5	13.5	46.5		26.5				
Max Q Clear Time (g_c+I1), s		5.5		4.8	2.8	6.2		4.0				
Green Ext Time (p_c), s		6.2		0.0	0.1	4.7		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	4.8
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.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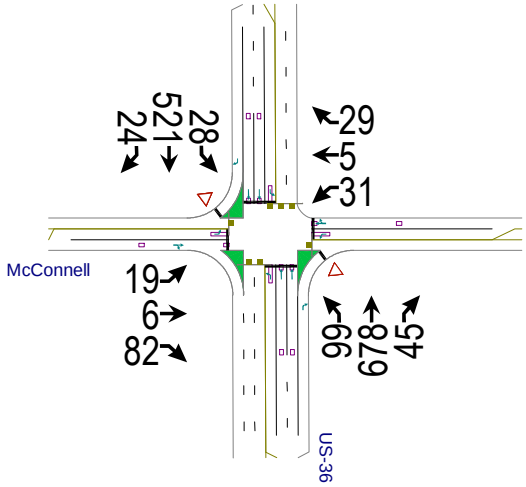
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	10	151	45	19	18	102	301	11	15	527	48
Future Volume (veh/h)	51	10	151	45	19	18	102	301	11	15	527	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	55	11	0	49	21	20	111	327	0	16	573	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	161		207	76	72	717	2832		809	2416	
Arrive On Green	0.09	0.09	0.00	0.09	0.09	0.09	0.06	0.80	0.00	0.68	0.68	0.00
Sat Flow, veh/h	1366	1870	0	1404	881	839	1781	3554	1585	1053	3554	1585
Grp Volume(v), veh/h	55	11	0	49	0	41	111	327	0	16	573	0
Grp Sat Flow(s),veh/h/ln	1366	1870	0	1404	0	1719	1781	1777	1585	1053	1777	1585
Q Serve(g_s), s	3.0	0.4	0.0	2.6	0.0	1.7	1.2	1.6	0.0	0.4	4.7	0.0
Cycle Q Clear(g_c), s	4.8	0.4	0.0	3.0	0.0	1.7	1.2	1.6	0.0	0.4	4.7	0.0
Prop In Lane	1.00		0.00	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	181	161		207	0	148	717	2832		809	2416	
V/C Ratio(X)	0.30	0.07		0.24	0.00	0.28	0.15	0.12		0.02	0.24	
Avail Cap(c_a), veh/h	585	715		622	0	657	924	2832		809	2416	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.2	32.4	0.0	33.8	0.0	33.0	2.6	1.8	0.0	4.0	4.7	0.0
Incr Delay (d2), s/veh	0.9	0.2	0.0	0.6	0.0	1.0	0.1	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.2	0.0	0.9	0.0	0.7	0.3	0.3	0.0	0.1	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.2	32.6	0.0	34.3	0.0	34.0	2.7	1.8	0.0	4.1	4.9	0.0
LnGrp LOS	D	C		C	A	C	A	A		A	A	
Approach Vol, veh/h		66	A		90			438	A		589	A
Approach Delay, s/veh		35.6			34.2			2.1			4.9	
Approach LOS		D			C			A			A	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		66.0		11.2	9.0	57.0		11.2				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		61.5		29.5	13.5	43.5		29.5				
Max Q Clear Time (g_c+I1), s		3.6		6.8	3.2	6.7		5.0				
Green Ext Time (p_c), s		2.4		0.2	0.2	4.5		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	7.8
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.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McConnell
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US-36

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	5	64	24	4	23	77	530	35	22	407	19
Future Volume (veh/h)	15	5	64	24	4	23	77	530	35	22	407	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	7	0	33	6	32	107	737	0	31	566	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	139	106		167	15	77	751	2942		606	2531	
Arrive On Green	0.06	0.06	0.00	0.06	0.06	0.06	0.06	0.83	0.00	0.71	0.71	0.00
Sat Flow, veh/h	1370	1870	0	1409	256	1368	1781	3554	1585	721	3554	1585
Grp Volume(v), veh/h	21	7	0	33	0	38	107	737	0	31	566	0
Grp Sat Flow(s),veh/h/ln	1370	1870	0	1409	0	1624	1781	1777	1585	721	1777	1585
Q Serve(g_s), s	1.2	0.3	0.0	1.8	0.0	1.8	1.0	3.5	0.0	1.0	4.2	0.0
Cycle Q Clear(g_c), s	2.9	0.3	0.0	2.0	0.0	1.8	1.0	3.5	0.0	1.0	4.2	0.0
Prop In Lane	1.00		0.00	1.00		0.84	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	139	106		167	0	92	751	2942		606	2531	
V/C Ratio(X)	0.15	0.07		0.20	0.00	0.41	0.14	0.25		0.05	0.22	
Avail Cap(c_a), veh/h	527	636		567	0	552	957	2942		606	2531	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.9	34.8	0.0	35.8	0.0	35.5	2.0	1.5	0.0	3.4	3.8	0.0
Incr Delay (d2), s/veh	0.5	0.3	0.0	0.6	0.0	2.9	0.1	0.2	0.0	0.2	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.1	0.0	0.6	0.0	0.8	0.2	0.5	0.0	0.1	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.4	35.1	0.0	36.3	0.0	38.4	2.1	1.7	0.0	3.5	4.0	0.0
LnGrp LOS	D	D		D	A	D	A	A		A	A	
Approach Vol, veh/h		28	A		71			844	A		597	A
Approach Delay, s/veh		36.8			37.5			1.7			4.0	
Approach LOS		D			D			A			A	

Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		69.0		8.9	9.0	60.0		8.9				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s		64.5		26.5	13.5	46.5		26.5				
Max Q Clear Time (g_c+I1), s		5.5		4.9	3.0	6.2		4.0				
Green Ext Time (p_c), s		6.2		0.0	0.2	4.7		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	4.9
HCM 6th LOS	A

Notes

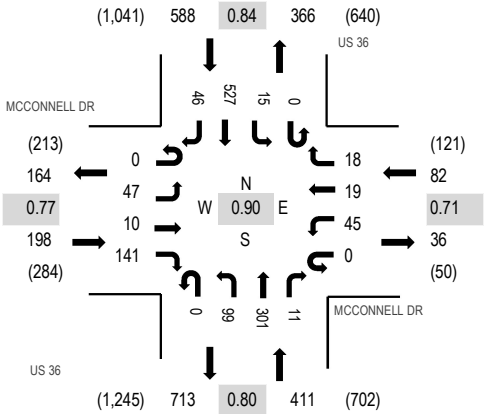
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

All Traffic Data Services Inc.

(303) 216-2439
www.alltrafficdata.net

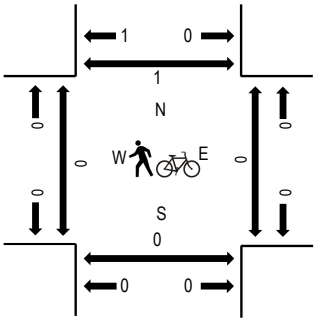
Location: 1 US 36 & MCCONNELL DR AM
Date: Tuesday, December 11, 2018
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

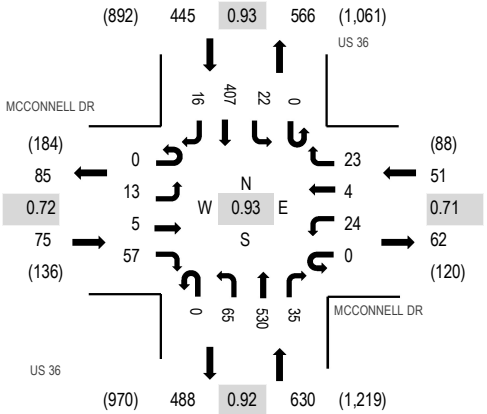
Interval Start Time	MCCONNELL DR Eastbound				MCCONNELL DR Westbound				US 36 Northbound				US 36 Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	4	1	24	0	5	2	4	0	20	47	3	0	3	95	7	215	1,209	0	0	0	0
7:15 AM	0	7	4	55	0	11	10	1	0	61	66	2	0	1	113	23	354	1,279	0	0	0	0
7:30 AM	0	14	4	40	0	11	7	0	0	24	81	4	0	0	112	14	311	1,148	0	0	0	0
7:45 AM	0	24	2	24	0	14	1	14	0	7	90	2	0	3	142	6	329	1,081	0	0	0	0
8:00 AM	0	2	0	22	0	9	1	3	0	7	64	3	0	11	160	3	285	939	0	0	0	0
8:15 AM	0	7	0	22	0	6	0	2	0	6	69	1	0	1	109	0	223		0	0	0	1
8:30 AM	0	0	0	22	0	9	0	3	0	2	69	0	0	2	134	3	244		1	0	1	0
8:45 AM	0	1	0	5	0	5	2	1	0	5	67	2	0	1	96	2	187		0	0	0	0
Count Total	0	59	11	214	0	70	23	28	0	132	553	17	0	22	961	58	2,148		1	0	1	1
Peak Hour	0	47	10	141	0	45	19	18	0	99	301	11	0	15	527	46	#####		0	0	0	0

All Traffic Data Services Inc.

(303) 216-2439
www.alltrafficdata.net

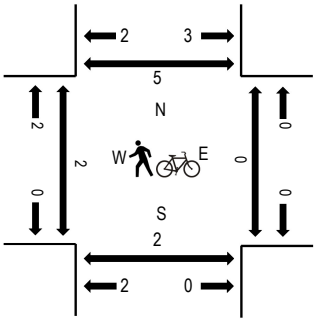
Location: 1 US 36 & MCCONNELL DR PM
Date: Tuesday, December 11, 2018
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 04:30 PM - 04:45 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	MCCONNELL DR Eastbound				MCCONNELL DR Westbound				US 36 Northbound				US 36 Southbound				Total	Rolling Hour	Pedestrain 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	5	4	15	0	7	1	4	0	20	112	12	0	2	117	5	304	1,179	0	0	0	0
4:15 PM	0	2	0	11	0	3	1	4	0	23	109	3	0	3	122	4	285	1,190	0	0	0	0
4:30 PM	0	5	2	22	0	7	2	5	0	16	130	7	0	6	118	4	324	1,201	2	0	2	4
4:45 PM	0	4	2	11	0	2	0	5	0	12	118	11	0	2	96	3	266	1,171	0	0	0	0
5:00 PM	0	3	1	16	0	9	2	7	0	17	133	10	0	5	104	8	315	1,156	0	0	0	0
5:15 PM	0	1	0	8	0	6	0	6	0	20	149	7	0	9	89	1	296		0	0	0	0
5:30 PM	0	2	1	8	0	7	1	2	0	19	133	16	1	5	96	3	294		0	0	0	0
5:45 PM	0	5	0	8	0	5	0	2	0	19	114	9	0	3	83	3	251		0	0	0	0
Count Total	0	27	10	99	0	46	7	35	0	146	998	75	1	35	825	31	2,335		2	0	2	4
Peak Hour	0	13	5	57	0	24	4	23	0	65	530	35	0	22	407	16	#####		2	0	2	4