

HCM Unsignalized Intersection Capacity Analysis

UNM Gibson Commercial District

1: Gibson & West Road

2015 PM Peak Hour - Build - With Left Out at Gibson - Improved

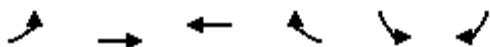
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1450	64	20	2715	165	41	0	26	0	0	162
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	1495	66	21	2799	170	42	0	27	0	0	167
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		Raised			Raised							
Median storage veh		1			1							
Upstream signal (ft)					710							
pX, platoon unblocked	0.56						0.56	0.56		0.56	0.56	0.56
vC, conflicting volume	2969			1561			2669	4538	531	3450	4486	1018
vC1, stage 1 conf vol							1528	1528		2925	2925	
vC2, stage 2 conf vol							1141	3010		525	1561	
vCu, unblocked vol	1776			1561			1242	4568	531	2632	4475	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			58	100	95	100	100	73
cM capacity (veh/h)	195			420			101	44	493	43	47	609
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1			
Volume Total	598	598	365	21	1120	1120	730	69	167			
Volume Left	0	0	0	21	0	0	0	42	0			
Volume Right	0	0	66	0	0	0	170	27	167			
cSH	1700	1700	1700	420	1700	1700	1700	146	609			
Volume to Capacity	0.35	0.35	0.21	0.05	0.66	0.66	0.43	0.47	0.27			
Queue Length 95th (ft)	0	0	0	4	0	0	0	55	28			
Control Delay (s)	0.0	0.0	0.0	14.0	0.0	0.0	0.0	50.1	13.1			
Lane LOS				B				F	B			
Approach Delay (s)	0.0			0.1				50.1	13.1			
Approach LOS								F	B			
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			80.0%			ICU Level of Service			D			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

2: Gibson & Entrance

UNM Gibson Commercial District

2015 PM Peak Hour - Build - With Left Out at Gibson - Improved



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	245	1231	2577	159	135	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	5085	5085	1583	1770	1583
Flt Permitted	0.05	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	94	5085	5085	1583	1770	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	253	1269	2657	164	139	330
RTOR Reduction (vph)	0	0	0	51	0	174
Lane Group Flow (vph)	253	1269	2657	113	139	156
Turn Type	pm+pt			Perm		Over
Protected Phases	7	4	8		6	7
Permitted Phases	4			8		
Actuated Green, G (s)	96.0	96.0	75.2	75.2	16.0	16.8
Effective Green, g (s)	96.0	96.0	75.2	75.2	16.0	16.8
Actuated g/C Ratio	0.80	0.80	0.63	0.63	0.13	0.14
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	310	4068	3187	992	236	222
v/s Ratio Prot	c0.11	0.25	0.52		c0.08	0.10
v/s Ratio Perm	c0.54			0.07		
v/c Ratio	0.82	0.31	0.83	0.11	0.59	0.70
Uniform Delay, d1	39.0	3.2	17.5	9.0	48.9	49.2
Progression Factor	1.00	1.00	0.39	0.02	1.00	1.00
Incremental Delay, d2	15.2	0.0	2.0	0.2	10.4	9.7
Delay (s)	54.2	3.2	8.9	0.3	59.3	58.9
Level of Service	D	A	A	A	E	E
Approach Delay (s)		11.7	8.4		59.0	
Approach LOS		B	A		E	

Intersection Summary

HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis

3: Gibson & University

UNM Gibson Commercial District

2015 PM Peak Hour - Build - With Left Out at Gibson - Improved

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	1165	59	55	2263	190	63	24	55	248	33	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00		0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	1669		3367	1827	1553
Flt Permitted	0.05	1.00	1.00	0.21	1.00	1.00	0.73	1.00		0.95	1.00	1.00
Satd. Flow (perm)	96	5085	1583	387	5085	1583	1369	1669		3367	1827	1553
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	118	1214	61	57	2357	198	66	25	57	258	34	215
RTOR Reduction (vph)	0	0	17	0	0	57	0	53	0	0	0	36
Lane Group Flow (vph)	118	1214	44	57	2357	141	66	29	0	258	34	179
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	4%	4%
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt			Prot		pm+ov
Protected Phases	7	4	5	3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2					6
Actuated Green, G (s)	88.7	79.2	86.5	79.2	73.7	85.5	14.8	7.5		11.8	12.0	23.0
Effective Green, g (s)	88.7	79.2	86.5	79.2	73.7	85.5	14.8	7.5		11.8	12.0	23.0
Actuated g/C Ratio	0.74	0.66	0.72	0.66	0.61	0.71	0.12	0.06		0.10	0.10	0.19
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	224	3356	1194	319	3123	1181	193	104		331	183	349
v/s Ratio Prot	c0.05	0.24	0.00	0.01	c0.46	0.01	0.02	0.02		c0.08	0.02	c0.05
v/s Ratio Perm	0.34		0.03	0.11		0.08	0.02					0.07
v/c Ratio	0.53	0.36	0.04	0.18	0.75	0.12	0.34	0.27		0.78	0.19	0.51
Uniform Delay, d1	24.4	9.1	4.8	7.2	16.6	5.4	47.9	53.7		52.8	49.5	43.5
Progression Factor	1.17	0.89	0.43	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.1	0.1	0.0	0.3	1.7	0.0	1.1	1.4		11.0	0.5	1.3
Delay (s)	30.8	8.2	2.1	7.5	18.4	5.5	49.0	55.1		63.9	50.0	44.7
Level of Service	C	A	A	A	B	A	D	E		E	D	D
Approach Delay (s)		9.8			17.2			52.4			54.8	
Approach LOS		A			B			D			D	
Intersection Summary												
HCM Average Control Delay			20.2			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			73.7%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

4: East Road & University

UNM Gibson Commercial District

2015 PM Peak Hour - Build - With Left Out at Gibson - Improved

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	0	40	4	0	19	14	313	3	12	472	136
Sign Control	Stop				Stop		Free				Free	
Grade	0%				0%		0%				0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	148	0	42	4	0	20	15	326	3	12	492	142
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	729	875	246	669	1015	165	633				329	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	729	875	246	669	1015	165	633				329	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	50	100	94	99	100	98	98				99	
cM capacity (veh/h)	298	279	754	318	231	851	932				1227	
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4		
Volume Total	148	42	24	15	217	112	12	246	246	142		
Volume Left	148	0	4	15	0	0	12	0	0	0		
Volume Right	0	42	20	0	0	3	0	0	0	142		
cSH	298	754	659	932	1700	1700	1227	1700	1700	1700		
Volume to Capacity	0.50	0.06	0.04	0.02	0.13	0.07	0.01	0.14	0.14	0.08		
Queue Length 95th (ft)	65	4	3	1	0	0	1	0	0	0		
Control Delay (s)	28.5	10.1	10.7	8.9	0.0	0.0	8.0	0.0	0.0	0.0		
Lane LOS	D	B	B	A				A				
Approach Delay (s)	24.4	10.7		0.4	0.2							
Approach LOS	C	B										
Intersection Summary												
Average Delay	4.3											
Intersection Capacity Utilization	34.2%			ICU Level of Service					A			
Analysis Period (min)	15											

HCM Signalized Intersection Capacity Analysis

5: Cesar Chavez & University

UNM Gibson Commercial District

2015 PM Peak Hour - Build - With Left Out at Gibson - Improved

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	387	476	143	104	506	122	159	325	74	138	386	342
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4909		1770	3436		1770	3539	1583	1770	3539	1583
Flt Permitted	0.25	1.00		0.33	1.00		0.35	1.00	1.00	0.52	1.00	1.00
Satd. Flow (perm)	457	4909		620	3436		651	3539	1583	963	3539	1583
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	425	523	157	114	556	134	175	357	81	152	424	376
RTOR Reduction (vph)	0	77	0	0	31	0	0	0	56	0	0	53
Lane Group Flow (vph)	425	603	0	114	659	0	175	357	25	152	424	323
Turn Type	pm+pt			pm+pt			pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	34.9	26.1		22.4	17.6		19.4	14.9	19.7	16.8	13.6	26.9
Effective Green, g (s)	34.9	26.1		22.4	17.6		19.4	14.9	19.7	16.8	13.6	26.9
Actuated g/C Ratio	0.54	0.40		0.34	0.27		0.30	0.23	0.30	0.26	0.21	0.41
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	514	1971		299	930		272	811	480	289	740	655
v/s Ratio Prot	c0.17	0.12		0.03	0.19		c0.04	0.10	0.00	0.03	0.12	0.10
v/s Ratio Perm	c0.27			0.10			c0.15		0.01	0.11		0.10
v/c Ratio	0.83	0.31		0.38	0.71		0.64	0.44	0.05	0.53	0.57	0.49
Uniform Delay, d1	17.2	13.3		18.4	21.4		18.4	21.5	16.0	19.8	23.1	14.0
Progression Factor	0.62	0.13		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.9	0.3		0.8	4.5		5.1	0.4	0.0	1.7	1.1	0.6
Delay (s)	19.6	2.1		19.2	25.9		23.5	21.9	16.1	21.5	24.2	14.6
Level of Service	B	A		B	C		C	C	B	C	C	B
Approach Delay (s)		8.8			25.0			21.6			20.0	
Approach LOS		A			C			C			B	
Intersection Summary												
HCM Average Control Delay			17.9			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			72.1%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: Cesar Chavez & Langham

UNM Gibson Commercial District
2015 PM Peak Hour - Build - With Left Out at Gibson - Improved

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	128	1039	134	4	1256	1	136	1	33	6	0	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Flt	1.00	0.98		1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4998		1770	5085		1770	1590		1770	1583	
Flt Permitted	0.23	1.00		0.23	1.00		0.48	1.00		0.73	1.00	
Satd. Flow (perm)	428	4998		428	5085		886	1590		1362	1583	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	151	1222	158	5	1478	1	160	1	39	7	0	241
RTOR Reduction (vph)	0	26	0	0	0	0	0	25	0	0	162	0
Lane Group Flow (vph)	151	1354	0	5	1479	0	160	15	0	7	79	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.8	23.8		18.2	18.2		26.8	23.6		22.0	21.2	
Effective Green, g (s)	23.8	23.8		18.2	18.2		26.8	23.6		22.0	21.2	
Actuated g/C Ratio	0.37	0.37		0.28	0.28		0.41	0.36		0.34	0.33	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	289	1830		136	1424		409	577		466	516	
v/s Ratio Prot	0.05	c0.27		0.00	c0.29		c0.02	0.01		0.00	0.05	
v/s Ratio Perm	0.14			0.01			c0.14			0.00		
v/c Ratio	0.52	0.74		0.04	1.04		0.39	0.03		0.02	0.15	
Uniform Delay, d1	23.8	17.9		18.3	23.4		13.2	13.3		14.3	15.5	
Progression Factor	1.00	1.00		0.83	0.77		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	1.6		0.1	33.3		0.6	0.1		0.0	0.6	
Delay (s)	25.5	19.5		15.3	51.4		13.8	13.4		14.3	16.2	
Level of Service	C	B		B	D		B	B		B	B	
Approach Delay (s)		20.1			51.3			13.7			16.1	
Approach LOS		C			D			B			B	
Intersection Summary												
HCM Average Control Delay			32.8			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			65.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			64.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												