

HCM Unsignalized Intersection Capacity Analysis

1: Gibson & West Road

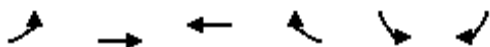
UNM Gibson Commercial District
2015 PM Peak Hour - Build - No Left Out at Gibson

												
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)												
pX, platoon unblocked												
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	2969			1561			2669	4538	531	3450	4486	1018
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			0	100	95	100	100	29
cM capacity (veh/h)	116			420			37	23	493	13	24	235
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	58	235			
Volume to Capacity	0.35	0.35	0.21	0.05	0.66	0.66	0.43	1.18	0.71			
Queue Length 95th (ft)	0	0	0	4	0	0	0	145	118			
Control Delay (s)	0.0	0.0	0.0	14.0	0.0	0.0	0.0	294.0	50.9			
Lane LOS				B				F	F			
Approach Delay (s)	0.0			0.1				294.0	50.9			
Approach LOS								F	F			
Intersection Summary												
Average Delay			6.1									
Intersection Capacity Utilization			80.0%			ICU Level of Service			D			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

2: Gibson & Entrance

UNM Gibson Commercial District
2015 PM Peak Hour - Build - No Left Out at Gibson



Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations		  	  						
Volume (veh/h)	245	1231	2577	159	0	320			
Sign Control		Free	Free		Stop				
Grade		0%	0%		0%				
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97			
Hourly flow rate (vph)	253	1269	2657	164	0	330			
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)			718						
pX, platoon unblocked	0.59				0.59	0.59			
vC, conflicting volume	2821				3585	886			
vC1, stage 1 conf vol					2657				
vC2, stage 2 conf vol					928				
vCu, unblocked vol	1675				2960	0			
tC, single (s)	4.1				6.8	6.9			
tC, 2 stage (s)					5.8				
tF (s)	2.2				3.5	3.3			
p0 queue free %	0				0	49			
cM capacity (veh/h)	225				0	645			
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	SB 1
Volume Total	253	423	423	423	886	886	886	164	330
Volume Left	253	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	164	330
cSH	225	1700	1700	1700	1700	1700	1700	1700	645
Volume to Capacity	1.12	0.25	0.25	0.25	0.52	0.52	0.52	0.10	0.51
Queue Length 95th (ft)	290	0	0	0	0	0	0	0	73
Control Delay (s)	142.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.3
Lane LOS	F								C
Approach Delay (s)	23.6				0.0				16.3
Approach LOS									C
Intersection Summary									
Average Delay			8.8						
Intersection Capacity Utilization			76.3%		ICU Level of Service				D
Analysis Period (min)			15						

HCM Signalized Intersection Capacity Analysis

3: Gibson & University

UNM Gibson Commercial District
2015 PM Peak Hour - Build - No Left Out at Gibson

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	113	1055	59	55	2263	190	63	24	55	358	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		1.00	1.00	1.00
Flt Protected	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90		1.00	1.00	0.85
Flt Permitted	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		1736	1827	1553
Satd. Flow (perm)	180	5085	1583	350	5085	1583	1369	1669		866	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	1099	61	57	2357	198	66	25	57	373	34	215
RTOR Reduction (vph)	0	0	21	0	0	69	0	52	0	0	0	50
Lane Group Flow (vph)	118	1099	40	57	2357	129	66	30	0	373	34	165
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			pm+pt		pm+ov
Protected Phases	7	4	5	3	8	1	5	2		1	6	7
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)	47.0	47.0	52.9	44.1	44.1	53.2	12.5	6.6		18.9	9.8	15.5
Effective Green, g (s)	47.0	47.0	52.9	44.1	44.1	53.2	12.5	6.6		18.9	9.8	15.5
Actuated g/C Ratio	0.58	0.58	0.65	0.54	0.54	0.65	0.15	0.08		0.23	0.12	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)	215	2932	1105	238	2752	1033	239	135		298	220	295
v/s Ratio Prot	c0.04	0.22	0.00	0.01	c0.46	0.01	0.02	0.02		c0.14	0.02	0.04
v/s Ratio Perm	0.28		0.02	0.12		0.07	0.02			c0.15		0.07
v/c Ratio	0.55	0.37	0.04	0.24	0.86	0.13	0.28	0.22		1.25	0.15	0.56
Uniform Delay, d1	27.2	9.3	5.1	9.6	16.0	5.4	30.3	35.0		30.3	32.1	29.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.9	0.1	0.0	0.5	2.8	0.1	0.6	0.8		137.9	0.3	2.3
Delay (s)	30.1	9.4	5.2	10.1	18.8	5.4	31.0	35.9		168.2	32.5	32.2
Level of Service	C	A	A	B	B	A	C	D		F	C	C
Approach Delay (s)		11.1			17.6			33.7			113.8	
Approach LOS		B			B			C			F	
Intersection Summary												
HCM Average Control Delay			29.2			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			81.5			Sum of lost time (s)				12.0		
Intersection Capacity Utilization			86.5%			ICU Level of Service				E		
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 - No Left Out at Gibson

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	0	150	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	156	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	784	1015	165	633				329	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	729	875	246	784	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	79	98	100	98	98				99	
cM capacity (veh/h)	298	279	754	220	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	156	24	15	217	112	12	246	246	142		
Volume Left	148	0	4	15	0	0	12	0	0	0		
Volume Right	0	156	20	0	0	3	0	0	0	142		
cSH	298	754	568	932	1700	1700	1227	1700	1700	1700		
Volume to Capacity	0.50	0.21	0.04	0.02	0.13	0.07	0.01	0.14	0.14	0.08		
Queue Length 95th (ft)	65	19	3	1	0	0	1	0	0	0		
Control Delay (s)	28.5	11.0	11.6	8.9	0.0	0.0	8.0	0.0	0.0	0.0		
Lane LOS	D	B	B	A				A				
Approach Delay (s)	19.5	11.6		0.4	0.2							
Approach LOS	C	B										
Intersection Summary												
Average Delay			4.9									
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 - No Left Out at Gibson

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	387	476	143	95	506	122	159	325	74	138	370	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	0.23	1.00		0.31	1.00		0.41	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)	433	4909		583	3436		757	3539	1583	869	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	104	556	134	175	357	81	152	407	376
RTOR Reduction (vph)	0	90	0	0	32	0	0	0	50	0	0	55
Lane Group Flow (vph)	425	590	0	104	658	0	175	357	31	152	407	321
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)	32.5	18.4		25.9	15.1		15.1	12.1	22.9	15.1	12.1	26.2
Effective Green, g (s)	32.5	18.4		25.9	15.1		15.1	12.1	22.9	15.1	12.1	26.2
Actuated g/C Ratio	0.54	0.31		0.43	0.25		0.25	0.20	0.38	0.25	0.20	0.43
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)	546	1498		463	860		240	710	601	262	710	688
v/s Ratio Prot	c0.18	0.12		0.04	0.19		c0.04	0.10	0.01	0.03	0.11	0.11
v/s Ratio Perm	c0.24			0.06			c0.15		0.01	0.12		0.09
v/c Ratio	0.78	0.39		0.22	0.76		0.73	0.50	0.05	0.58	0.57	0.47
Uniform Delay, d1	15.6	16.5		13.4	21.0		20.1	21.4	11.8	19.1	21.8	12.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.9	0.2		0.2	4.1		10.6	0.6	0.0	3.2	1.1	0.5
Delay (s)	22.5	16.7		13.6	25.0		30.6	22.0	11.9	22.3	22.9	12.6
Level of Service	C	B		B	C		C	C	B	C	C	B
Approach Delay (s)		18.9			23.5			23.1			18.7	
Approach LOS		B			C			C			B	
Intersection Summary												
HCM Average Control Delay			20.7			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			60.3			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			71.7%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

6: Cesar Chavez & Langham

UNM Gibson Commercial District
2015 PM Peak Hour - Build - No Left Out at Gibson

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Volume (veh/h)	128	1039	134	4	1256	1	136	1	33	6	0	205
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	151	1222	158	5	1478	1	160	1	39	7	0	241
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)												
pX, platoon unblocked												
vC, conflicting volume	1479			1380			2345	3091	486	2236	3169	493
vC1, stage 1 conf vol							1602	1602		1488	1488	
vC2, stage 2 conf vol							743	1488		748	1681	
vCu, unblocked vol	1479			1380			2345	3091	486	2236	3169	493
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 %	67			99			0	95	93	91	100	54
cM capacity (veh/h)	451			493			30	26	527	81	60	522
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	SB 1	SB 2
Volume Total	151	489	489	402	5	591	591	297	160	40	7	241
Volume Left	151	0	0	0	5	0	0	0	160	0	7	0
Volume Right	0	0	0	158	0	0	0	1	0	39	0	241
cSH	451	1700	1700	1700	493	1700	1700	1700	30	336	81	522
Volume to Capacity	0.33	0.29	0.29	0.24	0.01	0.35	0.35	0.17	5.37	0.12	0.09	0.46
Queue Length 95th (ft)	36	0	0	0	1	0	0	0	Err	10	7	60
Control Delay (s)	16.9	0.0	0.0	0.0	12.4	0.0	0.0	0.0	Err	17.2	53.7	17.7
Lane LOS	C				B				F	C	F	C
Approach Delay (s)	1.7				0.0				8002.6		18.7	
Approach LOS									F		C	
Intersection Summary												
Average Delay				464.4								
Intersection Capacity Utilization			64.9%		ICU Level of Service				C			
Analysis Period (min)			15									