

HCM Unsignalized Intersection Capacity Analysis

1: Gibson & West Road

UNM Gibson Commercial District
2011 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↵	↑↑↑			↔				↵
Volume (veh/h)	0	1166	61	19	2399	0	39	0	25	0	0	0
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	1202	63	20	2473	0	40	0	26	0	0	0
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	2473			1265			2097	3746	432	2939	3777	824
vC1, stage 1 conf vol							1234	1234		2512	2512	
vC2, stage 2 conf vol							864	2512		426	1265	
vCu, unblocked vol	2473			1265			2097	3746	432	2939	3777	824
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			96			66	100	95	100	100	100
cM capacity (veh/h)	184			545			118	42	572	24	41	316
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1			
Volume Total	481	481	303	20	989	989	495	66	0			
Volume Left	0	0	0	20	0	0	0	40	0			
Volume Right	0	0	63	0	0	0	0	26	0			
cSH	1700	1700	1700	545	1700	1700	1700	171	1700			
Volume to Capacity	0.28	0.28	0.18	0.04	0.58	0.58	0.29	0.39	0.00			
Queue Length 95th (ft)	0	0	0	3	0	0	0	42	0			
Control Delay (s)	0.0	0.0	0.0	11.8	0.0	0.0	0.0	38.6	0.0			
Lane LOS				B				E	A			
Approach Delay (s)	0.0			0.1				38.6	0.0			
Approach LOS								E	A			
Intersection Summary												
Average Delay			0.7									
Intersection Capacity Utilization			56.7%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Gibson & University

UNM Gibson Commercial District
2011 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	999	56	52	2009	169	60	23	52	190	31	156
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)	222	5085	1583	454	5085	1583	1049	1669		1624	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)	111	1041	58	54	2093	176	62	24	54	198	32	162
RTOR Reduction (vph)	0	0	21	0	0	75	0	48	0	0	0	74
Lane Group Flow (vph)	111	1041	37	54	2093	101	62	30	0	198	32	88
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)	37.6	33.6	40.6	34.2	31.9	36.3	14.1	7.1		8.9	4.5	8.5
Effective Green, g (s)	37.6	33.6	40.6	34.2	31.9	36.3	14.1	7.1		8.9	4.5	8.5
Actuated g/C Ratio	0.59	0.53	0.64	0.54	0.50	0.57	0.22	0.11		0.14	0.07	0.13
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)	229	2695	1114	293	2559	1006	313	187		236	130	306
v/s Ratio Prot	c0.03	0.20	0.00	0.01	c0.41	0.01	c0.02	0.02		c0.06	0.02	0.02
v/s Ratio Perm	0.26		0.02	0.09		0.06	0.02			c0.06		0.04
v/c Ratio	0.48	0.39	0.03	0.18	0.82	0.10	0.20	0.16		0.84	0.25	0.29
Uniform Delay, d1	9.9	8.8	4.2	7.0	13.3	6.1	19.9	25.5		26.5	27.8	24.7
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	1.6	0.1	0.0	0.3	2.1	0.0	0.3	0.4		22.2	1.0	0.5
Delay (s)	11.5	8.9	4.2	7.3	15.4	6.2	20.2	25.9		48.6	28.8	25.2
Level of Service	B	A	A	A	B	A	C	C		D	C	C
Approach Delay (s)		8.9			14.6			23.4			37.3	
Approach LOS		A			B			C			D	
Intersection Summary												
HCM Average Control Delay			15.4			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			63.4			Sum of lost time (s)			24.0			
Intersection Capacity Utilization			71.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

4: East Road & University

UNM Gibson Commercial District

2011 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	4	0	18	0	299	3	11	377	0
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)	0	0	0	4	0	19	0	311	3	11	393	0
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	590	730	196	532	729	157	393			315		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	590	730	196	532	729	157	393			315		
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 %	100	100	100	99	100	98	100			99		
cM capacity (veh/h)	380	344	812	427	345	860	1148			1242		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4		
Volume Total	0	0	23	0	208	107	11	196	196	0		
Volume Left	0	0	4	0	0	0	11	0	0	0		
Volume Right	0	0	19	0	0	3	0	0	0	0		
cSH	1700	1700	726	1700	1700	1700	1242	1700	1700	1700		
Volume to Capacity	0.00	0.00	0.03	0.00	0.12	0.06	0.01	0.12	0.12	0.00		
Queue Length 95th (ft)	0	0	2	0	0	0	1	0	0	0		
Control Delay (s)	0.0	0.0	10.1	0.0	0.0	0.0	7.9	0.0	0.0	0.0		
Lane LOS	A	A	B				A					
Approach Delay (s)	0.0		10.1	0.0				0.2				
Approach LOS	A		B									
Intersection Summary												
Average Delay	0.4											
Intersection Capacity Utilization	20.4%			ICU Level of Service			A					
Analysis Period (min)	15											

HCM Signalized Intersection Capacity Analysis

5: Cesar Chavez & University

UNM Gibson Commercial District

2011 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	327	437	102	33	479	116	142	221	25	131	243	305
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
Flt	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	4941		1770	3436		1770	3539	1583	1770	3539	1583
Flt Permitted	0.23	1.00		0.42	1.00		0.59	1.00	1.00	0.60	1.00	1.00
Satd. Flow (perm)	424	4941		778	3436		1094	3539	1583	1119	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)	359	480	112	36	526	127	156	243	27	144	267	335
RTOR Reduction (vph)	0	56	0	0	34	0	0	0	21	0	0	103
Lane Group Flow (vph)	359	536	0	36	619	0	156	243	6	144	267	232
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)	27.9	21.7		17.9	15.7		12.2	9.2	11.4	12.2	9.2	17.4
Effective Green, g (s)	27.9	21.7		17.9	15.7		12.2	9.2	11.4	12.2	9.2	17.4
Actuated g/C Ratio	0.54	0.42		0.34	0.30		0.23	0.18	0.22	0.23	0.18	0.33
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)	439	2058		309	1035		295	625	468	300	625	650
v/s Ratio Prot	c0.13	0.11		0.00	0.18		c0.03	0.07	0.00	0.03	0.08	0.06
v/s Ratio Perm	c0.31			0.04			c0.09		0.00	0.08		0.09
v/c Ratio	0.82	0.26		0.12	0.60		0.53	0.39	0.01	0.48	0.43	0.36
Uniform Delay, d1	8.4	9.9		11.5	15.5		16.8	19.0	15.9	16.7	19.1	13.1
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	11.3	0.1		0.2	0.9		1.7	0.4	0.0	1.2	0.5	0.3
Delay (s)	19.7	10.0		11.6	16.5		18.5	19.4	16.0	17.9	19.6	13.5
Level of Service	B	B		B	B		B	B	B	B	B	B
Approach Delay (s)		13.7			16.2			18.8			16.5	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM Average Control Delay			15.8			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			52.1			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			63.0%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

6: Cesar Chavez & Langham

UNM Gibson Commercial District
2011 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Volume (veh/h)	121	858	0	4	1175	1	11	0	25	4	0	194
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)	142	1009	0	5	1382	1	13	0	29	5	0	228
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	1384			1009			1993	2687	336	2043	2686	461
vC1, stage 1 conf vol							1294	1294		1392	1392	
vC2, stage 2 conf vol							698	1393		651	1294	
vCu, unblocked vol	1384			1009			1993	2687	336	2043	2686	461
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 %	71			99			76	100	96	95	100	58
cM capacity (veh/h)	491			682			54	47	659	99	89	547
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	142	404	404	202	5	553	553	278	13	29	5	228
Volume Left	142	0	0	0	5	0	0	0	13	0	5	0
Volume Right	0	0	0	0	0	0	0	1	0	29	0	228
cSH	491	1700	1700	1700	682	1700	1700	1700	54	659	99	547
Volume to Capacity	0.29	0.24	0.24	0.12	0.01	0.33	0.33	0.16	0.24	0.04	0.05	0.42
Queue Length 95th (ft)	30	0	0	0	1	0	0	0	21	3	4	51
Control Delay (s)	15.3	0.0	0.0	0.0	10.3	0.0	0.0	0.0	92.4	10.7	43.3	16.2
Lane LOS	C				B				F	B	E	C
Approach Delay (s)	1.9				0.0				35.7		16.8	
Approach LOS									E		C	
Intersection Summary												
Average Delay				2.7								
Intersection Capacity Utilization			51.4%		ICU Level of Service				A			
Analysis Period (min)			15									