

HCM Unsignalized Intersection Capacity Analysis

1: Gibson & West Road

UNM Gibson Commercial District

2015 No Build PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↵	↑↑↑			↔				↵
Volume (veh/h)	0	1231	64	20	2533	0	41	0	26	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	1269	66	21	2611	0	42	0	27	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	2611			1335			2214	3955	456	3102	3988	870
vC1, stage 1 conf vol							1302	1302		2653	2653	
vC2, stage 2 conf vol							912	2653		450	1335	
vCu, unblocked vol	2611			1335			2214	3955	456	3102	3988	870
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			60	100	95	100	100	100
cM capacity (veh/h)	162			513			107	35	551	20	34	295
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1			
Volume Total	508	508	320	21	1045	1045	522	69	0			
Volume Left	0	0	0	21	0	0	0	42	0			
Volume Right	0	0	66	0	0	0	0	27	0			
cSH	1700	1700	1700	513	1700	1700	1700	156	1700			
Volume to Capacity	0.30	0.30	0.19	0.04	0.61	0.61	0.31	0.44	0.00			
Queue Length 95th (ft)	0	0	0	3	0	0	0	50	0			
Control Delay (s)	0.0	0.0	0.0	12.3	0.0	0.0	0.0	45.4	0.0			
Lane LOS				B				E	A			
Approach Delay (s)	0.0			0.1				45.4	0.0			
Approach LOS								E	A			
Intersection Summary												
Average Delay			0.8									
Intersection Capacity Utilization			59.5%			ICU Level of Service			B			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Gibson & University

UNM Gibson Commercial District
2015 No Build PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Volume (vph)	113	1055	59	55	2122	178	63	24	55	201	33	165
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
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		1736	1827	1553
Flt Permitted	0.12	1.00	1.00	0.22	1.00	1.00	0.56	1.00		0.89	1.00	1.00
Satd. Flow (perm)	226	5085	1583	408	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)	118	1099	61	57	2210	185	66	25	57	209	34	172
RTOR Reduction (vph)	0	0	23	0	0	79	0	51	0	0	0	74
Lane Group Flow (vph)	118	1099	38	57	2210	106	66	31	0	209	34	98
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)	37.0	33.0	40.0	34.8	31.9	36.3	14.1	7.1		8.9	4.5	8.5
Effective Green, g (s)	37.0	33.0	40.0	34.8	31.9	36.3	14.1	7.1		8.9	4.5	8.5
Actuated g/C Ratio	0.58	0.52	0.63	0.55	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	2647	1099	286	2559	1006	313	187		236	130	306
v/s Ratio Prot	0.03	0.22	0.00	0.01	c0.43	0.01	c0.02	0.02		c0.06	0.02	c0.02
v/s Ratio Perm	0.27		0.02	0.10		0.06	0.02			c0.06		0.04
v/c Ratio	0.52	0.42	0.04	0.20	0.86	0.11	0.21	0.17		0.89	0.26	0.32
Uniform Delay, d1	10.8	9.3	4.4	6.8	13.8	6.2	20.0	25.5		26.7	27.9	24.8
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	2.0	0.1	0.0	0.3	3.3	0.0	0.3	0.4		30.1	1.1	0.6
Delay (s)	12.7	9.4	4.4	7.1	17.1	6.2	20.3	25.9		56.8	29.0	25.4
Level of Service	B	A	A	A	B	A	C	C		E	C	C
Approach Delay (s)		9.5			16.1			23.4			41.5	
Approach LOS		A			B			C			D	
Intersection Summary												
HCM Average Control Delay			16.8			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			63.4			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			75.1%			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 No Build 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	19	0	316	3	12	398	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	20	0	329	3	12	415	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	624	772	207	563	770	166	415			332		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	624	772	207	563	770	166	415			332		
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)	358	325	799	406	326	849	1127			1224		
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	24	0	219	113	12	207	207	0		
Volume Left	0	0	4	0	0	0	12	0	0	0		
Volume Right	0	0	20	0	0	3	0	0	0	0		
cSH	1700	1700	713	1700	1700	1700	1224	1700	1700	1700		
Volume to Capacity	0.00	0.00	0.03	0.00	0.13	0.07	0.01	0.12	0.12	0.00		
Queue Length 95th (ft)	0	0	3	0	0	0	1	0	0	0		
Control Delay (s)	0.0	0.0	10.2	0.0	0.0	0.0	8.0	0.0	0.0	0.0		
Lane LOS	A	A	B				A					
Approach Delay (s)	0.0		10.2	0.0			0.2					
Approach LOS	A		B									
Intersection Summary												
Average Delay	0.4											
Intersection Capacity Utilization	21.0%			ICU Level of Service			A					
Analysis Period (min)	15											

HCM Signalized Intersection Capacity Analysis

5: Cesar Chavez & University

UNM Gibson Commercial District
2015 No Build PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	361	461	108	35	506	122	159	233	26	138	257	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	4940		1770	3436		1770	3539	1583	1770	3539	1583
Flt Permitted	0.21	1.00		0.40	1.00		0.58	1.00	1.00	0.59	1.00	1.00
Satd. Flow (perm)	390	4940		752	3436		1078	3539	1583	1105	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)	397	507	119	38	556	134	175	256	29	152	282	376
RTOR Reduction (vph)	0	56	0	0	33	0	0	0	23	0	0	90
Lane Group Flow (vph)	397	570	0	38	657	0	175	256	6	152	282	286
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)	28.2	22.0		18.2	16.0		12.4	9.4	11.6	12.4	9.4	17.6
Effective Green, g (s)	28.2	22.0		18.2	16.0		12.4	9.4	11.6	12.4	9.4	17.6
Actuated g/C Ratio	0.54	0.42		0.35	0.30		0.24	0.18	0.22	0.24	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)	424	2066		303	1045		294	632	469	298	632	650
v/s Ratio Prot	c0.15	0.12		0.01	0.19		c0.03	0.07	0.00	0.03	0.08	0.07
v/s Ratio Perm	c0.36			0.04			c0.11		0.00	0.09		0.11
v/c Ratio	0.94	0.28		0.13	0.63		0.60	0.41	0.01	0.51	0.45	0.44
Uniform Delay, d1	9.3	10.1		11.5	15.7		17.2	19.1	16.0	16.8	19.3	13.7
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	28.0	0.1		0.2	1.2		3.2	0.4	0.0	1.5	0.5	0.5
Delay (s)	37.3	10.1		11.7	16.9		20.4	19.6	16.0	18.3	19.8	14.1
Level of Service	D	B		B	B		C	B	B	B	B	B
Approach Delay (s)	20.7			16.7			19.7			16.9		
Approach LOS	C			B			B			B		
Intersection Summary												
HCM Average Control Delay			18.5	HCM Level of Service			B					
HCM Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			52.6	Sum of lost time (s)			12.0					
Intersection Capacity Utilization			67.1%	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 No Build PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	128	963	0	4	1256	1	30	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	1133	0	5	1478	1	35	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			1133			2177	2922	378	2206	2922	493
vC1, stage 1 conf vol							1434	1434		1488	1488	
vC2, stage 2 conf vol							743	1488		718	1434	
vCu, unblocked vol	1479			1133			2177	2922	378	2206	2922	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	96	94	91	100	54
cM capacity (veh/h)	451			612			33	27	620	83	73	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	453	453	227	5	591	591	297	35	40	7	241
Volume Left	151	0	0	0	5	0	0	0	35	0	7	0
Volume Right	0	0	0	0	0	0	0	1	0	39	0	241
cSH	451	1700	1700	1700	612	1700	1700	1700	33	379	83	522
Volume to Capacity	0.33	0.27	0.27	0.13	0.01	0.35	0.35	0.17	1.06	0.11	0.09	0.46
Queue Length 95th (ft)	36	0	0	0	1	0	0	0	94	9	7	60
Control Delay (s)	16.9	0.0	0.0	0.0	10.9	0.0	0.0	0.0	355.0	15.6	52.5	17.7
Lane LOS	C				B				F	C	F	C
Approach Delay (s)	2.0				0.0				174.7		18.7	
Approach LOS									F		C	
Intersection Summary												
Average Delay	6.6											
Intersection Capacity Utilization	60.7%			ICU Level of Service			B					
Analysis Period (min)	15											