

HCM Unsignalized Intersection Capacity Analysis

UNM Gibson Commercial District

1: Gibson & West Road

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

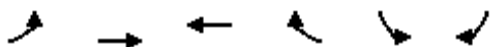
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	2523	32	15	1058	171	16	0	22	0	0	157
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	2656	34	16	1114	180	17	0	23	0	0	165
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	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	1294			2689			3241	3998	902	2144	3925	461
vC1, stage 1 conf vol							2673	2673		1235	1235	
vC2, stage 2 conf vol							568	1325		908	2689	
vCu, unblocked vol	968			2689			3113	3947	902	1904	3866	51
tC, single (s)	4.1			4.2			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			89			15	100	92	100	100	82
cM capacity (veh/h)	642			146			20	36	281	128	25	914
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1			
Volume Total	1062	1062	565	16	445	445	403	40	165			
Volume Left	0	0	0	16	0	0	0	17	0			
Volume Right	0	0	34	0	0	0	180	23	165			
cSH	1700	1700	1700	146	1700	1700	1700	43	914			
Volume to Capacity	0.62	0.62	0.33	0.11	0.26	0.26	0.24	0.93	0.18			
Queue Length 95th (ft)	0	0	0	9	0	0	0	92	16			
Control Delay (s)	0.0	0.0	0.0	32.7	0.0	0.0	0.0	260.3	9.8			
Lane LOS				D				F	A			
Approach Delay (s)	0.0			0.4				260.3	9.8			
Approach LOS								F	A			
Intersection Summary												
Average Delay			3.0									
Intersection Capacity Utilization			59.5%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

2: Gibson & Entrance

UNM Gibson Commercial District

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	54	2491	1174	46	33	71
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	4988	1553	1770	1583
Flt Permitted	0.18	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	343	5085	4988	1553	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	2622	1236	48	35	75
RTOR Reduction (vph)	0	0	0	15	0	71
Lane Group Flow (vph)	57	2622	1236	33	35	4
Heavy Vehicles (%)	2%	2%	4%	4%	2%	2%
Turn Type	pm+pt			Perm		Over
Protected Phases	7	4	8		6	7
Permitted Phases	4			8		
Actuated Green, G (s)	86.0	86.0	76.3	76.3	16.0	5.7
Effective Green, g (s)	86.0	86.0	76.3	76.3	16.0	5.7
Actuated g/C Ratio	0.78	0.78	0.69	0.69	0.15	0.05
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)	342	3976	3460	1077	257	82
v/s Ratio Prot	0.01	c0.52	0.25		c0.02	0.00
v/s Ratio Perm	0.12			0.02		
v/c Ratio	0.17	0.66	0.36	0.03	0.14	0.05
Uniform Delay, d1	3.4	5.4	6.9	5.3	41.0	49.6
Progression Factor	1.00	1.00	0.30	0.05	1.00	1.00
Incremental Delay, d2	0.2	0.9	0.1	0.0	1.1	0.2
Delay (s)	3.6	6.3	2.1	0.3	42.1	49.8
Level of Service	A	A	A	A	D	D
Approach Delay (s)		6.2	2.0		47.3	
Approach LOS		A	A		D	

Intersection Summary

HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Gibson & University

UNM Gibson Commercial District

2015 AM 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)	180	2291	31	26	1098	130	62	30	54	200	20	127
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)	1752	5036	1568	1736	4988	1553	1752	1666		3273	1776	1509
Flt Permitted	0.17	1.00	1.00	0.06	1.00	1.00	0.73	1.00		0.95	1.00	1.00
Satd. Flow (perm)	321	5036	1568	118	4988	1553	1355	1666		3273	1776	1509
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	194	2463	33	28	1181	140	67	32	58	215	22	137
RTOR Reduction (vph)	0	0	8	0	0	45	0	53	0	0	0	79
Lane Group Flow (vph)	194	2463	25	28	1181	95	67	37	0	215	22	58
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	3%	3%	3%	7%	7%	7%
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)	72.3	72.3	83.0	64.3	64.3	74.9	19.4	8.7		10.6	8.6	19.0
Effective Green, g (s)	72.3	72.3	83.0	64.3	64.3	74.9	19.4	8.7		10.6	8.6	19.0
Actuated g/C Ratio	0.66	0.66	0.75	0.58	0.58	0.68	0.18	0.08		0.10	0.08	0.17
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)	346	3310	1183	104	2916	1114	278	132		315	139	316
v/s Ratio Prot	0.05	c0.49	0.00	0.01	c0.24	0.01	0.02	c0.02		c0.07	0.01	0.02
v/s Ratio Perm	0.32		0.01	0.15		0.05	0.02					0.02
v/c Ratio	0.56	0.74	0.02	0.27	0.41	0.09	0.24	0.28		0.68	0.16	0.18
Uniform Delay, d1	9.0	12.6	3.4	23.1	12.4	5.9	38.8	47.7		48.1	47.3	38.9
Progression Factor	1.51	0.69	0.57	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.6	1.2	0.0	1.4	0.1	0.0	0.5	1.1		6.0	0.5	0.3
Delay (s)	15.2	9.9	1.9	24.5	12.5	6.0	39.2	48.8		54.1	47.9	39.2
Level of Service	B	A	A	C	B	A	D	D		D	D	D
Approach Delay (s)		10.2			12.1			44.7			48.2	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM Average Control Delay			15.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			70.0%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

UNM Gibson Commercial District

4: East Road & University

2015 AM 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)	41	0	4	1	0	2	5	334	6	17	343	58
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	44	0	4	1	0	2	5	359	6	18	369	62
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	598	782	184	598	841	183	431			366		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	598	782	184	598	841	183	431			366		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			2.2		
p0 queue free %	88	100	99	100	100	100	100			98		
cM capacity (veh/h)	379	318	826	378	294	828	1090			1182		
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4		
Volume Total	44	4	3	5	239	126	18	184	184	62		
Volume Left	44	0	1	5	0	0	18	0	0	0		
Volume Right	0	4	2	0	0	6	0	0	0	62		
cSH	379	826	593	1090	1700	1700	1182	1700	1700	1700		
Volume to Capacity	0.12	0.01	0.01	0.00	0.14	0.07	0.02	0.11	0.11	0.04		
Queue Length 95th (ft)	10	0	0	0	0	0	1	0	0	0		
Control Delay (s)	15.7	9.4	11.1	8.3	0.0	0.0	8.1	0.0	0.0	0.0		
Lane LOS	C	A	B	A			A					
Approach Delay (s)	15.2		11.1	0.1			0.3					
Approach LOS	C		B									
Intersection Summary												
Average Delay	1.1											
Intersection Capacity Utilization	26.5%			ICU Level of Service					A			
Analysis Period (min)	15											

HCM Signalized Intersection Capacity Analysis

5: Cesar Chavez & University

UNM Gibson Commercial District

2015 AM 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)	437	399	195	62	314	91	59	235	50	67	238	76
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	0.95		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	4835		1770	3420		1770	3539	1583	1770	3539	1583
Flt Permitted	0.38	1.00		0.39	1.00		0.57	1.00	1.00	0.51	1.00	1.00
Satd. Flow (perm)	701	4835		721	3420		1070	3539	1583	948	3539	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	491	448	219	70	353	102	63	250	53	73	259	83
RTOR Reduction (vph)	0	104	0	0	29	0	0	0	41	0	0	51
Lane Group Flow (vph)	491	563	0	70	427	0	63	250	12	73	259	32
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)	48.3	38.9		32.9	27.5		13.9	11.5	16.9	15.5	12.3	29.1
Effective Green, g (s)	48.3	38.9		32.9	27.5		13.9	11.5	16.9	15.5	12.3	29.1
Actuated g/C Ratio	0.64	0.52		0.44	0.37		0.19	0.15	0.23	0.21	0.16	0.39
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)	691	2508		392	1254		221	543	441	231	580	699
v/s Ratio Prot	c0.16	0.12		0.01	0.12		0.01	0.07	0.00	c0.01	c0.07	0.01
v/s Ratio Perm	c0.30			0.07			0.04		0.01	0.05		0.01
v/c Ratio	0.71	0.22		0.18	0.34		0.29	0.46	0.03	0.32	0.45	0.05
Uniform Delay, d1	7.3	9.8		12.3	17.2		25.8	28.9	22.6	24.6	28.3	14.3
Progression Factor	0.21	0.33		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.2		0.2	0.2		0.7	0.6	0.0	0.8	0.5	0.0
Delay (s)	4.6	3.4		12.5	17.3		26.5	29.5	22.7	25.4	28.8	14.3
Level of Service	A	A		B	B		C	C	C	C	C	B
Approach Delay (s)		3.9			16.7			28.0			25.3	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM Average Control Delay			13.8			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			59.3%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: Cesar Chavez & Langham

UNM Gibson Commercial District
2015 AM 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)	408	1166	97	4	465	2	41	1	14	1	0	77
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	
Frt	1.00	0.99		1.00	1.00		1.00	0.86		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	5027		1770	5082		1770	1600		1770	1583	
Flt Permitted	0.33	1.00		0.18	1.00		0.70	1.00		0.75	1.00	
Satd. Flow (perm)	615	5027		333	5082		1301	1600		1390	1583	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	474	1356	113	5	541	2	48	1	16	1	0	90
RTOR Reduction (vph)	0	12	0	0	1	0	0	12	0	0	71	0
Lane Group Flow (vph)	474	1457	0	5	542	0	48	5	0	1	19	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)	43.0	38.2		23.2	22.4		23.2	19.2		16.8	16.0	
Effective Green, g (s)	43.0	38.2		23.2	22.4		23.2	19.2		16.8	16.0	
Actuated g/C Ratio	0.57	0.51		0.31	0.30		0.31	0.26		0.22	0.21	
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)	608	2560		118	1518		427	410		315	338	
v/s Ratio Prot	c0.17	0.29		0.00	0.11		c0.01	0.00		0.00	0.01	
v/s Ratio Perm	c0.27			0.01			c0.03			0.00		
v/c Ratio	0.78	0.57		0.04	0.36		0.11	0.01		0.00	0.06	
Uniform Delay, d1	10.0	12.7		17.9	20.6		18.6	20.8		22.6	23.5	
Progression Factor	1.18	0.81		0.60	0.62		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.4	0.8		0.1	0.1		0.1	0.1		0.0	0.3	
Delay (s)	17.2	11.0		10.8	12.9		18.7	20.9		22.6	23.8	
Level of Service	B	B		B	B		B	C		C	C	
Approach Delay (s)		12.5			12.9			19.3			23.8	
Approach LOS		B			B			B			C	
Intersection Summary												
HCM Average Control Delay			13.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			75.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			50.6%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

7: Cesar Chavez & I-25 NB

UNM Gibson Commercial District

2015 AM 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)	847	1677	0	0	389	285	49	1	193	0	0	0
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			
Lane Util. Factor	1.00	0.95			0.95	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	3539			3505	1568		1776	1583			
Flt Permitted	0.40	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	753	3539			3505	1568		1776	1583			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	892	1765	0	0	409	300	52	1	203	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	892	1765	0	0	409	300	0	53	203	0	0	0
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt					Free	Perm		Free			
Protected Phases	7	4			8			2				
Permitted Phases	4					Free	2		Free			
Actuated Green, G (s)	126.0	126.0			56.4	150.0		16.0	150.0			
Effective Green, g (s)	126.0	126.0			56.4	150.0		16.0	150.0			
Actuated g/C Ratio	0.84	0.84			0.38	1.00		0.11	1.00			
Clearance Time (s)	4.0	4.0			4.0			4.0				
Vehicle Extension (s)	3.0	3.0			3.0			3.0				
Lane Grp Cap (vph)	1077	2973			1318	1568		189	1583			
v/s Ratio Prot	c0.36	0.50			0.12							
v/s Ratio Perm	c0.33					0.19		0.03	0.13			
v/c Ratio	0.83	0.59			0.31	0.19		0.28	0.13			
Uniform Delay, d1	11.3	3.8			33.1	0.0		61.7	0.0			
Progression Factor	1.00	1.00			0.79	1.00		1.00	1.00			
Incremental Delay, d2	5.4	0.9			0.1	0.3		3.7	0.2			
Delay (s)	16.6	4.7			26.4	0.3		65.4	0.2			
Level of Service	B	A			C	A		E	A			
Approach Delay (s)		8.7			15.3			13.7			0.0	
Approach LOS		A			B			B			A	
Intersection Summary												
HCM Average Control Delay		10.4			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.76										
Actuated Cycle Length (s)		150.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		71.0%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												