

# HCM Unsignalized Intersection Capacity Analysis

## 1: Red Rock Diner N & SH 133

11/15/2012



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↖	↕	↕	↗
Volume (veh/h)	0	28	7	569	723	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	31	8	625	795	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)					739	
pX, platoon unblocked						
vC, conflicting volume	1123	795	803			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1123	795	803			
tC, single (s)	6.9	7.0	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	91	99			
cM capacity (veh/h)	195	326	804			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	31	8	313	313	795	9
Volume Left	0	8	0	0	0	0
Volume Right	31	0	0	0	0	9
cSH	326	804	1700	1700	1700	1700
Volume to Capacity	0.09	0.01	0.18	0.18	0.47	0.01
Queue Length 95th (ft)	8	1	0	0	0	0
Control Delay (s)	17.2	9.5	0.0	0.0	0.0	0.0
Lane LOS	C	A				
Approach Delay (s)	17.2	0.1			0.0	
Approach LOS	C					

Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization		48.1%		ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 2: Red Rock Diner S & SH 133

11/15/2012



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	6	26	576	736	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	7	28	626	800	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				1199	869	
pX, platoon unblocked						
vC, conflicting volume	1178	808	816			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1178	808	816			
tC, single (s)	6.9	7.0	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	96			
cM capacity (veh/h)	174	320	794			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	8	237	417	816
Volume Left	1	28	0	0
Volume Right	7	0	0	16
cSH	286	794	1700	1700
Volume to Capacity	0.03	0.04	0.25	0.48
Queue Length 95th (ft)	2	3	0	0
Control Delay (s)	17.9	1.5	0.0	0.0
Lane LOS	C	A		
Approach Delay (s)	17.9	0.5		0.0
Approach LOS	C			

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization		49.6%	ICU Level of Service A
Analysis Period (min)		15	

# HCM Unsignalized Intersection Capacity Analysis

## 3: Cowen Dr & SH 133

11/15/2012



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔		↔	↔	
Volume (veh/h)	10	1	14	31	0	81	15	511	45	70	664	8
Sign Control		Stop			Stop			Free			Free	
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)	11	1	15	33	0	85	16	538	47	74	699	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage (veh)								2				
Upstream signal (ft)								1039			1029	
pX, platoon unblocked												
vC, conflicting volume	1236	1467	703	1455	1448	293	707			585		
vC1, stage 1 conf vol	851	851		593	593							
vC2, stage 2 conf vol	386	617		862	855							
vCu, unblocked vol	1236	1467	703	1455	1448	293	707			585		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)	6.6	5.6		6.6	5.6							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	96	86	100	88	98			92		
cM capacity (veh/h)	256	274	375	230	281	698	874			972		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	26	33	85	285	316	74	707
Volume Left	11	33	0	16	0	74	0
Volume Right	15	0	85	0	47	0	8
cSH	313	230	698	874	1700	972	1700
Volume to Capacity	0.08	0.14	0.12	0.02	0.19	0.08	0.42
Queue Length 95th (ft)	7	12	10	1	0	6	0
Control Delay (s)	17.6	23.3	10.9	0.7	0.0	9.0	0.0
Lane LOS	C	C	B	A		A	
Approach Delay (s)	17.6	14.3		0.3		0.8	
Approach LOS	C	B					

Intersection Summary			
Average Delay		2.0	
Intersection Capacity Utilization	69.6%		ICU Level of Service C
Analysis Period (min)	15		

# HCM Unsignalized Intersection Capacity Analysis

## 4: Cold Well Banker & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	12	560	4	11	740
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1	12	577	4	11	763
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL		TWLTL	
Median storage veh			2		2	
Upstream signal (ft)			729			
pX, platoon unblocked						
vC, conflicting volume	1365	291			581	
vC1, stage 1 conf vol	579					
vC2, stage 2 conf vol	786					
vCu, unblocked vol	1365	291			581	
tC, single (s)	6.9	7.0			4.2	
tC, 2 stage (s)	5.9					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			99	
cM capacity (veh/h)	333	700			975	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	13	385	197	11	763	
Volume Left	1	0	0	11	0	
Volume Right	12	0	4	0	0	
cSH	645	1700	1700	975	1700	
Volume to Capacity	0.02	0.23	0.12	0.01	0.45	
Queue Length 95th (ft)	2	0	0	1	0	
Control Delay (s)	10.7	0.0	0.0	8.7	0.0	
Lane LOS	B			A		
Approach Delay (s)	10.7	0.0		0.1		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			48.9%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 5: The Alpine & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	7	22	542	30	18	723
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	7	23	571	32	19	761
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL		TWLTL	
Median storage veh			2		2	
Upstream signal (ft)			349			
pX, platoon unblocked						
vC, conflicting volume	1385	301			602	
vC1, stage 1 conf vol	586					
vC2, stage 2 conf vol	799					
vCu, unblocked vol	1385	301			602	
tC, single (s)	6.9	7.0			4.2	
tC, 2 stage (s)	5.9					
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			98	
cM capacity (veh/h)	326	689			958	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	31	380	222	19	761
Volume Left	7	0	0	19	0
Volume Right	23	0	32	0	0
cSH	543	1700	1700	958	1700
Volume to Capacity	0.06	0.22	0.13	0.02	0.45
Queue Length 95th (ft)	4	0	0	2	0
Control Delay (s)	12.0	0.0	0.0	8.8	0.0
Lane LOS	B			A	
Approach Delay (s)	12.0	0.0		0.2	
Approach LOS	B				

Intersection Summary					
Average Delay			0.4		
Intersection Capacity Utilization		48.1%		ICU Level of Service	A
Analysis Period (min)			15		

# HCM Signalized Intersection Capacity Analysis

## 6: Village Rd & SH 133

11/15/2012



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔	↔	↑	↔	↔	↔	↔
Volume (vph)	10	7	37	76	4	61	3	501	66	64	643	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	4.5	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		0.91			1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.99			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1642			1744	1553	1736	1827	1553	1736	1818	
Flt Permitted		0.93			0.69	1.00	0.32	1.00	1.00	0.43	1.00	
Satd. Flow (perm)		1537			1269	1553	586	1827	1553	793	1818	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	7	39	81	4	65	3	533	70	68	684	24
RTOR Reduction (vph)	0	33	0	0	0	55	0	0	24	0	1	0
Lane Group Flow (vph)	0	24	0	0	85	10	3	533	46	68	707	0
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2				6
Permitted Phases	4			8		8	2		2		6	
Actuated Green, G (s)		7.6			7.6	7.6	32.0	32.0	32.0	32.0	32.0	32.0
Effective Green, g (s)		7.6			7.6	7.6	32.0	32.0	32.0	32.0	32.0	32.0
Actuated g/C Ratio		0.15			0.15	0.15	0.65	0.65	0.65	0.65	0.65	0.65
Clearance Time (s)		4.5			4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)		3.5			3.5	3.5	0.2	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)		238			196	240	382	1191	1012	517	1185	
v/s Ratio Prot								0.29				c0.39
v/s Ratio Perm		0.02			c0.07	0.01	0.01		0.03	0.09		
v/c Ratio		0.10			0.43	0.04	0.01	0.45	0.05	0.13	0.60	
Uniform Delay, d1		17.8			18.8	17.7	3.0	4.2	3.1	3.3	4.9	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2			1.8	0.1	0.0	0.1	0.0	0.0	0.5	
Delay (s)		18.0			20.6	17.7	3.0	4.3	3.1	3.3	5.4	
Level of Service		B			C	B	A	A	A	A	A	
Approach Delay (s)		18.0			19.4			4.2			5.2	
Approach LOS		B			B			A			A	

### Intersection Summary

HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	49.1	Sum of lost time (s)	9.5
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Unsignalized Intersection Capacity Analysis

## 7: Dolores Way & SH 133

11/15/2012



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖	↗			↖	↗
Volume (veh/h)	47	0	61	1	0	0	35	523	2	3	719	34
Sign Control		Stop			Stop			Free			Free	
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)	49	0	64	1	0	0	37	551	2	3	757	36
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			4									
Median type							None				TWLTL	
Median storage (veh)											2	
Upstream signal (ft)											786	
pX, platoon unblocked	0.78	0.78	0.78	0.78	0.78		0.78					
vC, conflicting volume	1387	1389	757	1421	1424	552	793			553		
vC1, stage 1 conf vol	763	763		625	625							
vC2, stage 2 conf vol	624	626		795	799							
vCu, unblocked vol	1356	1359	552	1399	1403	552	597			553		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	100	85	100	100	100	95			100		
cM capacity (veh/h)	303	308	415	242	282	530	760			1007		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	114	1	37	553	760	36
Volume Left	49	1	37	0	3	0
Volume Right	64	0	0	2	0	36
cSH	697	242	760	1700	1007	1700
Volume to Capacity	0.16	0.00	0.05	0.33	0.00	0.02
Queue Length 95th (ft)	15	0	4	0	0	0
Control Delay (s)	17.0	19.9	10.0	0.0	0.1	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	17.0	19.9	0.6		0.1	
Approach LOS	C	C				

Intersection Summary		
Average Delay		1.6
Intersection Capacity Utilization	55.1%	ICU Level of Service
Analysis Period (min)		15
		B

# HCM Unsignalized Intersection Capacity Analysis

8: ?? Name & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗	↖	↑
Volume (veh/h)	19	31	532	29	26	755
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	20	33	572	31	28	812
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						1184
pX, platoon unblocked	0.89					
vC, conflicting volume	1440	572			603	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1433	572			603	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	94			97	
cM capacity (veh/h)	127	516			965	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	54	572	31	28	812
Volume Left	20	0	0	28	0
Volume Right	33	0	31	0	0
cSH	238	1700	1700	965	1700
Volume to Capacity	0.23	0.34	0.02	0.03	0.48
Queue Length 95th (ft)	21	0	0	2	0
Control Delay (s)	24.4	0.0	0.0	8.8	0.0
Lane LOS	C			A	
Approach Delay (s)	24.4	0.0		0.3	
Approach LOS	C				

Intersection Summary					
Average Delay			1.0		
Intersection Capacity Utilization			49.7%	ICU Level of Service	A
Analysis Period (min)			15		



# HCM Unsignalized Intersection Capacity Analysis

## 9: Roaring Fork Valley Co-op & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	5	27	534	4	12	762
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	5	28	556	4	12	794
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	1377	558			560	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1377	558			560	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	95			99	
cM capacity (veh/h)	156	525			1001	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	33	560	806
Volume Left	5	0	12
Volume Right	28	4	0
cSH	384	1700	1001
Volume to Capacity	0.09	0.33	0.01
Queue Length 95th (ft)	7	0	1
Control Delay (s)	15.3	0.0	0.3
Lane LOS	C		A
Approach Delay (s)	15.3	0.0	0.3
Approach LOS	C		

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization		59.7%	ICU Level of Service
Analysis Period (min)		15	B

HCM Unsignalized Intersection Capacity Analysis  
 10: Industry PI & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	L	T
Volume (veh/h)	16	34	504	26	27	740
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	17	36	531	27	28	779
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	1380	544			558	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1380	544			558	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	93			97	
cM capacity (veh/h)	153	535			1003	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	53	558	807
Volume Left	17	0	28
Volume Right	36	27	0
cSH	297	1700	1003
Volume to Capacity	0.18	0.33	0.03
Queue Length 95th (ft)	16	0	2
Control Delay (s)	19.7	0.0	0.7
Lane LOS	C		A
Approach Delay (s)	19.7	0.0	0.7
Approach LOS	C		

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization		70.8%	ICU Level of Service C
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 11: Red Rock Plaza & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	15	4	526	25	3	753
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	16	4	548	26	3	784
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	1352	561			574	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1352	561			574	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	99			100	
cM capacity (veh/h)	163	523			989	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	20	574	788
Volume Left	16	0	3
Volume Right	4	26	0
cSH	191	1700	989
Volume to Capacity	0.10	0.34	0.00
Queue Length 95th (ft)	9	0	0
Control Delay (s)	26.0	0.0	0.1
Lane LOS	D		A
Approach Delay (s)	26.0	0.0	0.1
Approach LOS	D		

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		52.0%	ICU Level of Service
Analysis Period (min)		15	A

# HCM Unsignalized Intersection Capacity Analysis

12: 12th St & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Volume (veh/h)	20	13	538	9	17	751
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	21	13	555	9	18	774
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			1111			
pX, platoon unblocked						
vC, conflicting volume	1369	559			564	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1369	559			564	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	97			98	
cM capacity (veh/h)	157	525			998	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	34	564	792
Volume Left	21	0	18
Volume Right	13	9	0
cSH	217	1700	998
Volume to Capacity	0.16	0.33	0.02
Queue Length 95th (ft)	14	0	1
Control Delay (s)	24.6	0.0	0.5
Lane LOS	C		A
Approach Delay (s)	24.6	0.0	0.5
Approach LOS	C		

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		63.2%	ICU Level of Service B
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 13: Amerigas & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	1	546	0	0	771
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	1	557	0	0	787
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			999			
pX, platoon unblocked						
vC, conflicting volume	1344	557			557	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1344	557			557	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	166	526			1004	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	1	557	787
Volume Left	0	0	0
Volume Right	1	0	0
cSH	526	1700	1004
Volume to Capacity	0.00	0.33	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	11.9	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.9	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		50.6%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 14: ET Plaza & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	8	538	3	0	771
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	1	8	549	3	0	787
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			888			
pX, platoon unblocked						
vC, conflicting volume	1337	551			552	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1337	551			552	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			100	
cM capacity (veh/h)	167	531			1008	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	9	552	787
Volume Left	1	0	0
Volume Right	8	3	0
cSH	427	1700	1008
Volume to Capacity	0.02	0.32	0.00
Queue Length 95th (ft)	2	0	0
Control Delay (s)	13.6	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.6	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		50.6%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 15: Sopris Shopping Center & SH 133

11/15/2012






















Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗		↖
Volume (veh/h)	1	10	531	3	14	758
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1	10	547	3	14	781
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage (veh)			2			
Upstream signal (ft)			581			
pX, platoon unblocked	0.95	0.95			0.95	
vC, conflicting volume	1358	547			551	
vC1, stage 1 conf vol	547					
vC2, stage 2 conf vol	810					
vCu, unblocked vol	1350	493			497	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			99	
cM capacity (veh/h)	363	541			1000	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	11	547	3	796
Volume Left	1	0	0	14
Volume Right	10	0	3	0
cSH	518	1700	1700	1000
Volume to Capacity	0.02	0.32	0.00	0.01
Queue Length 95th (ft)	2	0	0	1
Control Delay (s)	12.1	0.0	0.0	0.4
Lane LOS	B			A
Approach Delay (s)	12.1	0.0		0.4
Approach LOS	B			

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization		61.1%	ICU Level of Service B
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis  
 16: Remax & SH 133

11/15/2012

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	2	8	15	4	46	0	480	25	56	669	34
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	8	2	8	15	4	47	0	490	26	57	683	35
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)												2
Upstream signal (ft)								199				
pX, platoon unblocked	0.91	0.91		0.91	0.91	0.91					0.91	
vC, conflicting volume	1336	1312	683	1296	1321	490	717				515	
vC1, stage 1 conf vol	797	797		490	490							
vC2, stage 2 conf vol	539	515		806	832							
vCu, unblocked vol	1319	1294	683	1276	1304	389	717				417	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	97	99	98	95	99	92	100				94	
cM capacity (veh/h)	287	314	446	305	317	595	874				1029	
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3					
Volume Total	18	66	490	26	57	683	35					
Volume Left	8	15	0	0	57	0	0					
Volume Right	8	47	0	26	0	0	35					
cSH	345	468	874	1700	1029	1700	1700					
Volume to Capacity	0.05	0.14	0.00	0.02	0.06	0.40	0.02					
Queue Length 95th (ft)	4	12	0	0	4	0	0					
Control Delay (s)	16.0	14.0	0.0	0.0	8.7	0.0	0.0					
Lane LOS	C	B			A							
Approach Delay (s)	16.0	14.0	0.0		0.6							
Approach LOS	C	B										
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			57.4%	ICU Level of Service		B						
Analysis Period (min)			15									



# HCM Signalized Intersection Capacity Analysis

## 17: Main Street & SH 133

11/15/2012






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕	↗	↗	↑	↗	↗	↕	↗
Volume (vph)	108	72	35	76	98	100	39	287	38	86	408	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.97	1.00		0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1774	1553		1788	1553	1736	1827	1553	1736	1827	1553
Flt Permitted		0.72	1.00		0.77	1.00	0.47	1.00	1.00	0.58	1.00	1.00
Satd. Flow (perm)		1308	1553		1415	1553	866	1827	1553	1058	1827	1553
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	111	74	36	78	101	103	40	296	39	89	421	166
RTOR Reduction (vph)	0	0	26	0	0	74	0	0	20	0	0	84
Lane Group Flow (vph)	0	185	10	0	179	29	40	296	19	89	421	82
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		Perm
Protected Phases		4			4			2				2
Permitted Phases	4		4	4		4	2		2	2		2
Actuated Green, G (s)		13.5	13.5		13.5	13.5	24.1	24.1	24.1	24.1	24.1	24.1
Effective Green, g (s)		13.5	13.5		13.5	13.5	24.1	24.1	24.1	24.1	24.1	24.1
Actuated g/C Ratio		0.28	0.28		0.28	0.28	0.50	0.50	0.50	0.50	0.50	0.50
Clearance Time (s)		5.5	5.5		5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Vehicle Extension (s)		2.0	2.0		2.0	2.0	0.2	0.2	0.2	0.2	0.2	0.2
Lane Grp Cap (vph)		363	431		393	431	429	906	770	525	906	770
v/s Ratio Prot								0.16			c0.23	
v/s Ratio Perm		c0.14	0.01		0.13	0.02	0.05		0.01	0.08		0.05
v/c Ratio		0.51	0.02		0.46	0.07	0.09	0.33	0.03	0.17	0.46	0.11
Uniform Delay, d1		14.8	12.8		14.5	12.9	6.5	7.4	6.3	6.7	8.0	6.5
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		0.4	0.0		0.3	0.0	0.0	0.1	0.0	0.1	0.1	0.0
Delay (s)		15.2	12.8		14.8	12.9	6.5	7.4	6.3	6.8	8.2	6.5
Level of Service		B	B		B	B	A	A	A	A	A	A
Approach Delay (s)		14.8			14.1			7.2			7.6	
Approach LOS		B			B			A			A	

### Intersection Summary

HCM Average Control Delay	9.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	48.6	Sum of lost time (s)	11.0
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis  
 18: City Market & SH 133

11/15/2012

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	76	11	98	11	1	15	70	273	10	5	394	120
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	84	12	108	12	1	16	77	300	11	5	433	132
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL				None
Median storage (veh)								2				
Upstream signal (ft)												341
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	765	909	433	1017	1035	155	565			311		
vC1, stage 1 conf vol	444	444		459	459							
vC2, stage 2 conf vol	321	465		558	576							
vCu, unblocked vol	672	834	298	956	976	155	447			311		
tC, single (s)	7.6	6.6	7.0	7.6	6.6	7.0	4.2			4.2		
tC, 2 stage (s)	6.6	5.6		6.6	5.6							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	82	97	82	96	100	98	92			100		
cM capacity (veh/h)	473	428	614	290	361	856	973			1232		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	203	30	77	200	111	5	433	132				
Volume Left	84	12	77	0	0	5	0	0				
Volume Right	108	16	0	0	11	0	0	132				
cSH	535	464	973	1700	1700	1232	1700	1700				
Volume to Capacity	0.38	0.06	0.08	0.12	0.07	0.00	0.25	0.08				
Queue Length 95th (ft)	44	5	6	0	0	0	0	0				
Control Delay (s)	15.8	13.3	9.0	0.0	0.0	7.9	0.0	0.0				
Lane LOS	C	B	A			A						
Approach Delay (s)	15.8	13.3	1.8			0.1						
Approach LOS	C	B										
Intersection Summary												
Average Delay			3.6									
Intersection Capacity Utilization			48.6%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 19: Crystal Valley MH & SH 133

11/15/2012



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↔	↔	↔
Volume (veh/h)	4	2	0	9	0	23	1	326	14	39	451	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	2	0	10	0	25	1	354	15	42	490	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			TWLTL	
Median storage (veh)												2
Upstream signal (ft)												632
pX, platoon unblocked	0.97	0.97	0.97	0.97	0.97		0.97					
vC, conflicting volume	971	954	497	940	953	362	504			370		
vC1, stage 1 conf vol	582	582		364	364							
vC2, stage 2 conf vol	389	372		576	589							
vCu, unblocked vol	955	937	467	923	937	362	474			370		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	100	98	100	96	100			96		
cM capacity (veh/h)	405	415	574	425	420	678	1046			1178		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	7	35	371	42	504
Volume Left	4	10	1	42	0
Volume Right	0	25	15	0	14
cSH	408	581	1046	1178	1700
Volume to Capacity	0.02	0.06	0.00	0.04	0.30
Queue Length 95th (ft)	1	5	0	3	0
Control Delay (s)	14.0	11.6	0.0	8.2	0.0
Lane LOS	B	B	A	A	
Approach Delay (s)	14.0	11.6	0.0	0.6	
Approach LOS	B	B			

Intersection Summary		
Average Delay		0.9
Intersection Capacity Utilization	41.0%	ICU Level of Service A
Analysis Period (min)		15

# HCM Unsignalized Intersection Capacity Analysis

## 20: Alley & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔			↕
Volume (veh/h)	1	7	334	0	5	455
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1	8	367	0	5	500
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						797
pX, platoon unblocked						
vC, conflicting volume	878	367			367	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	878	367			367	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	314	674			1181	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	9	367	505
Volume Left	1	0	5
Volume Right	8	0	0
cSH	590	1700	1181
Volume to Capacity	0.01	0.22	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	11.2	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	11.2	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		37.9%	ICU Level of Service A
Analysis Period (min)		15	

# HCM Unsignalized Intersection Capacity Analysis

## 21: Euclid Ave & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	6	13	321	4	13	443
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	14	349	4	14	482
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						953
pX, platoon unblocked						
vC, conflicting volume	861	351			353	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	861	351			353	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	98			99	
cM capacity (veh/h)	320	688			1194	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	21	353	496
Volume Left	7	0	14
Volume Right	14	4	0
cSH	504	1700	1194
Volume to Capacity	0.04	0.21	0.01
Queue Length 95th (ft)	3	0	1
Control Delay (s)	12.4	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	12.4	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		43.8%	ICU Level of Service A
Analysis Period (min)		15	

# HCM Unsignalized Intersection Capacity Analysis

## 22: Mobile Home Park & SH 133

11/15/2012



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	4	7	4	352	436	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	4	7	4	363	449	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	1114					
pX, platoon unblocked						
vC, conflicting volume	823	452	455			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	823	452	455			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	339	603	1096			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	11	367	455			
Volume Left	4	4	0			
Volume Right	7	0	5			
cSH	470	1096	1700			
Volume to Capacity	0.02	0.00	0.27			
Queue Length 95th (ft)	2	0	0			
Control Delay (s)	12.8	0.1	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.8	0.1	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			33.3%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 23: Wells Fargo & SH 133

11/15/2012



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	46	15	5	310	428	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	48	16	5	323	446	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)	1299					
pX, platoon unblocked						
vC, conflicting volume	779	446	461			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	779	446	461			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	87	97	100			
cM capacity (veh/h)	360	608	1089			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	64	328	446	16		
Volume Left	48	5	0	0		
Volume Right	16	0	0	16		
cSH	400	1089	1700	1700		
Volume to Capacity	0.16	0.00	0.26	0.01		
Queue Length 95th (ft)	14	0	0	0		
Control Delay (s)	15.7	0.2	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	15.7	0.2	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay	1.2					
Intersection Capacity Utilization	32.7%			ICU Level of Service	A	
Analysis Period (min)	15					

# HCM Unsignalized Intersection Capacity Analysis

## 24: SH 133 & Sopris Ave

11/15/2012

	↑	↗	↘	↓	↙	↖
Movement	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↗			↖↗	↘↖	
Volume (veh/h)	261	10	60	383	27	54
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	287	11	66	421	30	59
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			298		635	292
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			298		635	292
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		92	92
cM capacity (veh/h)			1246		385	698
Direction, Lane #	NB 1	SB 1	SB 2	SW 1		
Volume Total	298	206	281	89		
Volume Left	0	66	0	30		
Volume Right	11	0	0	59		
cSH	1700	1246	1700	549		
Volume to Capacity	0.18	0.05	0.17	0.16		
Queue Length 95th (ft)	0	4	0	14		
Control Delay (s)	0.0	2.9	0.0	12.8		
Lane LOS		A		B		
Approach Delay (s)	0.0	1.2		12.8		
Approach LOS				B		
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			41.5%		ICU Level of Service	A
Analysis Period (min)			15			



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Intersection has too many legs for HCM analysis.

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HCM Unsignalized Intersection Capacity Analysis  
 26: SH 133 & Family Physicians

11/15/2012



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Volume (veh/h)	1	368	253	2	2	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	409	281	2	2	7
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	283				693	282
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	283				693	282
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1268				406	752

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	410	283	9
Volume Left	1	0	2
Volume Right	0	2	7
cSH	1268	1700	620
Volume to Capacity	0.00	0.17	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.0	0.0	10.9
Lane LOS	A		B
Approach Delay (s)	0.0	0.0	10.9
Approach LOS			B

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		30.2%	ICU Level of Service A
Analysis Period (min)		15	

# HCM Unsignalized Intersection Capacity Analysis

## 27: SH 133 & 8th Street

11/15/2012



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Volume (veh/h)	4	364	245	10	31	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	4	409	275	11	35	11
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	287				699	281
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	287				699	281
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				91	99
cM capacity (veh/h)	1264				402	753

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	413	287	46
Volume Left	4	0	35
Volume Right	0	11	11
cSH	1264	1700	453
Volume to Capacity	0.00	0.17	0.10
Queue Length 95th (ft)	0	0	8
Control Delay (s)	0.1	0.0	13.8
Lane LOS	A		B
Approach Delay (s)	0.1	0.0	13.8
Approach LOS			B

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		32.3%	ICU Level of Service
Analysis Period (min)		15	A

# HCM Unsignalized Intersection Capacity Analysis

## 28: SH 133 & Keator Road

11/15/2012



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	376	22	3	247	8	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	413	24	3	271	9	7
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			437		703	425
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			437		703	425
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %						
		100		98		99
cM capacity (veh/h)			1112	399		625
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	437	275	15			
Volume Left	0	3	9			
Volume Right	24	0	7			
cSH	1700	1112	473			
Volume to Capacity	0.26	0.00	0.03			
Queue Length 95th (ft)	0	0	3			
Control Delay (s)	0.0	0.1	12.9			
Lane LOS	A		B			
Approach Delay (s)	0.0	0.1	12.9			
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			31.1%	ICU Level of Service		A
Analysis Period (min)			15			

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Intersection Sign configuration not allowed in HCM analysis.

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# HCM Unsignalized Intersection Capacity Analysis

## 30: River Valley Ranch Rd & SH 133

11/15/2012



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	5	1	57	26	57	1	225	29	50	350	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	19	6	1	63	29	63	1	250	32	56	389	29
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	830	784	389	756	781	250	418			282		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	830	784	389	756	781	250	418			282		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			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 %	92	98	100	79	91	92	100			96		
cM capacity (veh/h)	237	308	655	306	309	784	1131			1269		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	19	7	156	251	32	56	389	29
Volume Left	19	0	63	1	0	56	0	0
Volume Right	0	1	63	0	32	0	0	29
cSH	237	338	408	1131	1700	1269	1700	1700
Volume to Capacity	0.08	0.02	0.38	0.00	0.02	0.04	0.23	0.02
Queue Length 95th (ft)	6	2	44	0	0	3	0	0
Control Delay (s)	21.5	15.9	19.1	0.0	0.0	8.0	0.0	0.0
Lane LOS	C	C	C	A		A		
Approach Delay (s)	20.0		19.1	0.0		0.9		
Approach LOS	C		C					

### Intersection Summary

Average Delay	4.2
Intersection Capacity Utilization	55.0%
ICU Level of Service	A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

## 31: gated school entrance & SH 133

11/15/2012























Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗	↖	↓
Volume (veh/h)	4	28	218	5	38	378
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	31	242	6	42	420
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			1058			
pX, platoon unblocked						
vC, conflicting volume	539	245			248	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	539	245			248	
tC, single (s)	6.9	7.0			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	96			97	
cM capacity (veh/h)	452	749			1301	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>	
Volume Total	36	248	42	210	210	
Volume Left	4	0	42	0	0	
Volume Right	31	6	0	0	0	
cSH	692	1700	1301	1700	1700	
Volume to Capacity	0.05	0.15	0.03	0.12	0.12	
Queue Length 95th (ft)	4	0	3	0	0	
Control Delay (s)	10.5	0.0	7.9	0.0	0.0	
Lane LOS	B		A			
Approach Delay (s)	10.5	0.0	0.7			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.9			
Intersection Capacity Utilization			28.4%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Signalized Intersection Capacity Analysis

## 32: SH 133 & Crystal Bridge Dr

11/15/2012

												
Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	5	114	5	94	207	85	47	3	5	0	1	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.5	5.5		5.5	5.5	5.5		5.5			5.5	5.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85		0.99			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96			1.00	1.00
Satd. Flow (prot)	1736	1816		1736	1827	1553		1731			1827	1553
Flt Permitted	0.62	1.00		0.53	1.00	1.00		0.85			1.00	1.00
Satd. Flow (perm)	1127	1816		970	1827	1553		1533			1827	1553
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)	5	125	5	103	227	93	52	3	5	0	1	68
RTOR Reduction (vph)	0	2	0	0	0	45	0	4	0	0	0	61
Lane Group Flow (vph)	5	128	0	103	227	48	0	56	0	0	1	7
Turn Type	pm+pt			pm+pt		Perm	Perm			Perm		Perm
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	19.7	18.6		29.7	23.6	23.6		4.4			4.4	4.4
Effective Green, g (s)	19.7	18.6		29.7	23.6	23.6		4.4			4.4	4.4
Actuated g/C Ratio	0.43	0.41		0.65	0.52	0.52		0.10			0.10	0.10
Clearance Time (s)	5.5	5.5		5.5	5.5	5.5		5.5			5.5	5.5
Vehicle Extension (s)	3.5	4.0		3.5	4.0	4.0		3.5			3.5	3.5
Lane Grp Cap (vph)	502	741		734	946	804		148			176	150
v/s Ratio Prot	0.00	0.07		c0.02	c0.12						0.00	
v/s Ratio Perm	0.00			0.07		0.03		c0.04				0.00
v/c Ratio	0.01	0.17		0.14	0.24	0.06		0.38			0.01	0.04
Uniform Delay, d1	7.4	8.6		3.2	6.1	5.5		19.3			18.6	18.7
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.0	0.2		0.1	0.2	0.0		1.9			0.0	0.1
Delay (s)	7.4	8.8		3.4	6.2	5.5		21.3			18.6	18.8
Level of Service	A	A		A	A	A		C			B	B
Approach Delay (s)		8.7			5.4			21.3			18.8	
Approach LOS		A			A			C			B	

### Intersection Summary

HCM Average Control Delay	8.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	45.6	Sum of lost time (s)	16.5
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



# HCM Unsignalized Intersection Capacity Analysis

## 33: High School & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	13	122	2	23	187
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	14	136	2	26	208
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						763
pX, platoon unblocked						
vC, conflicting volume	396	137			138	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	396	137			138	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			98	
cM capacity (veh/h)	595	907			1434	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	14	138	26	208
Volume Left	0	0	26	0
Volume Right	14	2	0	0
cSH	907	1700	1434	1700
Volume to Capacity	0.02	0.08	0.02	0.12
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	9.0	0.0	7.6	0.0
Lane LOS	A		A	
Approach Delay (s)	9.0	0.0	0.8	
Approach LOS	A			

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		23.2%	ICU Level of Service
Analysis Period (min)		15	A

# HCM Signalized Intersection Capacity Analysis

## 45: SH 82 & SH 133

11/15/2012



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Volume (vph)	0	331	400	0	369	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		1.00	1.00		1.00	1.00
Frt		0.85	1.00		1.00	0.85
Flt Protected		1.00	0.95		0.95	1.00
Satd. Flow (prot)		1553	1736		1736	1553
Flt Permitted		1.00	0.76		0.95	1.00
Satd. Flow (perm)		1553	1383		1736	1553
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	360	435	0	401	217
RTOR Reduction (vph)	0	223	0	0	0	127
Lane Group Flow (vph)	0	137	435	0	401	90
Turn Type		Perm	Perm		Perm	Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)		14.7	14.7		16.0	16.0
Effective Green, g (s)		14.7	14.7		16.0	16.0
Actuated g/C Ratio		0.38	0.38		0.41	0.41
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)		590	525		718	642
v/s Ratio Prot					c0.23	
v/s Ratio Perm		0.09	c0.31			0.06
v/c Ratio		0.23	0.83		0.56	0.14
Uniform Delay, d1		8.2	10.9		8.7	7.1
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.2	10.4		3.1	0.5
Delay (s)		8.4	21.3		11.8	7.5
Level of Service		A	C		B	A
Approach Delay (s)	8.4			21.3	10.3	
Approach LOS	A			C	B	

### Intersection Summary

HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			