

# 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	51	4	663	563	1
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)	0	53	4	684	580	1
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	930	580	581			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	930	580	581			
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	88	100			
cM capacity (veh/h)	261	452	975			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	53	4	342	342	580	1
Volume Left	0	4	0	0	0	0
Volume Right	53	0	0	0	0	1
cSH	452	975	1700	1700	1700	1700
Volume to Capacity	0.12	0.00	0.20	0.20	0.34	0.00
Queue Length 95th (ft)	10	0	0	0	0	0
Control Delay (s)	14.0	8.7	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	14.0	0.1			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			39.6%		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	1	22	666	609	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)	1	1	23	687	628	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)				1199	869	
pX, platoon unblocked						
vC, conflicting volume	1019	630	633			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1019	630	633			
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	100	98			
cM capacity (veh/h)	224	419	932			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	2	252	458	633		
Volume Left	1	23	0	0		
Volume Right	1	0	0	5		
cSH	292	932	1700	1700		
Volume to Capacity	0.01	0.02	0.27	0.37		
Queue Length 95th (ft)	1	2	0	0		
Control Delay (s)	17.4	1.0	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	17.4	0.4		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			44.4%		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)	3	0	1	22	4	111	4	574	67	86	517	7
Sign Control		Stop			Stop			Free			Free	
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)	3	0	1	23	4	114	4	592	69	89	533	7
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	1135	1383	537	1346	1352	330	540			661		
vC1, stage 1 conf vol	714	714		635	635							
vC2, stage 2 conf vol	421	669		711	718							
vCu, unblocked vol	1135	1383	537	1346	1352	330	540			661		
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 %	99	100	100	92	99	83	100			90		
cM capacity (veh/h)	274	283	483	277	313	659	1011			910		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	4	23	119	300	365	89	540
Volume Left	3	23	0	4	0	89	0
Volume Right	1	0	114	0	69	0	7
cSH	307	277	635	1011	1700	910	1700
Volume to Capacity	0.01	0.08	0.19	0.00	0.21	0.10	0.32
Queue Length 95th (ft)	1	7	17	0	0	8	0
Control Delay (s)	16.9	19.1	12.0	0.2	0.0	9.4	0.0
Lane LOS	C	C	B	A		A	
Approach Delay (s)	16.9	13.1		0.1		1.3	
Approach LOS	C	B					

Intersection Summary			
Average Delay		1.9	
Intersection Capacity Utilization	62.8%		ICU Level of Service B
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	0	646	4	5	542
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)	1	0	673	4	5	565
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	1250	339			677	
vC1, stage 1 conf vol	675					
vC2, stage 2 conf vol	575					
vCu, unblocked vol	1250	339			677	
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	100			99	
cM capacity (veh/h)	369	651			897	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	1	449	228	5	565	
Volume Left	1	0	0	5	0	
Volume Right	0	0	4	0	0	
cSH	369	1700	1700	897	1700	
Volume to Capacity	0.00	0.26	0.13	0.01	0.33	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	14.8	0.0	0.0	9.0	0.0	
Lane LOS	B			A		
Approach Delay (s)	14.8	0.0		0.1		
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			38.5%		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)	0	14	636	12	17	526
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)	0	15	662	12	18	548
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	1252	338			675	
vC1, stage 1 conf vol	669					
vC2, stage 2 conf vol	583					
vCu, unblocked vol	1252	338			675	
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			98	
cM capacity (veh/h)	366	653			899	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	15	442	233	18	548	
Volume Left	0	0	0	18	0	
Volume Right	15	0	12	0	0	
cSH	653	1700	1700	899	1700	
Volume to Capacity	0.02	0.26	0.14	0.02	0.32	
Queue Length 95th (ft)	2	0	0	2	0	
Control Delay (s)	10.6	0.0	0.0	9.1	0.0	
Lane LOS	B			A		
Approach Delay (s)	10.6	0.0		0.3		
Approach LOS	B					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			37.7%		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)	7	0	15	38	1	58	16	583	43	42	461	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		0.98			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1633			1742	1553	1736	1827	1553	1736	1814	
Flt Permitted		0.88			0.81	1.00	0.47	1.00	1.00	0.41	1.00	
Satd. Flow (perm)		1457			1473	1553	865	1827	1553	748	1814	
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)	7	0	15	39	1	60	16	601	44	43	475	24
RTOR Reduction (vph)	0	14	0	0	0	54	0	0	13	0	2	0
Lane Group Flow (vph)	0	8	0	0	40	6	16	601	31	43	497	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)		4.9			4.9	4.9	34.8	34.8	34.8	34.8	34.8	
Effective Green, g (s)		4.9			4.9	4.9	34.8	34.8	34.8	34.8	34.8	
Actuated g/C Ratio		0.10			0.10	0.10	0.71	0.71	0.71	0.71	0.71	
Clearance Time (s)		4.5			4.5	4.5	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	
Lane Grp Cap (vph)		145			147	155	612	1292	1098	529	1283	
v/s Ratio Prot								c0.33				0.27
v/s Ratio Perm		0.01			c0.03	0.00	0.02		0.02	0.06		
v/c Ratio		0.06			0.27	0.04	0.03	0.47	0.03	0.08	0.39	
Uniform Delay, d1		20.1			20.5	20.0	2.1	3.1	2.2	2.2	2.9	
Progression Factor		1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2			1.2	0.1	0.0	0.1	0.0	0.0	0.1	
Delay (s)		20.3			21.7	20.1	2.2	3.2	2.2	2.3	3.0	
Level of Service		C			C	C	A	A	A	A	A	
Approach Delay (s)		20.3			20.8			3.1			2.9	
Approach LOS		C			C			A			A	

### Intersection Summary

HCM Average Control Delay	4.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	49.2	Sum of lost time (s)	9.5
Intersection Capacity Utilization	66.3%	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)	55	0	55	1	0	0	79	587	0	2	430	82
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)	58	0	58	1	0	0	83	618	0	2	453	86
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												
vC, conflicting volume	1241	1241	453	1270	1327	618	539			618		
vC1, stage 1 conf vol	457	457		784	784							
vC2, stage 2 conf vol	784	784		486	543							
vCu, unblocked vol	1241	1241	453	1270	1327	618	539			618		
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 %	82	100	90	100	100	100	92			100		
cM capacity (veh/h)	314	328	603	287	303	486	1019			953		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	116	1	83	618	455	86
Volume Left	58	1	83	0	2	0
Volume Right	58	0	0	0	0	86
cSH	628	287	1019	1700	953	1700
Volume to Capacity	0.18	0.00	0.08	0.36	0.00	0.05
Queue Length 95th (ft)	17	0	7	0	0	0
Control Delay (s)	15.3	17.6	8.8	0.0	0.1	0.0
Lane LOS	C	C	A		A	
Approach Delay (s)	15.3	17.6	1.0		0.1	
Approach LOS	C	C				

### Intersection Summary

Average Delay	1.9
Intersection Capacity Utilization	67.0%
ICU Level of Service	C
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

8: ?? Name & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	9	30	641	25	23	463
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)	9	31	661	26	24	477
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						
vC, conflicting volume	1186	661			687	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1186	661			687	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	93			97	
cM capacity (veh/h)	201	459			898	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	40	661	26	24	477
Volume Left	9	0	0	24	0
Volume Right	31	0	26	0	0
cSH	354	1700	1700	898	1700
Volume to Capacity	0.11	0.39	0.02	0.03	0.28
Queue Length 95th (ft)	10	0	0	2	0
Control Delay (s)	16.5	0.0	0.0	9.1	0.0
Lane LOS	C			A	
Approach Delay (s)	16.5	0.0		0.4	
Approach LOS	C				

Intersection Summary					
Average Delay			0.7		
Intersection Capacity Utilization			43.7%	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)	1	21	645	4	11	461
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	21	658	4	11	470
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	1153	660			662	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1153	660			662	
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	95			99	
cM capacity (veh/h)	214	459			917	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	22	662	482			
Volume Left	1	0	11			
Volume Right	21	4	0			
cSH	437	1700	917			
Volume to Capacity	0.05	0.39	0.01			
Queue Length 95th (ft)	4	0	1			
Control Delay (s)	13.7	0.0	0.4			
Lane LOS	B		A			
Approach Delay (s)	13.7	0.0	0.4			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.4			
Intersection Capacity Utilization			44.2%		ICU Level of Service	A
Analysis Period (min)			15			

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

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	7	12	637	31	18	444
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)	7	12	657	32	19	458
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	1168	673			689	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1168	673			689	
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	97			98	
cM capacity (veh/h)	208	452			896	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	20	689	476
Volume Left	7	0	19
Volume Right	12	32	0
cSH	315	1700	896
Volume to Capacity	0.06	0.41	0.02
Queue Length 95th (ft)	5	0	2
Control Delay (s)	17.2	0.0	0.6
Lane LOS	C		A
Approach Delay (s)	17.2	0.0	0.6
Approach LOS	C		

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		48.0%	ICU Level of Service A
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)	0	0	668	1	0	451
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)	0	0	689	1	0	465
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	1154	689			690	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1154	689			690	
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)	216	442			896	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	690	465
Volume Left	0	0	0
Volume Right	0	1	0
cSH	1700	1700	896
Volume to Capacity	0.00	0.41	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		38.6%	ICU Level of Service A
Analysis Period (min)		15	

# HCM Unsignalized Intersection Capacity Analysis

12: 12th St & SH 133

11/15/2012



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	2	7	662	8	10	441
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)	2	7	682	8	10	455
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	1162	687			691	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1162	687			691	
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			99	
cM capacity (veh/h)	211	444			895	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	9	691	465
Volume Left	2	0	10
Volume Right	7	8	0
cSH	356	1700	895
Volume to Capacity	0.03	0.41	0.01
Queue Length 95th (ft)	2	0	1
Control Delay (s)	15.4	0.0	0.3
Lane LOS	C		A
Approach Delay (s)	15.4	0.0	0.3
Approach LOS	C		

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization		45.3%	ICU Level of Service A
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	2	668	0	1	442
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	2	682	0	1	451
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	0.98	0.98			0.98	
vC, conflicting volume	1135	682			682	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1126	663			663	
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)	219	448			896	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	2	682	452
Volume Left	0	0	1
Volume Right	2	0	0
cSH	448	1700	896
Volume to Capacity	0.00	0.40	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	13.1	0.0	0.0
Lane LOS	B		A
Approach Delay (s)	13.1	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		45.2%	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)	0	9	659	7	3	439
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	9	672	7	3	448
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	0.95	0.95			0.95	
vC, conflicting volume	1130	676			680	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1109	629			633	
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			100	
cM capacity (veh/h)	217	453			890	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	9	680	451
Volume Left	0	0	3
Volume Right	9	7	0
cSH	453	1700	890
Volume to Capacity	0.02	0.40	0.00
Queue Length 95th (ft)	2	0	0
Control Delay (s)	13.1	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	13.1	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		45.1%	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)	0	8	658	5	1	438
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)	0	8	678	5	1	452
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	0.87	0.87			0.87	
vC, conflicting volume	1132	678			684	
vC1, stage 1 conf vol	678					
vC2, stage 2 conf vol	454					
vCu, unblocked vol	1079	560			566	
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			100	
cM capacity (veh/h)	425	458			871	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	8	678	5	453
Volume Left	0	0	0	1
Volume Right	8	0	5	0
cSH	458	1700	1700	871
Volume to Capacity	0.02	0.40	0.00	0.00
Queue Length 95th (ft)	1	0	0	0
Control Delay (s)	13.0	0.0	0.0	0.0
Lane LOS	B			A
Approach Delay (s)	13.0	0.0		0.0
Approach LOS	B			

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		44.6%	ICU Level of Service A
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)	14	0	3	9	1	55	1	594	23	52	372	14
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)	15	0	3	9	1	57	1	619	24	54	388	15
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	0.85	0.85		0.85	0.85	0.85					0.85	
vC, conflicting volume	1174	1141	388	1120	1131	619	402				643	
vC1, stage 1 conf vol	496	496		621	621							
vC2, stage 2 conf vol	679	645		499	510							
vCu, unblocked vol	1118	1078	388	1054	1067	466	402				494	
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 %	95	100	100	98	100	89	100				94	
cM capacity (veh/h)	300	347	656	378	374	505	1146				903	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>					
Volume Total	18	68	620	24	54	388	15					
Volume Left	15	9	1	0	54	0	0					
Volume Right	3	57	0	24	0	0	15					
cSH	332	480	1146	1700	903	1700	1700					
Volume to Capacity	0.05	0.14	0.00	0.01	0.06	0.23	0.01					
Queue Length 95th (ft)	4	12	0	0	5	0	0					
Control Delay (s)	16.5	13.7	0.0	0.0	9.2	0.0	0.0					
Lane LOS	C	B	A		A							
Approach Delay (s)	16.5	13.7	0.0		1.1							
Approach LOS	C	B										
<b>Intersection Summary</b>												
Average Delay			1.5									
Intersection Capacity Utilization			53.8%		ICU Level of Service					A		
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)	127	50	54	42	43	87	39	390	27	43	265	50
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)		1764	1553		1783	1553	1736	1827	1553	1736	1827	1553
Flt Permitted		0.73	1.00		0.78	1.00	0.58	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)		1331	1553		1421	1553	1066	1827	1553	862	1827	1553
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	54	59	46	47	95	42	424	29	47	288	54
RTOR Reduction (vph)	0	0	43	0	0	69	0	0	14	0	0	27
Lane Group Flow (vph)	0	192	16	0	93	26	42	424	15	47	288	27
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)		13.6	13.6		13.6	13.6	24.7	24.7	24.7	24.7	24.7	24.7
Effective Green, g (s)		13.6	13.6		13.6	13.6	24.7	24.7	24.7	24.7	24.7	24.7
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)		367	428		392	428	534	915	778	432	915	778
v/s Ratio Prot							c0.23				0.16	
v/s Ratio Perm		c0.14	0.01		0.07	0.02	0.04		0.01	0.05		0.02
v/c Ratio		0.52	0.04		0.24	0.06	0.08	0.46	0.02	0.11	0.31	0.03
Uniform Delay, d1		15.1	13.1		13.8	13.1	6.4	8.0	6.2	6.5	7.3	6.2
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		0.6	0.0		0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Delay (s)		15.7	13.1		13.9	13.2	6.4	8.1	6.2	6.5	7.4	6.3
Level of Service		B	B		B	B	A	A	A	A	A	A
Approach Delay (s)		15.1			13.6			7.9			7.1	
Approach LOS		B			B			A			A	




















### Intersection Summary

HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	49.3	Sum of lost time (s)	11.0
Intersection Capacity Utilization	58.9%	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)	31	0	31	3	0	1	45	424	2	0	322	39
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	38	0	38	4	0	1	56	523	2	0	398	48
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	0.93	0.93	0.93	0.93	0.93		0.93					
vC, conflicting volume	772	1035	398	1072	1081	263	446			526		
vC1, stage 1 conf vol	398	398		636	636							
vC2, stage 2 conf vol	374	637		436	446							
vCu, unblocked vol	715	999	312	1038	1049	263	364			526		
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 %	92	100	94	99	100	100	95			100		
cM capacity (veh/h)	481	391	629	337	372	730	1092			1023		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	77	5	56	349	177	0	398	48				
Volume Left	38	4	56	0	0	0	0	0				
Volume Right	38	1	0	0	2	0	0	48				
cSH	545	389	1092	1700	1700	1700	1700	1700				
Volume to Capacity	0.14	0.01	0.05	0.21	0.10	0.00	0.23	0.03				
Queue Length 95th (ft)	12	1	4	0	0	0	0	0				
Control Delay (s)	12.7	14.4	8.5	0.0	0.0	0.0	0.0	0.0				
Lane LOS	B	B	A									
Approach Delay (s)	12.7	14.4	0.8						0.0			
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			34.0%	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)	5	0	1	17	1	23	2	443	20	29	324	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	6	0	1	21	1	28	2	547	25	36	400	4
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	0.99	0.99	0.99	0.99	0.99		0.99					
vC, conflicting volume	1067	1050	402	1037	1040	559	404			572		
vC1, stage 1 conf vol	473	473		564	564							
vC2, stage 2 conf vol	593	577		473	475							
vCu, unblocked vol	1064	1047	395	1034	1036	559	396			572		
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 %	98	100	100	95	100	95	100			96		
cM capacity (veh/h)	365	391	646	406	408	525	1144			991		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	7	51	574	36	404
Volume Left	6	21	2	36	0
Volume Right	1	28	25	0	4
cSH	393	465	1144	991	1700
Volume to Capacity	0.02	0.11	0.00	0.04	0.24
Queue Length 95th (ft)	1	9	0	3	0
Control Delay (s)	14.3	13.7	0.1	8.8	0.0
Lane LOS	B	B	A	A	
Approach Delay (s)	14.3	13.7	0.1	0.7	
Approach LOS	B	B			

Intersection Summary				
Average Delay			1.1	
Intersection Capacity Utilization		36.1%	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	5	460	1	1	341
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	1	6	590	1	1	437
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	1030	590			591	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1030	590			591	
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)	256	504			975	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	8	591	438
Volume Left	1	0	1
Volume Right	6	1	0
cSH	434	1700	975
Volume to Capacity	0.02	0.35	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	13.5	0.0	0.0
Lane LOS	B		A
Approach Delay (s)	13.5	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		34.3%	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)	3	16	445	6	9	333
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	4	21	571	8	12	427
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	1024	574			578	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1024	574			578	
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	96			99	
cM capacity (veh/h)	255	514			986	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	24	578	438
Volume Left	4	0	12
Volume Right	21	8	0
cSH	443	1700	986
Volume to Capacity	0.05	0.34	0.01
Queue Length 95th (ft)	4	0	1
Control Delay (s)	13.6	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	13.6	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		34.8%	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)	3	8	1	445	347	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	4	11	1	610	475	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	1090	478	481			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1090	478	481			
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	100			
cM capacity (veh/h)	236	583	1071			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	15	611	481			
Volume Left	4	1	0			
Volume Right	11	0	5			
cSH	416	1071	1700			
Volume to Capacity	0.04	0.00	0.28			
Queue Length 95th (ft)	3	0	0			
Control Delay (s)	14.0	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	14.0	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			34.2%	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)	14	3	0	442	351	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	19	4	0	605	481	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)					1299	
pX, platoon unblocked						
vC, conflicting volume	1086	481	486			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1086	481	486			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	99	100			
cM capacity (veh/h)	237	581	1066			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	23	605	481	5
Volume Left	19	0	0	0
Volume Right	4	0	0	5
cSH	265	1066	1700	1700
Volume to Capacity	0.09	0.00	0.28	0.00
Queue Length 95th (ft)	7	0	0	0
Control Delay (s)	19.9	0.0	0.0	0.0
Lane LOS	C			
Approach Delay (s)	19.9	0.0	0.0	
Approach LOS	C			

Intersection Summary			
Average Delay		0.4	
Intersection Capacity Utilization		33.3%	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)	397	7	27	327	11	45
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	551	10	38	454	15	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				561	858	556
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				561	858	556
tC, single (s)				4.2	6.9	7.0
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				96	95	87
cM capacity (veh/h)				992	281	469
Direction, Lane #	NB 1	SB 1	SB 2	SW 1		
Volume Total	561	189	303	78		
Volume Left	0	38	0	15		
Volume Right	10	0	0	62		
cSH	1700	992	1700	415		
Volume to Capacity	0.33	0.04	0.18	0.19		
Queue Length 95th (ft)	0	3	0	17		
Control Delay (s)	0.0	2.0	0.0	15.7		
Lane LOS				A	C	
Approach Delay (s)	0.0	0.8			15.7	
Approach LOS				C		
Intersection Summary						
Average Delay				1.4		
Intersection Capacity Utilization				39.7%	ICU Level of Service	A
Analysis Period (min)				15		



---

Intersection has too many legs for HCM analysis.

---

# 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)	3	356	368	0	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66
Hourly flow rate (vph)	5	539	558	0	2	2
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	558				1106	558
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	558				1106	558
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	100
cM capacity (veh/h)	1003				230	526

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	544	558	3
Volume Left	5	0	2
Volume Right	0	0	2
cSH	1003	1700	320
Volume to Capacity	0.00	0.33	0.01
Queue Length 95th (ft)	0	0	1
Control Delay (s)	0.1	0.0	16.4
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	16.4
Approach LOS			C

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		31.1%	ICU Level of Service
Analysis Period (min)		15	A

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)	5	353	364	29	28	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65
Hourly flow rate (vph)	8	543	560	45	43	6
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	605				1141	582
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	605				1141	582
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				80	99
cM capacity (veh/h)	964				218	509

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	551	605	49
Volume Left	8	0	43
Volume Right	0	45	6
cSH	964	1700	235
Volume to Capacity	0.01	0.36	0.21
Queue Length 95th (ft)	1	0	19
Control Delay (s)	0.2	0.0	24.3
Lane LOS	A		C
Approach Delay (s)	0.2	0.0	24.3
Approach LOS			C

Intersection Summary			
Average Delay		1.1	
Intersection Capacity Utilization		32.6%	ICU Level of Service A
Analysis Period (min)		15	

# 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)	353	5	3	376	17	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66
Hourly flow rate (vph)	535	8	5	570	26	8
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			542		1117	539
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			542		1117	539
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		89	99
cM capacity (veh/h)			1016		226	539

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	542	574	33
Volume Left	0	5	26
Volume Right	8	0	8
cSH	1700	1016	261
Volume to Capacity	0.32	0.00	0.13
Queue Length 95th (ft)	0	0	11
Control Delay (s)	0.0	0.1	20.8
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	20.8
Approach LOS			C

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		32.2%	ICU Level of Service A
Analysis Period (min)		15	

---

Intersection Sign configuration not allowed in HCM analysis.

---

# 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)	14	7	10	23	7	105	7	335	95	97	283	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Hourly flow rate (vph)	23	11	16	37	11	169	11	540	153	156	456	18
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	1507	1485	456	1354	1350	540	474			694		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1507	1485	456	1354	1350	540	474			694		
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 %	58	89	97	61	91	69	99			82		
cM capacity (veh/h)	54	101	600	96	122	538	1077			893		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	23	27	218	552	153	156	456	18
Volume Left	23	0	37	11	0	156	0	0
Volume Right	0	16	169	0	153	0	0	18
cSH	54	197	274	1077	1700	893	1700	1700
Volume to Capacity	0.42	0.14	0.79	0.01	0.09	0.18	0.27	0.01
Queue Length 95th (ft)	39	12	154	1	0	16	0	0
Control Delay (s)	113.7	26.2	54.4	0.3	0.0	9.9	0.0	0.0
Lane LOS	F	D	F	A		A		
Approach Delay (s)	65.7		54.4	0.2		2.5		
Approach LOS	F		F					

### Intersection Summary

Average Delay	10.5
Intersection Capacity Utilization	57.7%
ICU Level of Service	B
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)	6	71	365	31	79	232
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.58	0.58	0.58	0.58	0.58	0.58
Hourly flow rate (vph)	10	122	629	53	136	400
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	0.90	0.90			0.90	
vC, conflicting volume	1128	656			683	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1087	562			591	
tC, single (s)	6.9	7.0			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	71			84	
cM capacity (veh/h)	157	419			870	





















Direction, Lane #	WB 1	NB 1	SB 1	SB 2	SB 3
Volume Total	133	683	136	200	200
Volume Left	10	0	136	0	0
Volume Right	122	53	0	0	0
cSH	371	1700	870	1700	1700
Volume to Capacity	0.36	0.40	0.16	0.12	0.12
Queue Length 95th (ft)	40	0	14	0	0
Control Delay (s)	20.0	0.0	9.9	0.0	0.0
Lane LOS	C		A		
Approach Delay (s)	20.0	0.0	2.5		
Approach LOS	C				

Intersection Summary					
Average Delay			3.0		
Intersection Capacity Utilization			40.2%	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)	7	211	7	82	118	35	80	7	6	0	9	101
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	1.00		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	1818		1736	1827	1553		1736			1827	1553
Flt Permitted	0.64	1.00		0.37	1.00	1.00		0.74			1.00	1.00
Satd. Flow (perm)	1162	1818		674	1827	1553		1349			1827	1553
Peak-hour factor, PHF	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Adj. Flow (vph)	11	346	11	134	193	57	131	11	10	0	15	166
RTOR Reduction (vph)	0	1	0	0	0	30	0	2	0	0	0	129
Lane Group Flow (vph)	11	356	0	134	193	27	0	150	0	0	15	37
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)	22.1	21.0		32.7	26.3	26.3		12.6			12.6	12.6
Effective Green, g (s)	22.1	21.0		32.7	26.3	26.3		12.6			12.6	12.6
Actuated g/C Ratio	0.39	0.37		0.58	0.47	0.47		0.22			0.22	0.22
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)	466	676		510	850	723		301			407	346
v/s Ratio Prot	0.00	c0.20		c0.03	0.11						0.01	
v/s Ratio Perm	0.01			0.12		0.02		c0.11				0.02
v/c Ratio	0.02	0.53		0.26	0.23	0.04		0.50			0.04	0.11
Uniform Delay, d1	10.5	13.9		6.2	9.0	8.2		19.2			17.2	17.5
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.0	1.0		0.3	0.2	0.0		1.5			0.0	0.2
Delay (s)	10.6	14.8		6.5	9.2	8.2		20.7			17.2	17.6
Level of Service	B	B		A	A	A		C			B	B
Approach Delay (s)		14.7			8.1			20.7			17.6	
Approach LOS		B			A			C			B	
<b>Intersection Summary</b>												
HCM Average Control Delay			13.7				HCM Level of Service				B	
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			56.5				Sum of lost time (s)		22.0			
Intersection Capacity Utilization			42.9%				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)	4	52	175	12	68	56
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.58	0.58	0.58	0.58	0.58	0.58
Hourly flow rate (vph)	7	90	302	21	117	97
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	643	312			322	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	643	312			322	
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	88			90	
cM capacity (veh/h)	393	724			1226	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	97	322	117	97
Volume Left	7	0	117	0
Volume Right	90	21	0	0
cSH	683	1700	1226	1700
Volume to Capacity	0.14	0.19	0.10	0.06
Queue Length 95th (ft)	12	0	8	0
Control Delay (s)	11.1	0.0	8.2	0.0
Lane LOS	B		A	
Approach Delay (s)	11.1	0.0	4.5	
Approach LOS	B			

Intersection Summary			
Average Delay		3.2	
Intersection Capacity Utilization		27.1%	ICU Level of Service A
Analysis Period (min)		15	

# 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	364	200	0	370	300
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	396	217	0	402	326
RTOR Reduction (vph)	0	277	0	0	0	171
Lane Group Flow (vph)	0	119	217	0	402	155
Turn Type		Perm	Perm			Perm
Protected Phases	4			8	2	
Permitted Phases		4	8			2
Actuated Green, G (s)		10.6	10.6		16.8	16.8
Effective Green, g (s)		10.6	10.6		16.8	16.8
Actuated g/C Ratio		0.30	0.30		0.47	0.47
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)		465	414		824	737
v/s Ratio Prot					c0.23	
v/s Ratio Perm		0.08	c0.16			0.10
v/c Ratio		0.26	0.52		0.49	0.21
Uniform Delay, d1		9.4	10.3		6.4	5.4
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.3	1.2		2.1	0.6
Delay (s)		9.7	11.5		8.4	6.1
Level of Service		A	B		A	A
Approach Delay (s)	9.7			11.5	7.4	
Approach LOS	A			B	A	

### Intersection Summary

HCM Average Control Delay	8.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	35.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			