












# HCM Unsignalized Intersection Capacity Analysis

## 21: Frontage Rd & US 276










2035 PM  
7/6/2011

						
Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (veh/h)	69	160	50	2770	2206	71
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)	77	178	56	3078	2451	79
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)					1009	
pX, platoon unblocked	0.56	0.56	0.56			
vC, conflicting volume	4141	1265	2530			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	5026	0	2165			
tC, single (s)	6.9	7.0	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	71	58			
cM capacity (veh/h)	0	605	131			
Direction, Lane #	WB 1	SE 1	SE 2	SE 3	NW 1	NW 2
Volume Total	254	56	1539	1539	1634	896
Volume Left	77	56	0	0	0	0
Volume Right	178	0	0	0	0	79
cSH	0	131	1700	1700	1700	1700
Volume to Capacity	712.03	0.42	0.91	0.91	0.96	0.53
Queue Length 95th (ft)	Err	46	0	0	0	0
Control Delay (s)	Err	51.1	0.0	0.0	0.0	0.0
Lane LOS	F	F				
Approach Delay (s)	Err	0.9			0.0	
Approach LOS	F					
Intersection Summary						
Average Delay		430.4				
Intersection Capacity Utilization		96.9%		ICU Level of Service		F
Analysis Period (min)		15				

# HCM Unsignalized Intersection Capacity Analysis

## 22: US 276 & St Josephs Dr

2035 PM  
7/6/2011

						
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	2290	549	113	1784	493	348
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)	2544	610	126	1982	548	387
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				861		
pX, platoon unblocked					0.53	
vC, conflicting volume			3154		4092	1577
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			3154		5053	1577
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			0		0	0
cM capacity (veh/h)			92		0	95
Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	
Volume Total	1696	1458	786	1321	934	
Volume Left	0	0	126	0	548	
Volume Right	0	610	0	0	387	
cSH	1700	1700	92	1700	0	
Volume to Capacity	1.00	0.86	1.36	0.78	Err	
Queue Length 95th (ft)	0	0	231	0	Err	
Control Delay (s)	0.0	0.0	298.8	0.0	Err	
Lane LOS			F		F	
Approach Delay (s)	0.0		111.5		Err	
Approach LOS					F	
Intersection Summary						
Average Delay			Err			
Intersection Capacity Utilization			189.5%		ICU Level of Service	H
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 29: Rothwell Dr & E Butler Road

2035 PM  
7/6/2011













Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	30	8	2	1101	1518	2
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)	33	9	2	1223	1687	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		5				
Median type				TWLTL	TWLTL	
Median storage (veh)				2	2	
Upstream signal (ft)				1175	377	
pX, platoon unblocked	0.87	0.82	0.82			
vC, conflicting volume	2304	844	1689			
vC1, stage 1 conf vol	1688					
vC2, stage 2 conf vol	616					
vCu, unblocked vol	1285	382	1408			
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 %	78	98	99			
cM capacity (veh/h)	150	500	383			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	42	2	612	612	1124	564
Volume Left	33	2	0	0	0	0
Volume Right	9	0	0	0	0	2
cSH	190	383	1700	1700	1700	1700
Volume to Capacity	0.22	0.01	0.36	0.36	0.66	0.33
Queue Length 95th (ft)	20	0	0	0	0	0
Control Delay (s)	30.7	14.4	0.0	0.0	0.0	0.0
Lane LOS	D	B				
Approach Delay (s)	30.7	0.0			0.0	
Approach LOS	D					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			52.0%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 32: New Commerce Ct & E Butler Road

2035 PM  
7/6/2011




















						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	80	91	1531	6	80	2399
Sign Control	Stop		Free		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)	89	101	1701	7	89	2666
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)			369			
pX, platoon unblocked	0.83	0.83			0.83	
vC, conflicting volume	3215	854			1708	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3260	402			1436	
tC, single (s)	6.9	7.0			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	79			76	
cM capacity (veh/h)	4	487			375	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	190	1134	574	89	1333	1333
Volume Left	89	0	0	89	0	0
Volume Right	101	0	7	0	0	0
cSH	9	1700	1700	375	1700	1700
Volume to Capacity	21.69	0.67	0.34	0.24	0.78	0.78
Queue Length 95th (ft)	Err	0	0	23	0	0
Control Delay (s)	Err	0.0	0.0	17.6	0.0	0.0
Lane LOS	F			C		
Approach Delay (s)	Err	0.0		0.6		
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			408.7			
Intersection Capacity Utilization			83.0%		ICU Level of Service	E
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 33: E Butler Road & Brookfield Pkwy

2035 PM

7/6/2011

													
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR	
Lane Configurations													
Volume (veh/h)	23	1593	6	2	2187	14	3	0	267	25	0	6	
Sign Control	Free				Free				Stop		Stop		
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)	26	1770	7	2	2430	16	3	0	297	28	0	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)	939												
pX, platoon unblocked				0.83			0.83			0.83			
vC, conflicting volume	2446			1777			3385			4270			
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	2446			1518			3466			4538			
tC, single (s)	4.2			4.2			7.6			6.6			
tC, 2 stage (s)													
tF (s)	2.2			2.2			3.5			4.0			
p0 queue free %	86			99			0			100			
cM capacity (veh/h)	180			348			2			1			
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	SE 1	SE 2	NW 1	NW 2				
Volume Total	26	1180	597	1217	1231	3	297	28	7				
Volume Left	26	0	0	2	0	3	0	28	0				
Volume Right	0	0	7	0	16	0	297	0	7				
cSH	180	1700	1700	348	1700	2	167	0	458				
Volume to Capacity	0.14	0.69	0.35	0.01	0.72	1.94	1.78	Err	0.01				
Queue Length 95th (ft)	12	0	0	0	0	31	535	Err	1				
Control Delay (s)	28.3	0.0	0.0	0.4	0.0	3685.3	420.1	Err	13.0				
Lane LOS	D			A		F	F	F	B				
Approach Delay (s)	0.4			0.2		456.3		Err					
Approach LOS						F		F					
Intersection Summary													
Average Delay	Err												
Intersection Capacity Utilization	90.8%			ICU Level of Service						E			
Analysis Period (min)	15												