











HCM Unsignalized Intersection Capacity Analysis

21: Frontage Rd & US 276










2035 AM
7/6/2011

						
Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (veh/h)	166	27	103	2092	2557	92
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)	184	30	114	2324	2841	102
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)					1010	
pX, platoon unblocked	0.44	0.44	0.44			
vC, conflicting volume	4283	1472	2943			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	5918	0	2871			
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	94	0			
cM capacity (veh/h)	0	473	53			
Direction, Lane #	WB 1	SE 1	SE 2	SE 3	NW 1	NW 2
Volume Total	214	114	1162	1162	1894	1049
Volume Left	184	114	0	0	0	0
Volume Right	30	0	0	0	0	102
cSH	0	53	1700	1700	1700	1700
Volume to Capacity	Err	2.15	0.68	0.68	1.11	0.62
Queue Length 95th (ft)	Err	285	0	0	0	0
Control Delay (s)	Err	696.8	0.0	0.0	0.0	0.0
Lane LOS	F	F				
Approach Delay (s)	Err	32.7			0.0	
Approach LOS	F					
Intersection Summary						
Average Delay			Err			
Intersection Capacity Utilization			100.2%		ICU Level of Service	G
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

22: US 276 & St Josephs Dr

2035 AM
7/6/2011

						
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	1899	359	342	1397	610	124
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)	2110	399	380	1552	678	138
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)				862		
pX, platoon unblocked					0.37	
vC, conflicting volume			2509		3846	1254
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2509		5256	1254
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	13
cM capacity (veh/h)			170		0	159
Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	
Volume Total	1407	1102	897	1035	816	
Volume Left	0	0	380	0	678	
Volume Right	0	399	0	0	138	
cSH	1700	1700	170	1700	0	
Volume to Capacity	0.83	0.65	2.24	0.61	Err	
Queue Length 95th (ft)	0	0	772	0	Err	
Control Delay (s)	0.0	0.0	619.6	0.0	Err	
Lane LOS			F		F	
Approach Delay (s)	0.0		287.8		Err	
Approach LOS					F	
Intersection Summary						
Average Delay			Err			
Intersection Capacity Utilization			163.8%		ICU Level of Service	H
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

29: Rothwell Dr & E Butler Road

2035 AM
7/6/2011













Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	8	2	6	1559	1310	37
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)	9	2	7	1732	1456	41
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	379	
pX, platoon unblocked	0.77	0.77	0.77			
vC, conflicting volume	2356	748	1497			
vC1, stage 1 conf vol	1476					
vC2, stage 2 conf vol	879					
vCu, unblocked vol	822	76	1048			
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 %	96	100	99			
cM capacity (veh/h)	227	740	495			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	11	7	866	866	970	526
Volume Left	9	7	0	0	0	0
Volume Right	2	0	0	0	0	41
cSH	284	495	1700	1700	1700	1700
Volume to Capacity	0.04	0.01	0.51	0.51	0.57	0.31
Queue Length 95th (ft)	3	1	0	0	0	0
Control Delay (s)	19.2	12.4	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	19.2	0.0			0.0	
Approach LOS	C					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			53.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

32: New Commerce Ct & E Butler Road

2035 AM
7/6/2011




















						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	75	81	2075	30	50	1873
Sign Control	Stop		Free		Free	Free
Grade	0%		0%		0%	0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	83	90	2306	33	56	2081
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)			371			
pX, platoon unblocked	0.56	0.56			0.56	
vC, conflicting volume	3474	1169			2339	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3849	0			1816	
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	85			69	
cM capacity (veh/h)	1	600			180	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	173	1537	802	56	1041	1041
Volume Left	83	0	0	56	0	0
Volume Right	90	0	33	0	0	0
cSH	2	1700	1700	180	1700	1700
Volume to Capacity	87.94	0.90	0.47	0.31	0.61	0.61
Queue Length 95th (ft)	Err	0	0	31	0	0
Control Delay (s)	Err	0.0	0.0	33.8	0.0	0.0
Lane LOS	F			D		
Approach Delay (s)	Err	0.0		0.9		
Approach LOS	F					
Intersection Summary						
Average Delay		373.2				
Intersection Capacity Utilization		74.1%		ICU Level of Service		D
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

33: E Butler Road & Brookfield Pkwy

2035 AM

7/6/2011

																		
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR						
Lane Configurations																		
Volume (veh/h)	134	1992	30	23	1876	25	2	0	19	28	0	14						
Sign Control	Free				Free				Stop									
Grade	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)	149	2213	33	26	2084	28	2	0	21	31	0	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)	939																	
pX, platoon unblocked				0.56				0.56	0.56									
vC, conflicting volume	2112				2247				3569	4694	1056	3642						
vC1, stage 1 conf vol																		
vC2, stage 2 conf vol																		
vCu, unblocked vol	2112				1653				4018	6029	1056	4148						
tC, single (s)	4.2				4.2				7.6	6.6	7.0	7.6						
tC, 2 stage (s)																		
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5						
p0 queue free %	39				88				0	100	90	0						
cM capacity (veh/h)	245				209				0	0	217	0						
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	SE 1	SE 2	NW 1	NW 2									
Volume Total	149	1476	771	1068	1070	2	21	31	16									
Volume Left	149	0	0	26	0	2	0	31	0									
Volume Right	0	0	33	0	28	0	21	0	16									
cSH	245	1700	1700	209	1700	0	217	0	601									
Volume to Capacity	0.61	0.87	0.45	0.12	0.63	10.17	0.10	196.32	0.03									
Queue Length 95th (ft)	89	0	0	10	0	Err	8	Err	2									
Control Delay (s)	40.0	0.0	0.0	8.2	0.0	Err	23.4	Err	11.1									
Lane LOS	E				A				F	C	F	B						
Approach Delay (s)	2.5				4.1				973.5									
Approach LOS							F				F							
Intersection Summary																		
Average Delay	75.7																	
Intersection Capacity Utilization	126.2%				ICU Level of Service				H									
Analysis Period (min)	15																	