












HCM Unsignalized Intersection Capacity Analysis 21: Frontage Rd & US 276

2015 PM Woodruff Improvements

7/6/2011










						
Movement	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (veh/h)	53	119	37	2967	1654	53
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)	59	132	41	3297	1838	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)					1010	
pX, platoon unblocked	0.76	0.76	0.76			
vC, conflicting volume	3598	948	1897			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3789	291	1543			
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	75	87			
cM capacity (veh/h)	2	527	312			
Direction, Lane #	WB 1	SE 1	SE 2	SE 3	NW 1	NW 2
Volume Total	191	41	1648	1648	1225	671
Volume Left	59	41	0	0	0	0
Volume Right	132	0	0	0	0	59
cSH	6	312	1700	1700	1700	1700
Volume to Capacity	33.14	0.13	0.97	0.97	0.72	0.39
Queue Length 95th (ft)	Err	11	0	0	0	0
Control Delay (s)	Err	18.3	0.0	0.0	0.0	0.0
Lane LOS	F	C				
Approach Delay (s)	Err	0.2			0.0	
Approach LOS	F					
Intersection Summary						
Average Delay			352.3			
Intersection Capacity Utilization			98.9%		ICU Level of Service	F
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

22: US 276 & St Josephs Dr

2015 PM Woodruff Improvements

7/6/2011

						
Movement	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (veh/h)	1710	410	87	1340	367	266
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)	1900	456	97	1489	408	296
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					0.75	
vC, conflicting volume			2356		3066	1178
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			2356		3088	1178
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			51		0	0
cM capacity (veh/h)			196		3	179
Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	
Volume Total	1267	1089	593	993	703	
Volume Left	0	0	97	0	408	
Volume Right	0	456	0	0	296	
cSH	1700	1700	196	1700	6	
Volume to Capacity	0.75	0.64	0.49	0.58	125.59	
Queue Length 95th (ft)	0	0	61	0	Err	
Control Delay (s)	0.0	0.0	29.9	0.0	Err	
Lane LOS			D		F	
Approach Delay (s)	0.0		11.2		Err	
Approach LOS					F	
Intersection Summary						
Average Delay			1518.0			
Intersection Capacity Utilization			145.8%		ICU Level of Service	H
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

29: Rothwell Dr & E Butler Road

2015 PM Woodruff Improvements

7/6/2011













Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	21	6	1	784	1081	1
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)	23	7	1	871	1201	1
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	0.90	0.89	0.89			
vC, conflicting volume	1639	601	1202			
vC1, stage 1 conf vol	1202					
vC2, stage 2 conf vol	438					
vCu, unblocked vol	1381	304	980			
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 %	91	99	100			
cM capacity (veh/h)	265	608	607			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	30	1	436	436	801	401
Volume Left	23	1	0	0	0	0
Volume Right	7	0	0	0	0	1
cSH	340	607	1700	1700	1700	1700
Volume to Capacity	0.09	0.00	0.26	0.26	0.47	0.24
Queue Length 95th (ft)	7	0	0	0	0	0
Control Delay (s)	17.9	10.9	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	17.9	0.0			0.0	
Approach LOS	C					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			39.9%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

32: New Commerce Ct & E Butler Road

2015 PM Woodruff Improvements

7/6/2011




















						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	57	65	1090	4	57	1708
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)	63	72	1211	4	63	1898
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	0.91	0.91			0.91	
vC, conflicting volume	2289	608			1216	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2218	369			1038	
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	87			89	
cM capacity (veh/h)	29	563			589	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	136	807	408	63	949	949
Volume Left	63	0	0	63	0	0
Volume Right	72	0	4	0	0	0
cSH	58	1700	1700	589	1700	1700
Volume to Capacity	2.32	0.47	0.24	0.11	0.56	0.56
Queue Length 95th (ft)	336	0	0	9	0	0
Control Delay (s)	754.3	0.0	0.0	11.8	0.0	0.0
Lane LOS	F			B		
Approach Delay (s)	754.3	0.0		0.4		
Approach LOS	F					
Intersection Summary						
Average Delay		31.1				
Intersection Capacity Utilization		61.0%		ICU Level of Service		B
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

33: E Butler Road & Brookfield Pkwy

2015 PM Woodruff Improvements

7/6/2011

													
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR	
Lane Configurations													
Volume (veh/h)	17	1134	4	1	1557	10	2	0	190	18	0	4	
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)	19	1260	4	1	1730	11	2	0	211	20	0	4	
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				0.95				0.95	0.95			0.95	0.95
vC, conflicting volume	1741			1264				2410	3040	871	2378	3043	632
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1741			1179				2381	3042	871	2348	3045	516
tC, single (s)	4.2			4.2				7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)													
tF (s)	2.2			2.2				3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100				86	100	27	0	100	99
cM capacity (veh/h)	344			545				16	11	289	4	11	473
Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2	SE 1	SE 2	NW 1	NW 2				
Volume Total	19	840	424	866	876	2	211	20	4				
Volume Left	19	0	0	1	0	2	0	20	0				
Volume Right	0	0	4	0	11	0	211	0	4				
cSH	344	1700	1700	545	1700	16	289	4	473				
Volume to Capacity	0.05	0.49	0.25	0.00	0.52	0.14	0.73	4.46	0.01				
Queue Length 95th (ft)	4	0	0	0	0	10	132	Err	1				
Control Delay (s)	16.1	0.0	0.0	0.1	0.0	270.9	45.2	Err	12.7				
Lane LOS	C			A		F	E	F	B				
Approach Delay (s)	0.2			0.0		47.5		8183.3					
Approach LOS						E		F					
Intersection Summary													
Average Delay	64.5												
Intersection Capacity Utilization	68.5%			ICU Level of Service					C				
Analysis Period (min)	15												