

Attachment A

Turning Movement Count Data/Traffic Signal Permit Plans/Field Sketches

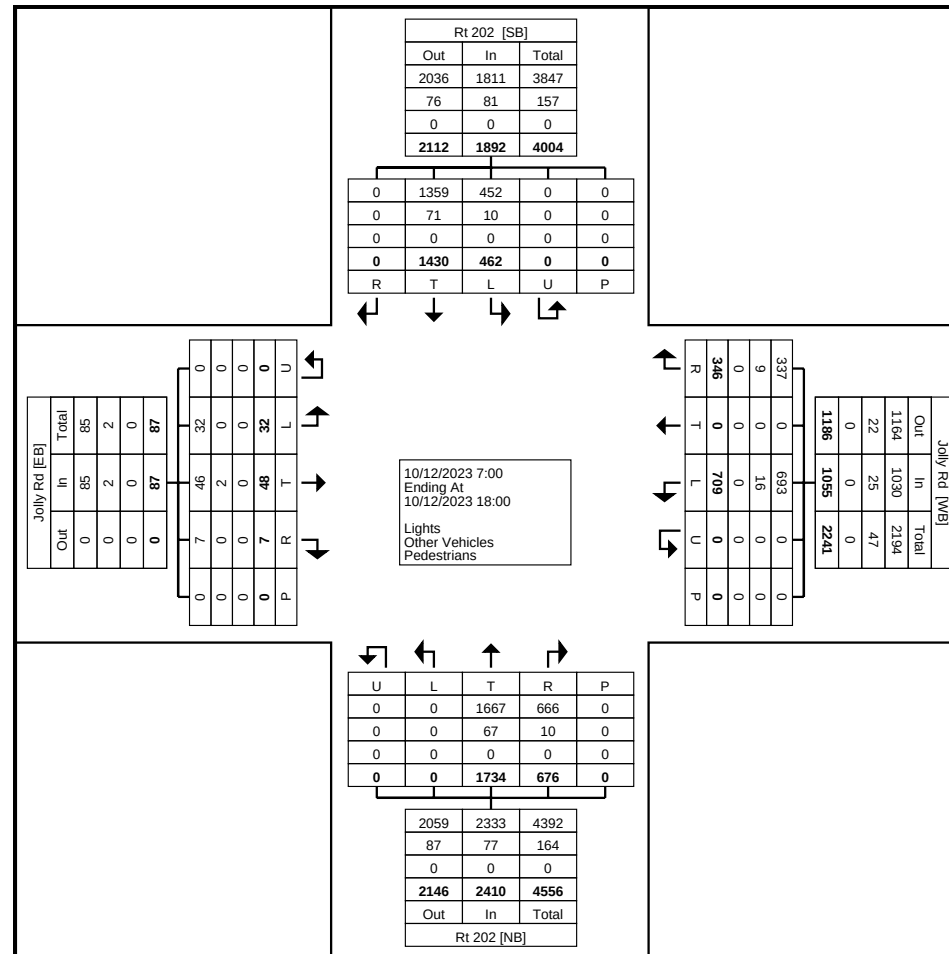
Start Time	Rt 202 Southbound							Jolly Rd Westbound							Rt 202 Northbound							Jolly Rd Eastbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total		
7:00	39	73	0	0	0	0	112	6	0	7	5	0	0	18	0	106	36	9	0	0	151	0	0	0	0	0	0	281	
7:15	42	91	0	0	0	0	133	18	0	12	16	0	0	46	0	92	19	3	0	0	114	0	0	0	0	0	0	293	
7:30	53	108	0	0	0	0	161	26	0	7	5	0	0	38	0	117	32	8	0	0	157	1	0	0	0	0	1	357	
7:45	38	131	0	0	0	0	169	35	0	8	14	0	0	57	0	110	42	12	0	0	164	0	1	0	0	0	1	391	
Hourly Total	172	403	0	0	0	0	575	85	0	34	40	0	0	159	0	425	129	32	0	0	586	1	1	0	0	0	2	1322	
8:00	41	134	0	0	0	0	175	43	0	11	9	0	0	63	0	109	53	2	0	0	164	6	7	1	0	0	14	416	
8:15	58	124	0	0	0	0	182	18	0	7	10	0	0	35	0	131	38	1	0	0	170	0	2	0	0	0	2	389	
8:30	44	142	0	0	0	0	186	32	0	9	8	0	0	49	0	106	41	3	0	0	150	1	1	0	0	0	2	387	
8:45	35	97	0	0	0	0	132	24	0	13	6	0	0	43	0	111	29	6	0	0	146	2	1	0	0	0	3	324	
Hourly Total	178	497	0	0	0	0	675	117	0	40	33	0	0	190	0	457	161	12	0	0	630	9	11	1	0	0	21	1516	
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
16:00	15	70	0	0	0	0	85	59	0	15	17	0	0	91	0	103	25	10	0	0	138	1	4	0	0	0	5	319	
16:15	20	59	0	0	0	0	79	56	0	10	14	0	0	80	0	114	34	15	0	0	163	0	2	0	0	0	2	324	
16:30	17	64	0	0	0	0	81	57	0	11	6	0	0	74	0	93	26	9	0	0	128	2	1	1	0	0	4	287	
16:45	11	59	0	0	0	0	70	75	0	17	10	0	0	102	0	110	32	6	0	0	148	2	3	2	0	0	7	327	
Hourly Total	63	252	0	0	0	0	315	247	0	53	47	0	0	347	0	420	117	40	0	0	577	5	10	3	0	0	18	1257	
17:00	15	65	0	0	0	0	80	64	0	17	18	0	0	99	0	114	33	21	0	0	168	0	0	1	0	0	1	348	
17:15	14	83	0	0	0	0	97	70	0	11	14	0	0	95	0	122	31	13	0	0	166	2	7	0	0	0	9	367	
17:30	15	70	0	0	0	0	85	75	0	4	15	0	0	94	0	101	22	8	0	0	131	8	10	2	0	0	20	330	
17:45	5	60	0	0	0	0	65	51	0	11	9	0	0	71	0	95	44	13	0	0	152	7	9	0	0	0	16	304	
Hourly Total	49	278	0	0	0	0	327	260	0	43	56	0	0	359	0	432	130	55	0	0	617	17	26	3	0	0	46	1349	
Grand Total	462	1430	0	0	0	0	1892	709	0	170	176	0	0	1055	0	1734	537	139	0	0	2410	32	48	7	0	0	87	5444	
Approach %	24.4	75.6	0.0	0.0	0.0	-	-	67.2	0.0	16.1	16.7	0.0	-	-	0.0	72.0	22.3	5.8	0.0	-	-	36.8	55.2	8.0	0.0	-	-	-	
Total %	8.5	26.3	0.0	0.0	0.0	-	34.8	13.0	0.0	3.1	3.2	0.0	-	19.4	0.0	31.9	9.9	2.6	0.0	-	44.3	0.6	0.9	0.1	0.0	-	1.6	-	
Lights	452	1359	0	0	0	-	1811	693	0	165	172	0	-	1030	0	1667	529	137	0	-	2333	32	46	7	0	-	85	5259	
% Lights	97.8	95.0	-	-	-	-	95.7	97.7	-	97.1	97.7	-	-	97.6	-	96.1	98.5	98.6	-	-	96.8	100.0	95.8	100.0	-	-	97.7	96.6	
Other Vehicles	10	71	0	0	0	-	81	16	0	5	4	0	-	25	0	67	8	2	0	-	77	0	2	0	0	-	2	185	
% Other Vehicles	2.2	5.0	-	-	-	-	4.3	2.3	-	2.9	2.3	-	-	2.4	-	3.9	1.5	1.4	-	-	3.2	0.0	4.2	0.0	-	-	2.3	3.4	
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	0	-	-	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	



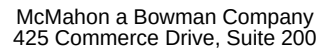
McMahon a Bowman Company
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 313807-01-001 Whitpain - 202 &
Jolly
Site Code:
Start Date: 10/12/2023
Page No: 2



Turning Movement Data Plot



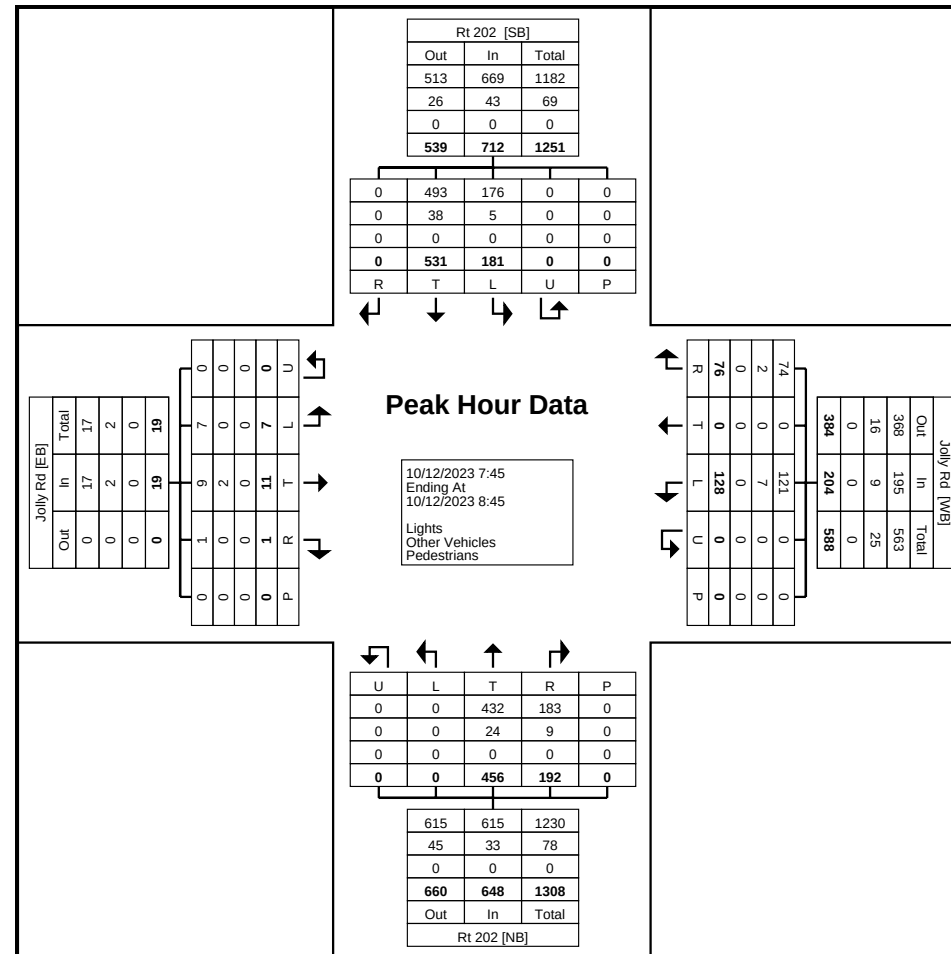
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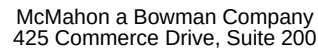
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Site Code:
Start Date: 10/12/2023
Page No: 4



Turning Movement Peak Hour Data Plot (7:45)



Count Name: 313807-01-001 Whitpain - 202 & Jolly
Site Code:
Start Date: 10/12/2023
Page No: 5

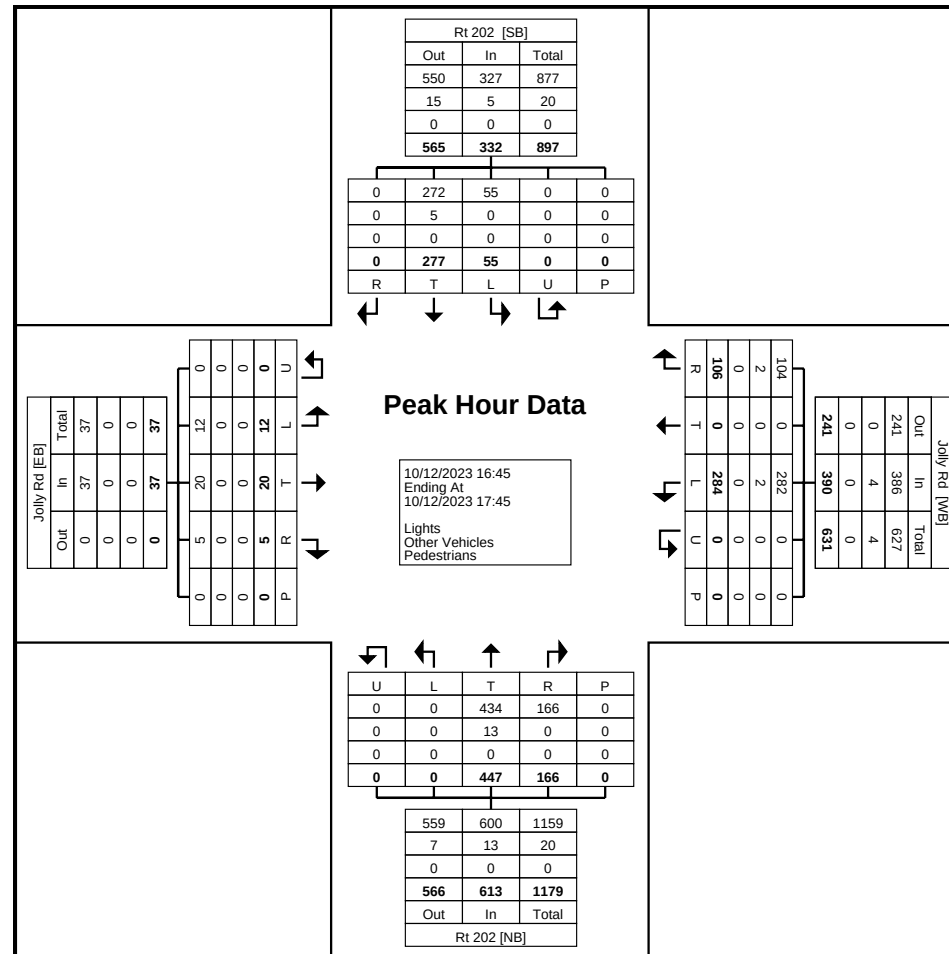
Start Time	Rt 202 Southbound							Jolly Rd Westbound							Rt 202 Northbound							Jolly Rd Eastbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App.Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App.Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App.Total	Left	Thru	Right	U-Turn	Peds	App.Total		
16:45	11	59	0	0	0	0	70	75	0	17	10	0	0	102	0	110	32	6	0	0	148	2	3	2	0	0	7	327	
17:00	15	65	0	0	0	0	80	64	0	17	18	0	0	99	0	114	33	21	0	0	168	0	0	1	0	0	1	348	
17:15	14	83	0	0	0	0	97	70	0	11	14	0	0	95	0	122	31	13	0	0	166	2	7	0	0	0	9	367	
17:30	15	70	0	0	0	0	85	75	0	4	15	0	0	94	0	101	22	8	0	0	131	8	10	2	0	0	20	330	
Total	55	277	0	0	0	0	332	284	0	49	57	0	0	390	0	447	118	48	0	0	613	12	20	5	0	0	37	1372	
Approach %	16.6	83.4	0.0	0.0	0.0	-	-	72.8	0.0	12.6	14.6	0.0	-	-	0.0	72.9	19.2	7.8	0.0	-	-	32.4	54.1	13.5	0.0	-	-	-	
Total %	4.0	20.2	0.0	0.0	0.0	-	24.2	20.7	0.0	3.6	4.2	0.0	-	28.4	0.0	32.6	8.6	3.5	0.0	-	44.7	0.9	1.5	0.4	0.0	-	2.7	-	
PHF	0.917	0.834	0.000	0.000	0.000	-	0.856	0.947	0.000	0.721	0.792	0.000	-	0.956	0.000	0.916	0.894	0.571	0.000	-	0.912	0.375	0.500	0.625	0.000	-	0.463	0.935	
Lights	55	272	0	0	0	-	327	282	0	48	56	0	-	386	0	434	118	48	0	-	600	12	20	5	0	-	37	1350	
% Lights	100.0	98.2	-	-	-	-	98.5	99.3	-	98.0	98.2	-	-	99.0	-	97.1	100.0	100.0	-	-	97.9	100.0	100.0	100.0	-	-	100.0	98.4	
Other Vehicles	0	5	0	0	0	-	5	2	0	1	1	0	-	4	0	13	0	0	0	-	13	0	0	0	0	-	0	22	
% Other Vehicles	0.0	1.8	-	-	-	-	1.5	0.7	-	2.0	1.8	-	-	1.0	-	2.9	0.0	0.0	-	-	2.1	0.0	0.0	0.0	-	-	0.0	1.6	
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-	-	-	-	0	-	-	-	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	



McMahon a Bowman Company
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 313807-01-001 Whitpain - 202 &
Jolly
Site Code:
Start Date: 10/12/2023
Page No: 6



Turning Movement Peak Hour Data Plot (16:45)

McMahon a Bowman Company

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Whitpain Township
Location: Route 202 &
Jolly Road/ Centre Park Road
Counter: M

File Name : 202jolly01s
Site Code : 00000000
Start Date : 10/21/2023
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Route 202 Southbound			Jolly Rd Westbound				Route 202 Northbound				Centre Park Rd Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	ROR	Right	Left	Thru	ROR	Right	Left	Thru	Right	
11:00	11	113	0	9	0	2	15	0	147	2	16	0	0	0	315
11:15	15	134	0	10	0	2	14	0	131	2	14	0	0	0	322
11:30	11	134	0	11	0	4	16	0	165	3	18	0	0	0	362
11:45	14	106	0	12	0	2	18	0	156	2	15	0	0	0	325
Total	51	487	0	42	0	10	63	0	599	9	63	0	0	0	1324
12:00	11	97	0	15	0	1	22	0	111	0	16	0	0	0	273
12:15	10	119	0	11	0	2	20	0	162	4	11	0	0	0	339
12:30	12	114	0	14	0	1	19	0	151	2	15	0	0	0	328
12:45	12	106	0	11	0	0	18	0	152	3	16	0	0	0	318
Total	45	436	0	51	0	4	79	0	576	9	58	0	0	0	1258
13:00	10	92	0	10	0	0	12	0	137	2	18	0	0	0	281
13:15	9	122	0	9	0	1	14	0	119	3	13	0	0	0	290
13:30	8	129	0	10	0	2	12	0	122	2	11	0	0	0	296
13:45	11	114	0	11	0	0	10	0	126	0	10	0	0	0	282
Total	38	457	0	40	0	3	48	0	504	7	52	0	0	0	1149
Grand Total	134	1380	0	133	0	17	190	0	1679	25	173	0	0	0	3731
Apprch %	8.9	91.1	0	39.1	0	5	55.9	0	89.5	1.3	9.2	0	0	0	
Total %	3.6	37	0	3.6	0	0.5	5.1	0	45	0.7	4.6	0	0	0	
Passenger Vehicles	132	1355	0	133	0	17	190	0	1642	25	169	0	0	0	3663
% Passenger Vehicles	98.5	98.2	0	100	0	100	100	0	97.8	100	97.7	0	0	0	98.2
Heavy Vehicles	2	25	0	0	0	0	0	0	37	0	4	0	0	0	68
% Heavy Vehicles	1.5	1.8	0	0	0	0	0	0	2.2	0	2.3	0	0	0	1.8

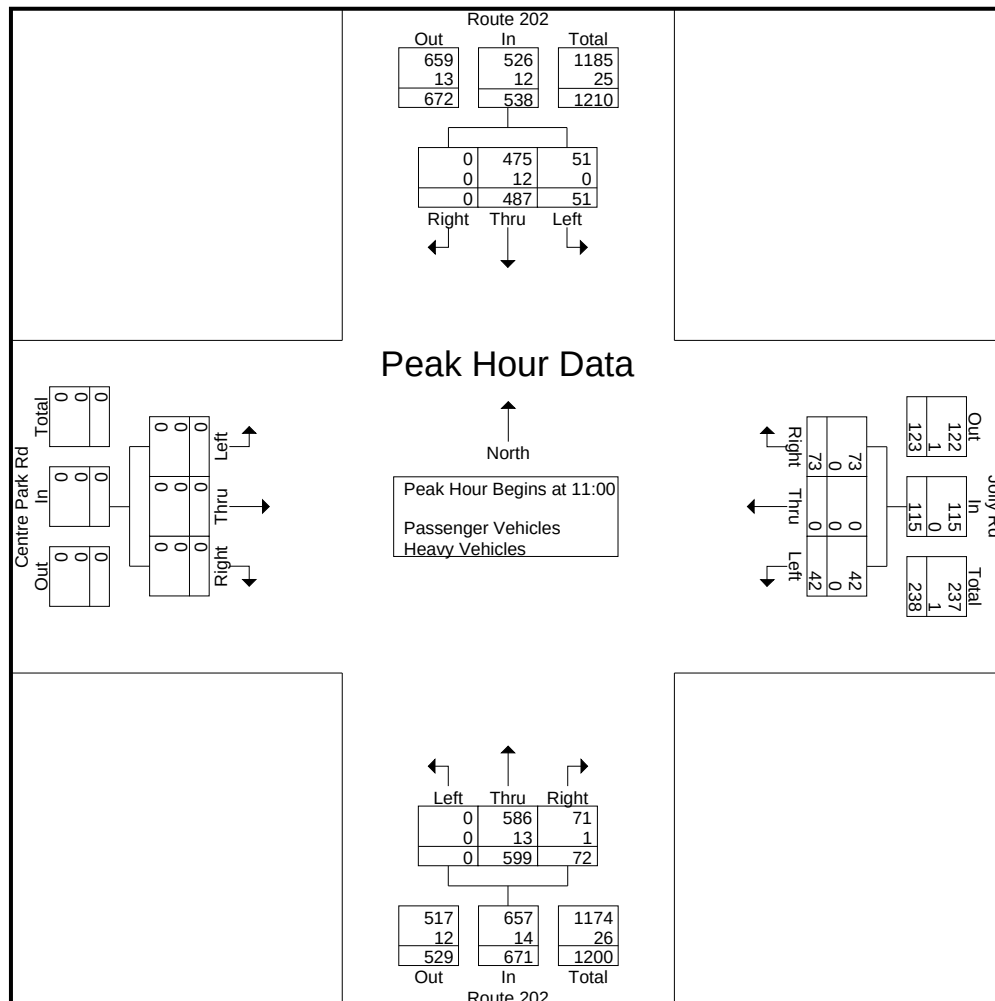
McMahon a Bowman Company

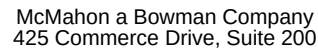
425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Whitpain Township
Location: Route 202 &
Jolly Road/ Centre Park Road
Counter: M

File Name : 202jolly01s
Site Code : 00000000
Start Date : 10/21/2023
Page No : 2

	Route 202 Southbound				Jolly Rd Westbound					Route 202 Northbound					Centre Park Rd Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	ROR	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 to 13:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 11:00																			
11:00	11	113	0	124	9	0	2	15	26	0	147	2	16	165	0	0	0	0	315
11:15	15	134	0	149	10	0	2	14	26	0	131	2	14	147	0	0	0	0	322
11:30	11	134	0	145	11	0	4	16	31	0	165	3	18	186	0	0	0	0	362
11:45	14	106	0	120	12	0	2	18	32	0	156	2	15	173	0	0	0	0	325
Total Volume	51	487	0	538	42	0	10	63	115	0	599	9	63	671	0	0	0	0	1324
% App. Total	9.5	90.5	0		36.5	0	8.7	54.8		0	89.3	1.3	9.4		0	0	0		
PHF	.850	.909	.000	.903	.875	.000	.625	.875	.898	.000	.908	.750	.875	.902	.000	.000	.000	.000	.914
Passenger Vehicles	51	475	0	526	42	0	10	63	115	0	586	9	62	657	0	0	0	0	1298
% Passenger Vehicles	100	97.5	0	97.8	100	0	100	100	100	0	97.8	100	98.4	97.9	0	0	0	0	98.0
Heavy Vehicles	0	12	0	12	0	0	0	0	0	0	13	0	1	14	0	0	0	0	26
% Heavy Vehicles	0	2.5	0	2.2	0	0	0	0	0	0	2.2	0	1.6	2.1	0	0	0	0	2.0





Count Name: 313807-01-001 Whitpain - Wentz
& Jolly Rd
Site Code:
Start Date: 10/12/2023
Page No: 1

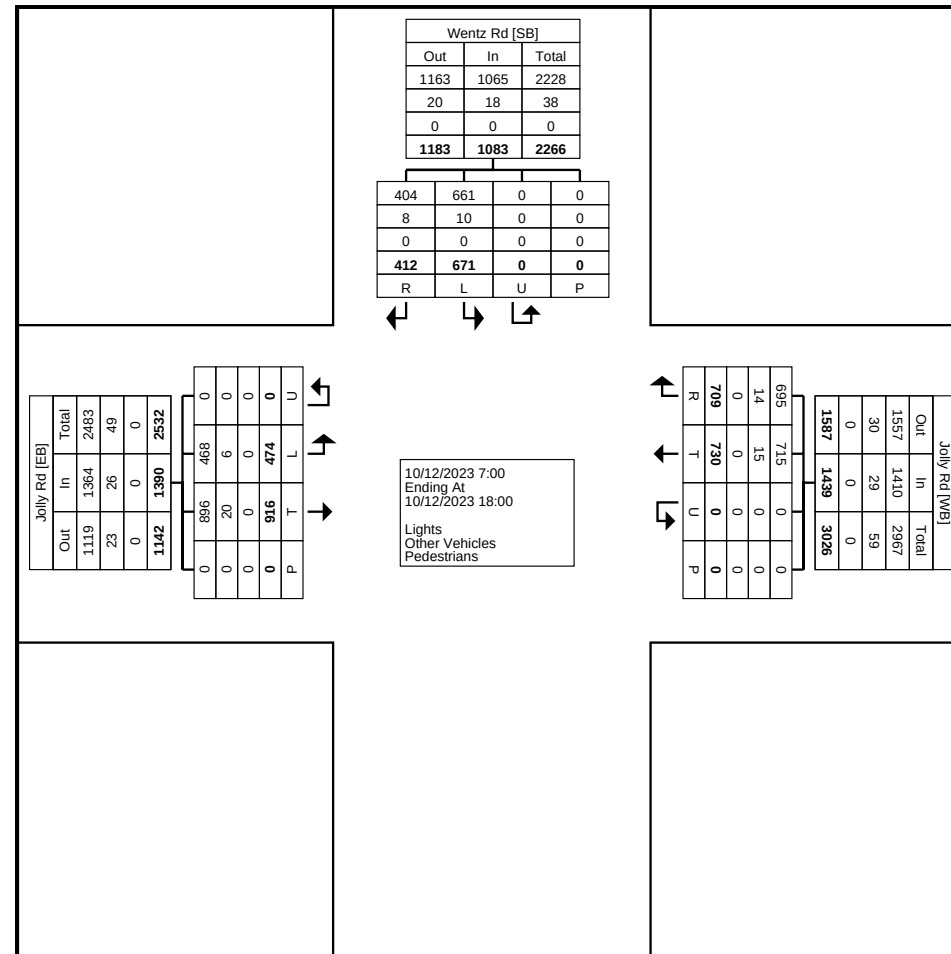
Start Time	Wentz Rd Southbound						Jolly Rd Westbound						Jolly Rd Eastbound					Int. Total
	Left	Right	Right on Red	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
7:00	34	4	2	0	0	40	16	17	8	0	0	41	26	79	0	0	105	186
7:15	31	10	2	0	0	43	36	23	9	0	0	68	19	59	0	0	78	189
7:30	32	17	4	0	0	53	28	18	11	0	0	57	20	85	0	0	105	215
7:45	41	16	9	0	0	66	36	24	11	0	0	71	27	78	0	0	105	242
Hourly Total	138	47	17	0	0	202	116	82	39	0	0	237	92	301	0	0	393	832
8:00	41	13	4	0	0	58	32	26	7	0	0	65	36	88	0	0	124	247
8:15	44	9	4	0	0	57	28	26	5	0	0	59	26	89	0	0	115	231
8:30	29	22	6	0	0	57	27	22	10	0	0	59	17	89	0	0	106	222
8:45	32	12	6	0	0	50	30	26	7	0	0	63	11	65	0	0	76	189
Hourly Total	146	56	20	0	0	222	117	100	29	0	0	246	90	331	0	0	421	889
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16:00	59	19	8	0	0	86	61	41	22	0	0	124	26	47	0	0	73	283
16:15	43	25	3	0	0	71	55	48	20	0	0	123	38	30	0	0	68	262
16:30	43	28	9	0	0	80	60	53	17	0	0	130	27	36	0	0	63	273
16:45	51	36	3	0	0	90	79	37	12	0	0	128	37	23	0	0	60	278
Hourly Total	196	108	23	0	0	327	255	179	71	0	0	505	128	136	0	0	264	1096
17:00	53	14	8	0	0	75	81	45	16	0	0	142	47	27	0	0	74	291
17:15	49	43	5	0	0	97	68	40	17	0	0	125	41	31	0	0	72	294
17:30	41	35	7	0	0	83	46	27	16	0	0	89	27	40	0	0	67	239
17:45	48	26	3	0	0	77	47	37	11	0	0	95	49	50	0	0	99	271
Hourly Total	191	118	23	0	0	332	242	149	60	0	0	451	164	148	0	0	312	1095
Grand Total	671	329	83	0	0	1083	730	510	199	0	0	1439	474	916	0	0	1390	3912
Approach %	62.0	30.4	7.7	0.0	-	-	50.7	35.4	13.8	0.0	-	-	34.1	65.9	0.0	-	-	-
Total %	17.2	8.4	2.1	0.0	-	27.7	18.7	13.0	5.1	0.0	-	36.8	12.1	23.4	0.0	-	35.5	-
Lights	661	323	81	0	-	1065	715	499	196	0	-	1410	468	896	0	-	1364	3839
% Lights	98.5	98.2	97.6	-	-	98.3	97.9	97.8	98.5	-	-	98.0	98.7	97.8	-	-	98.1	98.1
Other Vehicles	10	6	2	0	-	18	15	11	3	0	-	29	6	20	0	-	26	73
% Other Vehicles	1.5	1.8	2.4	-	-	1.7	2.1	2.2	1.5	-	-	2.0	1.3	2.2	-	-	1.9	1.9
Pedestrians	-	-	-	-														



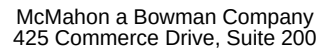
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Page No: 2



Turning Movement Data Plot



Count Name: 313807-01-001 Whitpain - Wentz
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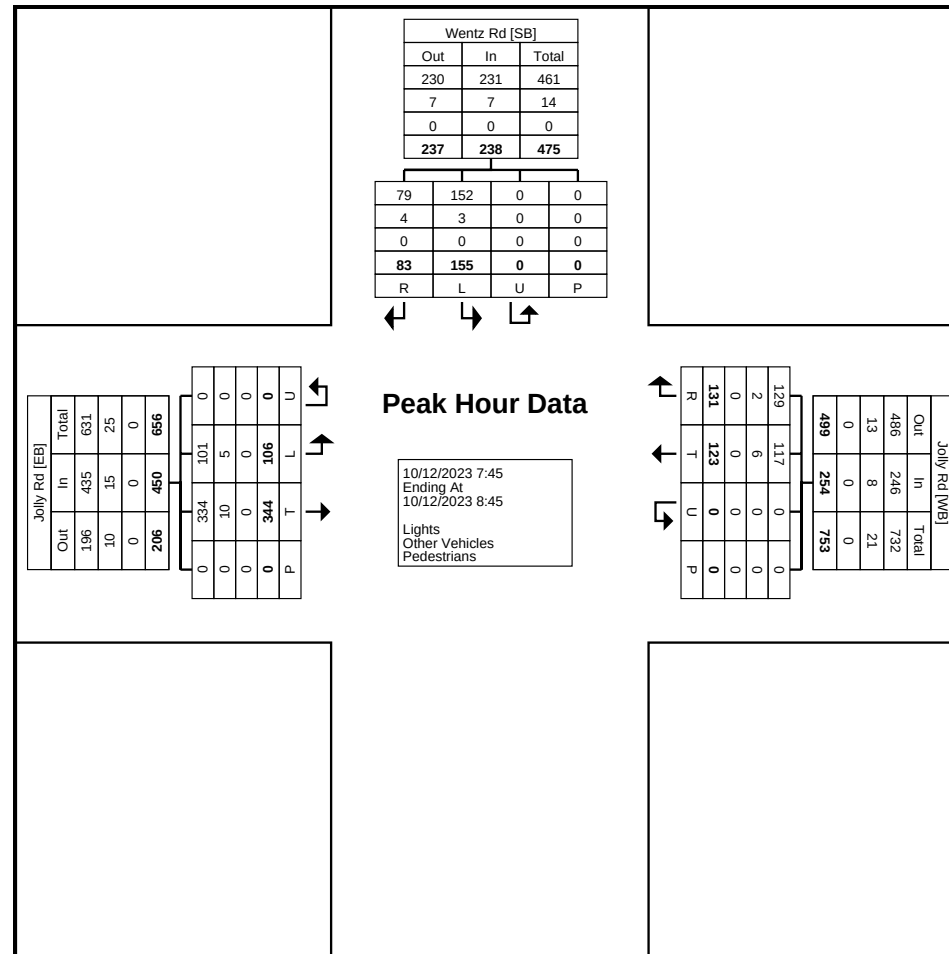
Start Time	Wentz Rd Southbound						Jolly Rd Westbound						Jolly Rd Eastbound					Int. Total
	Left	Right	Right on Red	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
7:45	41	16	9	0	0	66	36	24	11	0	0	71	27	78	0	0	105	242
8:00	41	13	4	0	0	58	32	26	7	0	0	65	36	88	0	0	124	247
8:15	44	9	4	0	0	57	28	26	5	0	0	59	26	89	0	0	115	231
8:30	29	22	6	0	0	57	27	22	10	0	0	59	17	89	0	0	106	222
Total	155	60	23	0	0	238	123	98	33	0	0	254	106	344	0	0	450	942
Approach %	65.1	25.2	9.7	0.0	-	-	48.4	38.6	13.0	0.0	-	-	23.6	76.4	0.0	-	-	-
Total %	16.5	6.4	2.4	0.0	-	25.3	13.1	10.4	3.5	0.0	-	27.0	11.3	36.5	0.0	-	47.8	-
PHF	0.881	0.682	0.639	0.000	-	0.902	0.854	0.942	0.750	0.000	-	0.894	0.736	0.966	0.000	-	0.907	0.953
Lights	152	57	22	0	-	231	117	96	33	0	-	246	101	334	0	-	435	912
% Lights	98.1	95.0	95.7	-	-	97.1	95.1	98.0	100.0	-	-	96.9	95.3	97.1	-	-	96.7	96.8
Other Vehicles	3	3	1	0	-	7	6	2	0	0	-	8	5	10	0	-	15	30
% Other Vehicles	1.9	5.0	4.3	-	-	2.9	4.9	2.0	0.0	-	-	3.1	4.7	2.9	-	-	3.3	3.2
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

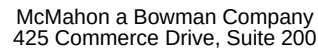


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Count Name: 313807-01-001 Whitpain - Wentz
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Count Name: 313807-01-001 Whitpain - Wentz
& Jolly Rd
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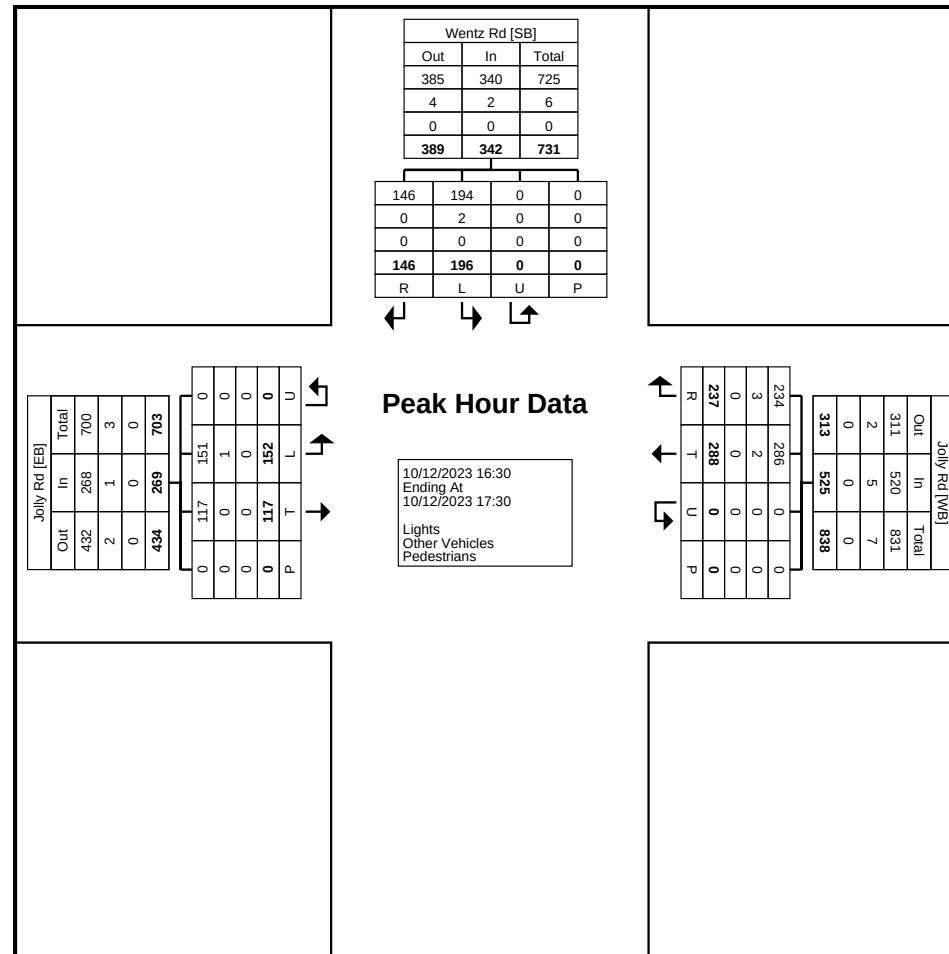
Start Time	Wentz Rd Southbound						Jolly Rd Westbound						Jolly Rd Eastbound					Int. Total
	Left	Right	Right on Red	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
16:30	43	28	9	0	0	80	60	53	17	0	0	130	27	36	0	0	63	273
16:45	51	36	3	0	0	90	79	37	12	0	0	128	37	23	0	0	60	278
17:00	53	14	8	0	0	75	81	45	16	0	0	142	47	27	0	0	74	291
17:15	49	43	5	0	0	97	68	40	17	0	0	125	41	31	0	0	72	294
Total	196	121	25	0	0	342	288	175	62	0	0	525	152	117	0	0	269	1136
Approach %	57.3	35.4	7.3	0.0	-	-	54.9	33.3	11.8	0.0	-	-	56.5	43.5	0.0	-	-	-
Total %	17.3	10.7	2.2	0.0	-	30.1	25.4	15.4	5.5	0.0	-	46.2	13.4	10.3	0.0	-	23.7	-
PHF	0.925	0.703	0.694	0.000	-	0.881	0.889	0.825	0.912	0.000	-	0.924	0.809	0.813	0.000	-	0.909	0.966
Lights	194	121	25	0	-	340	286	172	62	0	-	520	151	117	0	-	268	1128
% Lights	99.0	100.0	100.0	-	-	99.4	99.3	98.3	100.0	-	-	99.0	99.3	100.0	-	-	99.6	99.3
Other Vehicles	2	0	0	0	-	2	2	3	0	0	-	5	1	0	0	-	1	8
% Other Vehicles	1.0	0.0	0.0	-	-	0.6	0.7	1.7	0.0	-	-	1.0	0.7	0.0	-	-	0.4	0.7
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



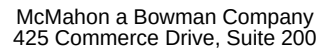
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Count Name: 313807-01-001 Whitpain - Wentz
& Jolly Rd
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Turning Movement Peak Hour Data Plot (16:30)



Count Name: 313807-01-001 Whitpain - Jolly & Wentz
Site Code:
Start Date: 10/21/2023
Page No: 1

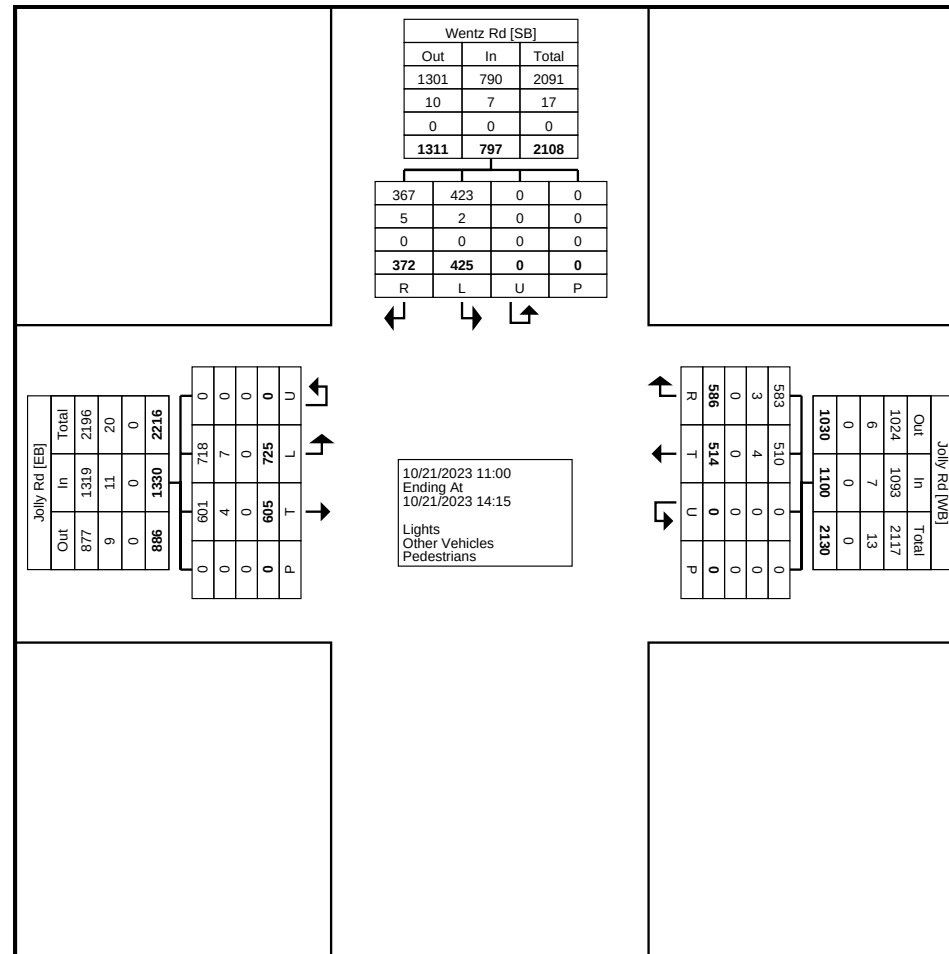
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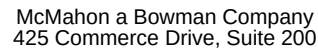
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Count Name: 313807-01-001 Whitpain - Jolly &
Wentz
Site Code:
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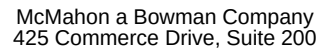


Turning Movement Data Plot



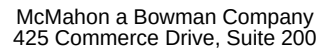
Count Name: 313807-01-001 Whitpain - Jolly & Wentz
Site Code:
Start Date: 10/21/2023
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Start Time	Wentz Rd Southbound						Jolly Rd Westbound						Jolly Rd Eastbound					Int. Total
	Left	Right	Right on Red	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
12:30	47	27	12	0	0	86	61	63	14	0	0	138	62	57	0	0	119	343
12:45	36	16	14	0	0	66	32	61	17	0	0	110	56	62	0	0	118	294
13:00	39	34	12	0	0	85	58	32	19	0	0	109	73	52	0	0	125	319
13:15	38	29	10	0	0	77	47	28	21	0	0	96	134	52	0	0	186	359
Total	160	106	48	0	0	314	198	184	71	0	0	453	325	223	0	0	548	1315
Approach %	51.0	33.8	15.3	0.0	-	-	43.7	40.6	15.7	0.0	-	-	59.3	40.7	0.0	-	-	-
Total %	12.2	8.1	3.7	0.0	-	23.9	15.1	14.0	5.4	0.0	-	34.4	24.7	17.0	0.0	-	41.7	-
PHF	0.851	0.779	0.857	0.000	-	0.913	0.811	0.730	0.845	0.000	-	0.821	0.606	0.899	0.000	-	0.737	0.916
Lights	160	103	47	0	-	310	195	183	71	0	-	449	320	221	0	-	541	1300
% Lights	100.0	97.2	97.9	-	-	98.7	98.5	99.5	100.0	-	-	99.1	98.5	99.1	-	-	98.7	98.9
Other Vehicles	0	3	1	0	-	4	3	1	0	0	-	4	5	2	0	-	7	15
% Other Vehicles	0.0	2.8	2.1	-	-	1.3	1.5	0.5	0.0	-	-	0.9	1.5	0.9	-	-	1.3	1.1
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Count Name: 313807-01-001 Whitpain - Jolly & Wentz
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Count Name: 3138047-01-001 Whitpain - Arch
St Rd & Jolly
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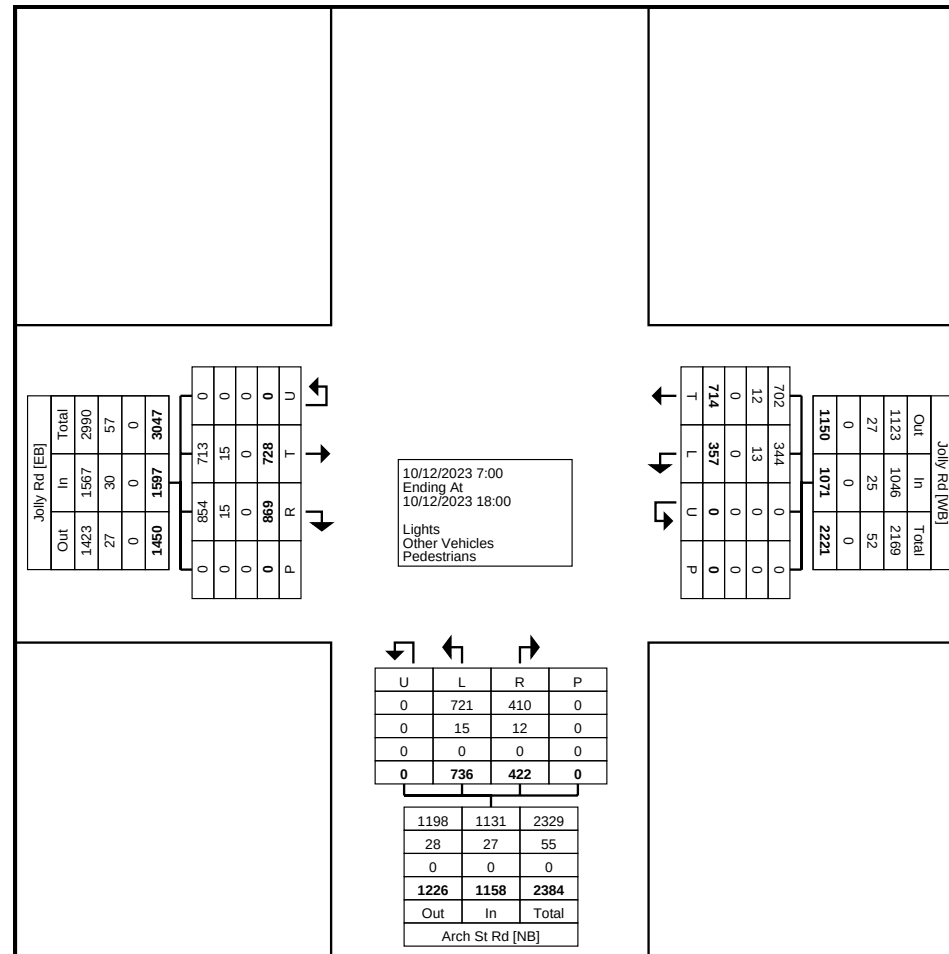
Start Time	Jolly Rd Westbound					Arch St Rd Northbound						Jolly Rd Eastbound						Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:00	9	12	0	0	21	27	20	7	0	0	54	58	33	7	0	0	98	173
7:15	10	21	0	0	31	47	22	3	0	0	72	48	40	4	0	0	92	195
7:30	11	14	0	0	25	41	19	8	0	0	68	60	56	5	0	0	121	214
7:45	13	22	0	0	35	49	24	5	0	0	78	68	43	14	0	0	125	238
Hourly Total	43	69	0	0	112	164	85	23	0	0	272	234	172	30	0	0	436	820
8:00	8	23	0	0	31	47	19	3	0	0	69	71	47	11	0	0	129	229
8:15	17	19	0	0	36	38	22	1	0	0	61	77	48	16	0	0	141	238
8:30	17	26	0	0	43	33	20	2	0	0	55	56	46	5	0	0	107	205
8:45	16	24	0	0	40	40	34	2	0	0	76	55	39	10	0	0	104	220
Hourly Total	58	92	0	0	150	158	95	8	0	0	261	259	180	42	0	0	481	892
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16:00	39	84	0	0	123	47	27	4	0	0	78	44	53	15	0	0	112	313
16:15	31	68	0	0	99	53	25	3	0	0	81	29	36	11	0	0	76	256
16:30	35	75	0	0	110	52	14	12	0	0	78	24	43	14	0	0	81	269
16:45	30	78	0	0	108	56	15	10	0	0	81	24	35	10	0	0	69	258
Hourly Total	135	305	0	0	440	208	81	29	0	0	318	121	167	50	0	0	338	1096
17:00	46	90	0	0	136	45	18	4	0	0	67	24	56	11	0	0	91	294
17:15	31	67	0	0	98	63	20	8	0	0	91	30	36	6	0	0	72	261
17:30	22	47	0	0	69	41	25	8	0	0	74	28	40	11	0	0	79	222
17:45	22	44	0	0	66	57	13	5	0	0	75	32	55	13	0	0	100	241
Hourly Total	121	248	0	0	369	206	76	25	0	0	307	114	187	41	0	0	342	1018
Grand Total	357	714	0	0	1071	736	337	85	0	0	1158	728	706	163	0	0	1597	3826
Approach %	33.3	66.7	0.0	-	-	63.6	29.1	7.3	0.0	-	-	45.6	44.2	10.2	0.0	-	-	-
Total %	9.3	18.7	0.0	-	28.0	19.2	8.8	2.2	0.0	-	30.3	19.0	18.5	4.3	0.0	-	41.7	-
Lights	344	702	0	-	1046	721	329	81	0	-	1131	713	694	160	0	-	1567	3744
% Lights	96.4	98.3	-	-	97.7	98.0	97.6	95.3	-	-	97.7	97.9	98.3	98.2	-	-	98.1	97.9
Other Vehicles	13	12	0	-	25	15	8	4	0	-	27	15	12	3	0	-	30	82
% Other Vehicles	3.6	1.7	-	-	2.3	2.0	2.4	4.7	-	-	2.3	2.1	1.7	1.8	-	-	1.9	2.1
Pedestrians	-	-	-	0	-	-	-	-										



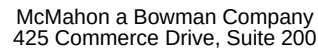
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215-283-9444

Count Name: 3138047-01-001 Whitpain - Arch
St Rd & Jolly
Site Code:
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Turning Movement Data Plot



Count Name: 3138047-01-001 Whitpain - Arch
St Rd & Jolly
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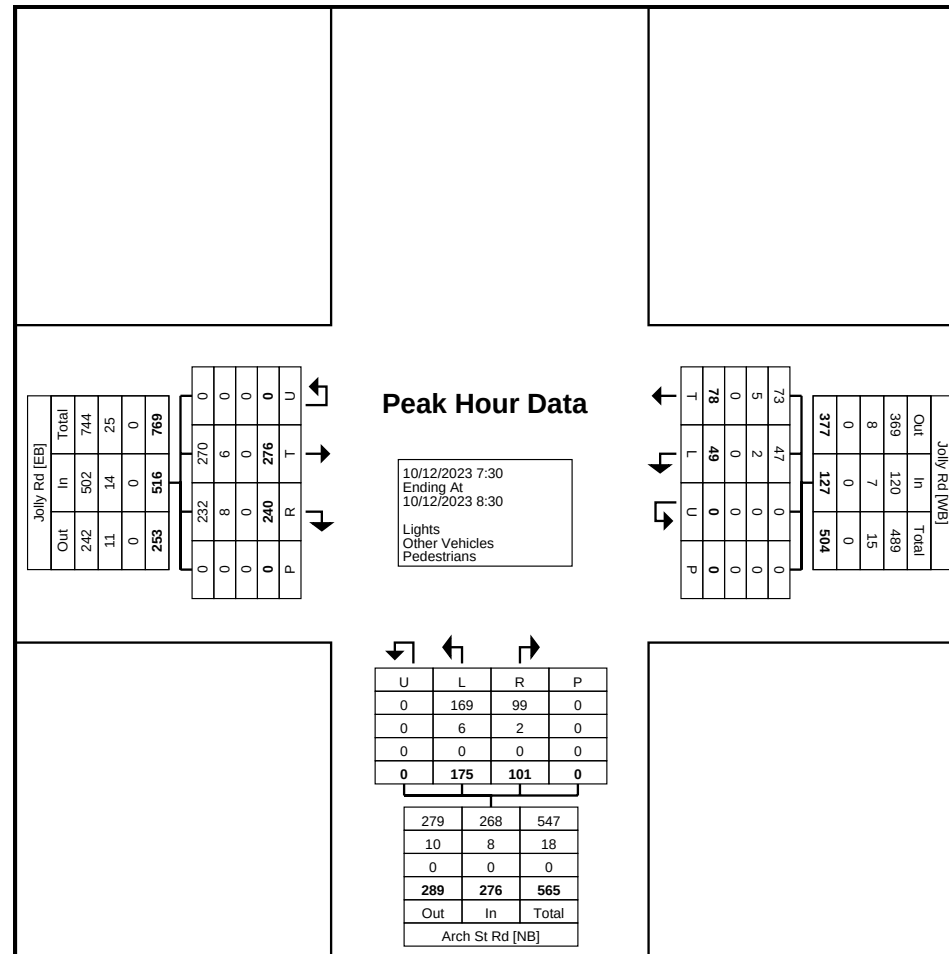
Start Time	Jolly Rd Westbound					Arch St Rd Northbound						Jolly Rd Eastbound						Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:30	11	14	0	0	25	41	19	8	0	0	68	60	56	5	0	0	121	214
7:45	13	22	0	0	35	49	24	5	0	0	78	68	43	14	0	0	125	238
8:00	8	23	0	0	31	47	19	3	0	0	69	71	47	11	0	0	129	229
8:15	17	19	0	0	36	38	22	1	0	0	61	77	48	16	0	0	141	238
Total	49	78	0	0	127	175	84	17	0	0	276	276	194	46	0	0	516	919
Approach %	38.6	61.4	0.0	-	-	63.4	30.4	6.2	0.0	-	-	53.5	37.6	8.9	0.0	-	-	-
Total %	5.3	8.5	0.0	-	13.8	19.0	9.1	1.8	0.0	-	30.0	30.0	21.1	5.0	0.0	-	56.1	-
PHF	0.721	0.848	0.000	-	0.882	0.893	0.875	0.531	0.000	-	0.885	0.896	0.866	0.719	0.000	-	0.915	0.965
Lights	47	73	0	-	120	169	82	17	0	-	268	270	187	45	0	-	502	890
% Lights	95.9	93.6	-	-	94.5	96.6	97.6	100.0	-	-	97.1	97.8	96.4	97.8	-	-	97.3	96.8
Other Vehicles	2	5	0	-	7	6	2	0	0	-	8	6	7	1	0	-	14	29
% Other Vehicles	4.1	6.4	-	-	5.5	3.4	2.4	0.0	-	-	2.9	2.2	3.6	2.2	-	-	2.7	3.2
Pedestrians	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Count Name: 3138047-01-001 Whitpain - Arch
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Turning Movement Peak Hour Data Plot (7:30)

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Count Name: 3138047-01-001 Whitpain - Arch
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Turning Movement Peak Hour Data (16:00)

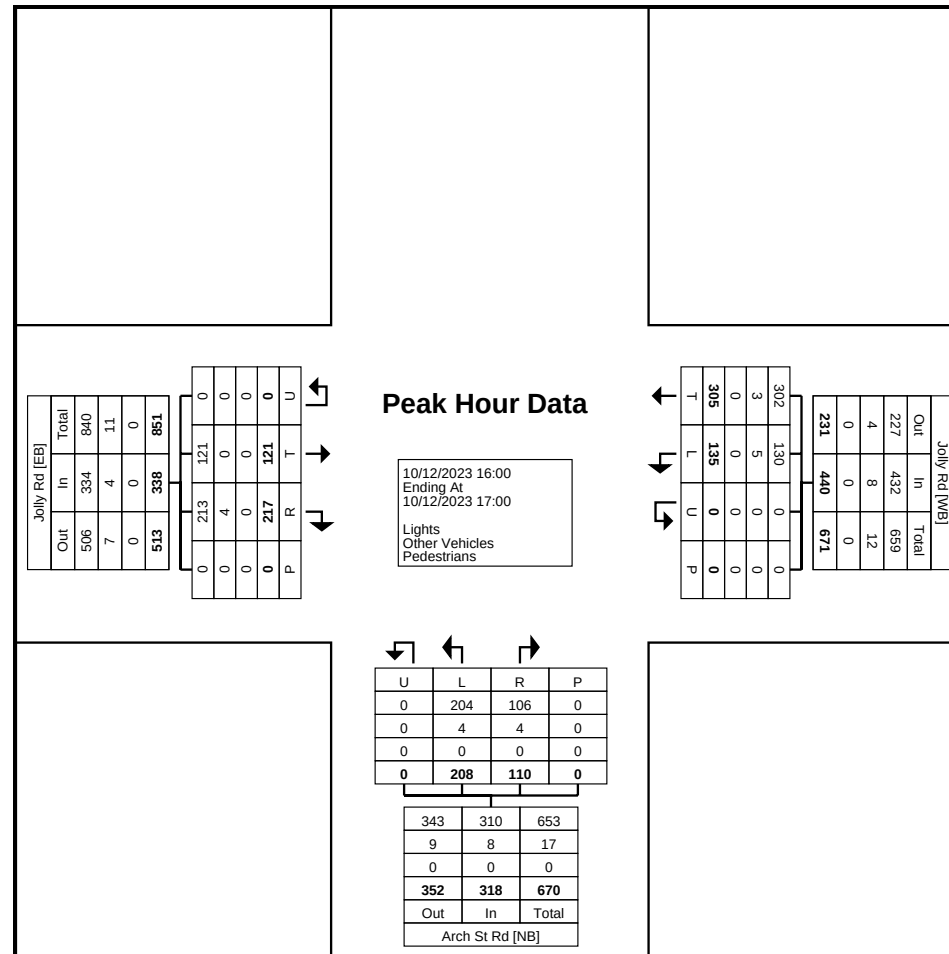
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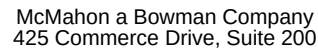
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Count Name: 3138047-01-001 Whitpain - Arch
St Rd & Jolly
Site Code:
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Turning Movement Peak Hour Data Plot (16:00)



Count Name: 313807-01-001 Whitpain - Arch St
Rd & Jolly
Site Code:
Start Date: 10/21/2023
Page No: 1

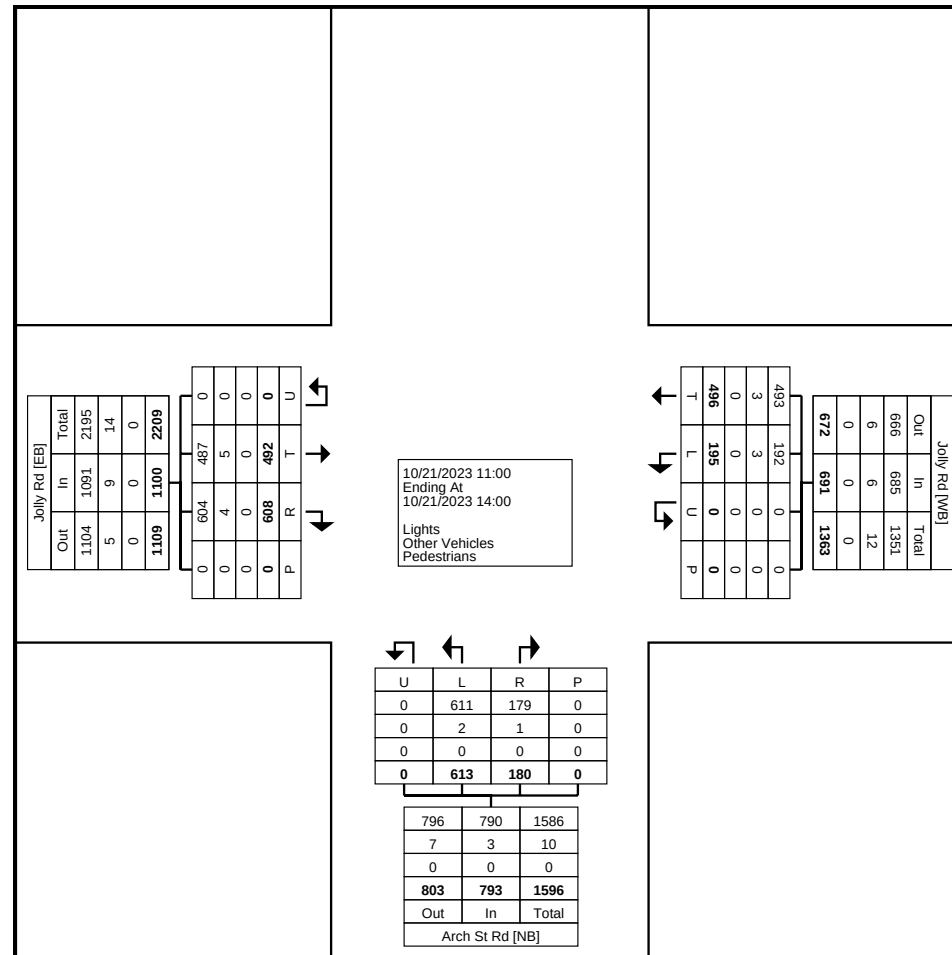
Start Time	Jolly Rd Westbound					Arch St Rd Northbound						Jolly Rd Eastbound						Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
11:00	9	13	0	0	22	39	9	3	0	0	51	20	35	8	0	0	63	136
11:15	14	20	0	0	34	48	13	0	0	0	61	26	35	8	0	0	69	164
11:30	8	29	0	0	37	42	12	3	0	0	57	36	30	7	0	0	73	167
11:45	9	40	0	0	49	44	14	3	0	0	61	38	45	11	0	0	94	204
Hourly Total	40	102	0	0	142	173	48	9	0	0	230	120	145	34	0	0	299	671
12:00	14	54	0	0	68	39	14	4	0	0	57	42	42	11	0	0	95	220
12:15	19	81	0	0	100	43	8	2	0	0	53	42	35	14	0	0	91	244
12:30	27	55	0	0	82	75	11	1	0	0	87	51	33	22	0	0	106	275
12:45	14	44	0	0	58	66	14	1	0	0	81	52	26	25	0	0	103	242
Hourly Total	74	234	0	0	308	223	47	8	0	0	278	187	136	72	0	0	395	981
13:00	28	51	0	0	79	44	4	4	0	0	52	50	41	5	0	0	96	227
13:15	22	43	0	0	65	49	12	8	0	0	69	42	45	10	0	0	97	231
13:30	12	30	0	0	42	59	18	2	0	0	79	57	37	16	0	0	110	231
13:45	19	36	0	0	55	65	14	6	0	0	85	36	56	11	0	0	103	243
Hourly Total	81	160	0	0	241	217	48	20	0	0	285	185	179	42	0	0	406	932
Grand Total	195	496	0	0	691	613	143	37	0	0	793	492	460	148	0	0	1100	2584
Approach %	28.2	71.8	0.0	-	-	77.3	18.0	4.7	0.0	-	-	44.7	41.8	13.5	0.0	-	-	-
Total %	7.5	19.2	0.0	-	26.7	23.7	5.5	1.4	0.0	-	30.7	19.0	17.8	5.7	0.0	-	42.6	-
Lights	192	493	0	-	685	611	142	37	0	-	790	487	456	148	0	-	1091	2566
% Lights	98.5	99.4	-	-	99.1	99.7	99.3	100.0	-	-	99.6	99.0	99.1	100.0	-	-	99.2	99.3
Other Vehicles	3	3	0	-	6	2	1	0	0	-	3	5	4	0	0	-	9	18
% Other Vehicles	1.5	0.6	-	-	0.9	0.3	0.7	0.0	-	-	0.4	1.0	0.9	0.0	-	-	0.8	0.7
Pedestrians	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



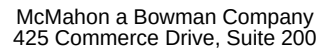
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215-283-9444

Count Name: 313807-01-001 Whitpain - Arch St
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Count Name: 313807-01-001 Whitpain - Arch St
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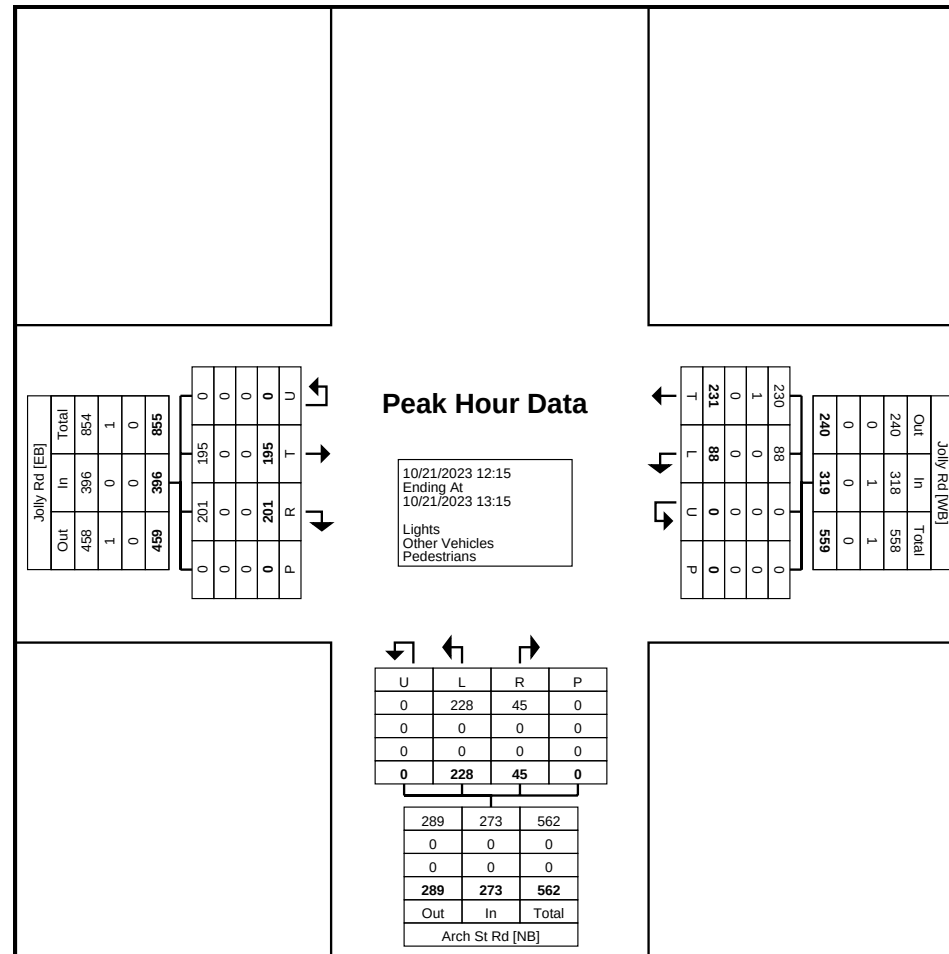
Start Time	Jolly Rd Westbound					Arch St Rd Northbound						Jolly Rd Eastbound						Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
12:15	19	81	0	0	100	43	8	2	0	0	53	42	35	14	0	0	91	244
12:30	27	55	0	0	82	75	11	1	0	0	87	51	33	22	0	0	106	275
12:45	14	44	0	0	58	66	14	1	0	0	81	52	26	25	0	0	103	242
13:00	28	51	0	0	79	44	4	4	0	0	52	50	41	5	0	0	96	227
Total	88	231	0	0	319	228	37	8	0	0	273	195	135	66	0	0	396	988
Approach %	27.6	72.4	0.0	-	-	83.5	13.6	2.9	0.0	-	-	49.2	34.1	16.7	0.0	-	-	-
Total %	8.9	23.4	0.0	-	32.3	23.1	3.7	0.8	0.0	-	27.6	19.7	13.7	6.7	0.0	-	40.1	-
PHF	0.786	0.713	0.000	-	0.798	0.760	0.661	0.500	0.000	-	0.784	0.938	0.823	0.660	0.000	-	0.934	0.898
Lights	88	230	0	-	318	228	37	8	0	-	273	195	135	66	0	-	396	987
% Lights	100.0	99.6	-	-	99.7	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	99.9
Other Vehicles	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Other Vehicles	0.0	0.4	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Pedestrians	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Count Name: 313807-01-001 Whitpain - Arch St
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Turning Movement Peak Hour Data Plot (12:15)

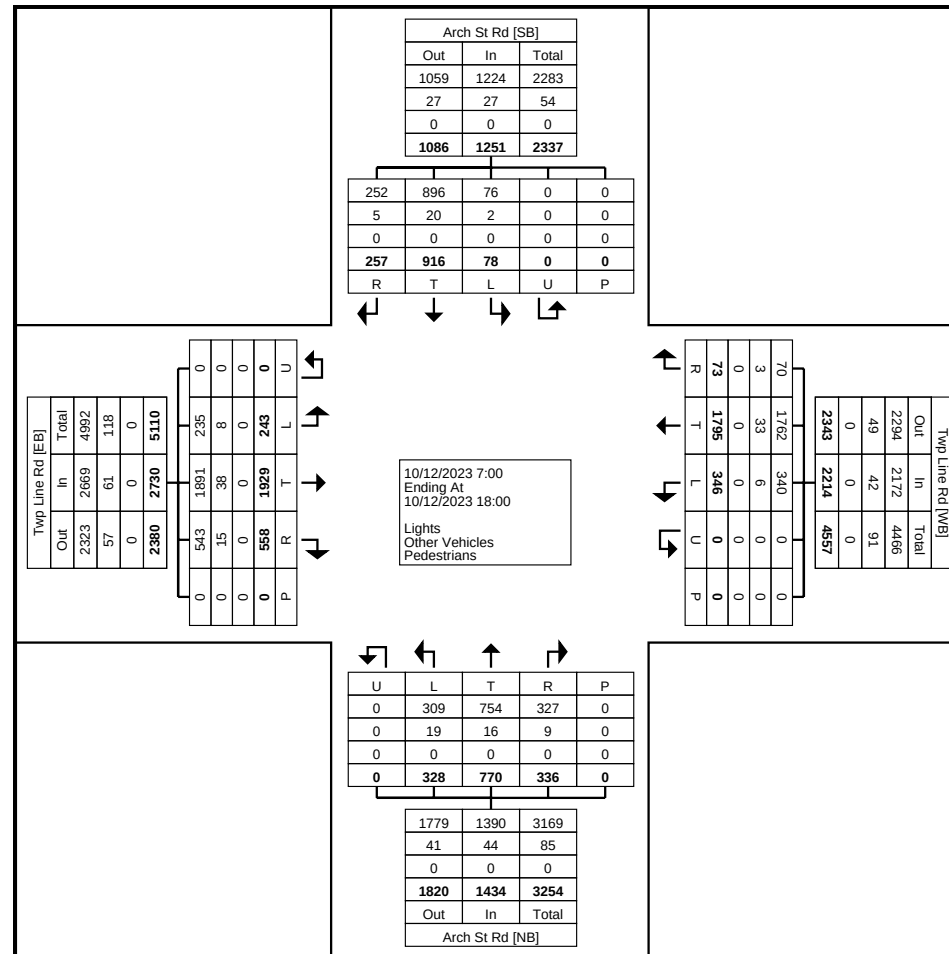
Start Time	Arch St Rd Southbound							Twp Line Rd Westbound							Arch St Rd Northbound							Twp Line Rd Eastbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:00	1	49	2	1	0	0	53	5	47	3	0	0	0	55	10	37	20	0	0	0	67	12	108	18	3	0	0	141	316
7:15	1	49	3	4	0	0	57	10	68	1	0	0	0	79	15	51	21	0	0	0	87	8	129	19	10	0	0	166	389
7:30	3	62	5	4	0	0	74	14	89	4	0	0	0	107	6	60	20	0	0	0	86	14	132	18	11	0	0	175	442
7:45	2	68	2	6	0	0	78	31	84	2	0	0	0	117	14	40	22	0	0	0	76	19	144	23	8	0	0	194	465
Hourly Total	7	228	12	15	0	0	262	60	288	10	0	0	0	358	45	188	83	0	0	0	316	53	513	78	32	0	0	676	1612
8:00	4	59	0	2	0	0	65	35	91	0	0	0	0	126	13	42	25	0	0	0	80	16	102	31	8	0	0	157	428
8:15	4	76	2	4	0	0	86	13	64	5	0	0	0	82	12	43	23	0	0	0	78	10	152	34	16	0	0	212	458
8:30	4	49	8	8	0	0	69	22	82	4	3	0	0	111	10	37	19	2	0	0	68	12	143	24	4	0	0	183	431
8:45	7	53	9	4	0	0	73	24	67	3	1	0	0	95	17	38	22	1	0	0	78	13	112	30	10	0	0	165	411
Hourly Total	19	237	19	18	0	0	293	94	304	12	4	0	0	414	52	160	89	3	0	0	304	51	509	119	38	0	0	717	1728
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
16:00	8	70	18	13	0	0	109	30	170	2	0	0	0	202	31	46	33	2	0	0	112	21	106	26	8	0	0	161	584
16:15	4	50	14	7	0	0	75	27	159	7	0	0	0	193	28	60	13	3	0	0	104	15	115	34	10	0	0	174	546
16:30	12	65	7	5	0	0	89	26	151	2	0	0	0	179	21	61	18	0	0	0	100	16	115	24	12	0	0	167	535
16:45	7	49	8	14	0	0	78	20	134	4	0	0	0	158	31	46	22	3	0	0	102	18	98	29	12	0	0	157	495
Hourly Total	31	234	47	39	0	0	351	103	614	15	0	0	0	732	111	213	86	8	0	0	418	70	434	113	42	0	0	659	2160
17:00	7	66	24	7	0	0	104	21	140	7	1	0	0	169	31	50	20	0	0	0	101	17	124	31	10	0	0	182	556
17:15	3	44	25	6	0	0	78	25	150	9	0	0	0	184	25	68	18	0	0	0	111	16	114	14	16	0	0	160	533
17:30	7	41	16	8	0	0	72	27	156	9	1	0	0	193	34	42	15	0	0	0	91	23	95	21	16	0	0	155	511
17:45	4	66	13	8	0	0	91	16	143	5	0	0	0	164	30	49	13	1	0	0	93	13	140	18	10	0	0	181	529
Hourly Total	21	217	78	29	0	0	345	89	589	30	2	0	0	710	120	209	66	1	0	0	396	69	473	84	52	0	0	678	2129
Grand Total	78	916	156	101	0	0	1251	346	1795	67	6	0	0	2214	328	770	324	12	0	0	1434	243	1929	394	164	0	0	2730	7629
Approach %	6.2	73.2	12.5	8.1	0.0	-	-	15.6	81.1	3.0	0.3	0.0	-	-	22.9	53.7	22.6	0.8	0.0	-	-	8.9	70.7	14.4	6.0	0.0	-	-	-
Total %	1.0	12.0	2.0	1.3	0.0	-	16.4	4.5	23.5	0.9	0.1	0.0	-	29.0	4.3	10.1	4.2	0.2	0.0	-	18.8	3.2	25.3	5.2	2.1	0.0	-	35.8	-
Lights	76	896	152	100	0	-	1224	340	1762	64	6	0	-	2172	309	754	315	12	0	-	1390	235	1891	382	161	0	-	2669	7455
% Lights	97.4	97.8	97.4	99.0	-	-	97.8	98.3	98.2	95.5	100.0	-	-	98.1	94.2	97.9	97.2	100.0	-	-	96.9	96.7	98.0	97.0	98.2	-	-	97.8	97.7
Other Vehicles	2	20	4	1	0	-	27	6	33	3	0	0	-	42	19	16	9	0	0	-	44	8	38	12	3	0	-	61	174
% Other Vehicles	2.6	2.2	2.6	1.0	-	-	2.2	1.7	1.8	4.5	0.0	-	-	1.9	5.8	2.1	2.8	0.0	-	-	3.1	3.3	2.0	3.0	1.8	-	-	2.2	2.3
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	



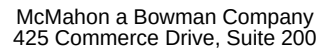
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Count Name: 313807-01-001 Whitpain - Twp
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Turning Movement Data Plot



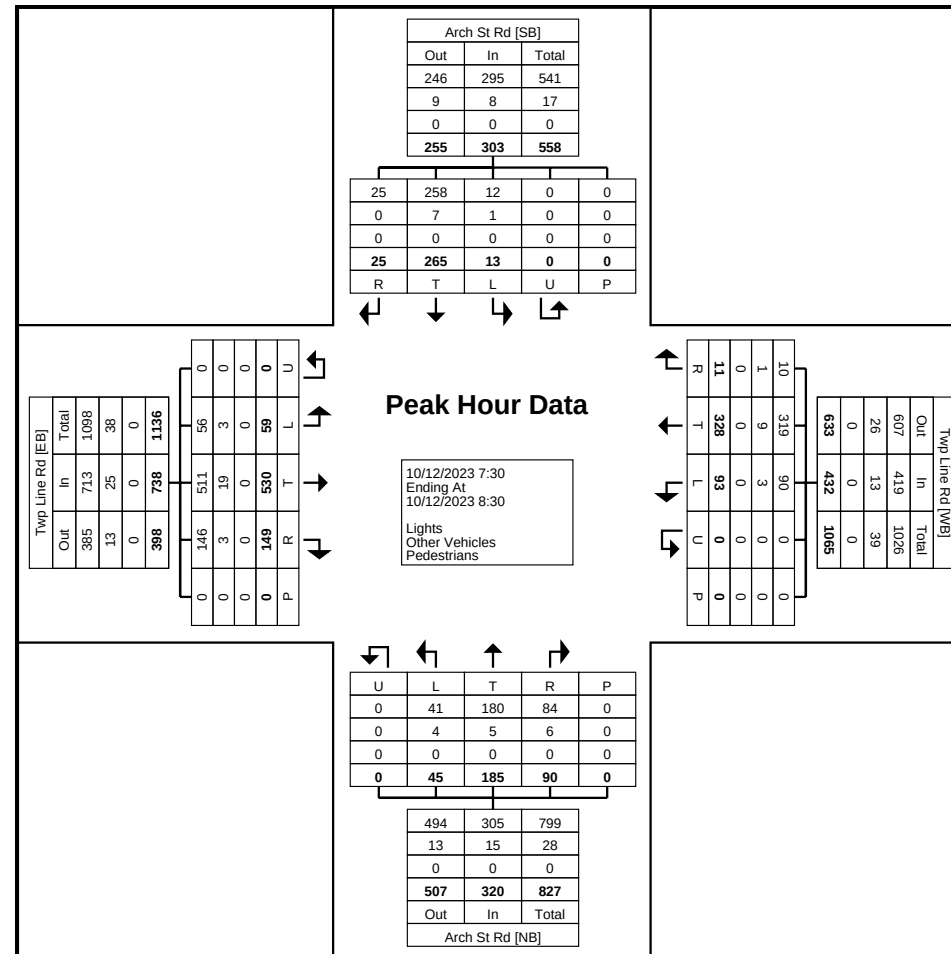
Count Name: 313807-01-001 Whitpain - Twp
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Start Time	Arch St Rd Southbound							Twp Line Rd Westbound							Arch St Rd Northbound							Twp Line Rd Eastbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:30	3	62	5	4	0	0	74	14	89	4	0	0	0	107	6	60	20	0	0	0	86	14	132	18	11	0	0	175	442
7:45	2	68	2	6	0	0	78	31	84	2	0	0	0	117	14	40	22	0	0	0	76	19	144	23	8	0	0	194	465
8:00	4	59	0	2	0	0	65	35	91	0	0	0	0	126	13	42	25	0	0	0	80	16	102	31	8	0	0	157	428
8:15	4	76	2	4	0	0	86	13	64	5	0	0	0	82	12	43	23	0	0	0	78	10	152	34	16	0	0	212	458
Total	13	265	9	16	0	0	303	93	328	11	0	0	0	432	45	185	90	0	0	0	320	59	530	106	43	0	0	738	1793
Approach %	4.3	87.5	3.0	5.3	0.0	-	-	21.5	75.9	2.5	0.0	0.0	-	-	14.1	57.8	28.1	0.0	0.0	-	-	8.0	71.8	14.4	5.8	0.0	-	-	-
Total %	0.7	14.8	0.5	0.9	0.0	-	16.9	5.2	18.3	0.6	0.0	0.0	-	24.1	2.5	10.3	5.0	0.0	0.0	-	17.8	3.3	29.6	5.9	2.4	0.0	-	41.2	-
PHF	0.813	0.872	0.450	0.667	0.000	-	0.881	0.664	0.901	0.550	0.000	0.000	-	0.857	0.804	0.771	0.900	0.000	0.000	-	0.930	0.776	0.872	0.779	0.672	0.000	-	0.870	0.964
Lights	12	258	9	16	0	-	295	90	319	10	0	0	-	419	41	180	84	0	0	-	305	56	511	105	41	0	-	713	1732
% Lights	92.3	97.4	100.0	100.0	-	-	97.4	96.8	97.3	90.9	-	-	-	97.0	91.1	97.3	93.3	-	-	-	95.3	94.9	96.4	99.1	95.3	-	-	96.6	96.6
Other Vehicles	1	7	0	0	0	-	8	3	9	1	0	0	-	13	4	5	6	0	0	-	15	3	19	1	2	0	-	25	61
% Other Vehicles	7.7	2.6	0.0	0.0	-	-	2.6	3.2	2.7	9.1	-	-	-	3.0	8.9	2.7	6.7	-	-	-	4.7	5.1	3.6	0.9	4.7	-	-	3.4	3.4
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Count Name: 313807-01-001 Whitpain - Twp
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Turning Movement Peak Hour Data (16:00)

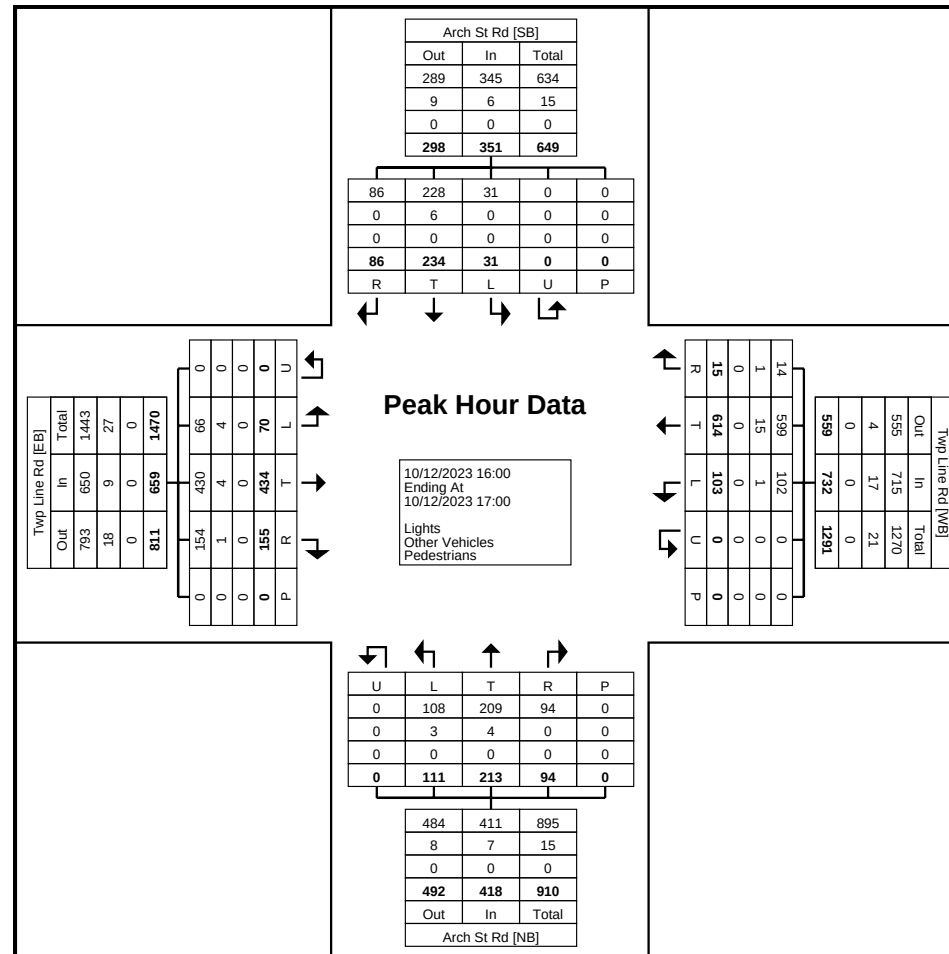
Start Time	Arch St Rd Southbound							Twp Line Rd Westbound							Arch St Rd Northbound							Twp Line Rd Eastbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
16:00	8	70	18	13	0	0	109	30	170	2	0	0	0	202	31	46	33	2	0	0	112	21	106	26	8	0	0	161	584
16:15	4	50	14	7	0	0	75	27	159	7	0	0	0	193	28	60	13	3	0	0	104	15	115	34	10	0	0	174	546
16:30	12	65	7	5	0	0	89	26	151	2	0	0	0	179	21	61	18	0	0	0	100	16	115	24	12	0	0	167	535
16:45	7	49	8	14	0	0	78	20	134	4	0	0	0	158	31	46	22	3	0	0	102	18	98	29	12	0	0	157	495
Total	31	234	47	39	0	0	351	103	614	15	0	0	0	732	111	213	86	8	0	0	418	70	434	113	42	0	0	659	2160
Approach %	8.8	66.7	13.4	11.1	0.0	-	-	14.1	83.9	2.0	0.0	0.0	-	-	26.6	51.0	20.6	1.9	0.0	-	-	10.6	65.9	17.1	6.4	0.0	-	-	-
Total %	1.4	10.8	2.2	1.8	0.0	-	16.3	4.8	28.4	0.7	0.0	0.0	-	33.9	5.1	9.9	4.0	0.4	0.0	-	19.4	3.2	20.1	5.2	1.9	0.0	-	30.5	-
PHF	0.646	0.836	0.653	0.696	0.000	-	0.805	0.858	0.903	0.536	0.000	0.000	-	0.906	0.895	0.873	0.652	0.667	0.000	-	0.933	0.833	0.943	0.831	0.875	0.000	-	0.947	0.925
Lights	31	228	47	39	0	-	345	102	599	14	0	0	-	715	108	209	86	8	0	-	411	66	430	112	42	0	-	650	2121
% Lights	100.0	97.4	100.0	100.0	-	-	98.3	99.0	97.6	93.3	-	-	-	97.7	97.3	98.1	100.0	100.0	-	-	98.3	94.3	99.1	99.1	100.0	-	-	98.6	98.2
Other Vehicles	0	6	0	0	0	-	6	1	15	1	0	0	-	17	3	4	0	0	0	-	7	4	4	1	0	0	-	9	39
% Other Vehicles	0.0	2.6	0.0	0.0	-	-	1.7	1.0	2.4	6.7	-	-	-	2.3	2.7	1.9	0.0	0.0	-	-	1.7	5.7	0.9	0.9	0.0	-	-	1.4	1.8
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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215-283-9444

Count Name: 313807-01-001 Whitpain - Arch St
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Turning Movement Data

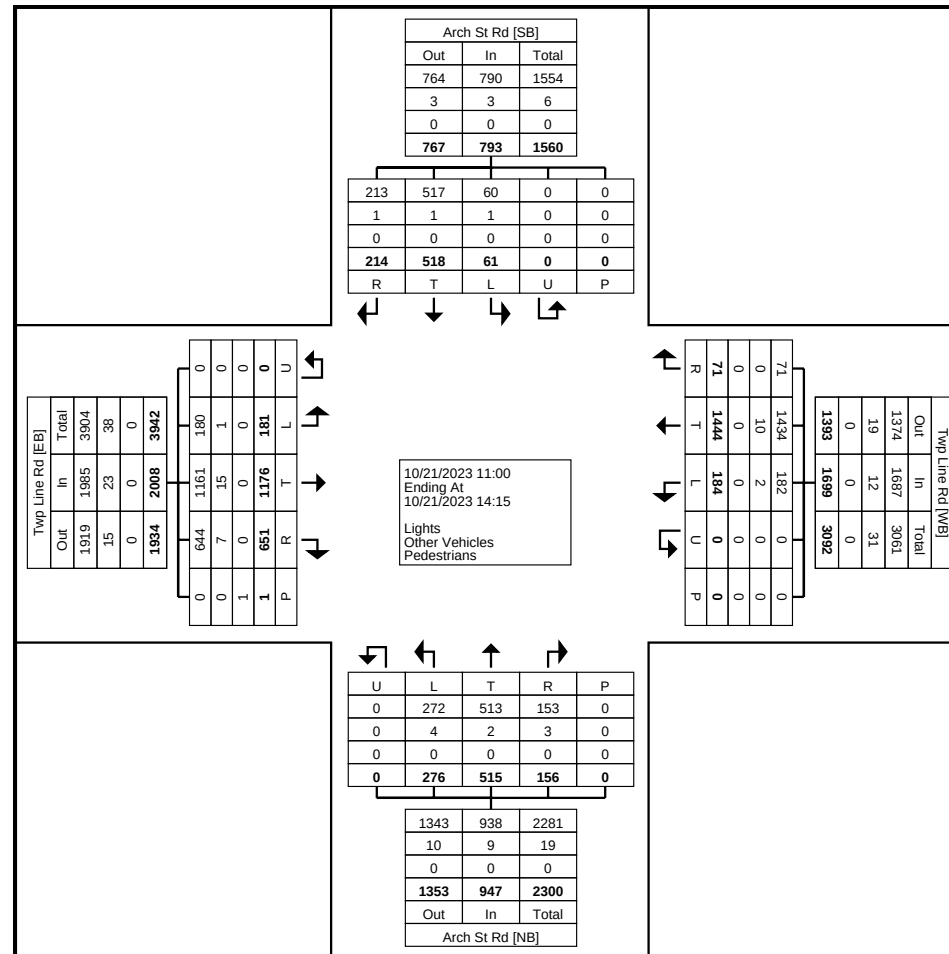
Start Time	Arch St Rd Southbound							Twp Line Rd Westbound							Arch St Rd Northbound							Twp Line Rd Eastbound							Int. Total	
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total		
11:00	7	37	3	8	0	0	55	16	92	5	0	0	0	113	19	37	10	1	0	0	67	4	83	29	6	0	0	122	357	
11:15	8	35	9	4	0	0	56	15	77	4	0	0	0	96	34	39	15	3	0	0	91	12	82	31	4	0	0	129	372	
11:30	6	22	5	6	0	0	39	13	112	3	0	0	0	128	20	45	17	1	0	0	83	5	81	24	9	0	0	119	369	
11:45	8	37	7	9	0	0	61	12	139	4	3	0	0	158	33	33	12	3	0	0	81	15	89	34	16	0	0	154	454	
Hourly Total	29	131	24	27	0	0	211	56	420	16	3	0	0	495	106	154	54	8	0	0	322	36	335	118	35	0	0	524	1552	
12:00	1	47	8	9	0	0	65	21	131	5	1	0	0	158	21	32	12	0	0	0	65	14	90	54	7	0	0	165	453	
12:15	2	50	9	6	0	0	67	22	123	3	0	0	0	148	28	32	8	1	0	0	69	18	85	59	5	0	0	167	451	
12:30	2	56	14	10	0	0	82	11	124	15	1	0	0	151	25	60	14	0	0	0	99	9	109	85	13	0	0	216	548	
12:45	7	50	10	10	0	0	77	17	159	9	0	0	0	185	15	67	8	1	0	0	91	10	117	58	13	0	0	198	551	
Hourly Total	12	203	41	35	0	0	291	71	537	32	2	0	0	642	89	191	42	2	0	0	324	51	401	256	38	0	0	746	2003	
13:00	6	40	23	3	0	0	72	11	133	4	0	0	0	148	15	40	17	0	0	0	72	12	97	33	17	0	1	159	451	
13:15	6	49	8	12	0	0	75	12	119	2	0	0	0	133	20	42	11	1	0	0	74	21	129	39	10	0	0	199	481	
13:30	3	40	7	15	0	0	65	15	121	6	0	0	0	142	21	44	12	1	0	0	78	29	112	42	14	0	0	197	482	
13:45	5	55	9	10	0	0	79	19	114	6	0	0	0	139	25	44	7	1	0	0	77	32	102	38	11	0	0	183	478	
Hourly Total	20	184	47	40	0	0	291	57	487	18	0	0	0	562	81	170	47	3	0	0	301	94	440	152	52	0	1	738	1892	
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	61	518	112	102	0	0	793	184	1444	66	5	0	0	1699	276	515	143	13	0	0	947	181	1176	526	125	0	1	2008	5447	
Approach %	7.7	65.3	14.1	12.9	0.0	-	-	10.8	85.0	3.9	0.3	0.0	-	-	29.1	54.4	15.1	1.4	0.0	-	-	9.0	58.6	26.2	6.2	0.0	-	-	-	-
Total %	1.1	9.5	2.1	1.9	0.0	-	14.6	3.4	26.5	1.2	0.1	0.0	-	31.2	5.1	9.5	2.6	0.2	0.0	-	17.4	3.3	21.6	9.7	2.3	0.0	-	36.9	-	
Lights	60	517	111	102	0	-	790	182	1434	66	5	0	-	1687	272	513	140	13	0	-	938	180	1161	519	125	0	-	1985	5400	
% Lights	98.4	99.8	99.1	100.0	-	-	99.6	98.9	99.3	100.0	100.0	-	-	99.3	98.6	99.6	97.9	100.0	-	-	99.0	99.4	98.7	98.7	100.0	-	-	98.9	99.1	-
Other Vehicles	1	1	1	0	0	-	3	2	10	0	0	0	-	12	4	2	3	0	0	-	9	1	15	7	0	0	-	23	47	-
% Other Vehicles	1.6	0.2	0.9	0.0	-	-	0.4	1.1	0.7	0.0	0.0	-	-	0.7	1.4	0.4	2.1	0.0	-	-	1.0	0.6	1.3	1.3	0.0	-	-	1.1	0.9	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-



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Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 313807-01-001 Whitpain - Arch St
Rd & Twp Line Rd
Site Code:
Start Date: 10/21/2023
Page No: 2



Turning Movement Data Plot



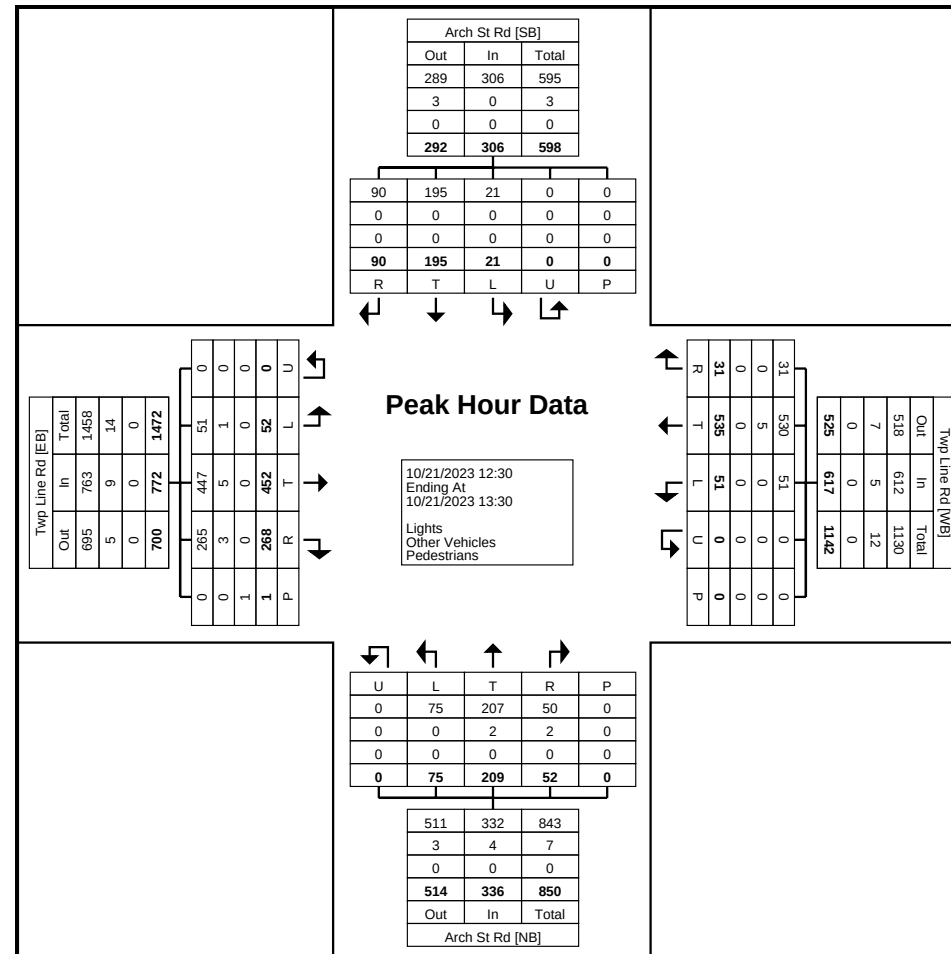
McMahon a Bowman Company
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 313807-01-001 Whitpain - Arch St
Rd & Twp Line Rd
Site Code:
Start Date: 10/21/2023
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Turning Movement Peak Hour Data (12:30)

Start Time	Arch St Rd Southbound							Twp Line Rd Westbound							Arch St Rd Northbound							Twp Line Rd Eastbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
12:30	2	56	14	10	0	0	82	11	124	15	1	0	0	151	25	60	14	0	0	0	99	9	109	85	13	0	0	216	548
12:45	7	50	10	10	0	0	77	17	159	9	0	0	0	185	15	67	8	1	0	0	91	10	117	58	13	0	0	198	551
13:00	6	40	23	3	0	0	72	11	133	4	0	0	0	148	15	40	17	0	0	0	72	12	97	33	17	0	1	159	451
13:15	6	49	8	12	0	0	75	12	119	2	0	0	0	133	20	42	11	1	0	0	74	21	129	39	10	0	0	199	481
Total	21	195	55	35	0	0	306	51	535	30	1	0	0	617	75	209	50	2	0	0	336	52	452	215	53	0	1	772	2031
Approach %	6.9	63.7	18.0	11.4	0.0	-	-	8.3	86.7	4.9	0.2	0.0	-	-	22.3	62.2	14.9	0.6	0.0	-	-	6.7	58.5	27.8	6.9	0.0	-	-	-
Total %	1.0	9.6	2.7	1.7	0.0	-	15.1	2.5	26.3	1.5	0.0	0.0	-	30.4	3.7	10.3	2.5	0.1	0.0	-	16.5	2.6	22.3	10.6	2.6	0.0	-	38.0	-
PHF	0.750	0.871	0.598	0.729	0.000	-	0.933	0.750	0.841	0.500	0.250	0.000	-	0.834	0.750	0.780	0.735	0.500	0.000	-	0.848	0.619	0.876	0.632	0.779	0.000	-	0.894	0.922
Lights	21	195	55	35	0	-	306	51	530	30	1	0	-	612	75	207	48	2	0	-	332	51	447	212	53	0	-	763	2013
% Lights	100.0	100.0	100.0	100.0	-	-	100.0	100.0	99.1	100.0	100.0	-	-	99.2	100.0	99.0	96.0	100.0	-	-	98.8	98.1	98.9	98.6	100.0	-	-	98.8	99.1
Other Vehicles	0	0	0	0	0	-	0	0	5	0	0	0	-	5	0	2	2	0	0	-	4	1	5	3	0	0	-	9	18
% Other Vehicles	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.9	0.0	0.0	-	-	0.8	0.0	1.0	4.0	0.0	-	-	1.2	1.9	1.1	1.4	0.0	-	-	1.2	0.9
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (12:30)



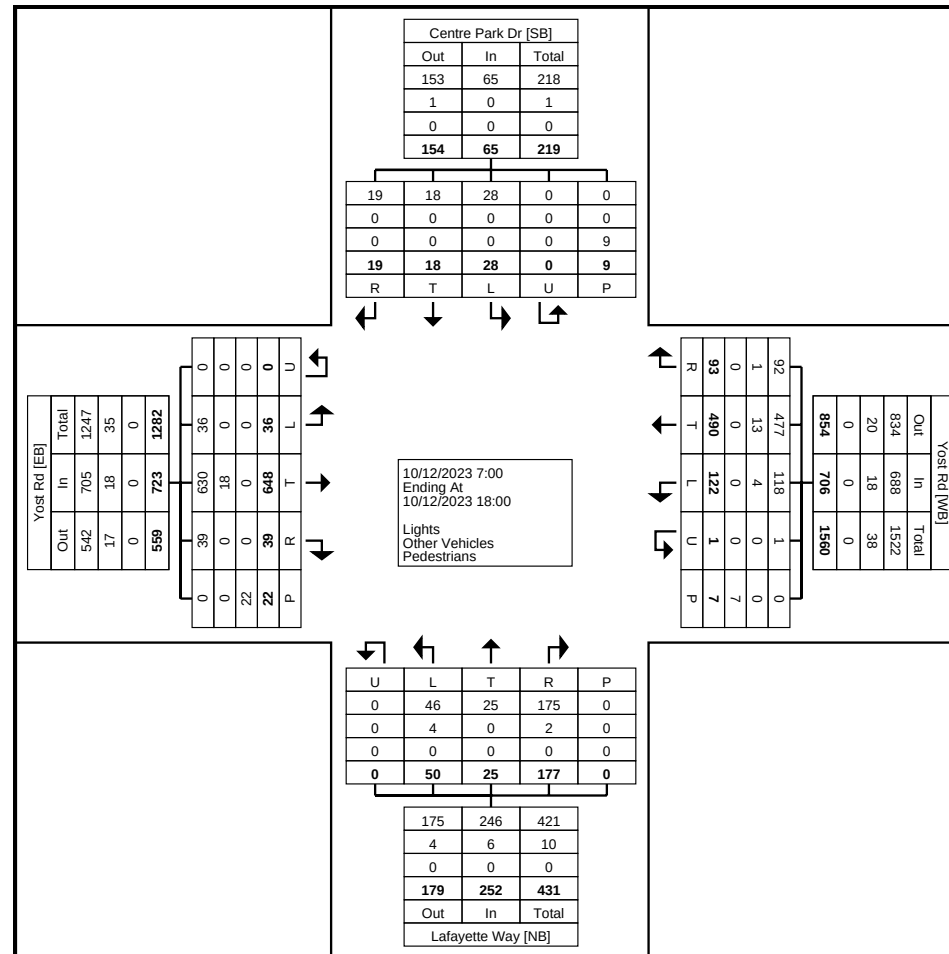
McMahon a Bowman Company
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 313807-01-001 Whitpain - Yost Rd
& Centre Park Dr
Site Code:
Start Date: 10/12/2023
Page No: 1

Turning Movement Data

Start Time	Centre Park Dr Southbound						Yost Rd Westbound						Lafayette Way Northbound						Yost Rd Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00	0	0	0	0	0	0	2	5	0	0	0	7	1	0	16	0	0	17	1	24	0	0	0	25	49
7:15	0	0	0	0	0	0	3	11	1	0	0	15	2	1	10	0	0	13	0	21	3	0	2	24	52
7:30	0	0	0	0	0	0	5	20	0	0	1	25	1	0	8	0	0	9	1	32	3	0	1	36	70
7:45	0	1	0	0	2	1	5	41	0	0	0	46	3	1	20	0	0	24	0	60	5	0	2	65	136
Hourly Total	0	1	0	0	2	1	15	77	1	0	1	93	7	2	54	0	0	63	2	137	11	0	5	150	307
8:00	1	2	3	0	0	6	12	42	7	0	0	61	5	3	19	0	0	27	0	87	2	0	0	89	183
8:15	1	0	3	0	1	4	8	28	3	0	1	39	3	0	7	0	0	10	0	50	3	0	2	53	106
8:30	2	1	0	0	0	3	5	25	3	0	0	33	5	0	6	0	0	11	0	63	3	0	0	66	113
8:45	6	2	6	0	0	14	7	11	2	0	1	20	2	4	13	0	0	19	12	47	2	0	3	61	114
Hourly Total	10	5	12	0	1	27	32	106	15	0	2	153	15	7	45	0	0	67	12	247	10	0	5	269	516
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16:00	0	0	1	0	1	1	10	30	2	0	0	42	3	3	12	0	0	18	0	28	3	0	1	31	92
16:15	3	1	1	0	0	5	4	50	1	0	2	55	7	3	12	0	0	22	1	46	6	0	5	53	135
16:30	3	0	1	0	0	4	15	34	3	0	2	52	2	0	11	0	0	13	0	31	3	0	0	34	103
16:45	1	2	0	0	0	3	7	39	3	1	0	50	3	0	10	0	0	13	2	28	1	0	0	31	97
Hourly Total	7	3	3	0	1	13	36	153	9	1	4	199	15	6	45	0	0	66	3	133	13	0	6	149	427
17:00	0	1	1	0	0	2	12	31	4	0	0	47	6	0	9	0	0	15	1	28	3	0	0	32	96
17:15	1	1	0	0	0	2	9	27	24	0	0	60	1	6	6	0	0	13	4	34	1	0	1	39	114
17:30	7	6	2	0	2	15	5	48	29	0	0	82	2	4	8	0	0	14	13	30	1	0	0	44	155
17:45	3	1	1	0	3	5	13	48	11	0	0	72	4	0	10	0	0	14	1	39	0	0	5	40	131
Hourly Total	11	9	4	0	5	24	39	154	68	0	0	261	13	10	33	0	0	56	19	131	5	0	6	155	496
Grand Total	28	18	19	0	9	65	122	490	93	1	7	706	50	25	177	0	0	252	36	648	39	0	22	723	1746
Approach %	43.1	27.7	29.2	0.0	-	-	17.3	69.4	13.2	0.1	-	-	19.8	9.9	70.2	0.0	-	-	5.0	89.6	5.4	0.0	-	-	-
Total %	1.6	1.0	1.1	0.0	-	3.7	7.0	28.1	5.3	0.1	-	40.4	2.9	1.4	10.1	0.0	-	14.4	2.1	37.1	2.2	0.0	-	41.4	-
Lights	28	18	19	0	-	65	118	477	92	1	-	688	46	25	175	0	-	246	36	630	39	0	-	705	1704
% Lights	100.0	100.0	100.0	-	-	100.0	96.7	97.3	98.9	100.0	-	97.5	92.0	100.0	98.9	-	-	97.6	100.0	97.2	100.0	-	-	97.5	97.6
Other Vehicles	0	0	0	0	-	0	4	13	1	0	-	18	4	0	2	0	-	6	0	18	0	0	-	18	42
% Other Vehicles	0.0	0.0	0.0	-	-	0.0	3.3	2.7	1.1	0.0	-	2.5	8.0	0.0	1.1	-	-	2.4	0.0	2.8	0.0	-	-	2.5	2.4
Pedestrians	-	-	-	-	9	-	-	-	-	-	7	-	-	-	-	-	0	-	-	-	-	-	22	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Turning Movement Data Plot



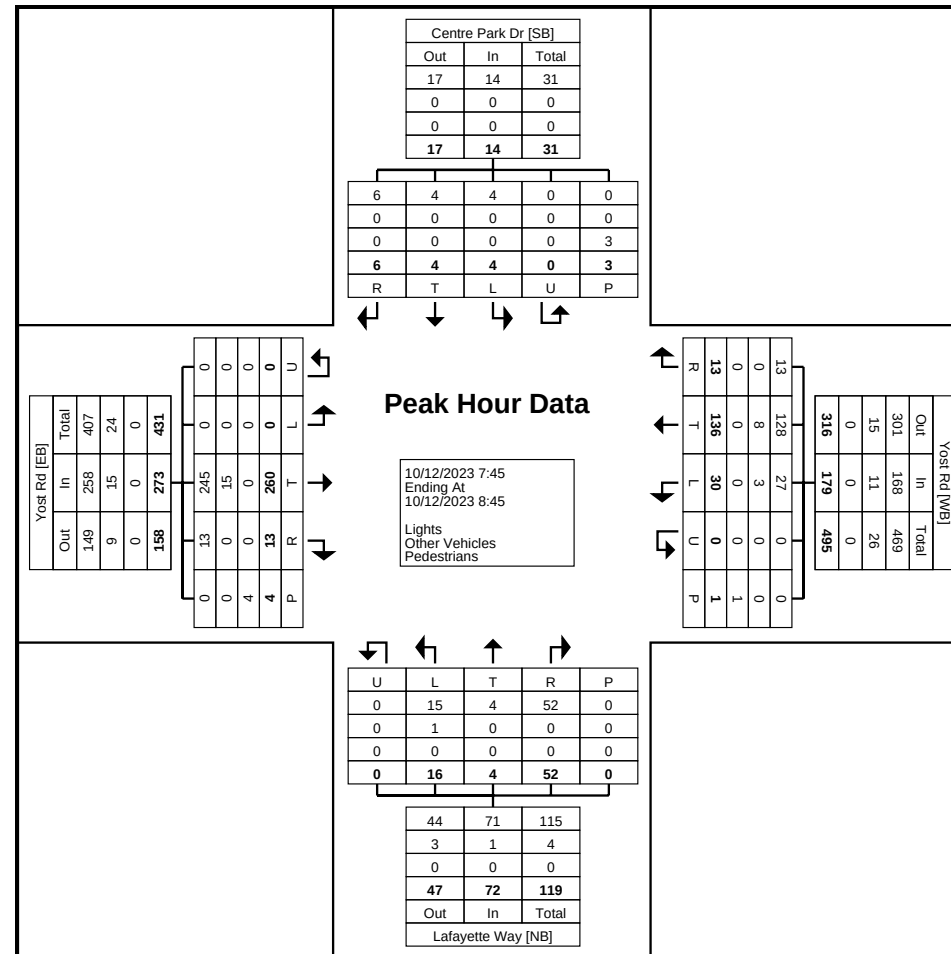
McMahon a Bowman Company
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 313807-01-001 Whitpain - Yost Rd
& Centre Park Dr
Site Code:
Start Date: 10/12/2023
Page No: 3

Turning Movement Peak Hour Data (7:45)

Start Time	Centre Park Dr Southbound						Yost Rd Westbound						Lafayette Way Northbound						Yost Rd Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:45	0	1	0	0	2	1	5	41	0	0	0	46	3	1	20	0	0	24	0	60	5	0	2	65	136
8:00	1	2	3	0	0	6	12	42	7	0	0	61	5	3	19	0	0	27	0	87	2	0	0	89	183
8:15	1	0	3	0	1	4	8	28	3	0	1	39	3	0	7	0	0	10	0	50	3	0	2	53	106
8:30	2	1	0	0	0	3	5	25	3	0	0	33	5	0	6	0	0	11	0	63	3	0	0	66	113
Total	4	4	6	0	3	14	30	136	13	0	1	179	16	4	52	0	0	72	0	260	13	0	4	273	538
Approach %	28.6	28.6	42.9	0.0	-	-	16.8	76.0	7.3	0.0	-	-	22.2	5.6	72.2	0.0	-	-	0.0	95.2	4.8	0.0	-	-	-
Total %	0.7	0.7	1.1	0.0	-	2.6	5.6	25.3	2.4	0.0	-	33.3	3.0	0.7	9.7	0.0	-	13.4	0.0	48.3	2.4	0.0	-	50.7	-
PHF	0.500	0.500	0.500	0.000	-	0.583	0.625	0.810	0.464	0.000	-	0.734	0.800	0.333	0.650	0.000	-	0.667	0.000	0.747	0.650	0.000	-	0.767	0.735
Lights	4	4	6	0	-	14	27	128	13	0	-	168	15	4	52	0	-	71	0	245	13	0	-	258	511
% Lights	100.0	100.0	100.0	-	-	100.0	90.0	94.1	100.0	-	-	93.9	93.8	100.0	100.0	-	-	98.6	-	94.2	100.0	-	-	94.5	95.0
Other Vehicles	0	0	0	0	-	0	3	8	0	0	-	11	1	0	0	0	-	1	0	15	0	0	-	15	27
% Other Vehicles	0.0	0.0	0.0	-	-	0.0	10.0	5.9	0.0	-	-	6.1	6.3	0.0	0.0	-	-	1.4	-	5.8	0.0	-	-	5.5	5.0
Pedestrians	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (7:45)



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Count Name: 313807-01-001 Whitpain - Yost Rd
& Centre Park Dr
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Start Date: 10/12/2023
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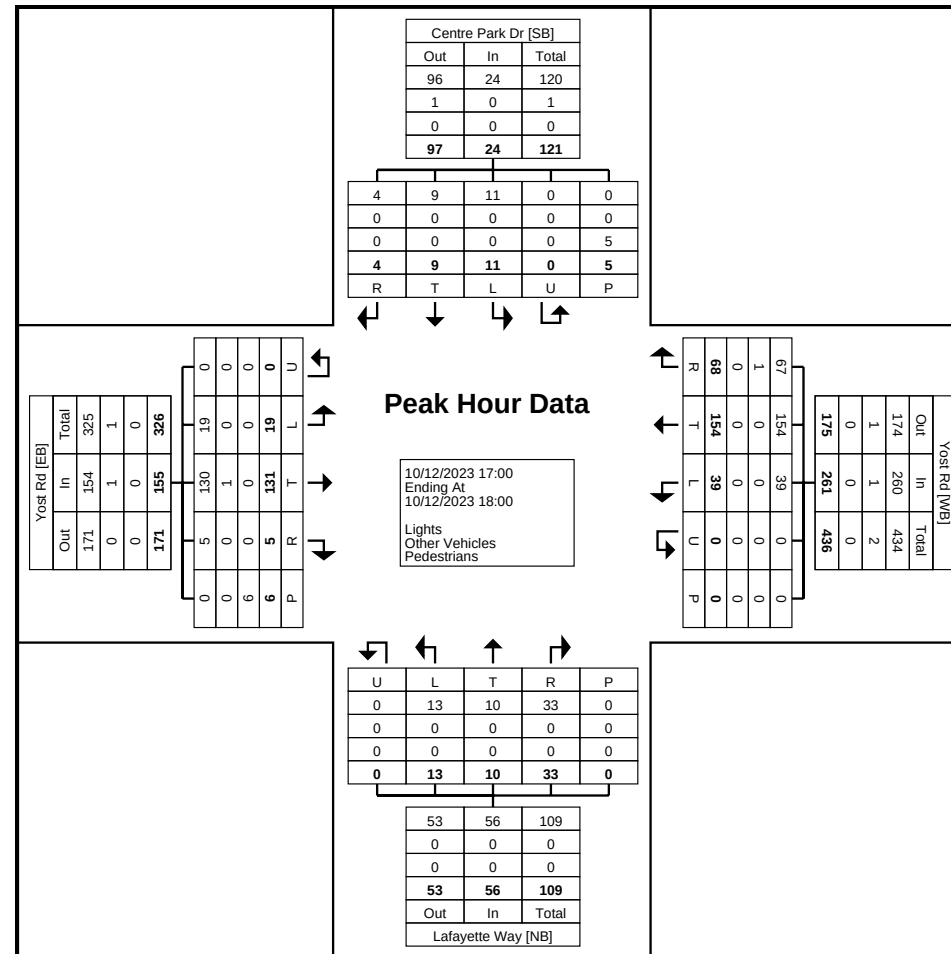
Turning Movement Peak Hour Data (17:00)

Start Time	Centre Park Dr Southbound						Yost Rd Westbound						Lafayette Way Northbound						Yost Rd Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
17:00	0	1	1	0	0	2	12	31	4	0	0	47	6	0	9	0	0	15	1	28	3	0	0	32	96
17:15	1	1	0	0	0	2	9	27	24	0	0	60	1	6	6	0	0	13	4	34	1	0	1	39	114
17:30	7	6	2	0	2	15	5	48	29	0	0	82	2	4	8	0	0	14	13	30	1	0	0	44	155
17:45	3	1	1	0	3	5	13	48	11	0	0	72	4	0	10	0	0	14	1	39	0	0	5	40	131
Total	11	9	4	0	5	24	39	154	68	0	0	261	13	10	33	0	0	56	19	131	5	0	6	155	496
Approach %	45.8	37.5	16.7	0.0	-	-	14.9	59.0	26.1	0.0	-	-	23.2	17.9	58.9	0.0	-	-	12.3	84.5	3.2	0.0	-	-	-
Total %	2.2	1.8	0.8	0.0	-	4.8	7.9	31.0	13.7	0.0	-	52.6	2.6	2.0	6.7	0.0	-	11.3	3.8	26.4	1.0	0.0	-	31.3	-
PHF	0.393	0.375	0.500	0.000	-	0.400	0.750	0.802	0.586	0.000	-	0.796	0.542	0.417	0.825	0.000	-	0.933	0.365	0.840	0.417	0.000	-	0.881	0.800
Lights	11	9	4	0	-	24	39	154	67	0	-	260	13	10	33	0	-	56	19	130	5	0	-	154	494
% Lights	100.0	100.0	100.0	-	-	100.0	100.0	100.0	98.5	-	-	99.6	100.0	100.0	100.0	-	-	100.0	100.0	99.2	100.0	-	-	99.4	99.6
Other Vehicles	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	2
% Other Vehicles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.5	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.0	0.8	0.0	-	-	0.6	0.4
Pedestrians	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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Count Name: 313807-01-001 Whitpain - Yost Rd
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Start Date: 10/12/2023
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Turning Movement Peak Hour Data Plot (17:00)



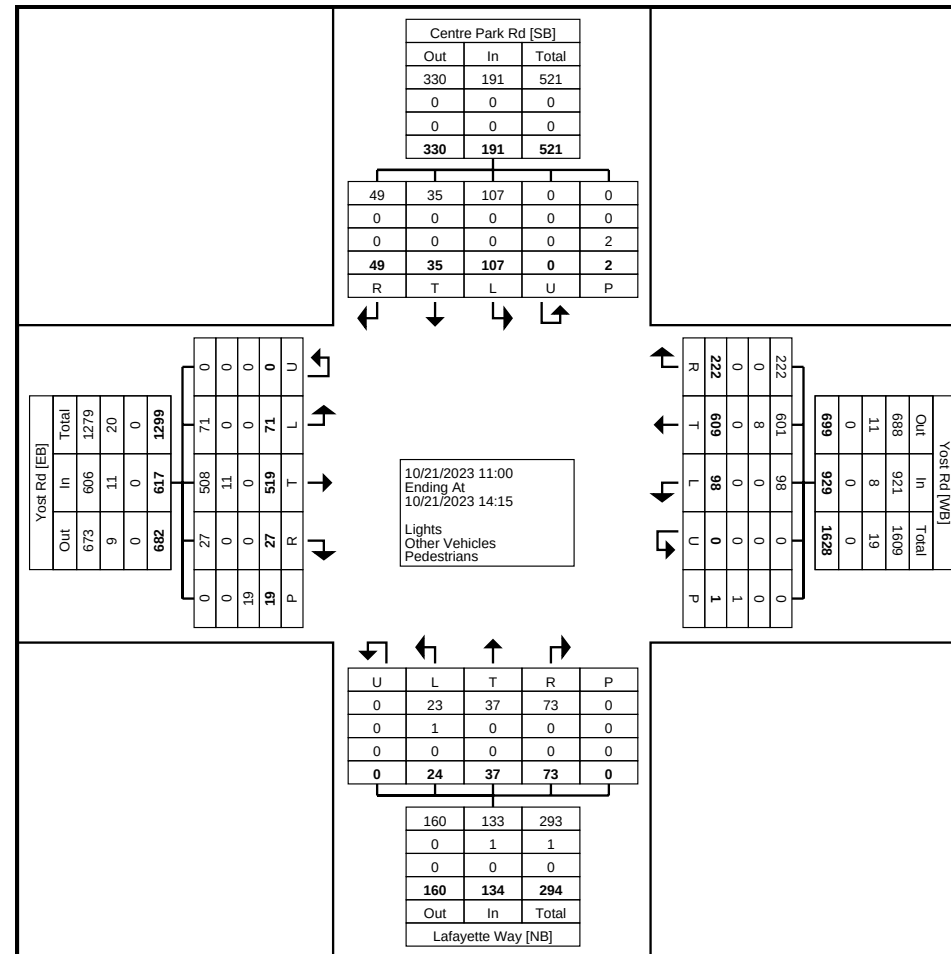
McMahon a Bowman Company
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Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 313807-01-001 - Whitpain - Yost &
Centre Park Rd
Site Code:
Start Date: 10/21/2023
Page No: 1

Turning Movement Data

Start Time	Centre Park Rd Southbound						Yost Rd Westbound						Lafayette Way Northbound						Yost Rd Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:00	0	2	2	0	0	4	9	20	36	0	0	65	1	4	9	0	0	14	4	16	1	0	3	21	104
11:15	13	2	5	0	1	20	3	18	17	0	0	38	3	3	3	0	0	9	6	17	1	0	2	24	91
11:30	5	2	1	0	0	8	5	28	15	0	0	48	0	0	4	0	0	4	11	20	3	0	0	34	94
11:45	13	5	5	0	0	23	14	66	15	0	0	95	0	3	4	0	0	7	1	19	3	0	0	23	148
Hourly Total	31	11	13	0	1	55	31	132	83	0	0	246	4	10	20	0	0	34	22	72	8	0	5	102	437
12:00	4	1	1	0	0	6	5	62	14	0	0	81	1	1	8	0	0	10	3	32	2	0	0	37	134
12:15	6	3	6	0	0	15	10	55	13	0	0	78	1	4	18	0	0	23	9	91	2	0	2	102	218
12:30	12	7	8	0	0	27	12	71	21	0	0	104	2	2	4	0	0	8	9	92	1	0	2	102	241
12:45	4	2	1	0	0	7	11	59	16	0	0	86	6	5	6	0	0	17	6	76	4	0	0	86	196
Hourly Total	26	13	16	0	0	55	38	247	64	0	0	349	10	12	36	0	0	58	27	291	9	0	4	327	789
13:00	15	4	2	0	0	21	6	70	8	0	0	84	4	1	4	0	0	9	8	41	4	0	2	53	167
13:15	18	2	2	0	1	22	10	53	11	0	0	74	0	2	2	0	0	4	4	37	1	0	4	42	142
13:30	12	2	14	0	0	28	10	60	20	0	0	90	4	9	7	0	0	20	6	42	2	0	1	50	188
13:45	5	3	2	0	0	10	3	47	36	0	1	86	2	3	4	0	0	9	4	36	3	0	3	43	148
Hourly Total	50	11	20	0	1	81	29	230	75	0	1	334	10	15	17	0	0	42	22	156	10	0	10	188	645
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	107	35	49	0	2	191	98	609	222	0	1	929	24	37	73	0	0	134	71	519	27	0	19	617	1871
Approach %	56.0	18.3	25.7	0.0	-	-	10.5	65.6	23.9	0.0	-	-	17.9	27.6	54.5	0.0	-	-	11.5	84.1	4.4	0.0	-	-	-
Total %	5.7	1.9	2.6	0.0	-	10.2	5.2	32.5	11.9	0.0	-	49.7	1.3	2.0	3.9	0.0	-	7.2	3.8	27.7	1.4	0.0	-	33.0	-
Lights	107	35	49	0	-	191	98	601	222	0	-	921	23	37	73	0	-	133	71	508	27	0	-	606	1851
% Lights	100.0	100.0	100.0	-	-	100.0	100.0	98.7	100.0	-	-	99.1	95.8	100.0	100.0	-	-	99.3	100.0	97.9	100.0	-	-	98.2	98.9
Other Vehicles	0	0	0	0	-	0	0	8	0	0	-	8	1	0	0	0	-	1	0	11	0	0	-	11	20
% Other Vehicles	0.0	0.0	0.0	-	-	0.0	0.0	1.3	0.0	-	-	0.9	4.2	0.0	0.0	-	-	0.7	0.0	2.1	0.0	-	-	1.8	1.1
Pedestrians	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	19	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Turning Movement Data Plot



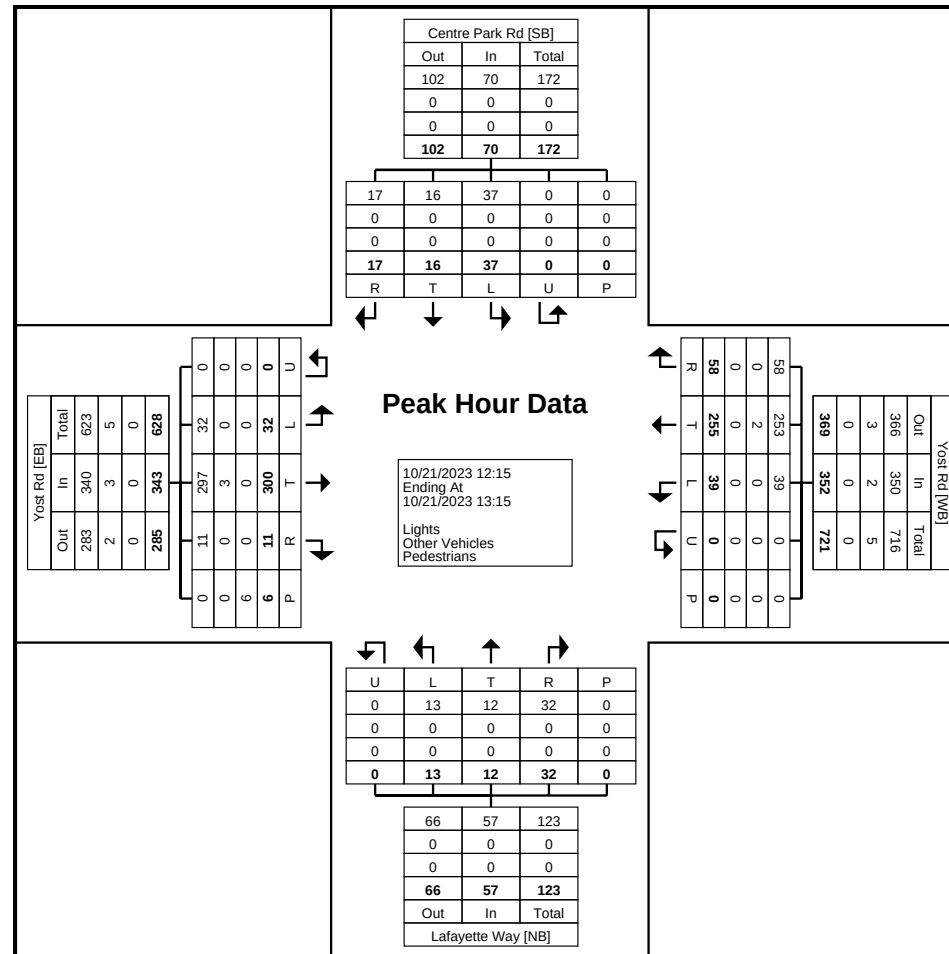
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Count Name: 313807-01-001 - Whitpain - Yost &
Centre Park Rd
Site Code:
Start Date: 10/21/2023
Page No: 3

Turning Movement Peak Hour Data (12:15)

Start Time	Centre Park Rd Southbound						Yost Rd Westbound						Lafayette Way Northbound						Yost Rd Eastbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:15	6	3	6	0	0	15	10	55	13	0	0	78	1	4	18	0	0	23	9	91	2	0	2	102	218
12:30	12	7	8	0	0	27	12	71	21	0	0	104	2	2	4	0	0	8	9	92	1	0	2	102	241
12:45	4	2	1	0	0	7	11	59	16	0	0	86	6	5	6	0	0	17	6	76	4	0	0	86	196
13:00	15	4	2	0	0	21	6	70	8	0	0	84	4	1	4	0	0	9	8	41	4	0	2	53	167
Total	37	16	17	0	0	70	39	255	58	0	0	352	13	12	32	0	0	57	32	300	11	0	6	343	822
Approach %	52.9	22.9	24.3	0.0	-	-	11.1	72.4	16.5	0.0	-	-	22.8	21.1	56.1	0.0	-	-	9.3	87.5	3.2	0.0	-	-	-
Total %	4.5	1.9	2.1	0.0	-	8.5	4.7	31.0	7.1	0.0	-	42.8	1.6	1.5	3.9	0.0	-	6.9	3.9	36.5	1.3	0.0	-	41.7	-
PHF	0.617	0.571	0.531	0.000	-	0.648	0.813	0.898	0.690	0.000	-	0.846	0.542	0.600	0.444	0.000	-	0.620	0.889	0.815	0.688	0.000	-	0.841	0.853
Lights	37	16	17	0	-	70	39	253	58	0	-	350	13	12	32	0	-	57	32	297	11	0	-	340	817
% Lights	100.0	100.0	100.0	-	-	100.0	100.0	99.2	100.0	-	-	99.4	100.0	100.0	100.0	-	-	100.0	100.0	99.0	100.0	-	-	99.1	99.4
Other Vehicles	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	0	3	0	0	-	3	5
% Other Vehicles	0.0	0.0	0.0	-	-	0.0	0.0	0.8	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.0	1.0	0.0	-	-	0.9	0.6
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (12:15)

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Whitpain Township
Location: Centre Park Rd &
Dog Park Access
Counter: LB

File Name : dogpark01w
Site Code : 00000000
Start Date : 10/12/2023
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

[illegible]

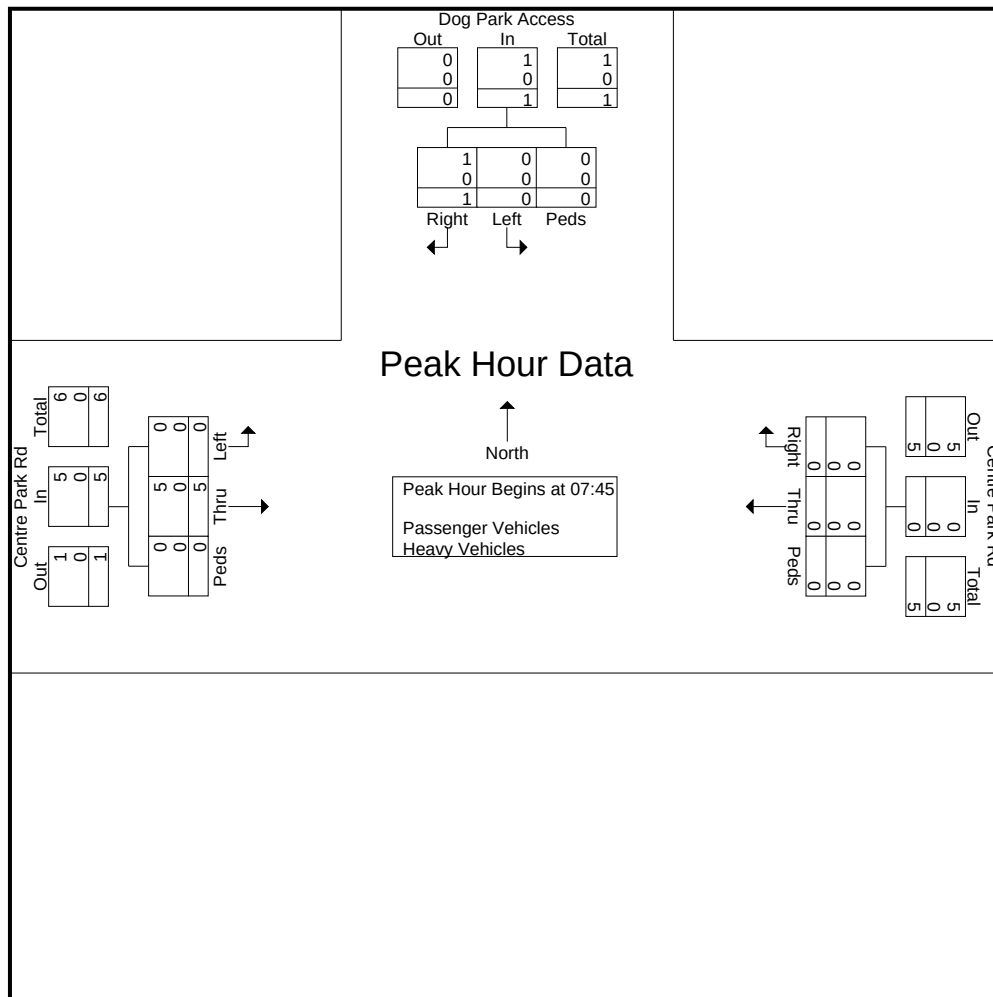
McMahon a Bowman Company

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Whitpain Township
Location: Centre Park Rd &
Dog Park Access
Counter: LB

File Name : dogpark01w
Site Code : 00000000
Start Date : 10/12/2023
Page No : 2

	Dog Park Access Southbound				Centre Park Rd Westbound				Centre Park Rd Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 11:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45													
07:45	0	0	0	0	0	0	0	0	0	1	0	1	1
08:00	0	0	0	0	0	0	0	0	0	2	0	2	2
08:15	0	1	0	1	0	0	0	0	0	1	0	1	2
08:30	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	1	0	1	0	0	0	0	0	5	0	5	6
% App. Total	0	100	0		0	0	0		0	100	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.625	.000	.625	.750
Passenger Vehicles	0	1	0	1	0	0	0	0	0	5	0	5	6
% Passenger Vehicles	0	100	0	100	0	0	0	0	0	100	0	100	100
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0



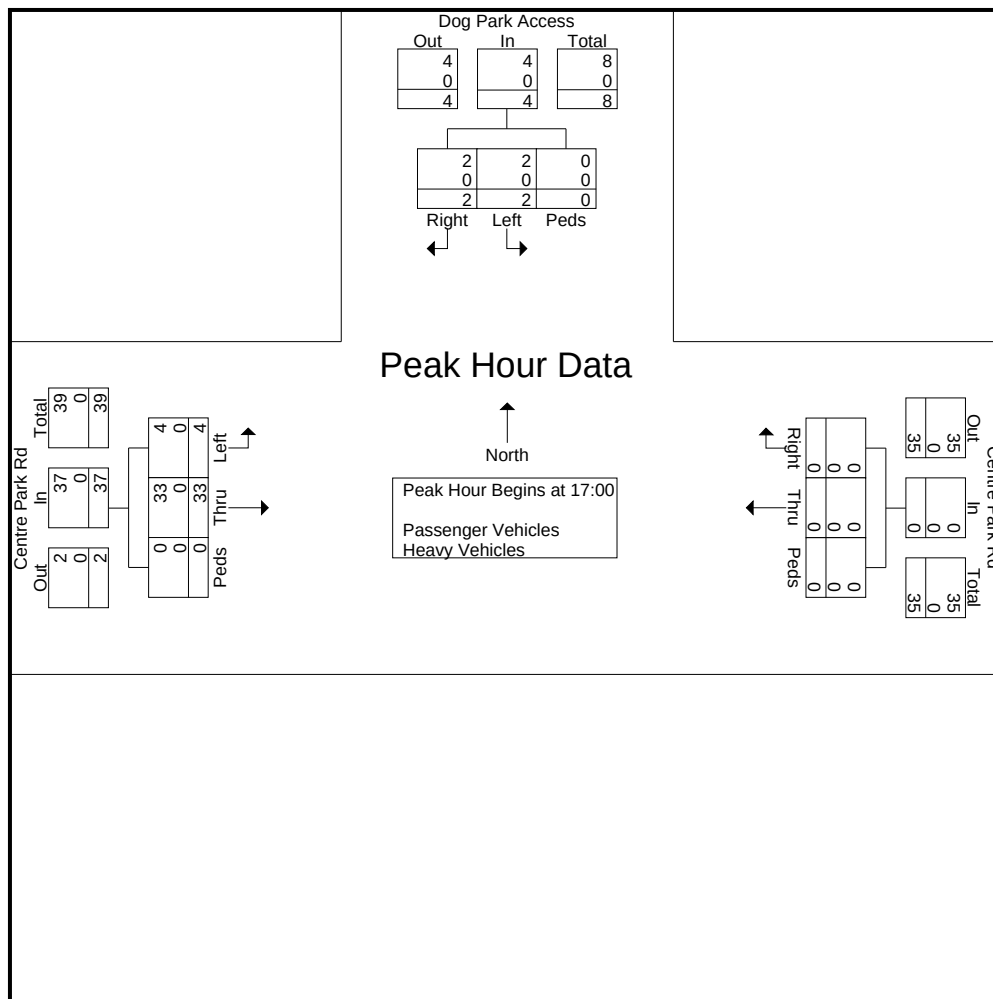
McMahon a Bowman Company

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Whitpain Township
Location: Centre Park Rd &
Dog Park Access
Counter: LB

File Name : dogpark01w
Site Code : 00000000
Start Date : 10/12/2023
Page No : 3

	Dog Park Access Southbound				Centre Park Rd Westbound				Centre Park Rd Eastbound				
Start Time	Left	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 17:00													
17:00	1	2	0	3	0	0	0	0	0	0	0	0	3
17:15	0	0	0	0	0	0	0	0	1	8	0	9	9
17:30	0	0	0	0	0	0	0	0	2	20	0	22	22
17:45	1	0	0	1	0	0	0	0	1	5	0	6	7
Total Volume	2	2	0	4	0	0	0	0	4	33	0	37	41
% App. Total	50	50	0		0	0	0		10.8	89.2	0		
PHF	.500	.250	.000	.333	.000	.000	.000	.000	.500	.413	.000	.420	.466
Passenger Vehicles	2	2	0	4	0	0	0	0	4	33	0	37	41
% Passenger Vehicles	100	100	0	100	0	0	0	0	100	100	0	100	100
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0



425 Commerce Drive, Suite 200
Fort Washington, PA 19034

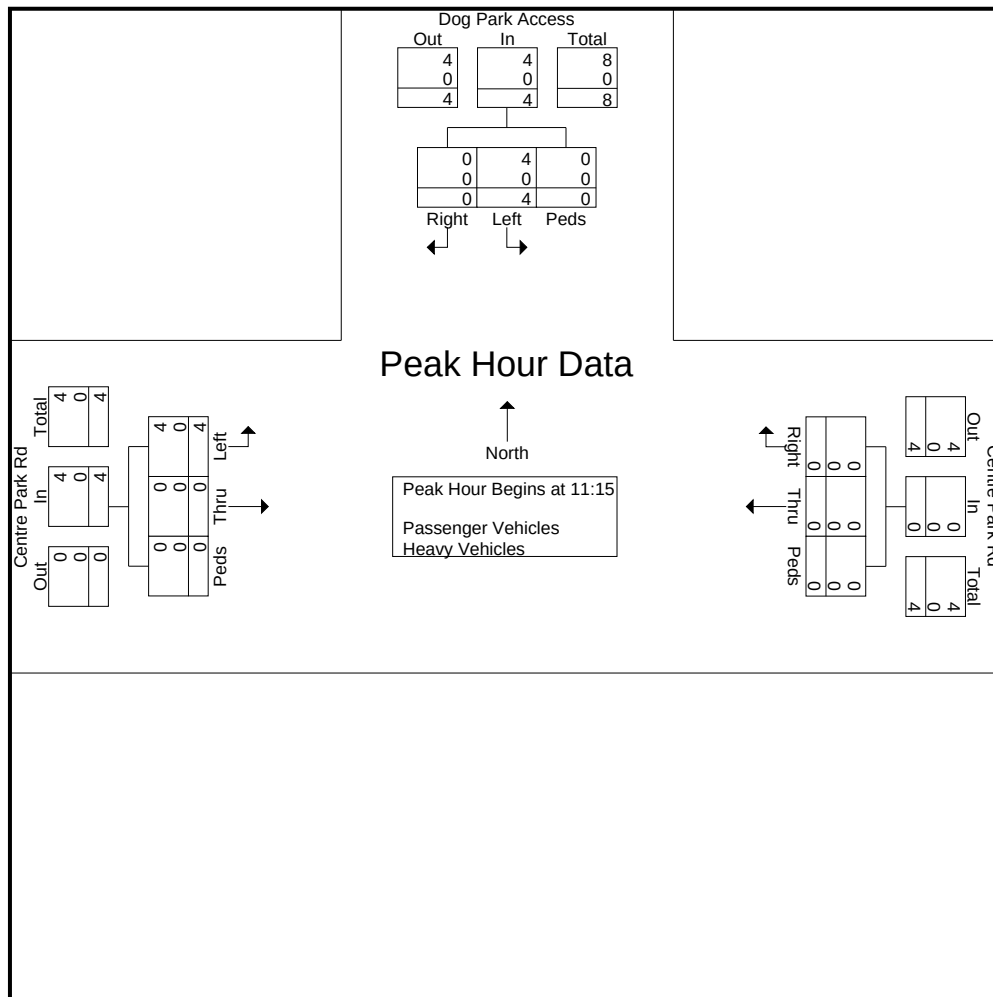
File Name : dogpark01s
Site Code : 00000000
Start Date : 10/21/2023
Page No : 1

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425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Whitpain Township
Location: Centre Park Rd &
Dog Park Access
Counter: KB

File Name : dogpark01s
Site Code : 00000000
Start Date : 10/21/2023
Page No : 2

[illegible]

McMahon a Bowman Company

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Whitpain Township
Location: Route 202 &
Yost Road
Counter:M

File Name : 202yost01a
Site Code : 00000000
Start Date : 10/12/2023
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

Start Time	Rt 202 Southbound			Rt 202 Northbound			Yost Rd Eastbound			Int. Total
	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	
07:00	80	20	0	6	90	0	13	8	0	217
07:15	83	18	0	7	108	0	12	8	0	236
07:30	102	12	0	4	95	0	15	11	0	239
07:45	102	13	0	10	114	0	14	15	0	268
Total	367	63	0	27	407	0	54	42	0	960
08:00	112	22	0	5	100	0	10	11	0	260
08:15	100	18	0	3	125	0	14	10	0	270
08:30	101	15	0	10	114	0	15	4	0	259
08:45	102	23	0	9	107	0	8	6	0	255
Total	415	78	0	27	446	0	47	31	0	1044
Grand Total	782	141	0	54	853	0	101	73	0	2004
Apprch %	84.7	15.3	0	6	94	0	58	42	0	
Total %	39	7	0	2.7	42.6	0	5	3.6	0	
Passenger Vehicles	751	138	0	53	808	0	98	73	0	1921
% Passenger Vehicles	96	97.9	0	98.1	94.7	0	97	100	0	95.9
Heavy Vehicles	31	3	0	1	45	0	3	0	0	83
% Heavy Vehicles	4	2.1	0	1.9	5.3	0	3	0	0	4.1

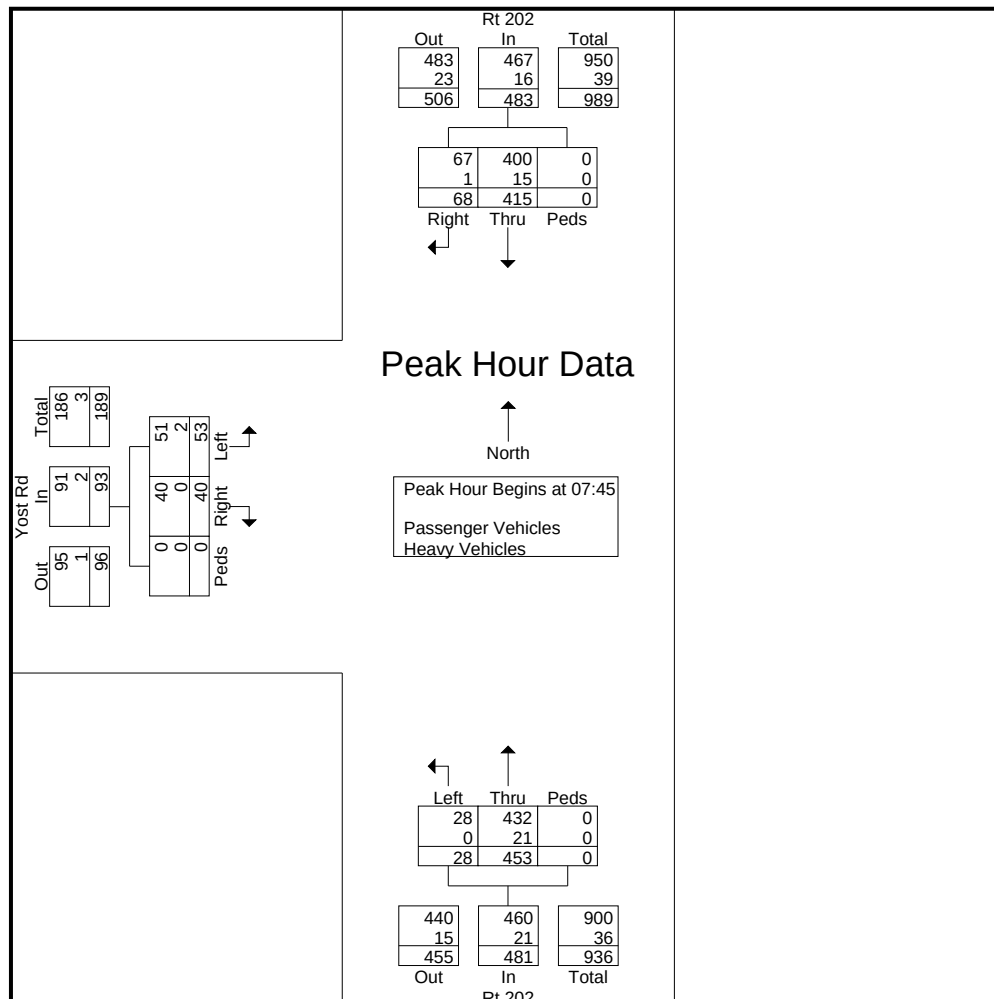
McMahon a Bowman Company

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Whitpain Township
Location: Route 202 &
Yost Road
Counter:M

File Name : 202yost01a
Site Code : 00000000
Start Date : 10/12/2023
Page No : 2

	Rt 202 Southbound				Rt 202 Northbound				Yost Rd Eastbound				
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45													
07:45	102	13	0	115	10	114	0	124	14	15	0	29	268
08:00	112	22	0	134	5	100	0	105	10	11	0	21	260
08:15	100	18	0	118	3	125	0	128	14	10	0	24	270
08:30	101	15	0	116	10	114	0	124	15	4	0	19	259
Total Volume	415	68	0	483	28	453	0	481	53	40	0	93	1057
% App. Total	85.9	14.1	0		5.8	94.2	0		57	43	0		
PHF	.926	.773	.000	.901	.700	.906	.000	.939	.883	.667	.000	.802	.979
Passenger Vehicles	400	67	0	467	28	432	0	460	51	40	0	91	1018
% Passenger Vehicles	96.4	98.5	0	96.7	100	95.4	0	95.6	96.2	100	0	97.8	96.3
Heavy Vehicles	15	1	0	16	0	21	0	21	2	0	0	2	39
% Heavy Vehicles	3.6	1.5	0	3.3	0	4.6	0	4.4	3.8	0	0	2.2	3.7



McMahon a Bowman Company

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Whitpain Township
Location: Route 202 &
Yost Rd
Counter: M

File Name : 202yost01p
Site Code :
Start Date : 10/12/2023
Page No : 1

Groups Printed- Lights - Other Vehicles

	Rt 202 Southbound			Rt 202 Northbound			Yost Rd Eastbound			
Start Time	Thru	Right	Peds	Left	Thru	Peds	Left	Right	Peds	Int. Total
16:00	84	37	0	18	118	0	16	14	0	287
16:15	76	43	0	17	135	0	26	20	0	317
16:30	73	35	0	17	110	0	20	22	0	277
16:45	97	49	0	12	134	0	23	11	0	326
Total	330	164	0	64	497	0	85	67	0	1207
17:00	86	35	0	7	141	0	28	17	0	314
17:15	95	57	0	17	137	0	27	17	0	350
17:30	83	59	0	17	114	0	18	31	0	322
17:45	89	26	0	18	124	0	47	27	0	331
Total	353	177	0	59	516	0	120	92	0	1317
Grand Total	683	341	0	123	1013	0	205	159	0	2524
Apprch %	66.7	33.3	0	10.8	89.2	0	56.3	43.7	0	
Total %	27.1	13.5	0	4.9	40.1	0	8.1	6.3	0	
Lights	670	340	0	123	992	0	204	158	0	2487
% Lights	98.1	99.7	0	100	97.9	0	99.5	99.4	0	98.5
Other Vehicles	13	1	0	0	21	0	1	1	0	37
% Other Vehicles	1.9	0.3	0	0	2.1	0	0.5	0.6	0	1.5

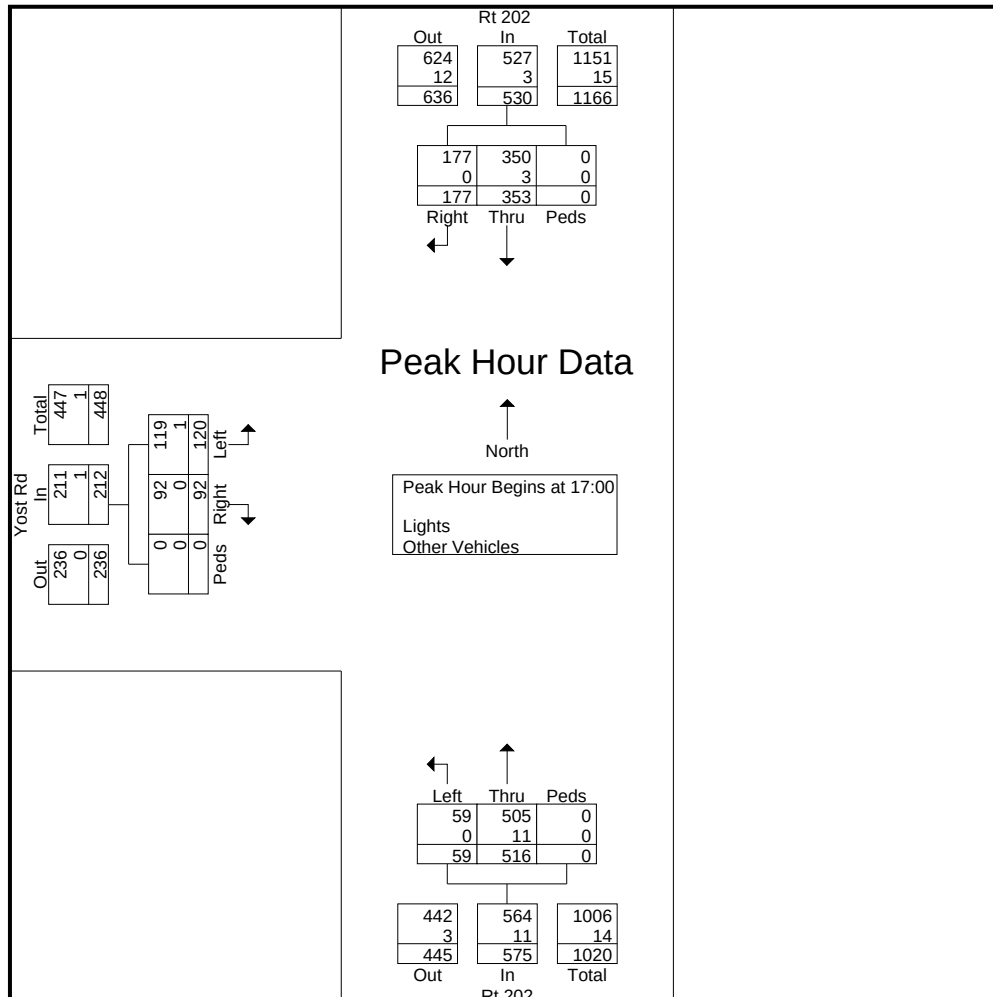
McMahon a Bowman Company

425 Commerce Drive, Suite 200
Fort Washington, PA 19034

Municipality: Whitpain Township
Location: Route 202 &
Yost Rd
Counter: M

File Name : 202yost01p
Site Code :
Start Date : 10/12/2023
Page No : 2

	Rt 202 Southbound				Rt 202 Northbound				Yost Rd Eastbound				
Start Time	Thru	Right	Peds	App. Total	Left	Thru	Peds	App. Total	Left	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 17:00													
17:00	86	35	0	121	7	141	0	148	28	17	0	45	314
17:15	95	57	0	152	17	137	0	154	27	17	0	44	350
17:30	83	59	0	142	17	114	0	131	18	31	0	49	322
17:45	89	26	0	115	18	124	0	142	47	27	0	74	331
Total Volume	353	177	0	530	59	516	0	575	120	92	0	212	1317
% App. Total	66.6	33.4	0		10.3	89.7	0		56.6	43.4	0		
PHF	.929	.750	.000	.872	.819	.915	.000	.933	.638	.742	.000	.716	.941
Lights	350	177	0	527	59	505	0	564	119	92	0	211	1302
% Lights	99.2	100	0	99.4	100	97.9	0	98.1	99.2	100	0	99.5	98.9
Other Vehicles	3	0	0	3	0	11	0	11	1	0	0	1	15
% Other Vehicles	0.8	0	0	0.6	0	2.1	0	1.9	0.8	0	0	0.5	1.1





McMahon a Bowman Company
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 313807-01-001 - Whitpain - 202 &
Jolly
Site Code:
Start Date: 10/21/2023
Page No: 1

Turning Movement Data

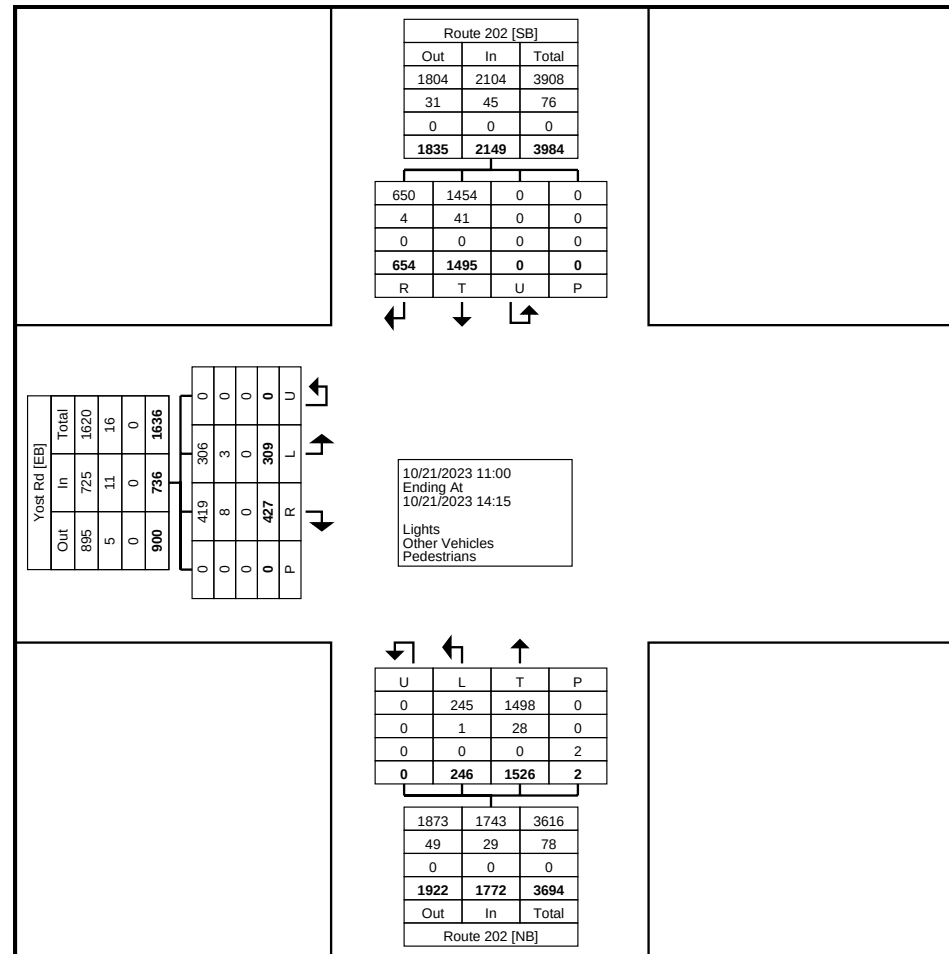
Start Time	Route 202 Southbound						Route 202 Northbound					Yost Rd Eastbound						Int. Total
	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	
11:00	119	44	0	0	0	163	17	145	0	2	162	20	6	0	0	0	26	351
11:15	143	27	2	0	0	172	11	135	0	0	146	18	16	0	0	0	34	352
11:30	142	44	0	0	0	186	10	162	0	0	172	19	13	0	0	0	32	390
11:45	114	64	5	0	0	183	27	140	0	0	167	18	18	0	0	0	36	386
Hourly Total	518	179	7	0	0	704	65	582	0	2	647	75	53	0	0	0	128	1479
12:00	110	54	0	0	0	164	23	98	0	0	121	19	20	3	0	0	42	327
12:15	128	48	1	0	0	177	25	131	0	0	156	38	69	0	0	0	107	440
12:30	124	54	4	0	0	182	24	132	0	0	156	42	68	0	0	0	110	448
12:45	115	56	2	0	0	173	27	120	0	0	147	45	61	2	0	0	108	428
Hourly Total	477	212	7	0	0	696	99	481	0	0	580	144	218	5	0	0	367	1643
13:00	101	63	1	0	0	165	20	125	0	0	145	31	31	0	0	0	62	372
13:15	136	57	0	0	0	193	18	103	0	0	121	25	39	0	0	0	64	378
13:30	138	71	0	0	0	209	19	107	0	0	126	25	41	0	0	0	66	401
13:45	125	55	1	0	0	181	25	128	0	0	153	9	40	0	0	0	49	383
Hourly Total	500	246	2	0	0	748	82	463	0	0	545	90	151	0	0	0	241	1534
14:00	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	1495	638	16	0	0	2149	246	1526	0	2	1772	309	422	5	0	0	736	4657
Approach %	69.6	29.7	0.7	0.0	-	-	13.9	86.1	0.0	-	-	42.0	57.3	0.7	0.0	-	-	-
Total %	32.1	13.7	0.3	0.0	-	46.1	5.3	32.8	0.0	-	38.1	6.6	9.1	0.1	0.0	-	15.8	-
Lights	1454	634	16	0	-	2104	245	1498	0	-	1743	306	414	5	0	-	725	4572
% Lights	97.3	99.4	100.0	-	-	97.9	99.6	98.2	-	-	98.4	99.0	98.1	100.0	-	-	98.5	98.2
Other Vehicles	41	4	0	0	-	45	1	28	0	-	29	3	8	0	0	-	11	85
% Other Vehicles	2.7	0.6	0.0	-	-	2.1	0.4	1.8	-	-	1.6	1.0	1.9	0.0	-	-	1.5	1.8
Pedestrians	-	-	-	-	0	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

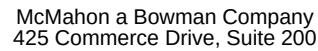


McMahon a Bowman Company
425 Commerce Drive, Suite 200

Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 313807-01-001 - Whitpain - 202 &
Jolly
Site Code:
Start Date: 10/21/2023
Page No: 2





Count Name: 313807-01-001 - Whitpain - 202 &
Jolly
Site Code:
Start Date: 10/21/2023
Page No: 3

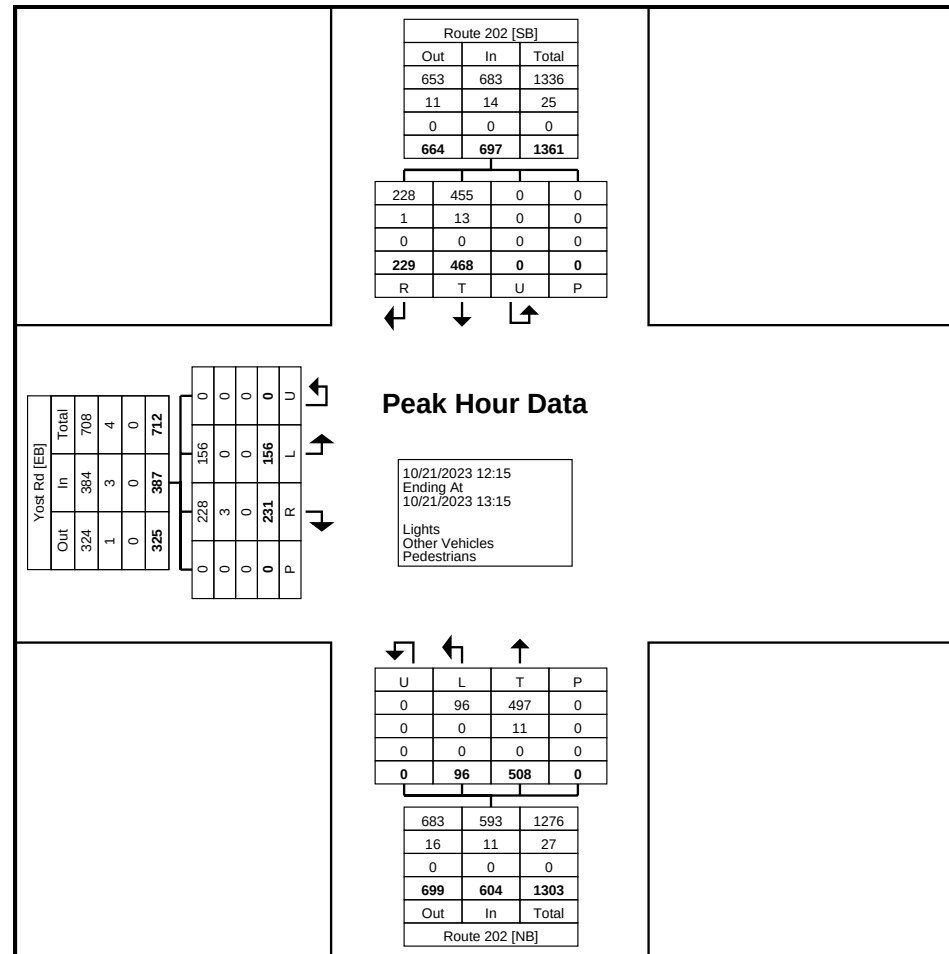
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McMahon a Bowman Company
425 Commerce Drive, Suite 200

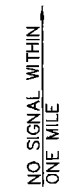
Fort Washington, Pennsylvania, United States 19034
215-283-9444

Count Name: 313807-01-001 - Whitpain - 202 & Jolly
Site Code:
Start Date: 10/21/2023
Page No: 4



Turning Movement Peak Hour Data Plot (12:15)

\\WDGR\00003 (Leon) \Tract\CADD\Signals\6permit jolly.dgn
3:54:29 PM rkenney Traffic Planning and Design, Inc.
4/5/2016



GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 212.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

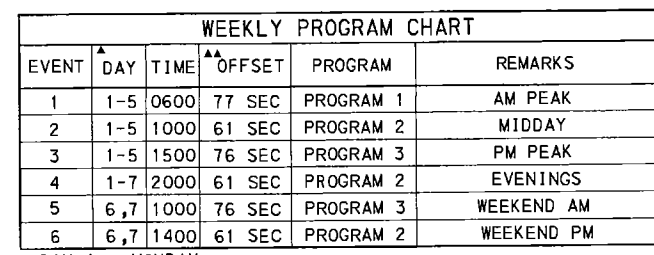


Diagram illustrating a road layout for JOLLY ROAD, showing various signs and dimensions:

- Top Left:** PECO #704430
- Top Left (Dashed Line):** NO SIGNAL WITHIN ONE MILE
- Center:** ONLY ONLY (Circle 4)
- Center:** SPEED LIMIT 35 MPH (Circle 4)
- Bottom Left:** PECO #680
- Right Side:** JOLLY ROAD
- Dimensions:** 12', 10', 10', 38', 14', 14', D.C. (Distance to Center), D.C.

12" LENS

8" LENS

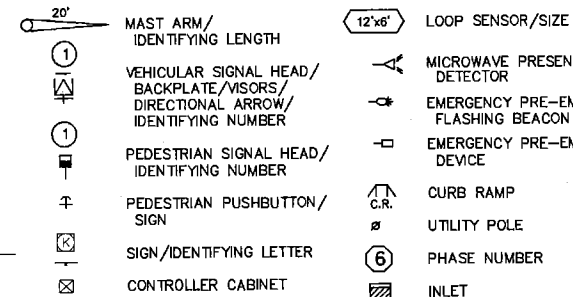
12" LENS

1

5,10

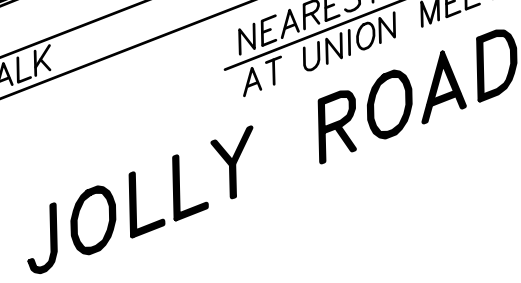
2,3,4,6

SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS AND LOUVERS 5



* UPON PEDESTRIAN ACTUATION ONLY.

TOTALS



*SEE FLASHING WARNING DEVICE PERMIT #W-6461-01 FOR THE EASTBOUND CURVE WARNING SIGN

* UPON PEDESTRIAN ACTUATION ONLY.



SHEET 2 OF 3 PERMIT # 64-3132 FILE # 3132

The diagram illustrates three types of signal transitions (2, 6, and 8) and their corresponding truth tables. Each transition is shown with a waveform and a table of signal states for 18 different phases.

Transition 2: The waveform shows a signal that is high for phases 10, 11, and 12, and low for phases 1 through 9 and 13 through 18. The truth table below shows the signal state for each phase.

PHASE	2
1	R
2	R
3	R
4	R
5,6,7	R
8,9	R
10,11	R
"RED"	R
"SIGNAL AHEAD"	R

Transition 6: The waveform shows a signal that is low for phases 13, 14, and 15, and high for phases 16 through 18. The truth table below shows the signal state for each phase.

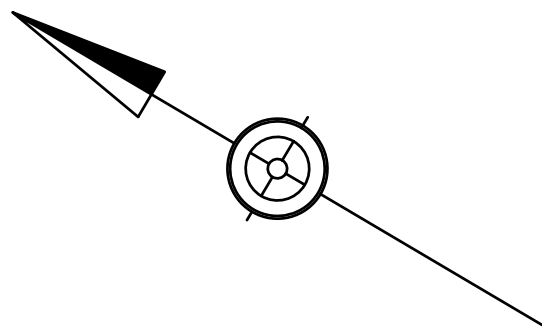
PHASE	6
13	R
14	R
15	R
16	R
17	R
18	R

Transition 8: The waveform shows a signal that is high for phases 16, 17, and 18, and low for phases 1 through 15. The truth table below shows the signal state for each phase.

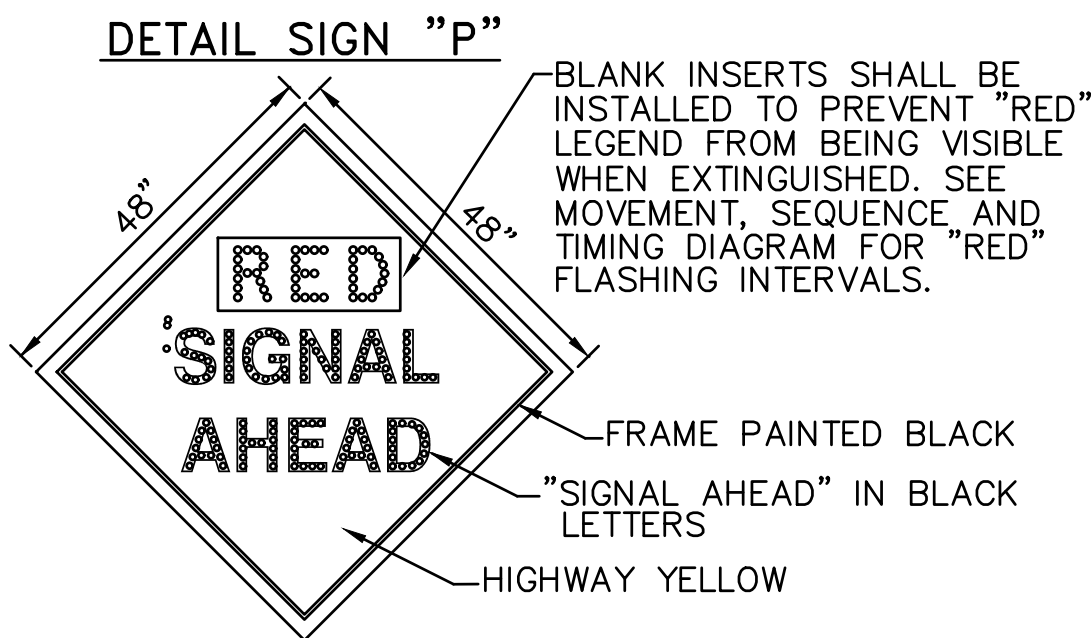
PHASE	8
16	R
17	R
18	R

IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON, TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

- IN EMERGENCY PREEMPTION, NO PRIORITY SHALL BE ESTABLISHED. PREEMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.



CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.



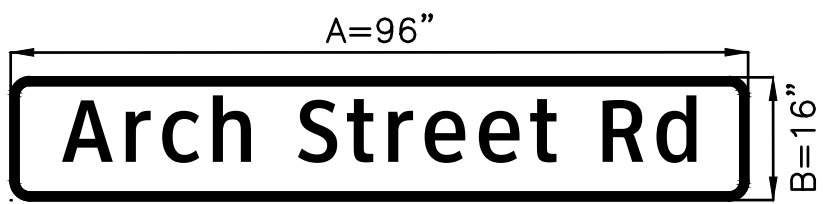
1. "RED SIGNAL AHEAD" SIGN SHALL BE FIBER-OPTIC WITH A MINIMUM OF TWO (2) LAMPS REQUIRED FOR EACH LINE OF THE SIGN LEGEND.
2. THE FIBER-OPTIC BUNDLES SHALL BE ARRANGED SO THAT THE FAILURE OF ONE LAMP WILL NOT EXTINGUISH THE LINE OF THE LEGEND.
3. THE SIGN CASE SHALL BE FULLY SEALED AND WATER TIGHT.
4. PROVIDE HINGES AND ALL HARDWARE OF STAINLESS STEEL.

A=60"

B=16"

Jolly Rd

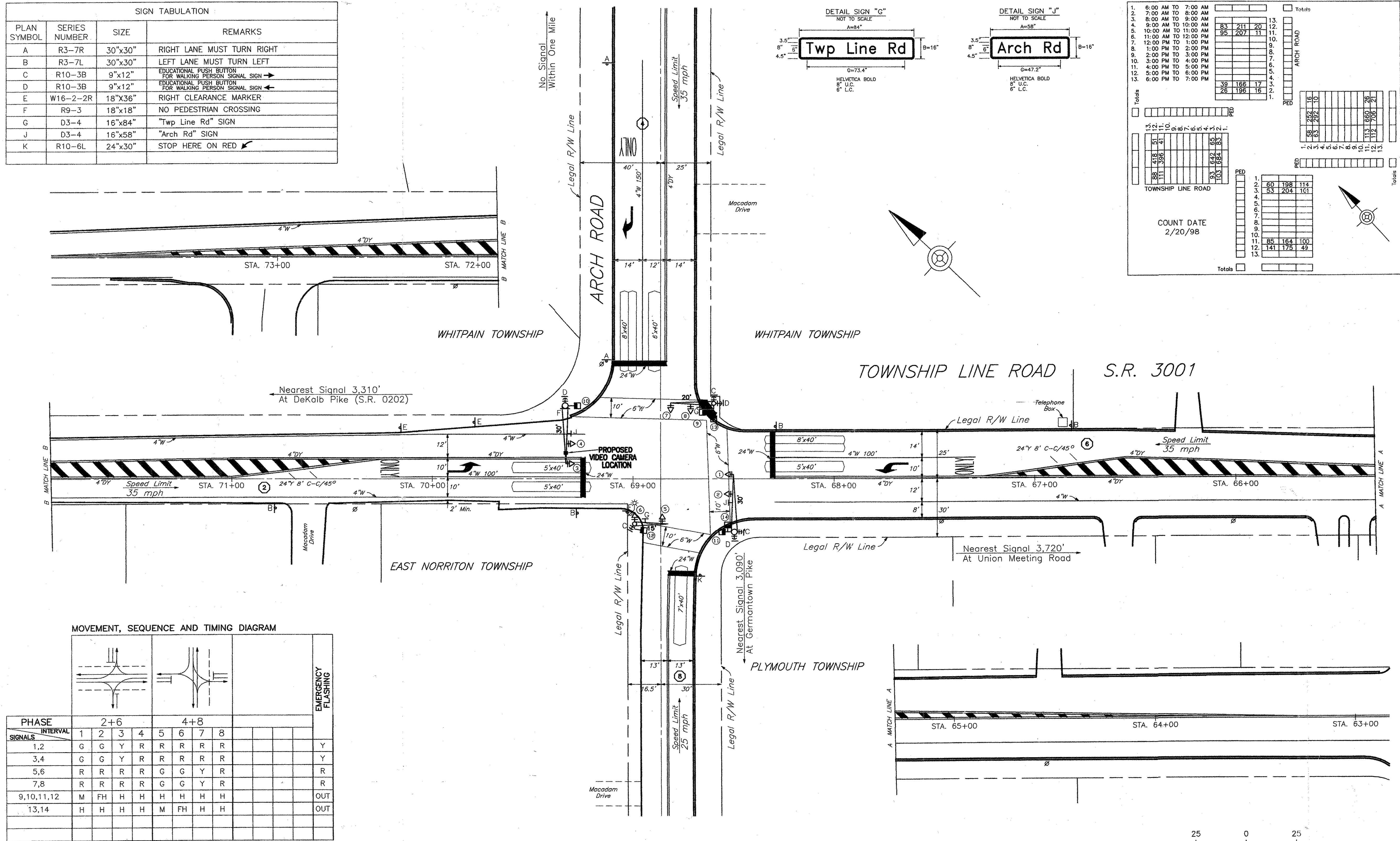
FONT: CLEARVIEW 3-W
8" UPPER CASE
6" LOWER CASE



FONT: CLEARVIEW 3-W
8" UPPER CASE
6" LOWER CASE

	MAST ARM/ IDENTIFYING LENGTH		LOOP SENSOR/SIZE
	VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER		ZONE OF DETECTION
	PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER		MICROWAVE PRESENCE DETECTOR
	PEDESTRIAN PUSHBUTTON/ SIGN		EMERGENCY PREEMPTION FLASHING BEACON
	SIGN/IDENTIFYING LETTER		EMERGENCY PREEMPTION DEVICE
	VIDEO DETECTOR		CURB RAMP
	OMNI DIRECTIONAL VIDEO DETECTOR		UTILITY POLE
	CONTROLLER CABINET		PHASE NUMBER
	REFLECTORIZED TWO-WAY DOUBLE YELLOW RAISED PAVEMENT MARKER 40' SPACING W/ YELLOW REFLECTOR		INLET
	REFLECTORIZED ONE-WAY WHITE RAISED PAVEMENT MARKER 40' SPACING W/ WHITE REFLECTOR		

SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R3-7R	30"x30"	RIGHT LANE MUST TURN RIGHT
B	R3-7L	30"x30"	LEFT LANE MUST TURN LEFT
C	R10-3B	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL SIGN
D	R10-3B	9"x12"	EDUCATIONAL PUSH BUTTON FOR WALKING PERSON SIGNAL SIGN
E	W16-2-2R	18"x36"	RIGHT CLEARANCE MARKER
F	R9-3	18"x18"	NO PEDESTRIAN CROSSING
G	D3-4	16"x84"	"Twp Line Rd" SIGN
J	D3-4	16"x58"	"Arch Rd" SIGN
K	R10-6L	24"x30"	STOP HERE ON RED



MOVEMENT, SEQUENCE AND TIMING DIAGRAM									
PHASE		2+6				4+8			
SIGNALS	INTERVAL	1	2	3	4	5	6	7	8
1,2	G	G	Y	R	R	R	R	R	R
3,4	G	G	Y	R	R	R	R	R	R
5,6	R	R	R	R	G	G	Y	R	R
7,8	R	R	R	R	G	G	Y	R	R
9,10,11,12	M	FH	H	H	H	H	H	H	H
13,14	H	H	H	H	M	FH	H	H	H

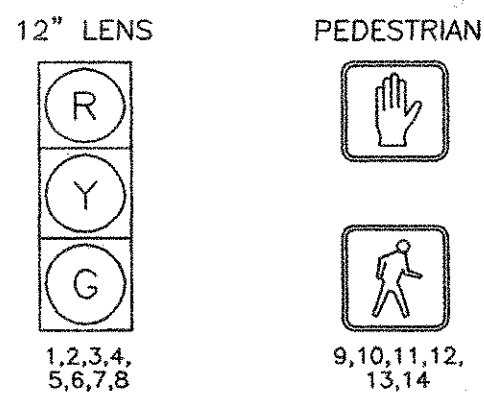
FIXED			4	2		4	2		
MINIMUM	6				6				
PASSAGE	5				5				
MAXIMUM	33				20				
PEDESTRIAN*	9*	10*			9*	10*			
MEMORY	MR				NL				

CONTROLLER TO DWELL IN 2+6 UNTIL ACTUATED BY 4+8.

* UPON PEDESTRIAN ACTUATION ONLY

SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS
SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS & LOUVERS

SIGNAL INDICATIONS



LEGEND	
20'	MAST ARM/IDENTIFYING LENGTH
②	VEHICULAR SIGNAL HEAD/BACKPLATE/VISORS/DIRECTIONAL ARROW/IDENTIFYING NUMBER
②	PEDESTRIAN SIGNAL HEAD/IDENTIFYING NUMBER
⊕	PEDESTRIAN PUSHBUTTON/SIGN
A	SIGN/IDENTIFYING LETTER
12'x6'	LOOP SENSOR/SIZE
—	MICROWAVE DETECTOR
—	EMERGENCY PREEMPTION DEVICE
—	CURB CUT RAMP
—	UTILITY POLE
②	PHASE NUMBER
■	PTZ CAMERA (POLICE SURVEILLANCE ONLY)

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

ALL MAINTENANCE WORK INCLUDING TRIMMING OF TREES, NECESSARY FOR PROPER VISIBILITY OF THE SIGNALS IS THE RESPONSIBILITY OF THE PERMITTEE.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ON THIS DRAWING ARE CONSIDERED PART OF THE PERMIT AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH PUBLICATION NO. 68.

POST MOUNTED SIGNALS SHALL BE INSTALLED WITH THE SIGNAL HEADS A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB OR THE EDGE OF THE SHOULDER. SUPPORT POLES FOR OVERHEAD SIGNALS SHALL ALSO HAVE A MINIMUM CLEARANCE HORIZONTALLY OF 2 FEET.

SIGNALS ERECTED OVER THE ROADWAY SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 16 FT. ABOVE THE ROADWAY. POST MOUNTED SIGNALS SHALL BE A MINIMUM OF 8 FT. ABOVE THE SIDEWALK OR PAVEMENT.

ALL OVERHEAD SIGNALS MUST BE RIGIDLY MOUNTED, TOP AND BOTTOM, AND EQUIPPED WITH BACKPLATES.

THE MINIMUM HORIZONTAL DISTANCE BETWEEN SIGNALS MEASURED AT RIGHT ANGLES TO THE APPROACH SHALL BE 8 FEET.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

CURBING TO BE INSTALLED BY MUNICIPALITY AND WHERE NOTED, SHALL BE PLAIN CEMENT CONCRETE CURB OR GRANITE CURB, INSTALLED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS FORM 408.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF ACT 187, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, EFFECTIVE DATE DECEMBER 7, 2006.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANGES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-7800 SERIES.

PENNSYLVANIA DEPARTMENT OF TRANSPORTATION ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: WHITPAIN, PLYMOUTH & EAST NORRITON TOWNSHIPS
INTERSECTION: TOWNSHIP LINE ROAD (S.R. 3001) & ARCH ROAD

REVIEWED: _____ DATE _____
MUNICIPAL OFFICIAL: _____ DATE _____
RECOMMENDED: MARK L. KRAY 12/2/85

WERNER J. EICHORN 12/2/85
DISTRICT TRAFFIC ENGINEER DATE

NO.	REVISION	DES/REV.	DATE	REV.	DATE	RECOM.	DATE
1	ADD PTZ CAMERA	EDM	7/28/07	NISP	10/25/07	10/25/07	10/25/07

1. 7:00AM TO 8:00AM
2. 8:00AM TO 9:00AM
3. 9:00AM TO 10:00AM
4. 10:00AM TO 11:00AM
5. 11:00AM TO 12:00N
6. 12:00N TO 1:00PM
7. 1:00PM TO 2:00PM
8. 2:00PM TO 3:00PM
9. 3:00PM TO 4:00PM
10. 4:00PM TO 5:00PM
11. 5:00PM TO 6:00PM
12. 6:00PM TO 7:00PM

19 65
27 52

65 314
40 345

YOST ROAD

(S.R. 0202)

772 34
905 37

889 135
910 229

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

PED.

DEKALB PIKE

766 72
777 61

763 49
735 27

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

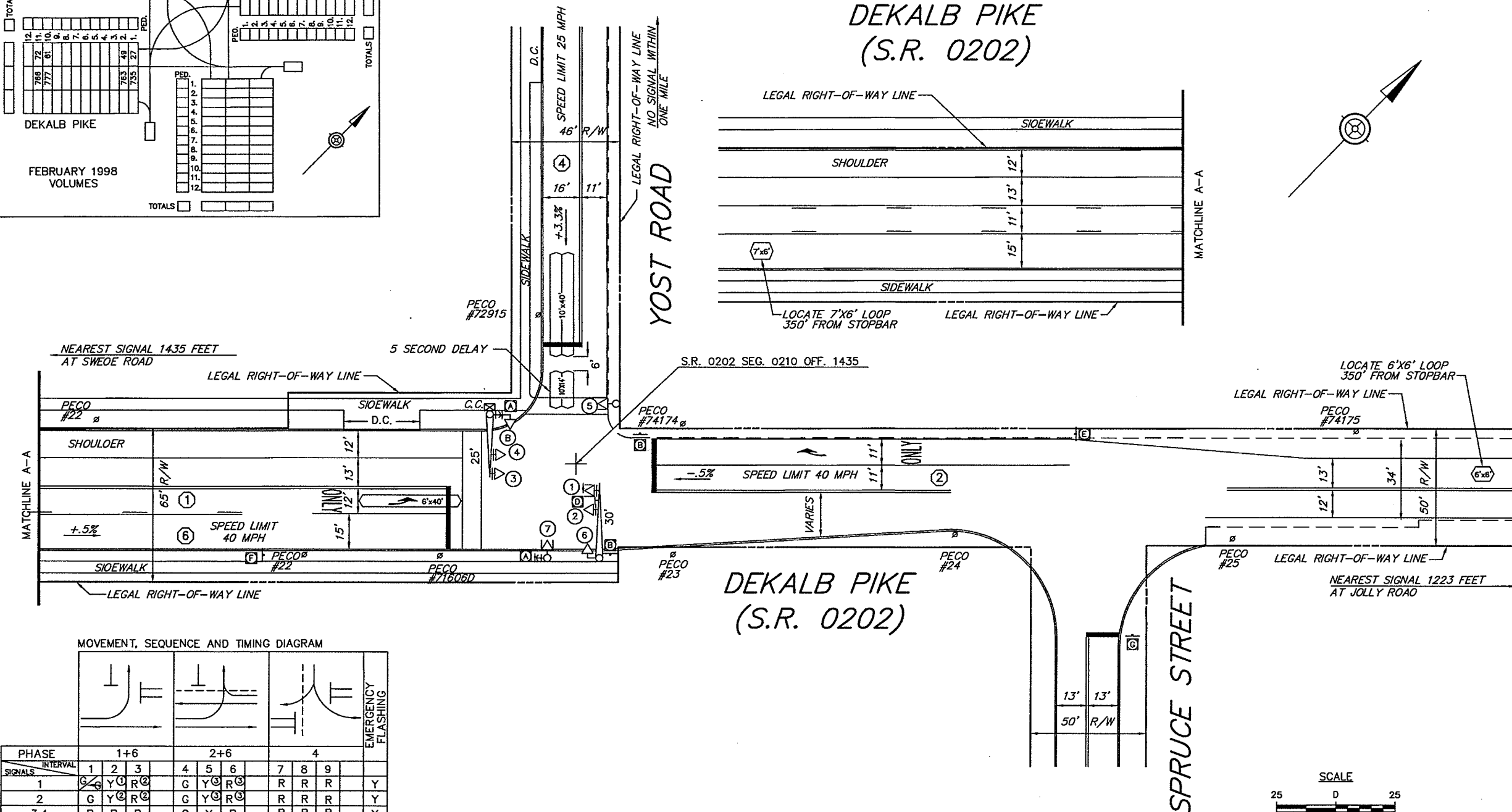
PED.

FEBRUARY 1998
VOLUMES

TOTALS

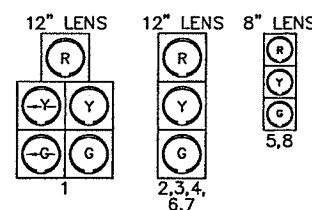
TOTALS

SHEET 2 OF 2	PERMIT # <u>64-2267</u>	FILE # <u>2267</u>



FIXED		4	2		4	2		3	2	
MINIMUM	3			15			3			
ADD. INITIAL				2						
MAX. INITIAL				37						
PASSAGE	3			6			3			
TBR				37						
TTR				15						
MIN. GAP				3.9						
MAX. 1	7			55			27			
MAX. 2	7			55			27			
PEDESTRIAN*	—			—			18*			
MEMORY	NL			MN			NL			

* UPON PEDESTRIAN ACTUATION ONLY.



SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS	1,5,7

25 D 25

	MAST ARM/ IDENTIFYING LENGTH		LOOP SENSOR/SIZE
	VEHICULAR SIGNAL HEAD/ BACKPLATE/VISORS/ DIRECTIONAL ARROW/ IDENTIFYING NUMBER		ZONE OF DETECTION
			MICROWAVE PRESENCE DETECTOR
	PEDESTRIAN SIGNAL HEAD/ IDENTIFYING NUMBER		EMERGENCY PRE-EMPTION FLASHING BEACON
			EMERGENCY PRE-EMPTION DEVICE
	PEDESTRIAN PUSHBUTTON/ SIGN		CURB RAMP
	SIGN/IDENTIFYING LETTER		UTILITY POLE
			PHASE NUMBER
	VIDEO DETECTOR		INLET
	CONTROLLER CABINET		DILEMMA ZONE DETECTOR

GENERAL NOTES

NO MODIFICATIONS OF THIS INSTALLATION ARE PERMITTED UNLESS PRIOR APPROVAL IS GRANTED IN WRITING BY A REPRESENTATIVE OF THE DEPARTMENT OF TRANSPORTATION.

REFER TO TRAFFIC SIGNAL PERMIT DRAWING FOR INDIVIDUAL INTERSECTION OPERATION, GEOMETRY, PHASING AND CRITICAL TIMES.

FOR CONSTRUCTION AND INSPECTION THE SYSTEM PERMIT SHOULD ALWAYS BE ACCOMPANIED WITH TRAFFIC SIGNAL PERMIT DRAWING.

TEST THE SYSTEM AT LOCAL INTERSECTION LEVEL, SUBSYSTEM LEVEL MASTER CONTROLLER LEVEL AND PERSONAL COMPUTER REMOTE DIAL UP LEVEL.

CATHER THE SYSTEM FAILURE CRITICAL ALARMS REPORT AND ARCHIVE THEM WHERE APPLICABLE.

SET UP PENNDOT DISTRICT 8-0 COMPUTER WITH THE SYSTEM DATABASE AND GRAPHICS. MODIFY THE DATABASE AND GRAPHICS FOR SYSTEMS REVISIONS.

ASSIGN LOOP DETECTORS AND PROGRAM THE CONTROLLERS TO GATHER TRAFFIC VOLUMES IN 15 MINUTE INTERVAL, WHERE APPLICABLE.

EXACT LOCATION OF DETECTORS SHALL BE DETERMINED PRIOR TO INSTALLATION BY A REPRESENTATIVE OF PENNDOT.

OBTAIN POLE ATTACHMENT PERMIT FOR AERIAL FIBER OPTIC INSTALLATION.

MAINTAIN MASTER CONTROLLER COMMUNICATION SUCH AS PHONE DROPS.

PRIOR TO INSTALLATION THE CONTRACTOR SHALL CONSULT WITH THE LOCAL OFFICIALS AND UTILITY COMPANIES TO RESOLVE ANY PROBLEMS WHICH MAY BE CREATED DUE TO THE LOCATION OF UTILITIES.

THIS DRAWING CANNOT BE USED AS A CONSTRUCTION DRAWING UNLESS THE PERMITTEE COMPLIES WITH THE PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

WHEN LIQUID FUELS MONEY IS USED, SIGNAL INSTALLATION MUST CONFORM TO FORM 408 AND A COPY OF THE PROPOSED SPECIFICATIONS MUST BE SUBMITTED TO THE DISTRICT TRAFFIC UNIT FOR REVIEW PRIOR TO BIDDING.

PERMITTEE SHALL OBTAIN A HIGHWAY OCCUPANCY PERMIT FOR ANY CHANCES IN INTERSECTION GEOMETRY REGARDING EXCAVATION.

CONDUIT INSTALLED IN BITUMINOUS ROADWAY LESS THAN 5 YEARS OLD, OR CONCRETE ROADWAY REGARDLESS OF AGE, MUST BE BORED OR JACKED UNDER THE ROADWAY. INSTALL IN ACCORDANCE WITH TRAFFIC SIGNAL STANDARDS TC-8800 SERIES.

SYSTEM NOTES

1. PROGRAM TO BE SELECTED BY TBC.
2. OFFSETS ARE REFERENCED TO THE BEGINNING OF YELLOW PHASE 2+6.
3. SYSTEM LIMITS :
DEKALB PIKE (4 INTERSECTIONS) - TOWNSHIP LINE ROAD TO JOLLY ROAD
SWEDE ROAD (1 INTERSECTION) - TOWNSHIP LINE ROAD
4. PRIMARY COORDINATION: GPS TIME CLOCKS
SECONOARY COORDINATION: TBC (DEFAULT TO BACKUP TBC).

CYCLE/SPLIT/OFFSET

PROGRAM 1			PHASE										CYCLE	OFFSETS
INTERSECTIONS	FILE #	MASTER	1	2	3	4	5	6	7	8	9			
1 TOWNSHIP LINE & SWEDE	0179			60		60	13(LEAD)	47		60			120	35
2 DEKALB & TOWNSHIP LINE	0377		13(LEAD)	41	13(LEAD)	53	14(LEAD)	40		66			120	41
3 DEKALB & SWEDE	1950			60		60		60					120	0
4 DEKALB & YOST	2267		13(LEAD)	62		25		95					120	100
5 DEKALB & JOLLY/CENTRE PARK	2266		14(LEAD)	85		21		99		21			120	96
PROGRAM 2			PHASE										CYCLE	OFFSETS
INTERSECTIONS	FILE #	MASTER	1	2	3	4	5	6	7	8	9			
1 TOWNSHIP LINE & SWEDE	0179			57		43	14(LEAD)	43		43			100	54
2 DEKALB & TOWNSHIP LINE	0377		15(LEAD)	36	13(LEAD)	36	16(LEAD)	33		49			100	49
3 DEKALB & SWEDE	1950			50		50		50					100	8
4 DEKALB & YOST	2267		13(LEAD)	66		21		79					100	99
5 DEKALB & JOLLY/CENTRE PARK	2266		13(LEAD)	57		30		70		30			100	66
PROGRAM 3			PHASE										CYCLE	OFFSETS
INTERSECTIONS	FILE #	MASTER	1	2	3	4	5	6	7	8	9			
1 TOWNSHIP LINE & SWEDE	0179			64		56	17(LEAD)	47		56			120	45
2 DEKALB & TOWNSHIP LINE	0377		19(LEAD)	46	13(LEAD)	42	24(LEAD)	41		55			120	40
3 DEKALB & SWEDE	1950			61		59		61					120	86
4 DEKALB & YOST	2267		13(LEAD)	66		21		99					120	97
5 DEKALB & JOLLY/CENTRE PARK	2266		13(LEAD)	73		34		66		34			120	102

WEEKLY PROGRAM CHART

EVENT	DAY*	TIME	CYCLE	PROGRAM	REMARKS
1	1-7	00:00		FREE	
2	1-5	06:00	120	1	A.M. PEAK
3	1-5	10:00	100	2	MIDDAY
4	1-5	15:00	120	3	P.M. PEAK
5	1-7	20:00	100	2	EVENINGS
6	6-7	08:00	100	2	WEEKEND
7	1-7	21:00		FREE	

* DAY 1 = MONDAY
** OFFSET REFERENCED TO PHASE 2+6 BEGINNING OF YELLOW.

NOT TO SCALE

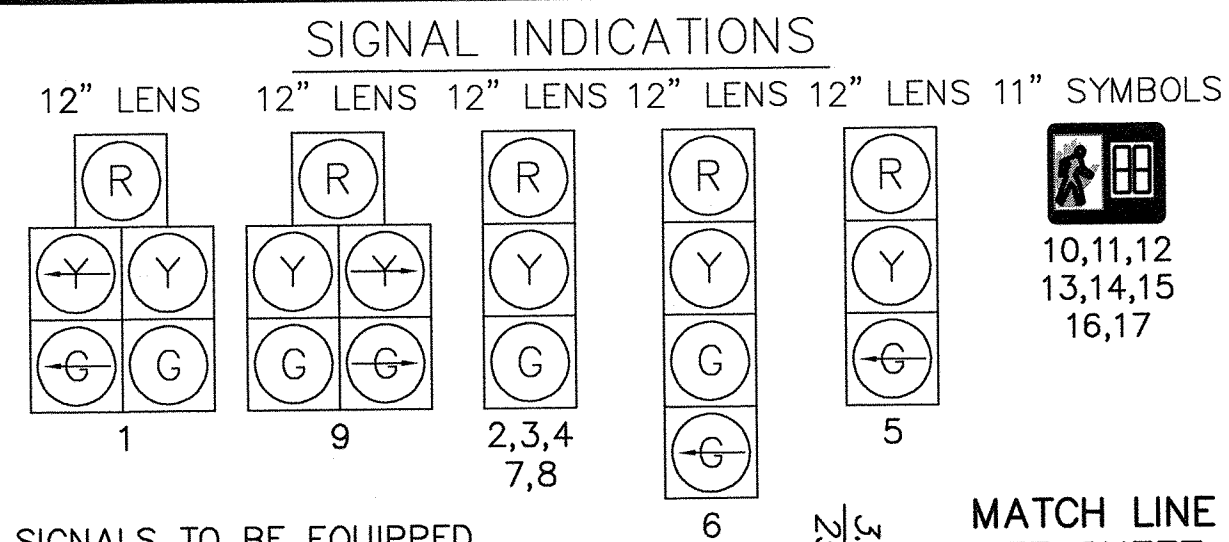
PENNSYLVANIA DEPARTMENT OF TRANSPORTATION
ENGINEERING DISTRICT 6-0

COUNTY: MONTGOMERY
MUNICIPALITY: WHITPAIN/EAST NORRITON TOWNSHIPS
INTERSECTION: DEKALB PIKE (S.R. 0202) & SWEDE
ROAD TRAFFIC SIGNAL SYSTEM

REVIEWED: _____ DATE _____
MUNICIPAL OFFICIAL: _____ DATE _____
RECOMMENDED: DAVID L. ADAMS 9/13/16
ASHWIN B. PATEL 9/16/16
DISTRICT TRAFFIC ENGINEER

NO.	REVISION	DES./REV.	DATE	REV.	DATE	RECOM.	DATE
1							
2							
3							
4							
5							
6							
7							
8							

SIGN TABULATION			
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS
A	R10-12	30"x36"	LEFT TURN YIELD ON GREEN ●
B	R10-3E(R)	9"x15"	EDUC. PUSH BUTTON FOR WALK SIGNAL W/ COUNTDOWN →
C	R10-3E(L)	9"x15"	EDUC. PUSH BUTTON FOR WALK SIGNAL W/ COUNTDOWN ←
D	R3-7L	36"x36"	LEFT LANE MUST TURN LEFT
E	R3-7R	36"x36"	RIGHT LANE MUST TURN RIGHT
F	R3-5L	30"x36"	LEFT TURN
G	R3-6LSR	30"x36"	OPTIONAL LEFT, STRAIGHT & RIGHT TURN
H	D3-4	72"x24"	SINGLE-LINE OVERHEAD STREET NAME SIGN "Jolly Rd" →
I	D3-4	72"x24"	SINGLE-LINE OVERHEAD STREET NAME SIGN "Jolly Rd" ←
J	D3-4	78"x24"	SINGLE-LINE STREET NAME SIGN "DeKalb Pike"
K	R10-10R	30"x36"	RIGHT TURN SIGNAL
L	R3-8A(L-SR)	30"x30"	LANE USE CONTROL (LEFT TURN, STRAIGHT-RIGHT TURN)
M	R10-11	36"x48"	NO TURN ON RED ●

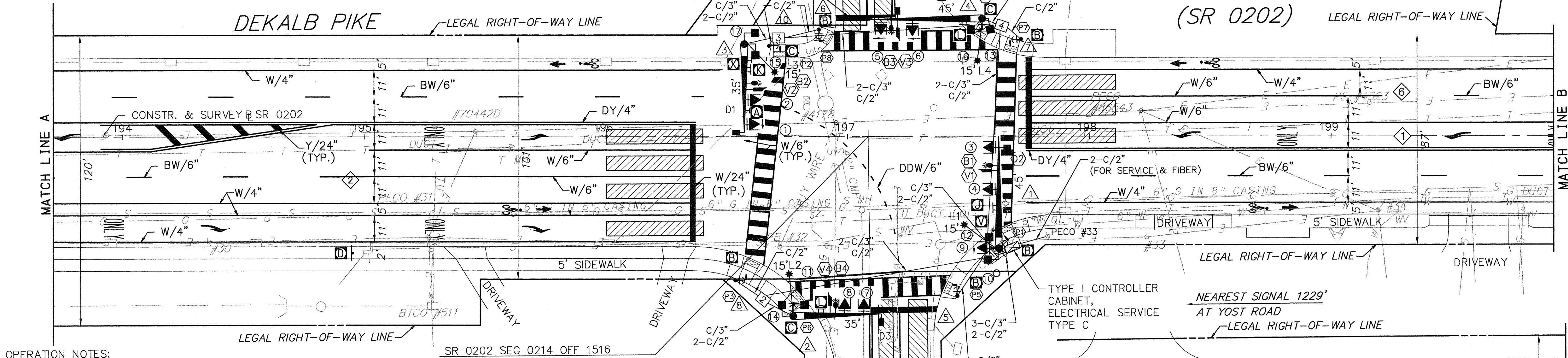


SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS

ALL

LEGAL TRAFFIC SIGNAL EASEMENT

MATCH LINE D SEE SHEET 11



OPERATION NOTES:

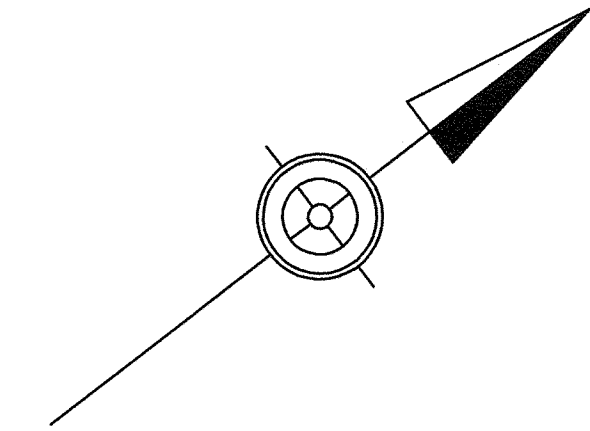
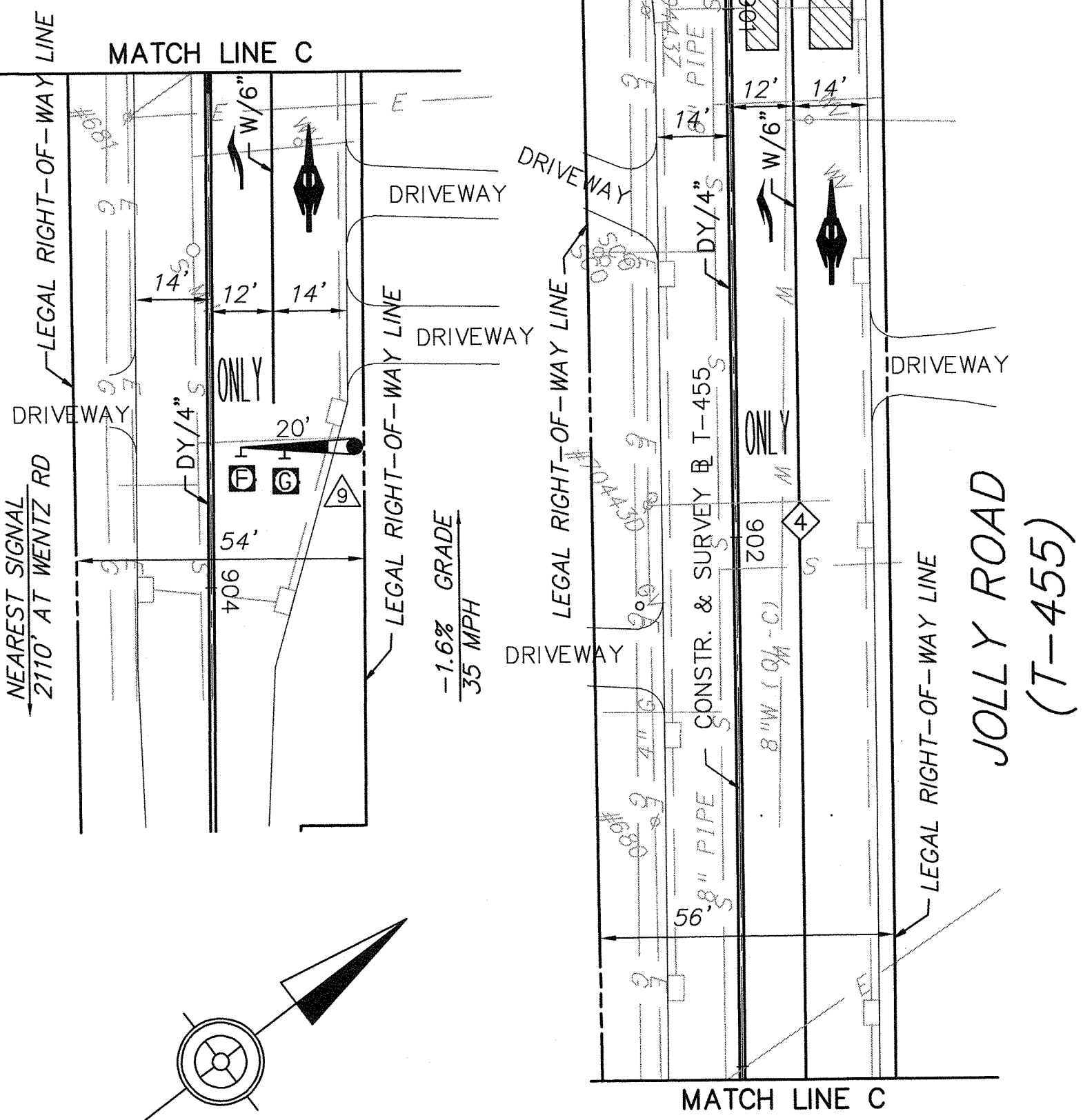
- IF FOLLOWED BY PHASE 2+6
 - G IF FOLLOWED BY PHASE 2+6
 - TIMING WILL BE AS SHOWN IN PHASE 2+6 IT MAY TIME OUT IN THIS PHASE OR BE COMPLETED IN PHASE 2+6.
- PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL.
 - REFER TO SYSTEM PERMIT #-0296 FOR TRAFFIC ADAPTIVE OPERATION.
 - DURING TRAFFIC ADAPTIVE OPERATION:
 - PHASE 1+6 SHALL NOT FOLLOW PHASE 2+6
 - PHASE PASSAGE CALCULATED BY TRAFFIC ADAPTIVE PROCESSOR
 - PHASE SEQUENCE SELECTED BY TRAFFIC ADAPTIVE PROCESSOR

MOVEMENT, SEQUENCE AND TIMING DIAGRAM

																		FLASHING
PHASE	INTERVAL	1	2	3		4	5	6	7	8	9	10	11	12	13	14	15	
SIGNALS		G	G	Y [Ⓡ]	R [Ⓡ]	G	G	Y	R	R	R	R	R	R	R	R	R	Y
1		G	Y [Ⓡ]	R [Ⓡ]		G	G	Y	R	R	R	R	R	R	R	R	R	Y
2		G	Y [Ⓡ]	R [Ⓡ]		G	G	Y	R	R	R	R	R	R	R	R	R	Y
3,4		R	R	R		G	G	Y	R	R	R	R	R	R	R	R	R	Y
5		R	R	R		R	R	R	R	G	G	Y	R	R	R	R	R	R
6		R	R	R		R	R	R	R	G	G	Y	R	R	R	R	R	R
7,8		R	R	R		R	R	R	R	R	R	R	G	G	Y	R	R	R
9		R	R	R		G	G	Y	R	R	G	G	Y	R	R	R	R	R
10,11		H	H	H		M	FH	H	H	H	H	H	H	H	H	H	H	OFF
12,13		H	H	H		H	H	H	H	M	FH	H	H	H	H	H	H	OFF
14,15		H	H	H		H	H	H	H	H	H	H	H	M	FH	H	H	OFF
16,17		H	H	H		M	FH	H	H	H	H	H	H	H	H	H	H	OFF

FIXED	4	3	4	3	4	3	3	3
MINIMUM	3		15		3		3	
PASSAGE	1		1		1		1	
MAXIMUM 1	7		31		26		30	
MAXIMUM 2	7		31		26		30	
PEDESTRIAN*	③		7	17	7	19	7	23
MEMORY	NL		SVR		NL		NL	

* UPON PEDESTRIAN ACTUATION ONLY



SCALE 0 25 50 FEET

- LEGEND**
- 20' EXISTING MAST ARM/LENGTH
 - 20' NEW MAST ARM/LENGTH
 - EXISTING SIGNAL HEAD/# & DIRECTIONAL ARROW
 - NEW SIGNAL HEAD/# & DIRECTIONAL ARROW
 - NEW PEDESTRIAN SIGNAL HEAD/#
 - EXISTING SIGN/ID LETTER
 - NEW SIGN/ID LETTER
 - EXISTING CONDUIT/SIZE
 - NEW CONDUIT/SIZE
 - EXISTING PEDESTAL
 - NEW PEDESTAL
 - NEW EMERGENCY PRE-EMPTION DETECTOR
 - NEW EMERGENCY PRE-EMPTION BEACON
 - VIDEO DETECTOR CAMERA
 - PUSH BUTTON SYMBOL/ SIGN & ID LETTER
 - CONTROLLER CABINET
 - EXISTING JUNCTION BOX/#
 - NEW JUNCTION BOX/#
 - EXISTING PEDESTAL/#
 - NEW PEDESTAL/#
 - PHASE #
 - EXISTING EMERGENCY PRE-EMPTION DETECTOR
 - EXISTING EMERGENCY PRE-EMPTION BEACON
 - ELECTRICAL LINE
 - COMMUNICATION LINE
 - GAS LINE
 - WATER LINE
 - PAVEMENT MARKING COLOR/WIDTH
 - LUMINAIRE ARM/LENGTH
 - ZONE OF DETECTION (VARIABLE SIZE)

DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	MONTGOMERY	SR 0202	61N	10 OF 28

WHITPAIN TOWNSHIP

REVISIONS

DATE BY

TRAFFIC SIGNAL NOTES

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OVERHEAD SIGNALS: INSTALL WITH A MINIMUM SIGNAL HEAD CLEARANCE OF 2 FEET BEHIND FACE OF CURB OR EDGE OF SHOULDER. PROVIDE A MINIMUM SIGNAL HEAD CLEARANCE OF 16 FEET ABOVE ROADWAY; RIGIDLY MOUNT, TOP AND BOTTOM; AND EQUIP WITH BACKPLATES. PROVIDE A MINIMUM HORIZONTAL DISTANCE OF 8 FEET BETWEEN SIGNALS AS MEASURED AT RIGHT ANGLES TO THE APPROACH.

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CALL BEFORE YOU DIG!

PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE-STOP CALL

PENNSYLVANIA ONE CALL SYSTEM, INC.

1-800-242-1776

FILE #2266
SYSTEM #-0296

COUNTY : MONTGOMERY

MUNICIPALITY : WHITPAIN TOWNSHIP

INTERSECTION : DEKALB PIKE (S.R. 0202) & JOLLY ROAD (T-455)

REVIEWED : *[Signature]* 2/1/18

MUNICIPAL OFFICIAL *[Signature]* DATE

RECOMMENDED : *[Signature]* 20

MADE-TRANSPORTATION OPERATIONS

EMERGENCY PRE-EMPTION PHASING
MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE		2			4			6			8		
SIGNALS	INTERVAL	16	17	18	19	20	21	22	23	24	25	26	27
1		R	R	R	R	R	R	G	Y ^b	R ^a	R	R	R
2		R	R	R	R	R	R	G	Y ^a	R ^b	R	R	R
3,4		G	Y ^a	R ^b	R	R	R	R	R	R	R	R	R
5,6		R	R	R	C	G	Y	R	R	R	R	R	R
7,8		R	R	R	R	R	R	R	R	R	G	Y	R
9		G	Y ^a	R ^b	R	R	R	R	R	R	R	R	R
10,11		H	H	H	H	H	H	H	H	H	H	H	H
12,13		H	H	H	H	H	H	H	H	H	H	H	H
14,15		H	H	H	H	H	H	H	H	H	H	H	H
16,17		H	H	H	H	H	H	H	H	H	H	H	H
FIXED TIME		*	4	3	*	4	3	*	4	3	*	3	3

* FOR DURATION OF PRE-EMPTION

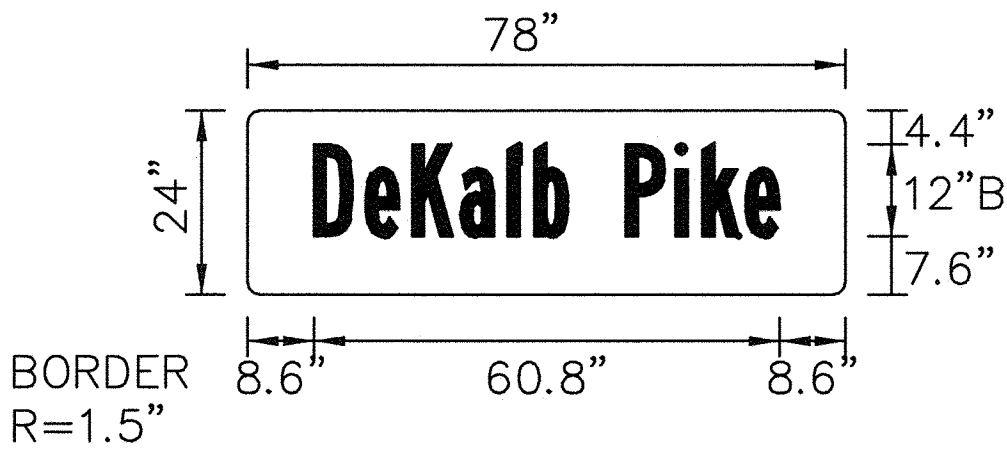
NOTE: IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

- ① SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION.
- ② SIGNAL TO INDICATE G/Y WHEN RETURNING TO NORMAL OPERATION.

EMERGENCY PRE-EMPTION NOTES:

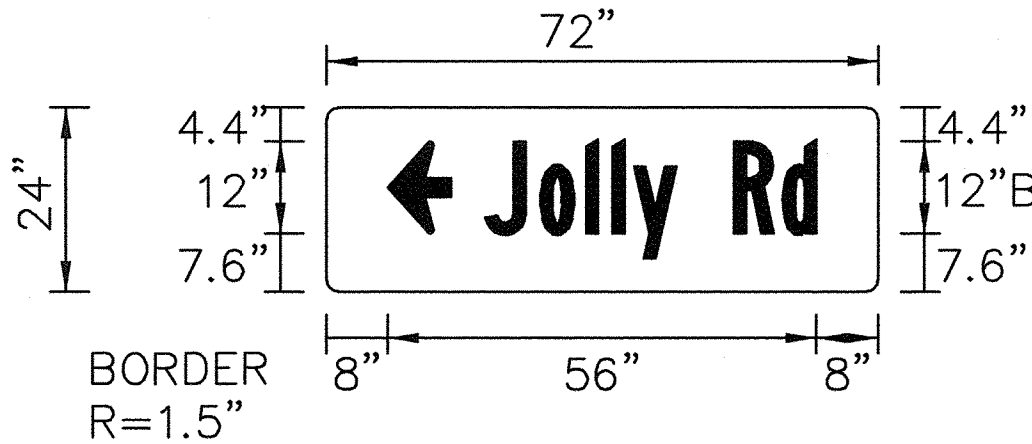
- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE WESTBOUND & EASTBOUND APPROACH OF JOLLY ROAD, AND THE NORTHBOUND & SOUTHBOUND APPROACHES OF DEKALB PIKE (S.R. 0202), WITH A FLASHING FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW. ONLY THOSE PHASES NOT POSING A YELLOW TRAP CONDITION MAY REMAIN GREEN (1+6, 4 OR 8) WHEN GOVERNED BY APPROACHING EMERGENCY VEHICLE.
- THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
- IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED DURING THE "MAN" INTERVAL, THE MAN INTERVAL SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE "FLASHING HAND" INDICATION IN ITS ENTIRETY, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE PROCEEDING TO THE PRE-EMPTION PHASE.
- IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING, ALL SIGNALS SHALL REMAIN FLASHING.
- IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
- UPON COMPLETION OF PRE-EMPTION PHASE 2, 4, 6 OR 8, IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.
- IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.
- LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.

Sign "L "

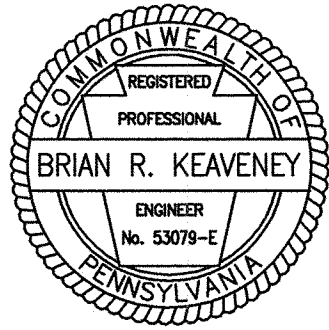
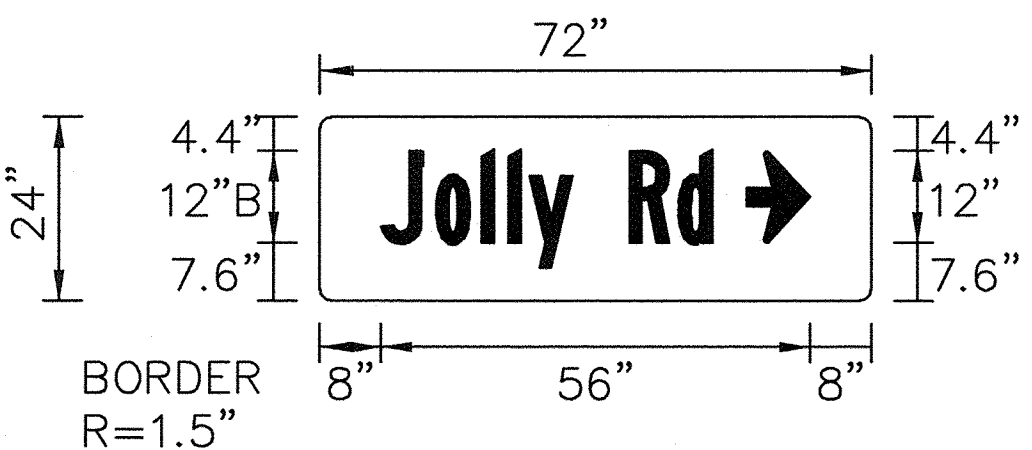


SHS STANDARD HIGHWAY GOTHIC SERIES B
12" U.C.
9" L.C.

Sign "K "



Sign "J "



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1-800-242-1776

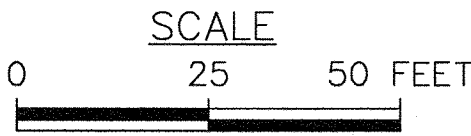
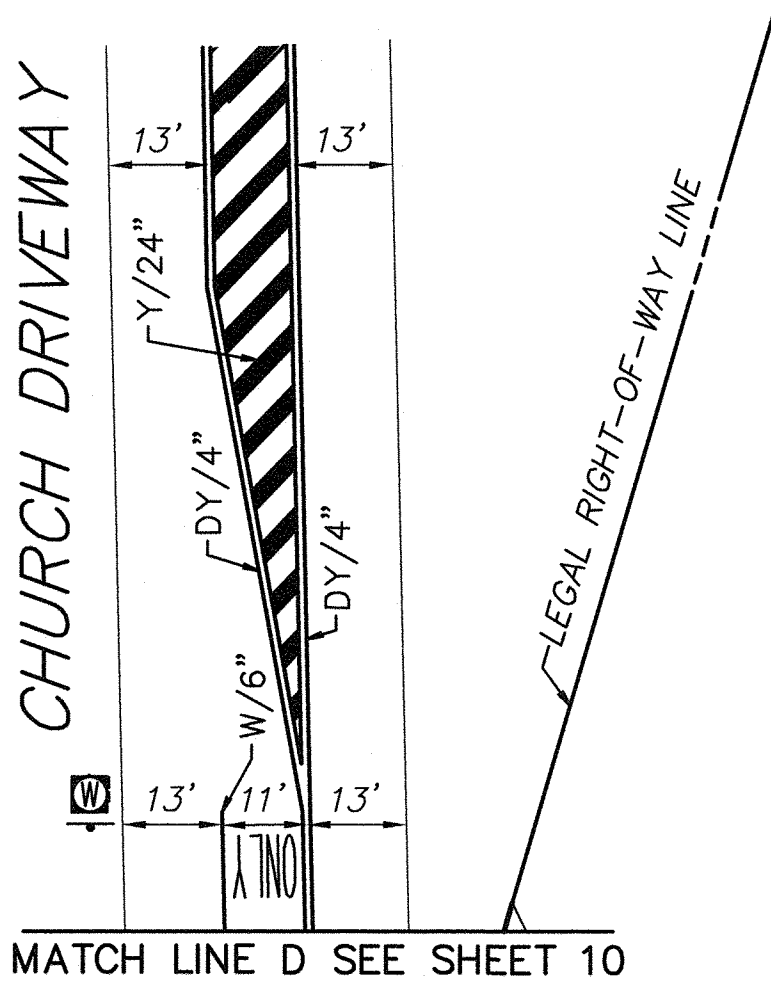
FILE #2266
SYSTEM #-0296

COUNTY : MONTGOMERY
MUNICIPALITY : WHITPAIN TOWNSHIP
INTERSECTION : DEKALB PIKE (S.R. 0202) &
JOLLY ROAD (T-455)

REVIEWED : [Signature] 2/1/13
MUNICIPAL OFFICIAL TOWNSHIP MANAGER DATE

RECOMMENDED : [Signature] 2/1/13 2/1/13 20

for ADE-TRANSPORTATION OPERATIONS



LEGEND

	EXISTING MAST ARM/LENGTH		PUSH BUTTON SYMBOL/ SIGN & ID LETTER
	NEW MAST ARM/LENGTH		CONTROLLER CABINET
	EXISTING SIGNAL HEAD/# & DIRECTIONAL ARROW		EXISTING JUNCTION BOX/#
	NEW SIGNAL HEAD/# & DIRECTIONAL ARROW		NEW JUNCTION BOX/#
	NEW PEDESTRIAN SIGNAL HEAD/#		EXISTING PEDESTAL/#
	NEW PEDESTAL		NEW PEDESTAL/#
	EXISTING SIGN/ID LETTER		PHASE #
	NEW SIGN/ID LETTER		EXISTING EMERGENCY PRE-EMPTION DETECTOR
	EXISTING CONDUIT/SIZE		EXISTING EMERGENCY PRE-EMPTION BEACON
	NEW CONDUIT/SIZE		ELECTRICAL LINE
	EXISTING PEDESTAL		COMMUNICATION LINE
	NEW PEDESTAL		GAS LINE
	NEW EMERGENCY PRE-EMPTION DETECTOR		WATER LINE
	NEW EMERGENCY PRE-EMPTION BEACON		PAVEMENT MARKING COLOR/WIDTH
	VIDEO DETECTOR CAMERA		LUMINAIRE ARM/LENGTH
			ZONE OF DETECTION (VARIABLE SIZE)

TRAFFIC SIGNAL/SIGN SUPPORTS

STRUCTURE NUMBER	ITEM NUMBER						ROUTE	STATION	SIDE	OFF- SET	MAST ARM																PEDESTAL		
	4951-2135	4951-2145	4951-4022	4951-0120							H	K	ARM A										ARM C		SHAFT				
													L	SIGNAL LOCATION					SIGN LOCATION					G	Z	H	K		
														M	N	O	P	Q	R	S	T	U							
△		1					0202	197+62	R	47'	18'	8' 10'	45'	40'	23'							15'	6'	15'	45°				
△	1						0202	196+77	R	74'	18'	8'	35'	28'	20'							10'		15'	90°				
△	1						0202	196+57	L	38'	18'	8'	35'	31'	21'							25'	8'	5'	15'	45°			
△		1					0202	197+56	L	49'	18'	8'	45'	40'	27'									5'	15'	80°			
△			1				0202	197+45	R	66'																5'			
△			1				0202	196+88	L	44'																5'			
△			1				0202	197+72	L	40'																5'			
△			1				0202	196+60	R	63'																5'			
△				1			JOLLY RD	903+74	R	26'	18'		20'					20'	12'										
△			1				0202	196+68	L	38'																5'			
TOTALS	2	2	5	1																									

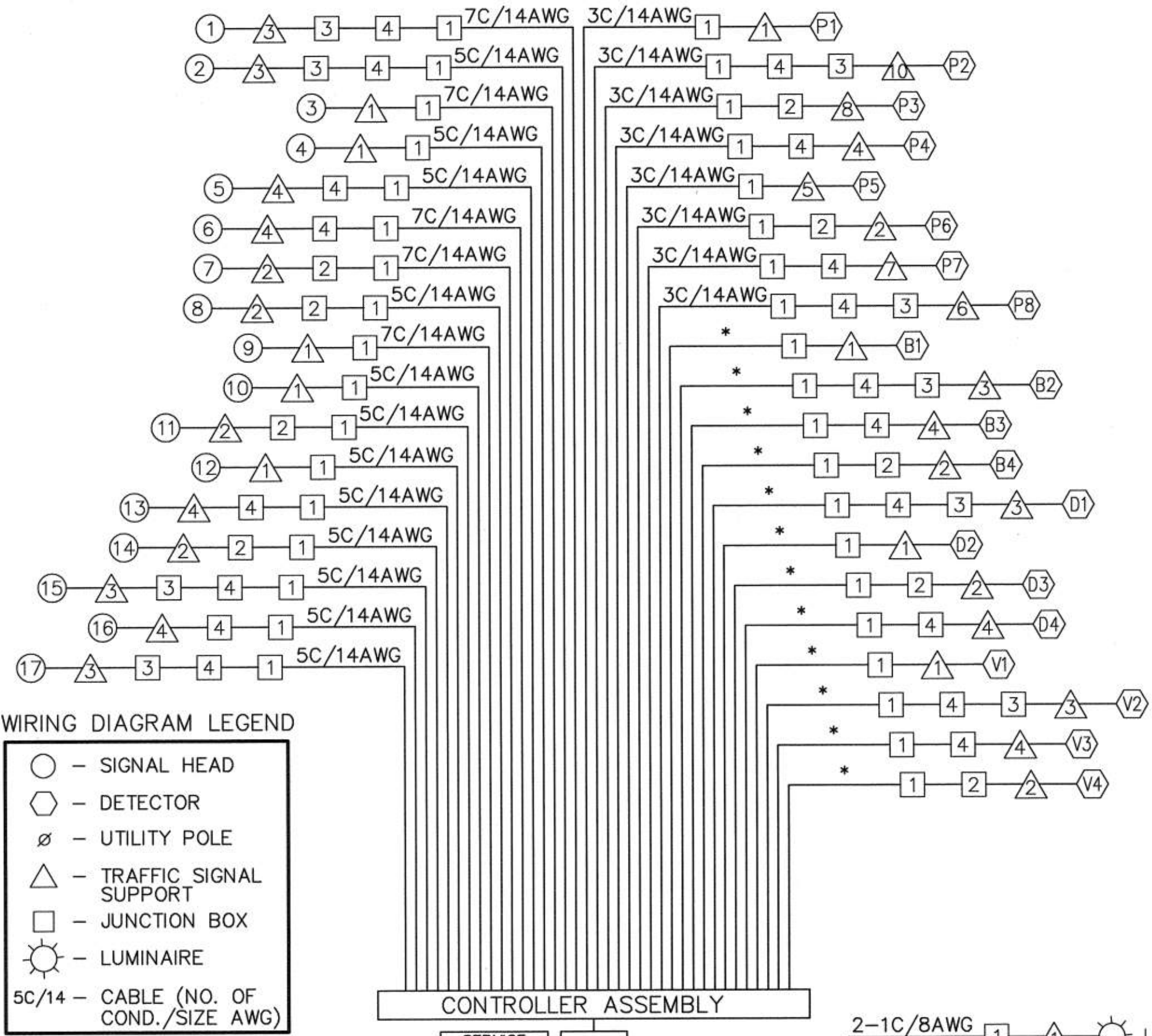
- * EXACT LOCATION OF THE SUPPORTS TO BE DETERMINED BY A PENNDOT REPRESENTATIVE.
- VERTICAL POLES AND MAST ARMS TO BE DESIGNED BY MANUFACTURER TO ADEQUATELY SUPPORT LOADS AS SHOWN ON THE PLAN OR MAXIMUM LOAD REQUIREMENTS ESTABLISHED BY AASHTO SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, WHICH EVER IS GREATER.

MISCELLANEOUS ITEMS

ITEM NO.	QUAN.	UNIT	DESCRIPTION	LOCATION
0955-3208	6	EACH	VEHICULAR SIGNAL HEAD, THREE 12" SECTIONS	②③④ ⑤⑦⑧
0955-3209	1	EACH	VEHICULAR SIGNAL HEAD, FOUR 12" SECTIONS	⑥
0955-3210	2	EACH	VEHICULAR SIGNAL HEAD, FIVE 12" SECTIONS	①⑨
4952-1030	1	EACH	NEMA TS-2; TYPE 1 CONTROLLER ASSEMBLY, TYPE 1 MOUNTING MODIFIED	C.C.
4954-0600	1	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS) LED INDICATOR LIGHT	C.C.
4955-3722	8	EACH	LED COUNTDOWN PEDESTRIAN SIGNAL HEAD, TYPE A STEADY COUNTDOWN	⑩⑪⑫⑬ ⑭⑮⑯⑰ P1P2P3P4 P5P6P7P8
4956-0500	8	EACH	PEDESTRIAN PUSH BUTTON LATCHING LED	L1,L2,L3,L4
9000-1101	4	EACH	LED LUMINAIRE, ARM MOUNT, PAINTED 250 WATT EQUIVALENT	C.C.
9000-1102	1	EACH	FIBER OPTIC PATCH PANEL	SEE PLANS
9000-1120	1	EACH	EMERGENCY PREEMPTION SYSTEM, 4 APPROACHES	SEE PLANS
9000-1122	1	EACH	ADAPTIVE CONTROL SYSTEM-4 APPROACHES	SEE PLANS
9000-1124	1	EACH	INSTALLATION OF TRAFFIC ADAPTIVE SYSTEM-4 APPROACHES	SEE PLANS
9000-1127	1	EACH	ETHERNET SWITCH	C.C.
9000-1128	1	EACH	CONNECTION OF COMMUNICATION CABLE TO TRAFFIC SIGNAL CONTROLLER	C.C.

ELECTRICAL DISTRIBUTION SYSTEM

DESCRIPTION	2 INCH CONDUIT	3 INCH CONDUIT	TRENCH AND BACKFILL, TYPE I	TRENCH AND BACKFILL, TYPE II	TRENCH AND BACKFILL, TYPE III	SIGNAL CABLE, 14 AWG, 3 CONDUCTOR	SIGNAL CABLE, 14 AWG, 5 CONDUCTOR	SIGNAL CABLE, 14 AWG, 7 CONDUCTOR	UNDERGROUND CABLE AWG 8, COPPER 1 CONDUCTOR	JUNCTION BOX, JB-27	ELECTRICAL SERVICE, TYPE C	JUNCTION BOX 17X30
ITEM NUMBER	0954	0954	0954	0954	0954	0954	0954	0954	0910	0954	0954	9000
UNIT	0012	0013	0151	0152	0153	0201	0202	0203	4116	0302	0403	1130
LOCATION	LF	LF	LF	LF	LF	LF	LF	LF	LF	EACH	EACH	EACH
SERVICE TO CC	30		15									1
CC TO ①	20	30	10									1-①
① TO ②	100	200	30		70					1-②		
① TO ④	100	200	20		80							1-④
① TO △	10	5	5									
① TO △	25		25									
② TO △	30	15	15									
② TO △	15		15									
③ TO △	30	15	15									
③ TO △	20		20							1-③		
③ TO △	5		5									
④ TO ③	95	190	40		55							
④ TO △	20	10	10									
④ TO △	10		10									
ENTIRE INTERSECTION						1070	1807	898	1380			
TOTALS	510	665	235		205	1070	1807	898	1380	2	1	2



WIRING DIAGRAM

PRE-EMPTION CABLE NOTE :

* CABLE TO BE SUPPLIED AS RECOMMENDED BY MANUFACTURER.

FLAT SHEET ALUMINUM SIGN TABULATION

SYMBOL	SERIES	SIZE	AREA EACH SF	REMARKS	QUANTITY EACH		ITEM NUMBER	
					POST MOUNTED	POLE MOUNTED	0931 0001	0936 0200
							POST MOUNTED TYPE B SF	STRUCTURE MOUNTED SF
A	R10-12	30"x36"	7.5	LEFT TURN YIELD ON GREEN ●		1		7.5
B	R10-3E(R)	9"x15"	0.9	EDUC. PUSH BUTTON FOR WALK SIGNAL W/ COUNTDOWN →	(5)			(4.5)
C	R10-3E(L)	9"x15"	0.9	EDUC. PUSH BUTTON FOR WALK SIGNAL W/ COUNTDOWN ←	(3)			(2.7)
D	R3-7L	36"x36"	9.0	LEFT LANE MUST TURN LEFT	(2)		(18)	
E	R3-7R	36"x36"	9.0	RIGHT LANE MUST TURN RIGHT	(1)		(9)	
F	R3-5L	30"x36"	7.5	LEFT TURN		1		7.5
G	R3-6LSR	30"x36"	7.5	OPTIONAL LEFT, STRAIGHT & RIGHT TURN		1		7.5
L	D3-4	78"x24"	13	SINGLE-LINE STREET NAME SIGN "DeKalb Pike"		2		26
K	D3-4	72"x24"	12	SINGLE-LINE OVERHEAD STREET NAME SIGN "Jolly Rd"		1		12
J	D3-4	72"x24"	12	SINGLE-LINE OVERHEAD STREET NAME SIGN "Jolly Rd →"		1		12
V	R10-10R	30"x36"	7.5	RIGHT TURN SIGNAL		1		7.5
W	R3-8A(L-SR)	30"x30"	6.3	LANE USE CONTROL (LEFT TURN, STRAIGHT-RIGHT TURN)	(1)		(6.3)	
X	R10-11	36"x48"	5	NO TURN ON RED ●		1		12
TOTALS						9		92

▼ FOR INFORMATION ONLY, SIGNING INCLUDED WITH ITEM 4956-0500 PEDESTRIAN PUSH BUTTON.
■ FOR INFORMATION ONLY, SIGNING INCLUDED IN SIGNING & PAVEMENT MARKING TABULATION.

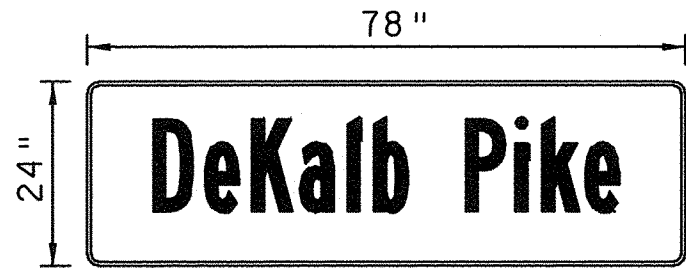
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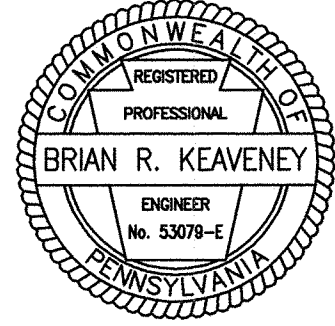
SIGN TABULATION				
PLAN SYMBOL	SERIES NUMBER	SIZE	REMARKS	
	R10-12	30"x36"	LEFT TURN YIELD ON GREEN ●	
	R10-3E(R)	9"x15"	EDUC. PUSH BUTTON FOR WALK SIGNAL W/ COUNTDOWN →	
	R10-3E(L)	9"x15"	EDUC. PUSH BUTTON FOR WALK SIGNAL W/ COUNTDOWN ←	
	R3-7L	36"x36"	LEFT LANE MUST TURN LEFT	
	R3-7R	36"x36"	RIGHT LANE MUST TURN RIGHT	
	R3-8A(L-LR)	36"x30"	LANE USE CONTROL	
	D3-4	78"x24"	SINGLE-LINE STREET NAME SIGN "DeKalb Pike"	
	R9-3	18"x18"	NO PEDESTRIAN CROSSING	
	D3-4	66"x24"	SINGLE-LINE OVERHEAD STREET NAME SIGN "Yost Rd"	
	D3-4	66"x24"	SINGLE-LINE OVERHEAD STREET NAME SIGN "Yost Rd"	
	W1-7	48"x24"	LARGE DOUBLE ARROW	
	OM1-3	18"x18"	OBJECT MARKER	
	R10-11	48"x36"	NO TURN ON RED ●	

MATCH LINE A SEE SHEET 8

Sign "G"



SHS STANDARD HIGHWAY SERIES
GOTHIC SERIES B
12" U.C.
9" L.C.



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PENNSYLVANIA ONE CALL SYSTEM, INC.



1-800-242-1776

FILE #2267
SYSTEM #1-0296

COUNTY : MONTGOMERY

MUNICIPALITY : WHITPAIN TOWNSHIP

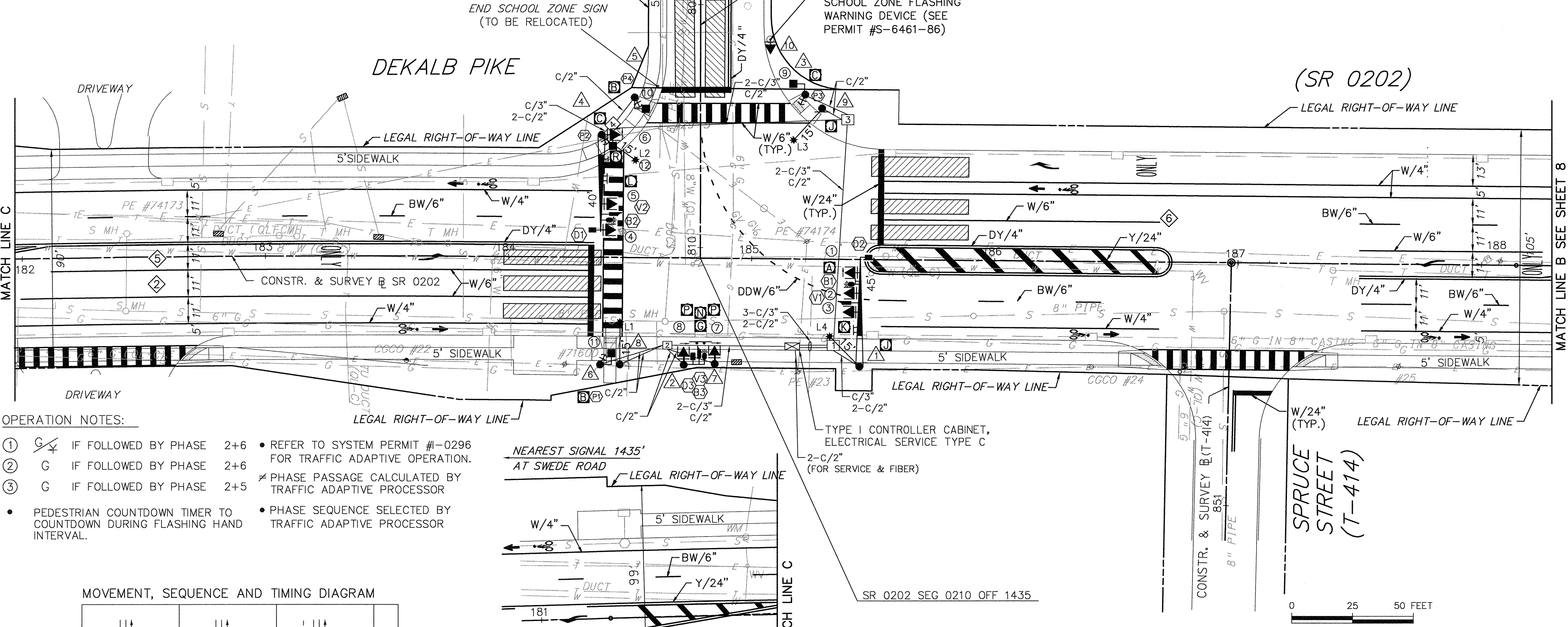
INTERSECTION : DEKALB PIKE (S.R. 0202) &
YOST ROAD (T-346)

REVIEWED :

MUNICIPAL OFFICIAL *Township Manager* DATE *2/1/18*

RECOMMENDED : *2/1/18* 20

apal
ADE-TRANSPORTATION OPERATIONS



OPERATION NOTES:

- IF FOLLOWED BY PHASE 2+6 • REFER TO SYSTEM PERMIT #1-0296 FOR TRAFFIC ADAPTIVE OPERATION.
 - IF FOLLOWED BY PHASE 2+6 ≠ PHASE PASSAGE CALCULATED BY TRAFFIC ADAPTIVE PROCESSOR
 - IF FOLLOWED BY PHASE 2+5
- PEDESTRIAN COUNTDOWN TIMER TO COUNTDOWN DURING FLASHING HAND INTERVAL.
 - PHASE SEQUENCE SELECTED BY TRAFFIC ADAPTIVE PROCESSOR

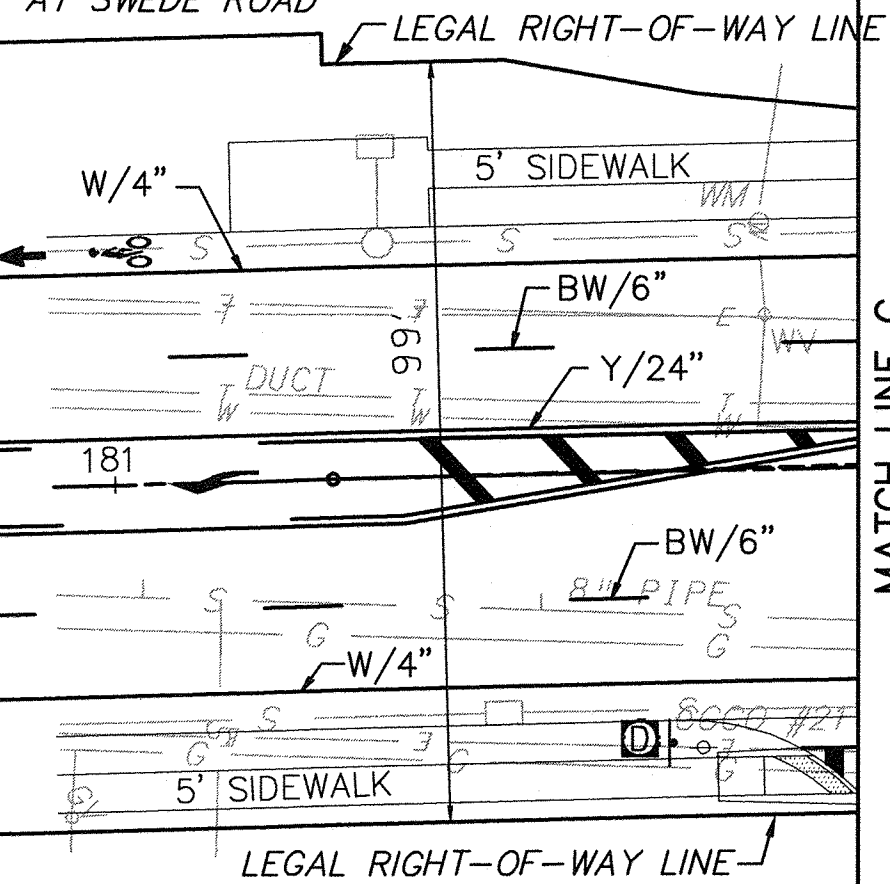
MOVEMENT, SEQUENCE AND TIMING DIAGRAM

PHASE	INTERVAL	2+5			2+6				4				FLASHING
		1	2	3	4	5	6	7	8	9	10	11	
1	G	Y	R	R	G	G	Y	R	R	R	R	R	Y
2,3	G	Y	R	R	G	G	Y	R	R	R	R	R	Y
4,5	R	R	R	R	G	G	Y	R	R	R	R	R	Y
6	R	R	R	R	G	G	Y	R	R	R	R	R	OFF
7	R	R	R	R	R	R	R	R	G	G	Y	R	R
8	R	R	R	R	R	R	R	R	G	G	Y	R	R
9,10	H	H	H	H	M	FH	H	H	H	H	H	H	OFF
11,12	H	H	H	H	H	H	H	H	M	FH	H	H	OFF

FIXED	4	2	4	2	3	4
MINIMUM	3		15		3	
PASSAGE	1≠		1≠		1≠	
MAXIMUM 1	7		64		30	
MAXIMUM 2	7		64		30	
PEDESTRIAN*			7	17	7	23
MEMORY	NL		SVR		NL	

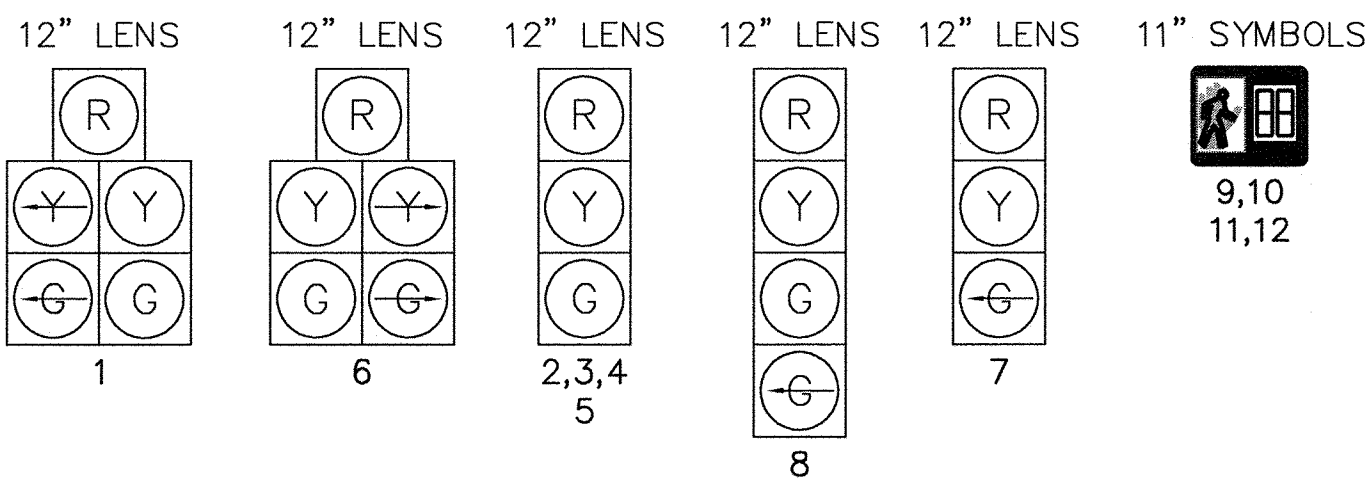
* UPON PEDESTRIAN ACTUATION ONLY

NEAREST SIGNAL 1435'
AT SWEDE ROAD



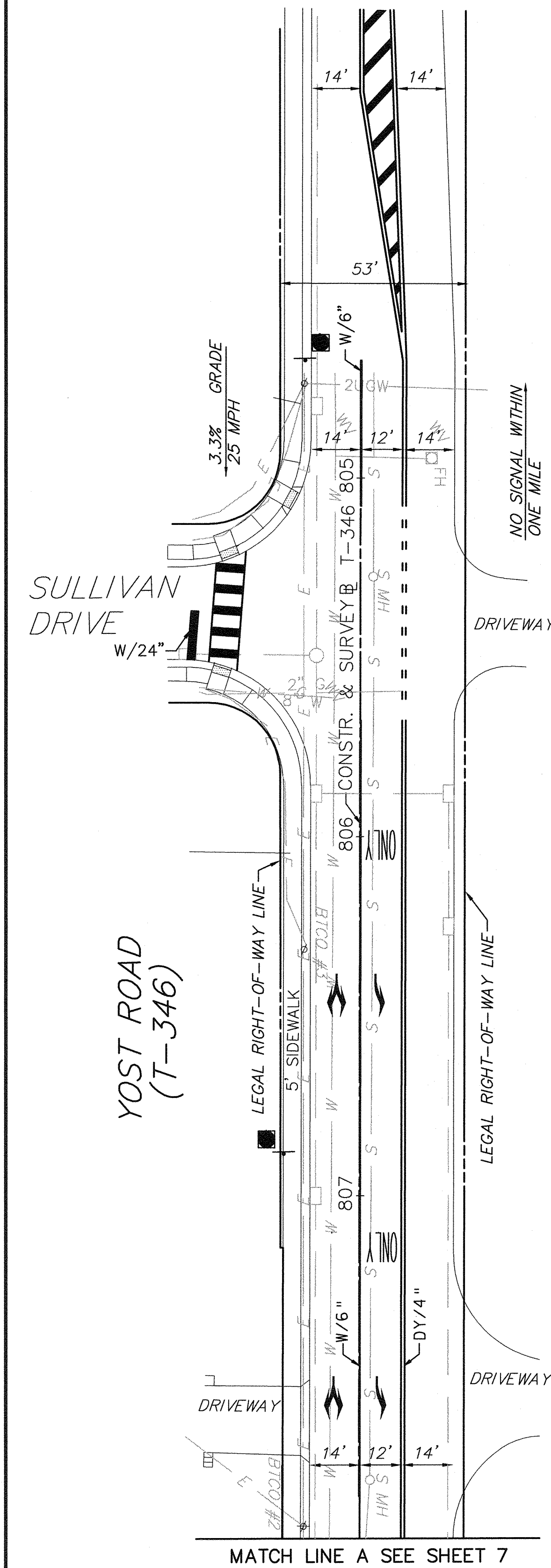
-0.8% GRADE
40 M.P.H.

SIGNAL INDICATIONS



SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS ALL
SIGNALS TO BE EQUIPPED WITH TUNNEL VISORS & LOUVERS

- EXISTING MAST ARM/LENGTH
- NEW MAST ARM/LENGTH
- EXISTING SIGNAL HEAD/# & DIRECTIONAL ARROW
- NEW SIGNAL HEAD/# & DIRECTIONAL ARROW
- NEW PEDESTRIAN SIGNAL HEAD/#
- EXISTING SIGN/ID LETTER
- NEW SIGN/ID LETTER
- EXISTING CONDUIT/SIZE
- NEW CONDUIT/SIZE
- EXISTING PEDESTAL
- NEW PEDESTAL
- NEW EMERGENCY PRE-EMPTION DETECTOR
- NEW EMERGENCY PRE-EMPTION BEACON
- VIDEO DETECTOR CAMERA
- PUSH BUTTON SYMBOL/ SIGN & ID LETTER
- CONTROLLER CABINET
- EXISTING JUNCTION BOX/#
- NEW JUNCTION BOX/#
- EXISTING PEDESTAL/#
- NEW PEDESTAL/#
- PHASE #
- EXISTING EMERGENCY PRE-EMPTION DETECTOR
- EXISTING EMERGENCY PRE-EMPTION BEACON
- ELECTRICAL LINE
- GAS LINE
- WATER LINE
- PAVEMENT MARKING COLOR/WIDTH
- LUMINAIRE ARM/LENGTH
- ZONE OF DETECTION (VARIABLE SIZE)



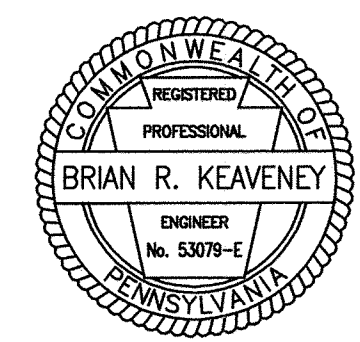
EMERGENCY PRE-EMPTION PHASING MOVEMENT, SEQUENCE AND TIMING DIAGRAM												
PHASE	2			4			6					
	12	13	14	18	19	20	15	16	17			
1	G	Y	R	R	R	R	R	R	R			
2,3	G	Y	R	R	R	R	R	R	R			
4,5	R	R	R	R	R	R	G	Y	R			
6	R	R	R	R	R	R	G	Y	R			
7	R	R	R	R	R	R	R	R	R			
8	R	R	R	R	R	R	R	R	R			
9,10	H	H	H	H	H	H	H	H	H			
11,12	H	H	H	H	H	H	H	H	H			
FIXED TIME	*	4	2	*	3	4	*	4	2			

* FOR DURATION OF PRE-EMPTION

NOTE: IF PRE-EMPTION EQUIPMENT HAS ENCODING CAPABILITIES FOR VEHICLE IDENTIFICATION, IT IS RECOMMENDED TO HAVE THE ZERO "00" FEATURE ON TO GIVE UNCODED EMITTERS THE ABILITY TO ACTIVATE THE EMERGENCY PRE-EMPTION.

① SIGNAL TO INDICATE G WHEN RETURNING TO NORMAL OPERATION.
② SIGNAL TO INDICATE G/Y WHEN RETURNING TO NORMAL OPERATION.

- EMERGENCY PRE-EMPTION NOTES:
- CONTROLLER TO BE EQUIPPED WITH EMERGENCY PRE-EMPTION FOR THE EASTBOUND APPROACH OF YOST ROAD, AND THE NORTHBOUND & SOUTHBOUND APPROACHES OF DEKALB PIKE (S.R. 0202), WITH A FLASHING FAIL SAFE DEVICE FOR EACH DIRECTION OF OPERATION. THIS EMERGENCY BEACON SHALL CONSIST OF A FLASHING WHITE FLOOD LIGHT, AND SHALL FLASH WHEN THE EMERGENCY VEHICLE HAS CONTROL OF THE INTERSECTION FOR THE APPROPRIATE APPROACH.
 - THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TERMINATE ALL GREEN INDICATIONS IMMEDIATELY, FOLLOWED BY THE COMPLETE YELLOW AND RED CLEARANCE INTERVALS, ACCORDINGLY. THEN THE GREEN INTERVAL FOR THE PRE-EMPTION PHASE SHALL FOLLOW. ONLY THOSE PHASES NOT POSING A YELLOW TRAP CONDITION MAY REMAIN GREEN (2, 2+5 OR 4) WHEN GOVERNED BY APPROACHING EMERGENCY VEHICLE.
 - THE SIGNALS, WHEN ACTIVATED BY EMERGENCY VEHICLE, SHALL TIME OUT ALL YELLOW AND RED INDICATIONS, FOLLOWED BY THE GREEN INTERVAL OF THE PRE-EMPTION PHASE GOVERNED BY THE APPROACHING EMERGENCY VEHICLE.
 - IF THE SIGNAL HAS BEEN ACTUATED BY A PEDESTRIAN PUSH BUTTON AND THE SIGNAL IS PRE-EMPTED DURING THE "MAN" INTERVAL, THE MAN INTERVAL SHALL TERMINATE IMMEDIATELY FOLLOWED BY THE "FLASHING HAND" INDICATION IN ITS ENTIRETY, FOLLOWED BY THE APPROPRIATE SELECTIVE CLEARANCES BEFORE PROCEEDING TO THE PRE-EMPTION PHASE.
 - IF THE SIGNALS, WHEN ACTIVATED BY AN EMERGENCY VEHICLE, ARE FLASHING, ALL SIGNALS SHALL REMAIN FLASHING.
 - IF ADDITIONAL PRE-EMPTION PHASES ARE ACTIVATED WHILE IN PRE-EMPTION, THE ORIGINAL PRE-EMPTION PHASE SHALL TIME OUT BEFORE PROCEEDING TO THE NEXT PRE-EMPTION PHASE.
 - UPON COMPLETION OF PRE-EMPTION PHASE 2, 4 OR 6, IN RETURNING TO NORMAL OPERATION, PHASE 2+6 INTERVAL 4 SHALL FOLLOW.
 - IN EMERGENCY PRE-EMPTION, NO PRIORITY SHALL BE ESTABLISHED, PRE-EMPTION SHALL BE A "FIRST COME, FIRST SERVE" OPERATION.
 - LOCATION OF EMERGENCY VEHICLE DETECTORS ARE TO BE FIELD ADJUSTED TO ACHIEVE MAXIMUM OPERATION.



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	MONTGOMERY	SR 0202	61N	8 OF 28

WHITPAIN TOWNSHIP			
REVISION NUMBER	REVISIONS	DATE	BY

TRAFFIC SIGNAL NOTES

DO NOT MODIFY INSTALLATION WITHOUT PRIOR WRITTEN APPROVAL.

ALL SIGNS AND PAVEMENT MARKINGS INDICATED ARE PART OF THE PERMIT. INSTALL AND MAINTAIN IN ACCORDANCE WITH PUBLICATION 212.

POST MOUNTED SIGNALS: INSTALL WITH A MINIMUM SIGNAL HEAD CLEARANCE OF 2 FEET BEHIND FACE OF CURB OR EDGE OF SHOULDER; AND 8 FEET ABOVE SIDEWALK OR PAVEMENT GRADE.

OVERHEAD SIGNALS: INSTALL WITH A MINIMUM SIGNAL HEAD CLEARANCE OF 2 FEET BEHIND FACE OF CURB OR EDGE OF SHOULDER. PROVIDE A MINIMUM SIGNAL HEAD CLEARANCE OF 16 FEET ABOVE ROADWAY; RIGIDLY MOUNT, TOP AND BOTTOM; AND EQUIP WITH BACKPLATES. PROVIDE A MINIMUM HORIZONTAL DISTANCE OF 8 FEET BETWEEN SIGNALS AS MEASURED AT RIGHT ANGLES TO THE APPROACH.

DETERMINE WITH A PENNDOT REPRESENTATIVE, THE EXACT LOCATION OF DETECTORS PRIOR TO INSTALLATION.

CONSULT WITH LOCAL OFFICIALS AND UTILITIES TO RESOLVE CONFLICTS PRIOR TO CONSTRUCTION.

COMPLY WITH PROVISIONS OF THE LATEST AMENDMENT TO ACT 287, PREVENTION OF DAMAGE TO UNDERGROUND UTILITIES, DATED DECEMBER 20, 1974.

ALL DESIGNERS AND CONTRACTORS UTILIZING THIS PLAN AND THE INFORMATION CONTAINED THEREON ARE CAUTIONED TO COMPLY WITH THE REQUIREMENTS OF PENNSYLVANIA ACT 287, ENTITLED "UNDERGROUND UTILITY LINE PROTECTION LAW", ANY INFORMATION APPEARING ON THESE DRAWINGS AS TO THE UNDERGROUND LINES OF A USER, SUCH AS A PUBLIC UTILITY, HAS BEEN INCORPORATED HEREON PURSUANT TO SAID PENNSYLVANIA ACT 287. THIS INFORMATION HAS BEEN PROVIDED BY THE RESPECTIVE USERS IN RESPONSE TO THE PA ONE CALL SYSTEM REFERENCE SERIAL #20152122133 PER PHONE CALL ON 12/30/2015.

PENNONI ASSOCIATES INC. HAS NOT MADE AN INDEPENDENT DETERMINATION WITH RESPECT TO THE ACCURACY OR COMPLETENESS OF SUCH INFORMATION AND SPECIFICALLY DISCLAIMS ANY WARRANTY OR REPRESENTATION AS TO THE ACCURACY OF SUCH INFORMATION. ALL LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY AND MUST BE FIELD VERIFIED PRIOR TO CONSTRUCTION.

CALL BEFORE YOU DIG!
PENNSYLVANIA LAW REQUIRES
3 WORKING DAYS NOTICE FOR
CONSTRUCTION PHASE AND 10 WORKING
DAYS IN DESIGN STAGE-STOP CALL

PENNSYLVANIA ONE CALL SYSTEM, INC.

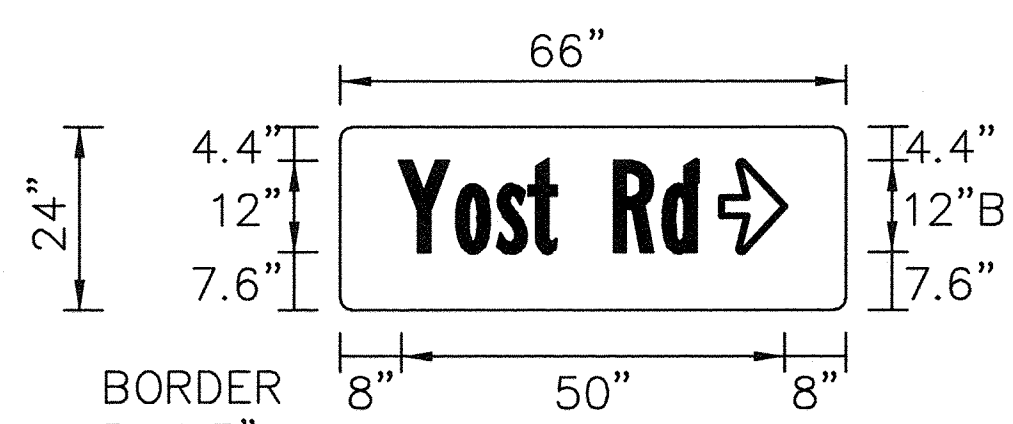
**1-800-242-1776**
FILE #2267
SYSTEM #-0296

COUNTY :	MONTGOMERY
MUNICIPALITY :	WHITPAIN TOWNSHIP
INTERSECTION :	DEKALB PIKE (S.R. 0202) & YOST ROAD (T-346)

REVIEWED :	
MUNICIPAL OFFICIAL	DATE
RECOMMENDED :	20

MADE-TRANSPORTATION OPERATIONS

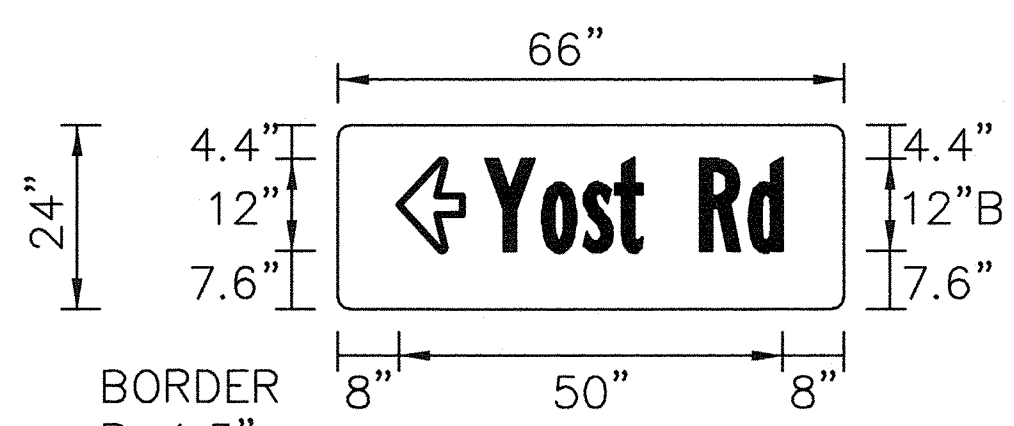
Sign "L"



SHS STANDARD HIGHWAY SERIES GOTHIC SERIES B
12" U.C.
9" L.C.

DEKALB PIKE
(SR 0202)

Sign "K"



SHS STANDARD HIGHWAY SERIES GOTHIC SERIES B
12" U.C.
9" L.C.

LEGEND

20'	EXISTING MAST ARM/LENGTH	20'	PUSH BUTTON SYMBOL / SIGN & ID LETTER
20'	NEW MAST ARM/LENGTH	20'	CONTROLLER CABINET
20'	EXISTING SIGNAL HEAD/# & DIRECTIONAL ARROW	20'	EXISTING JUNCTION BOX/#
20'	NEW SIGNAL HEAD/# & DIRECTIONAL ARROW	20'	NEW JUNCTION BOX/#
20'	NEW PEDESTRIAN SIGNAL HEAD/#	20'	EXISTING PEDESTAL/#
20'	EXISTING SIGN/ID LETTER	20'	NEW PEDESTAL/#
20'	NEW SIGN/ID LETTER	20'	PHASE #
20'	EXISTING CONDUIT/SIZE	20'	EXISTING EMERGENCY PRE-EMPTION DETECTOR
20'	NEW CONDUIT/SIZE	20'	EXISTING EMERGENCY PRE-EMPTION BEACON
20'	EXISTING PEDESTAL	20'	ELECTRICAL LINE
20'	NEW PEDESTAL	20'	COMMUNICATION LINE
20'	NEW EMERGENCY PRE-EMPTION DETECTOR	20'	GAS LINE
20'	NEW EMERGENCY PRE-EMPTION BEACON	20'	WATER LINE
20'	VIDEO DETECTOR CAMERA	20'	PAVEMENT MARKING COLOR/WIDTH
20'		20'	LUMINAIRE ARM/LENGTH
20'		20'	ZONE OF DETECTION (VARIABLE SIZE)

TRAFFIC SIGNAL/SIGN SUPPORTS

STRUCTURE NUMBER	ITEM NUMBER					ROUTE	STATION	SIDE	OFF-SET	MAST ARM															PEDESTAL				
	4951-2145	4951-2140	4951-4014								H	K	ARM A															SHAFT	
													L	SIGNAL LOCATION					SIGN LOCATION					ARM C		W	H	K	
														M	N	O	P	Q	R	S	T	U	G	Z					
	1					0202	185+45	R	44'	18'			45'	37'	28'	21'			35'		15'		15'	45'					
			1			0202	184+72	R	44'																14'	10'			
			1			0202	185+21	L	68'																12'	8' 5'			
		1				0202	184+38	L	51'	18'	10' 8' 5'	40'	39'	27'				18'	15'		15'	45'			12'	8' 5'			
			1			0202	184+51	L	66'																12'	8' 5'			
			1			0202	184+38	R	41'																12'	8' 5'			
			1			0202	184+85	R	44'																14'	10'			
			1			YOST RD	809+14	L	29'																14'	7'			
TOTALS	1	1	6																										

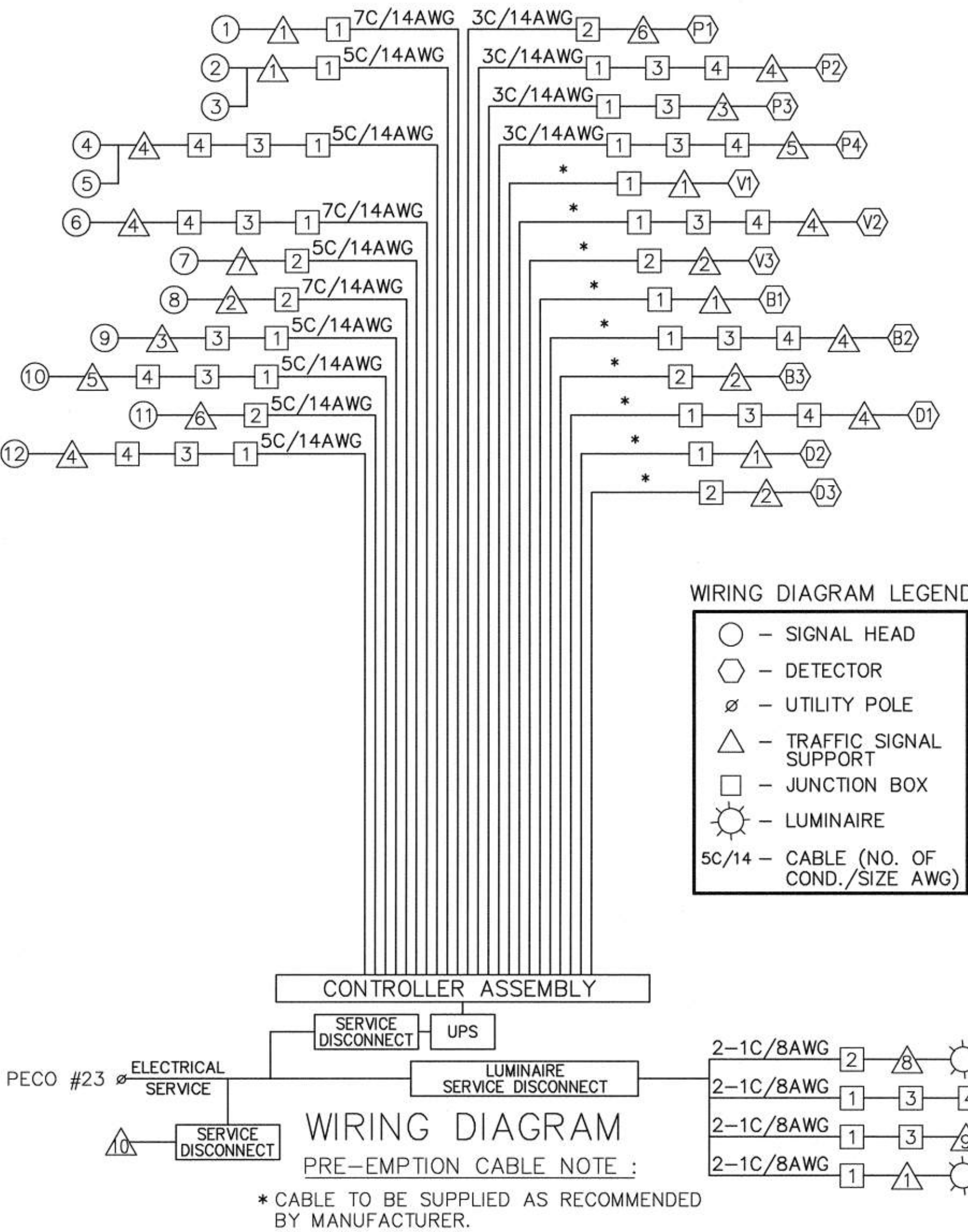
- EXACT LOCATION OF THE SUPPORTS TO BE DETERMINED BY A PENNDOT REPRESENTATIVE.
- VERTICAL POLES AND MAST ARMS TO BE DESIGNED BY MANUFACTURER TO ADEQUATELY SUPPORT LOADS AS SHOWN ON THE PLAN OR MAXIMUM LOAD REQUIREMENTS ESTABLISHED BY AASHTO SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, WHICH EVER IS GREATER.

MISCELLANEOUS ITEMS

ITEM NO.	QUAN.	UNIT	DESCRIPTION	LOCATION
0955-3208	5	EACH	VEHICULAR SIGNAL HEAD, THREE 12" SECTIONS	②③④⑤⑦
0955-3209	1	EACH	VEHICULAR SIGNAL HEAD, FOUR 12" SECTIONS	⑧
0955-3210	2	EACH	VEHICULAR SIGNAL HEAD, FIVE 12" SECTIONS	①⑥
4952-1030	1	EACH	NEMA TS-2; TYPE 1 CONTROLLER ASSEMBLY, TYPE 1 MOUNTING MODIFIED	C.C.
4954-0600	1	EACH	UNINTERRUPTIBLE POWER SUPPLY (UPS) LED INDICATOR LIGHT	C.C.
4955-3722	4	EACH	LED COUNTDOWN PEDESTRIAN SIGNAL HEAD, TYPE A STEADY COUNTDOWN	⑨⑩⑪⑫
4956-0500	4	EACH	PEDESTRIAN PUSH BUTTON LATCHING LED	⑬⑭⑮⑯
9000-1101	4	EACH	LED LUMINAIRE, ARM MOUNT, PAINTED 250 WATT EQUIVALENT	L1, L2, L3, L4
9000-1102	1	EACH	FIBER OPTIC PATCH PANEL	C.C.
9000-1119	1	EACH	EMERGENCY PREEMPTION SYSTEM, 3 APPROACHES	SEE PLANS
9000-1121	1	EACH	ADAPTIVE CONTROL SYSTEM-3 APPROACHES	SEE PLANS
9000-1123	1	EACH	INSTALLATION OF TRAFFIC ADAPTIVE SYSTEM-3 APPROACHES	SEE PLANS
9000-1127	1	EACH	ETHERNET SWITCH	C.C.
9000-1128	1	EACH	CONNECTION OF COMMUNICATION CABLE TO TRAFFIC SIGNAL CONTROLLER	C.C.
4910-0250	2	EACH	STEEL LIGHTING POLE WITH 15-FOOT BRACKET ARM (30-FOOT MOUNTING HEIGHT) TYPE A POWDER COATED	△△
0936-0411	1	EACH	SCHOOL ZONE SPEED LIMIT FLASHING WARNING SIGN (TYPE II)	△△

ELECTRICAL DISTRIBUTION SYSTEM

DESCRIPTION	2 INCH CONDUIT	3 INCH CONDUIT	TRENCH AND BACKFILL, TYPE I	TRENCH AND BACKFILL, TYPE II	SIGNAL CABLE, 14 AWG, 3 CONDUCTOR	SIGNAL CABLE, 14 AWG, 5 CONDUCTOR	SIGNAL CABLE, 14 AWG, 7 CONDUCTOR	UNDERGROUND CABLE AWG 8, COPPER 1 CONDUCTOR	JUNCTION BOX, JB-27	ELECTRICAL SERVICE, TYPE C	JUNCTION BOX 17X30		
ITEM NUMBER	0954	0954	0954	0954	0954	0954	0954	0910	0954	0954	9000		
UNIT	0012	0013	0151	0153	0201	0202	0203	4116	0302	0403	1130		
LOCATION	LF	LF	LF	LF	LF	LF	LF	LF	EACH	EACH	EACH		
SERVICE TO	CC									1			
CC TO	1	40	60	20							1-1		
CC TO	2	55	110	55					1-2				
1 TO	3	95	190	15	80						1-3		
1 TO	△	30	15	15									
2 TO	△	10		10									
2 TO	△	30		30									
2 TO	△	25		25									
2 TO	△	25		25									
3 TO	4	100	200	30	70				1-4				
3 TO	△	25		25									
3 TO	△	10		10									
4 TO	△	20	10	20									
4 TO	△	15		15									
ENTIRE INTERSECTION					730	640	1400	1355					
TOTALS	510	585	310	150	730	640	1400	1355	2	1		2	



FLAT SHEET ALUMINUM SIGN TABULATION

SYMBOL	SERIES	SIZE	AREA EACH SF	REMARKS	QUANTITY EACH	ITEM NUMBER
					POST MOUNTED	0931 0001
					POLE MOUNTED	0936 0200
A	R10-12	30"x36"	7.5	LEFT TURN YIELD ON GREEN ●	1	7.5
B	R10-3E	9"x15"	0.9	EDUC. PUSH BUTTON FOR WALK SIGNAL W/ COUNTDOWN →	(2)	(1.8)
C	R10-3E	9"x15"	0.9	EDUC. PUSH BUTTON FOR WALK SIGNAL W/ COUNTDOWN ←	(2)	(1.8)
D	R3-7L	36"x36"	9.0	LEFT LANE MUST TURN LEFT	(2)	(18)
E	R3-7R	36"x36"	9.0	RIGHT LANE MUST TURN RIGHT	(1)	(9)
F	R3-8A(L-LR)	30"x36"	7.5	LANE USE CONTROL	(2)	(15)
G	D3-4	78"x24"	13	SINGLE-LINE STREET NAME SIGN "DeKalb Pike"	(1)	(13)
J	R9-3	18"x18"	2.3	NO PEDESTRIAN CROSSING	2	4.5
K	D3-4	66"x24"	11	SINGLE-LINE OVERHEAD STREET NAME SIGN "Yost Rd"	1	11
L	D3-4	66"x24"	11	SINGLE-LINE OVERHEAD STREET NAME SIGN "Yost Rd"	1	11
N	W1-7	48"x24"	8.0	LARGE DOUBLE ARROW	(1)	(8.0)
P	OM1-3	18"x18"	2.3	OBJECT MARKER	(2)	(4.5)
R	R10-11	36"x48"	12	NO TURN ON RED ●	1	12
TOTALS					1	46

- ▼ FOR INFORMATION ONLY, SIGNING INCLUDED WITH ITEM 4956-0500 PEDESTRIAN PUSH BUTTON.
- FOR INFORMATION ONLY, SIGNING INCLUDED IN SIGNING & PAVEMENT MARKING TABULATION.

COUNTY : MONTGOMERY

MUNICIPALITY : WHITPAIN TOWNSHIP

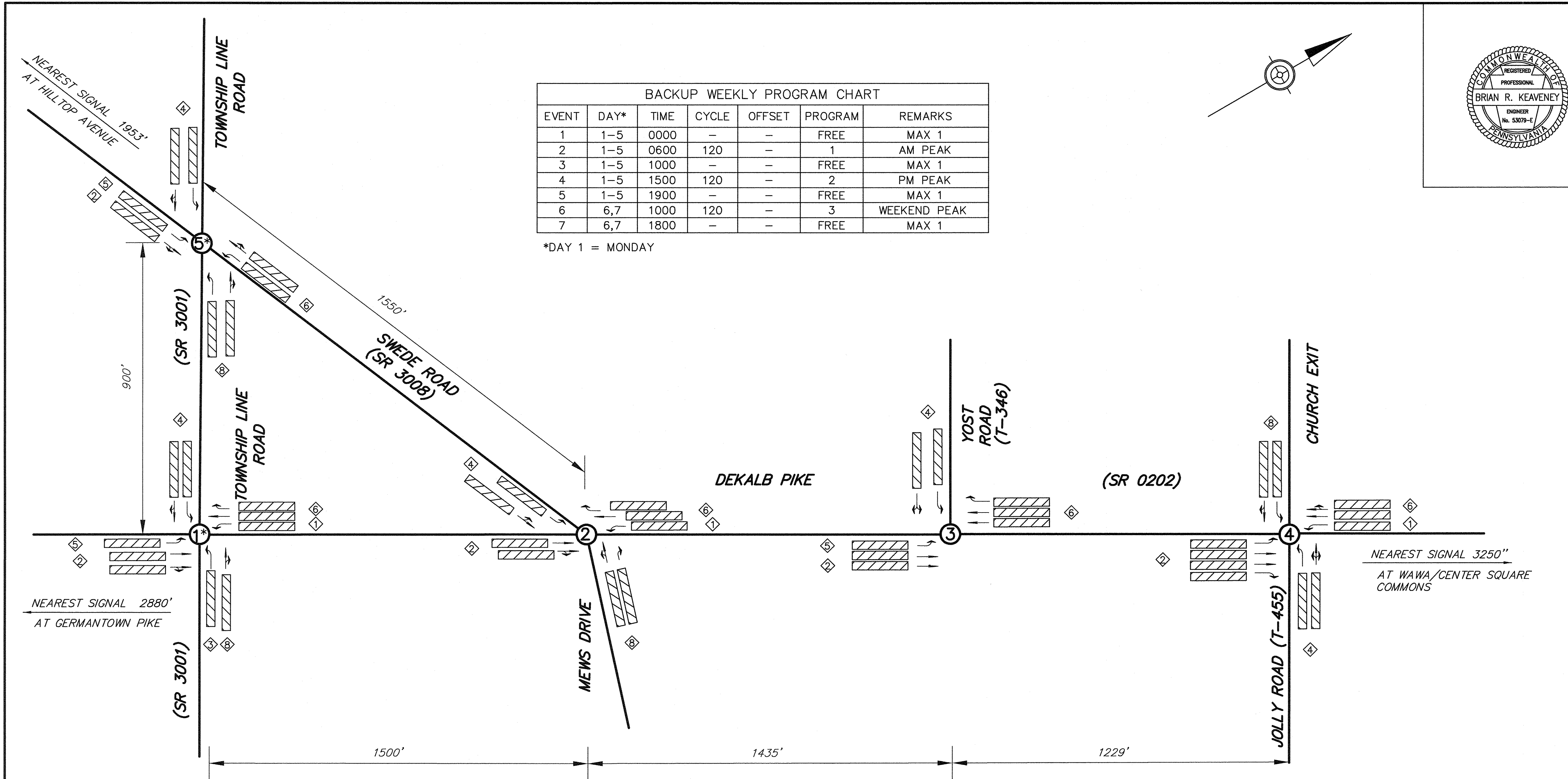
INTERSECTION : DEKALB PIKE (S.R. 0202) & YOST ROAD (T-346)

REVIEWED : *[Signature]* 2/1/18

MUNICIPAL OFFICIAL TOWNSHIP MANAGER DATE

RECOMMENDED : *[Signature]* 2/1/18 20

MADE-TRANSPORTATION OPERATIONS



SYSTEM NOTES

- PROGRAMS TO BE SELECTED BY TRAFFIC ADAPTIVE SYSTEM OR T.B.C. BACKUP.
- SYSTEM : DEKALB PIKE (SR 0202), SWEDE ROAD (SR 3008)
SYSTEM LIMITS : TOWNSHIP LINE ROAD TO JOLLY ROAD
- NON-ADAPTIVE SYSTEM OFFSETS REFERENCED FROM THE BEGINNING OF YELLOW PHASE 2+6 AT DEKALB PIKE (SR 0202)/TOWNSHIP LINE (SR 3001)
- PRIMARY COORDINATION : HARD-WIRE COMMUNICATION CABLE (FIBER OPTIC)
- SECONDARY COORDINATION: TIME BASED COORDINATION (DEFAULT TO BACKUP T.B.C. PROGRAM CHART)
- TRAFFIC ADAPTIVE SYSTEM IS DESIGNED FOR THE INSYNC SYSTEM SOFTWARE.
- TRAFFIC ADAPTIVE SYSTEM TO UTILIZE THE RHYTHM ENGINEERING TRAVIS/INSYNC VIDEO DETECTION/TRAFFIC ADAPTIVE SIGNAL CONTROL SYSTEM.
- TRAFFIC ADAPTIVE SYSTEM SETTINGS TO BE DETERMINED IN FIELD UPON ACTIVATION OF SYSTEM.
- REFER TO SIGNAL PERMIT PLANS FOR MAX 1, MAX 2 & CLEARANCE TIMES.
- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.

BACKUP WEEKLY PROGRAM CHART						
EVENT	DAY*	TIME	CYCLE	OFFSET	PROGRAM	REMARKS
1	1-5	0000	-	-	FREE	MAX 1
2	1-5	0600	120	-	1	AM PEAK
3	1-5	1000	-	-	FREE	MAX 1
4	1-5	1500	120	-	2	PM PEAK
5	1-5	1900	-	-	FREE	MAX 1
6	6,7	1000	120	-	3	WEEKEND PEAK
7	6,7	1800	-	-	FREE	MAX 1

*DAY 1 = MONDAY

TBC BACKUP TIMINGS

Program 1		Phase								Cycle	Offset
Intersections	File #	1	2	3	4	5	6	7	8		
* 5 SWEDE & TOWNSHIP LINE	0179	-	56	-	64	13	43	-	64	120	111
4 JOLLY ROAD (T-455)	2266	14(LEAD)	40	-	33(SPLIT)	-	54	-	33(SPLIT)	120	50
3 YOST ROAD (T-346)	2267	-	83	-	37	13	70	-	-	120	90
2 SWEDE ROAD (SR 3008)	1950	14(LEAD/LAG)	43	-	30(SPLIT)	-	57	-	33(SPLIT)	120	91
* 1 TOWNSHIP LINE ROAD (SR 3001)	0377	13(LEAD)	53	13(LEAD)	41	13(LEAD)	53	-	54	120	14
Program 2		Phase								Cycle	Offset #1
Intersections	File #	1	2	3	4	5	6	7	8		
* 5 SWEDE & TOWNSHIP LINE	0179	-	56	-	64	13	43	-	64	120	98
4 JOLLY ROAD (T-455)	2266	14(LEAD)	40	-	33(SPLIT)	-	54	-	33(SPLIT)	120	108
3 YOST ROAD (T-346)	2267	-	83	-	37	13	70	-	-	120	89
2 SWEDE ROAD (SR 3008)	1950	14(LEAD/LAG)	43	-	30(SPLIT)	-	57	-	33(SPLIT)	120	67
* 1 TOWNSHIP LINE ROAD (SR 3001)	0377	14(LEAD)	57	13(LEAD)	36	16(LEAD)	55	-	49	120	108
Program 3		Phase								Cycle	Offset #1
Intersections	File #	1	2	3	4	5	6	7	8		
* 5 SWEDE & TOWNSHIP LINE	0179	-	56	-	64	13	43	-	64	120	110
4 JOLLY ROAD (T-455)	2266	14(LEAD)	37	-	36(SPLIT)	-	51	-	33(SPLIT)	120	102
3 YOST ROAD (T-346)	2267	-	83	-	37	13	70	-	-	120	101
2 SWEDE ROAD (SR 3008)	1950	14(LEAD/LAG)	43	-	30(SPLIT)	-	57	-	33(SPLIT)	120	79
* 1 TOWNSHIP LINE ROAD (SR 3001)	0377	15(LEAD)	56	13(LEAD)	36	15(LEAD)	56	-	49	120	0

* INTERSECTION TO BE UPGRADED TO ADAPTIVE DURING SR 0202-61S PROJECT

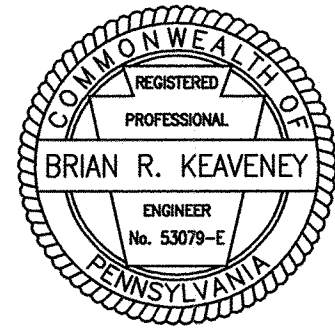
NOT TO SCALE

LEGEND

① INTERSECTION NUMBER

▨ ZONE OF VIDEO DETECTION (VARIABLE SIZE)

④ PHASE NUMBER



TRAFFIC SIGNAL NOTES

DO NOT MODIFY INSTALLATION WITHOUT PRIOR WRITTEN APPROVAL.

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3 WORKING DAYS NOTICE FOR
CONSTRUCTION PHASE AND 10 WORKING
DAYS IN DESIGN STAGE-STOP CALL

PENNSYLVANIA ONE CALL SYSTEM, INC.



1-800-242-1776

SYSTEM #1-0296

COUNTY : MONTGOMERY

MUNICIPALITY : E. NORRITON & WHITPAIN TOWNSHIPS

INTERSECTION : DEKALB PIKE (S.R. 0202)

FROM TOWNSHIP LINE ROAD TO JOLLY ROAD

REVIEWED :

MUNICIPAL OFFICIAL Roman M. Ponczak DATE 2/1/18

RECOMMENDED : 20

for ADE-TRANSPORTATION OPERATIONS

CYCLE/SPLIT/OFFSET

CONFIGURATION:				TUNNEL DURATION								PERIOD	GLOBAL OFFSET (AT FACILITATOR)	LOCAL OFFSET	TRAVEL TIME TO NEXT INTERSECTION	
1	2	Intersections	File #	Facilitator	1	2	3	4	5	6	7					8
1	0296	SWEDE & TOWNSHIP LINE	0179													
2		JOLLY ROAD (T-455)	2266													
3		YOST ROAD (T-346)	2262													
4		SWEDE ROAD (SR 3008)	1950													
5		TOWNSHIP LINE ROAD (SR 3001)	0377													

CONFIGURATION:					TUNNEL DURATION								PERIOD	GLOBAL OFFSET (AT FACILITATOR)	LOCAL OFFSET	TRAVEL TIME TO NEXT INTERSECTION
1	2	Intersections	File #	Facilitator	1	2	3	4	5	6	7	8				
1	0296	SWEDE & TOWNSHIP LINE	0179													
2		JOLLY ROAD (T-455)	2266													
3		YOST ROAD (T-346)	2262													
4		SWEDE ROAD (SR 3008)	1950													
5		TOWNSHIP LINE ROAD (SR 3001)	0377													

CONFIGURATION:				TUNNEL DURATION								PERIOD	GLOBAL OFFSET (AT FACILITATOR)	LOCAL OFFSET	TRAVEL TIME TO NEXT INTERSECTION	
1	2	Intersections	File #	Facilitator	1	2	3	4	5	6	7					8
1	I-0296	SWEDE & TOWNSHIP LINE	0179													
2		JOLLY ROAD (T-455)	2266													
3		YOST ROAD (T-346)	2262													
4		SWEDE ROAD (SR 3008)	1950													
5		TOWNSHIP LINE ROAD (SR 3001)	0377													

CONFIGURATION:				TUNNEL DURATION								PERIOD	GLOBAL OFFSET (AT FACILITATOR)	LOCAL OFFSET	TRAVEL TIME TO NEXT INTERSECTION	
1		Intersections	File #	Facilitator	1	2	3	4	5	6	7					8
1	I-0296	SWEDE & TOWNSHIP LINE	0179													
2		JOLLY ROAD (T-455)	2266													
3		YOST ROAD (T-346)	2262													
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5		TOWNSHIP LINE ROAD (SR 3001)	0377													

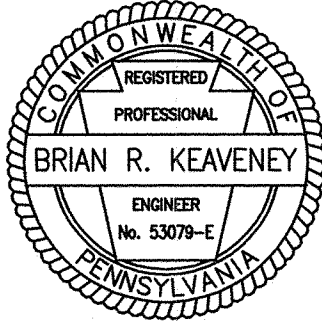
ADAPTIVE WEEKLY PROGRAM CHART

EVENT	DAY	TIME	PERIOD	PROGRAM	REMARKS

MONDAY = DAY 1
TUNNELLESS: UNCOORDINATED ADAPTIVE OPERATION

NOTES:

- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.
- REFER TO SIGNAL PERMIT PLAN FOR MAXIMUM, CLEARANCE AND PED TIMES.
- GLOBAL OFFSET (AT FACILITATOR): VALUE IN SECONDS THAT OFFSETS A TUNNEL GLOBALLY AT THE FACILITATOR INTERSECTION AS ENTERED IN CentralSync.
- LOCAL OFFSET: TUNNEL OFFSET AT INTERSECTION AS ENTERED IN CentralSync.
- TRAVEL TIME TO NEXT INTERSECTION: VALUE FOR TRAVEL TIME OF THE CHOSEN TUNNEL TO THE CORRESPONDING TUNNEL AT THE NEXT INTERSECTION AS ENTERED IN CentralSync MAP VIEW.



DISTRICT	COUNTY	ROUTE	SECTION	SHEET
6-0	MONTGOMERY	SR 0202	61N	26 OF 28

E. NORRITON & WHITPAIN TOWNSHIPS				
REVISION NUMBER	REVISIONS			DATE BY

TRAFFIC SIGNAL NOTES

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PENNSYLVANIA ONE CALL SYSTEM, INC.



1-800-242-1776

SYSTEM #-0296

COUNTY : MONTGOMERY

MUNICIPALITY : E. NORRITON & WHITPAIN TOWNSHIPS

INTERSECTION : DEKALB PIKE (S.R. 0202)

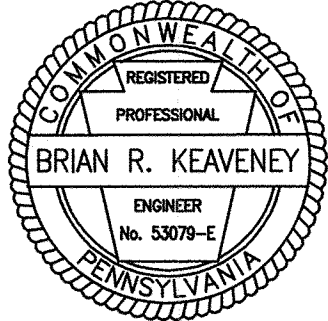
FROM TOWNSHIP LINE ROAD TO JOLLY ROAD

REVIEWED :

MUNICIPAL OFFICIAL Roman M. Poncrak DATE 2/1/18

RECOMMENDED : 2/1/18 20

MADE-TRANSPORTATION OPERATIONS



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SYSTEM REFERENCE SERIAL # _____
PER PHONE CALL ON _____

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PENNSYLVANIA ONE CALL SYSTEM, INC.



1-800-242-1776

SYSTEM #1-0004

COUNTY : MONTGOMERY

MUNICIPALITY : E. NORRITON & WHITPAIN TOWNSHIPS

INTERSECTION : DEKALB PIKE (S.R. 0202) FROM WAWA
/CENTER SQUARE COMMONS TO TOWNSHIP LINE ROAD

REVIEWED : R M BL 2/1/18
MUNICIPAL OFFICIAL Roman M. Drongczak DATE

RECOMMENDED : _____ 20_____

ADE-TRANSPORTATION OPERATIONS

MONDAY = DAY 1 OFFSET REFERENCED TO START
OFFSET IN SECONDS OF YELLOW ON DEKALB PIKE

* INTERSECTIONS 1,2,3,5,6 OPERATE PROGRAM 2
INTERSECTION 4 OPERATES MAX 2.

NOTES:

- ALL SPLIT TIMES INCLUDE YELLOW AND RED TIMES FOR A GIVEN PHASE.

- REFER TO SIGNAL PERMIT PLAN FOR MAX 1, MAX 2, CLEARANCE, AND PEDESTRIAN TIMES.

LEGEND

	INTERSECTION NUMBER
	SYSTEM INTERSECTION NUMBER/ SYSTEM DETECTOR NUMBER
	INTERSECTION NUMBER/ DETECTOR NUMBER
	LOOP DETECTOR
	ZONE OF VIDEO DETECTION (VARIABLE SIZE)
	ADVANCE DETECTION
	PHASE NUMBER
	FIBER OPTIC CABLE CONNECTION

SCALE: NOT TO SCALE

Program 3 = PM Peak		Phase								Cycle	Offset	
Intersections		File #	1	2	3	4	5	6	7	8		
1	DEKALB PIKE & CENTRE SQUARE/WAWA DRIVEWAYS	3896	13 (LEAD)	70		37		83		37	120	42
2	DEKALB PIKE & SKIPPACK PIKE	0364	14 (LEAD)	52	14 (LEAD)	40	14 (LEAD)	52	14 (LEAD)	40	120	18
3	DEKALB PIKE & VILLAGE SQUARE DRIVE	3112	14 (LEAD)	75				89		31	120	59
4	DEKALB PIKE & TOURNAMENT DRIVE	2642	14 (LEAD)	69		37	15 (LEAD)	68		37	120	105
5	DEKALB PIKE & MORRIS ROAD	1521	13 (LEAD)	43	14 (LEAD)	50	13 (LEAD)	43	19 (LEAD)	45	120	54
6	DEKALB PIKE & TOWNSHIP LINE ROAD	2977		80		40		80		40	120	13
7	MORRIS ROAD & MCCC DRIVEWAY	3841	13 (LEAD)	54				67		23	90	21
8	MORRIS ROAD & CATHCART RD	3134	14 (LEAD)	42		34		56		34	90	15
9	SKIPPACK PIKE & CENTRE SQUARE FIRE COMPANY/CENTER SQUARE PLAZA	3945		86		34	14 (LEAD)	72		34	120	108
10	SKIPPACK PIKE & WENTZ ROAD/PARKWOOD ROAD	2413		61		29	14 (LEAD)	47		29	90	0
11	SKIPPACK PIKE & CATHCART ROAD	3135	13 (LEAD)	57		20		70		20	90	25

REVISION NUMBER	REVISIONS	DATE	BY

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1-800-242-1776

SYSTEM #1-0004

COUNTY : MONTGOMERY

MUNICIPALITY : E. NORRITON & WHITPAIN TOWNSHIPS

INTERSECTION : DEKALB PIKE (S.R. 0202) FROM WAWA

/CENTER SQUARE COMMONS TO TOWNSHIP LINE ROAD

REVIEWED : _____

MUNICIPAL OFFICIAL Roman M. Proszczak DATE 11/11/2016

RECOMMENDED : _____ 20_____

1/ August

CONFIGURATION:			TUNNEL DURATION								PERIOD	GLOBAL OFFSET (AT FACILITATOR)	LOCAL OFFSET	TRAVEL TIME TO NEXT INTERSECTION
	Intersections	File #/Facilitator	1	2	3	4	5	6	7	8				
1	I-0004 DEKALB PIKE & CENTRE SQUARE/WAWA DRIVEWAYS	3896												
2		0364												
3		3112												
4		2642												
5		1521												
6		2977												
7		3841												
8		3134												
9		3945												
	SKIPPACK PIKE & CENTRE SQUARE FIRE COMPANY/CENTER SQUARE PLAZA													

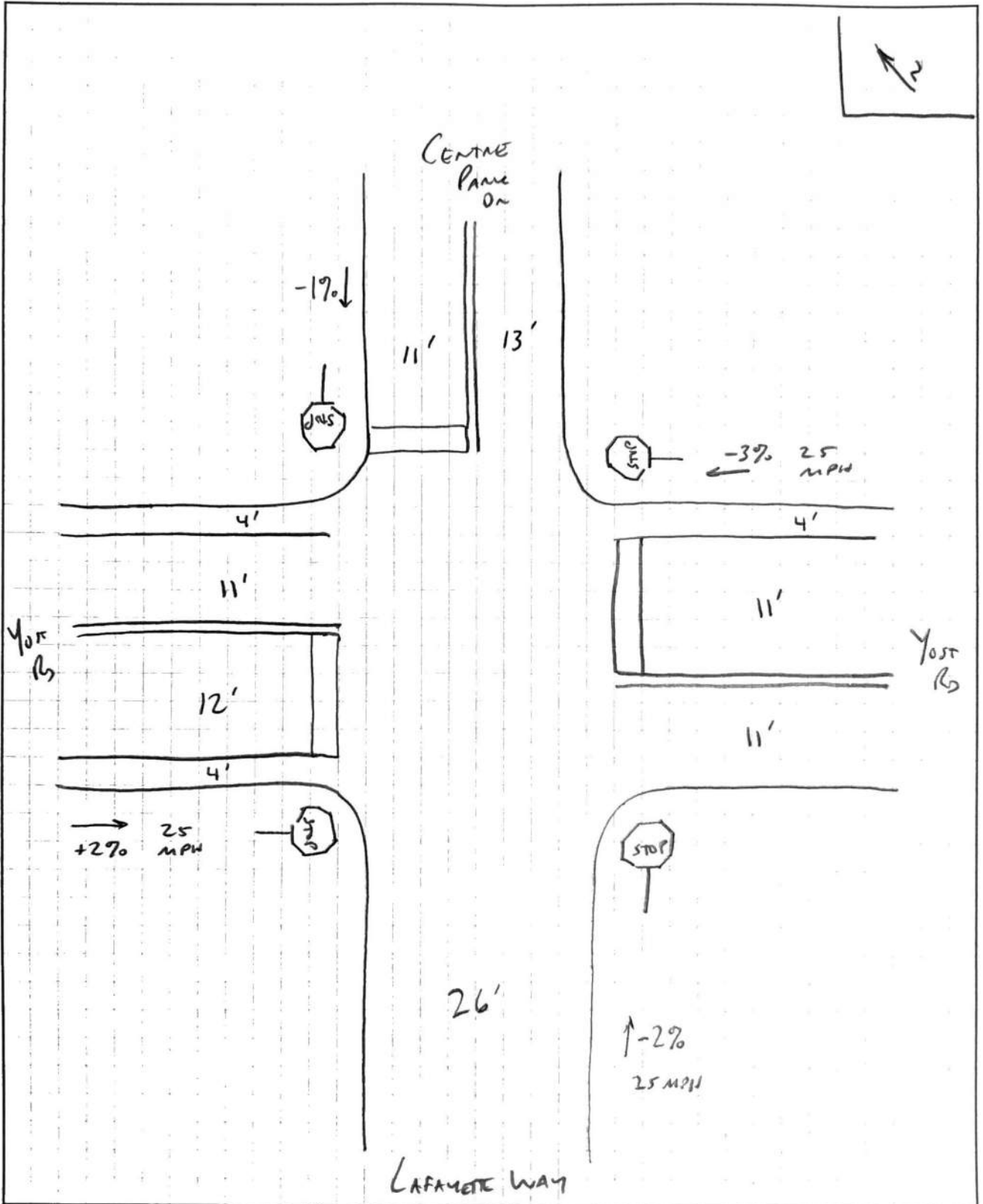
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4. LOCAL OFFSET: TUNNEL OFFSET AT INTERSECTION AS ENTERED IN CentralSync.
5. TRAVEL TIME TO NEXT INTERSECTION: VALUE FOR TRAVEL TIME OF THE CHOSEN TUNNEL TO THE CORRESPONDING TUNNEL AT THE NEXT INTERSECTION AS ENTERED IN CentralSync MAP VIEW.

MONDAY = DAY 1
TUNNELLESS: UNCOORDINATED ADAPTIVE OPERATION

MCMAHON

a Bowman company

Job _____ McMahon Project No. _____ Sheet _____ of _____
 Description CENTRE PARK RD + Designed By NOB Date _____
YOST RD + LAFAYETTE WAY Checked By _____ Date _____



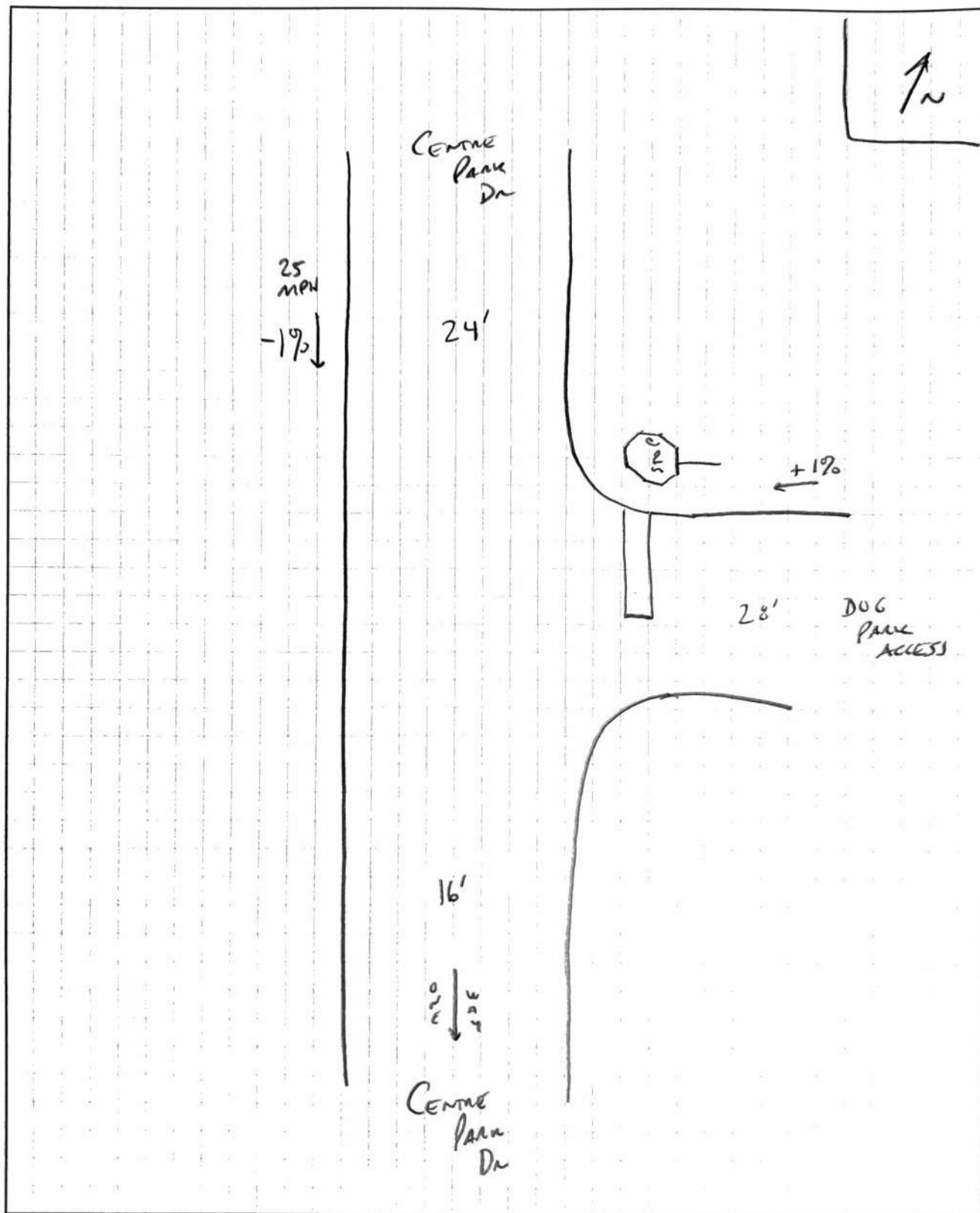
MCMAHON

a Bowman company

Job _____ McMahon Project No. _____ Sheet _____ of _____

Description CENTRE PARK DR + Designed By NDS Date _____

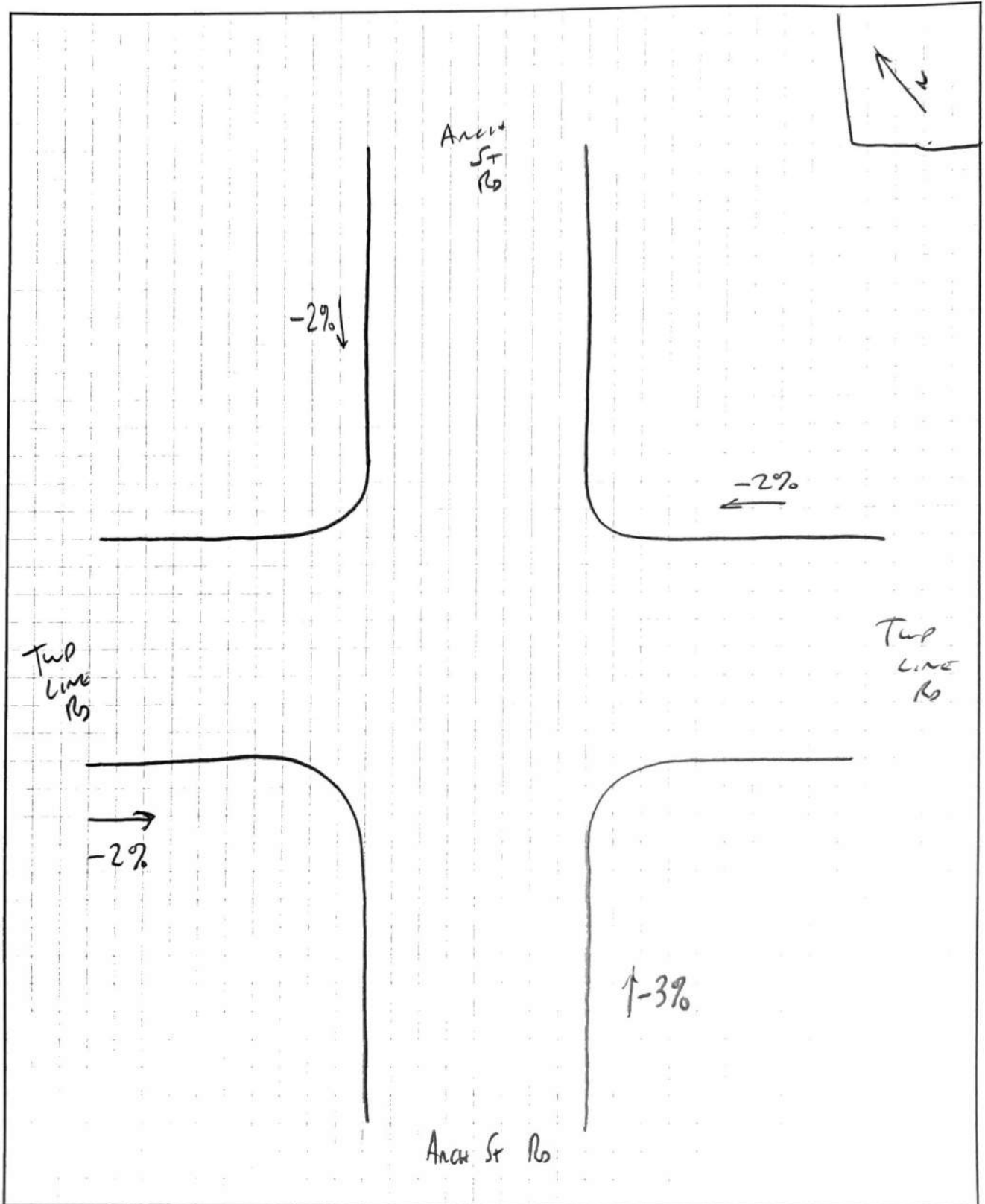
DOG PARK ACCESS Checked By _____ Date _____



MCMAHON

a Bowman company

Job _____ McMahan Project No. _____ Sheet _____ of _____
Description Ancu St R₂ + Designed By NDB Date _____
Turn Line R₂ - GRADES Checked By _____ Date _____



Attachment B

Capacity/Level-of-Service Methodology

CAPACITY/LEVEL-OF-SERVICE ANALYSIS METHODOLOGY

The detailed capacity/level-of-service analysis contained in this transportation impact study was performed in accordance with the standard techniques contained in the *Highway Capacity Manual 6th Edition*. By definition, capacity represents “the maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.” The level at which an intersection or a uniform section of a lane or roadway function can be expressed in terms of a level of service. Level of service (LOS) is defined as “a quantitative stratification of a performance measure or measures that represent quality of service, measured on an A-F scale, with LOS A representing the best operating conditions from the traveler’s perspective and LOS F the worst.”

Stop-Controlled Intersections

At unsignalized stop-controlled intersections, such as two-way stop-controlled (TWSC) or all-way stop-controlled (AWSC), a methodology for evaluating the relative functioning of these intersections is based upon the control delay. For these types of unsignalized intersections, the analysis of the control delay is based upon the following data:

- Number and configuration of lanes on each approach;
- Percentage of heavy vehicles on each approach;
- Demand flow rate for each entering vehicular movement and pedestrian crossing movement;
- Unique geometric factors such as, channelization aspects; two-way left-turn lanes, raised or striped median storage; approach grades, flared approaches on the minor street; and upstream signals within 0.25 miles.

At TWSC intersections, only drivers on the minor street approaches are required to stop before proceeding into the intersection and left-turning drivers from the major street may have to yield to on-coming major street through or right-turning traffic, but are not required to stop in the absence of on-coming traffic. The capacity at stop-controlled legs is based primarily on three factors: the distribution of gaps in the major stream, driver judgment in selecting the gaps, and the follow-up headways required by each driver in a queue.

At AWSC intersections, every vehicle is required to stop at the intersection before proceeding, and as a result, the decision to proceed is a function of the traffic conditions on the other approaches. Each driver proceeds only after determining that no vehicles are currently in the intersection and that it is the driver’s turn to proceed. Capacity at an AWSC intersection is described by the saturation headway or time between departures of successive vehicles on a given approach for a particular case assuming a continuous queue; departure headway or the average time between departures of successive vehicles on a given approach accounting for the probability of each possible case; and service time or the average time spent by a vehicle in first position waiting to depart.

At both TWSC and AWSC intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. For TWSC intersections, the level of service is not calculated for major-street approaches or for the intersection as a whole; however, the intersection-wide level of service is calculated for AWSC intersections. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for TWSC and AWSC intersections.

Control Delay (Sec/Veh)	<u>LOS by Volume-to-Capacity Ratio</u>	
	$v/c \leq 1.0$	$v/c > 1.0$
≤ 10	A	F
> 10 – 15	B	F
> 15 – 25	C	F
> 25 – 35	D	F
> 35 – 50	E	F
> 50	F	F

Signalized Intersections

At three or four-legged signalized intersections, a methodology for evaluating the capacity and quality of service provided to road users traveling through the signalized intersection. For signalized intersections, the level of service can be characterized for the entire intersection, each approach, and each lane group. The level of service is based upon the control delay and volume-to-capacity ratio. The delay quantifies the increase in travel time due to the traffic signal control and is a surrogate measure of driver discomfort and fuel consumption, while the volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group. Input data in determining the delay and volume-to-capacity ratio include:

- Demand flow rate for each entering vehicular movement and pedestrian crossing movement, including right-turn on red volumes and percent of heavy vehicles;
- Initial queue for each lane group;
- Number and configuration of lanes on each approach;
- Type of signal control and phase sequence;
- Allocation of minimum/maximum green times and clearance intervals (Yellow plus All Red phases); and
- Phase recall.

At signalized intersections, the level of service is based upon the control delay, as well as the corresponding volume-to-capacity ratio for each movement/lane group. The following table provides a summary of the relationship between the level of service, control delay, and volume-to-capacity ratio for signalized intersections.

Control Delay (Sec/Veh)	<u>LOS by Volume-to-Capacity Ratio</u>	
	$v/c \leq 1.0$	$v/c > 1.0$
≤ 10	A	F
> 10 – 20	B	F
> 20 – 35	C	F
> 35 – 55	D	F
> 55 – 80	E	F
> 80	F	F

Attachment C

Existing Capacity/Levels-of-Service Analysis Worksheets

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	11	1	128	0	76	0	456	192	181	531	0
Future Volume (vph)	7	11	1	128	0	76	0	456	192	181	531	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	0		0	0		300	150		0	250		0
Storage Lanes	0		0	1		1	0		0	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993				0.850		0.960				
Flt Protected		0.983		0.950						0.950		
Satd. Flow (prot)	0	1614	0	1629	0	1600	0	1575	0	1605	1626	0
Flt Permitted		0.983		0.744						0.291		
Satd. Flow (perm)	0	1614	0	1276	0	1600	0	1575	0	492	1626	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)								38				
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	18%	0%	6%	0%	3%	0%	5%	5%	3%	7%	0%
Adj. Flow (vph)	7	12	1	135	0	80	0	480	202	191	559	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	20	0	135	0	80	0	682	0	191	559	0
Number of Detectors	1	1		1		1		1		1	1	
Detector Template												
Leading Detector (ft)	35	35		35		35		306		35	306	
Trailing Detector (ft)	-5	-5		-5		-5		300		-5	300	
Detector 1 Position(ft)	-5	-5		-5		-5		300		-5	300	
Detector 1 Size(ft)	40	40		40		40		6		40	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0		0.0		0.0		0.0	0.0	
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Detector Phase	4	4		8		8		2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0		8.0		15.0		3.0	15.0	
Minimum Split (s)	14.0	14.0		14.0		14.0		21.0		13.0	21.0	
Total Split (s)	21.0	21.0		21.0		21.0		85.0		14.0	99.0	
Total Split (%)	17.5%	17.5%		17.5%		17.5%		70.8%		11.7%	82.5%	
Maximum Green (s)	15.0	15.0		15.0		15.0		79.0		8.0	93.0	
Yellow Time (s)	4.0	4.0		4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0		-1.0		-1.0		-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)		5.0		5.0		5.0		5.0		5.0	5.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0		5.0		5.0		3.0	5.0	
Minimum Gap (s)	3.0	3.0		3.0		3.0		3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0		0.0		32.0		0.0	32.0	
Time To Reduce (s)	0.0	0.0		0.0		0.0		15.0		0.0	15.0	
Recall Mode	None	None		None		None		C-Min		None	C-Min	
Walk Time (s)	7.0	7.0		7.0		7.0						
Flash Dont Walk (s)	16.0	16.0		16.0		16.0						
Pedestrian Calls (#/hr)	0	0		0		0						
Act Effect Green (s)		15.7		15.7		15.7		80.4		94.3	94.3	
Actuated g/C Ratio		0.13		0.13		0.13		0.67		0.79	0.79	
v/c Ratio		0.09		0.81		0.38		0.64		0.41	0.44	
Control Delay		47.0		84.2		53.4		13.9		5.9	5.5	
Queue Delay		0.0		0.0		0.0		0.0		0.0	0.0	
Total Delay		47.0		84.2		53.4		13.9		5.9	5.5	
LOS		D		F		D		B		A	A	
Approach Delay		47.0			72.7			13.9			5.6	
Approach LOS		D			E			B			A	
Queue Length 50th (ft)		14		103		57		294		30	119	
Queue Length 95th (ft)		38		#211		109		425		48	169	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)						300				250		
Base Capacity (vph)		215		170		213		1068		469	1277	
Starvation Cap Reductn		0		0		0		0		0	0	
Spillback Cap Reductn		0		0		0		0		0	0	
Storage Cap Reductn		0		0		0		0		0	0	
Reduced v/c Ratio		0.09		0.79		0.38		0.64		0.41	0.44	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 96 (80%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 18.1

Intersection LOS: B

Intersection Capacity Utilization 74.1%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road



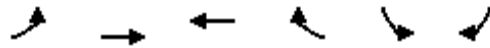
EX AM Weekday Morning Peak Hour 12:29 pm 10/30/2023

Synchro 11 Report

Page 2

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/02/2023

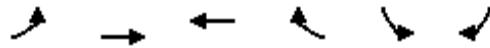


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	106	344	123	131	155	83
Future Volume (vph)	106	344	123	131	155	83
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	12	14	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	0			25	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.930		0.953	
Flt Protected		0.988			0.968	
Satd. Flow (prot)	0	1987	1602	0	1736	0
Flt Permitted		0.857			0.968	
Satd. Flow (perm)	0	1723	1602	0	1736	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			94		27	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	3%	5%	2%	2%	5%
Adj. Flow (vph)	112	362	129	138	163	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	474	267	0	250	0
Number of Detectors	1	2	1		4	
Detector Template	Left					
Leading Detector (ft)	20	306	306		41	
Trailing Detector (ft)	0	-5	300		-10	
Detector 1 Position(ft)	0	-5	300		-10	
Detector 1 Size(ft)	20	40	6		6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		300			0	
Detector 2 Size(ft)		6			6	
Detector 2 Type		Cl+Ex			Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)		0.0			0.0	
Detector 3 Position(ft)					15	
Detector 3 Size(ft)					6	
Detector 3 Type					Cl+Ex	
Detector 3 Channel						
Detector 3 Extend (s)					0.0	
Detector 4 Position(ft)					35	
Detector 4 Size(ft)					6	
Detector 4 Type					Cl+Ex	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector 4 Channel						
Detector 4 Extend (s)					0.0	
Turn Type	pm+pt	NA	NA		Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6					
Detector Phase	1	6	2		4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0		3.0	
Minimum Split (s)	13.0	16.0	16.0		13.0	
Total Split (s)	13.0	67.0	54.0		23.0	
Total Split (%)	14.4%	74.4%	60.0%		25.6%	
Maximum Green (s)	7.0	61.0	48.0		18.0	
Yellow Time (s)	4.0	4.0	4.0		3.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0	
Total Lost Time (s)		5.0	5.0		4.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0		3.0	
Minimum Gap (s)	3.0	2.5	2.5		3.0	
Time Before Reduce (s)	0.0	32.0	32.0		0.0	
Time To Reduce (s)	0.0	16.0	16.0		0.0	
Recall Mode	None	Max	Max		None	
Act Effct Green (s)		62.1	62.1		16.2	
Actuated g/C Ratio		0.71	0.71		0.19	
v/c Ratio		0.39	0.23		0.73	
Control Delay		6.5	3.6		42.5	
Queue Delay		0.0	0.0		0.0	
Total Delay		6.5	3.6		42.5	
LOS		A	A		D	
Approach Delay		6.5	3.6		42.5	
Approach LOS		A	A		D	
Queue Length 50th (ft)		94	28		116	
Queue Length 95th (ft)		152	56		198	
Internal Link Dist (ft)		2013	1686		775	
Turn Bay Length (ft)						
Base Capacity (vph)		1224	1165		399	
Starvation Cap Reductn		0	0		0	
Spillback Cap Reductn		0	0		0	
Storage Cap Reductn		0	0		0	
Reduced v/c Ratio		0.39	0.23		0.63	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 87.3
Natural Cycle: 45
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.73

Lanes, Volumes, Timings 2: Jolly Road & Wentz Road

11/02/2023

Intersection Signal Delay: 14.8

Intersection LOS: B

Intersection Capacity Utilization 66.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Jolly Road & Wentz Road



Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	276	240	49	78	175	101
Future Volume (vph)	276	240	49	78	175	101
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.951	
Flt Protected				0.981	0.969	
Satd. Flow (prot)	1689	1422	0	1630	1678	0
Flt Permitted				0.817	0.969	
Satd. Flow (perm)	1689	1422	0	1358	1678	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		247				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	4%	6%	3%	2%
Adj. Flow (vph)	285	247	51	80	180	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	285	247	0	131	284	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	30.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	53.3%	53.3%	18.7%	72.0%	28.0%	
Maximum Green (s)	51.0	51.0	14.0	71.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	5.8	3.0	
Minimum Gap (s)	4.1	4.1	3.0	4.1	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	32.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	15.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	22.1	22.1		22.1	14.3	
Actuated g/C Ratio	0.48	0.48		0.48	0.31	
v/c Ratio	0.35	0.31		0.20	0.55	
Control Delay	10.1	2.8		9.1	17.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	10.1	2.8		9.1	17.7	
LOS	B	A		A	B	
Approach Delay	6.7			9.1	17.7	
Approach LOS	A			A	B	
Queue Length 50th (ft)	43	0		18	62	
Queue Length 95th (ft)	103	31		51	116	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1689	1422		1358	907	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.17	0.17		0.10	0.31	

Intersection Summary

Area Type: Other

Cycle Length: 107

Actuated Cycle Length: 46.4

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 10.3

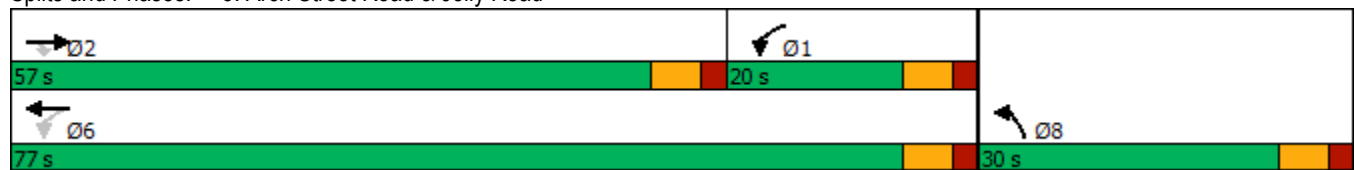
Intersection LOS: B

Intersection Capacity Utilization 64.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	530	149	93	328	11	45	185	90	13	265	25
Future Volume (vph)	59	530	149	93	328	11	45	185	90	13	265	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.995			0.951				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1645	1748	1616	1733	1811	0	1486	1555	0	1493	1883	1648
Flt Permitted	0.548			0.356			0.576			0.557		
Satd. Flow (perm)	949	1748	1616	649	1811	0	901	1555	0	875	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					6			60				82
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
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
Heavy Vehicles (%)	5%	4%	2%	3%	3%	9%	9%	3%	7%	8%	3%	0%
Adj. Flow (vph)	61	552	155	97	342	11	47	193	94	14	276	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	552	155	97	353	0	47	287	0	14	276	26
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	2	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0		16.0	16.0		16.0	16.0	16.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		10.0	10.0		10.0	10.0	10.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	Max	Max	Max	Max	Max		None	None		None	None	None
Act Effect Green (s)	19.0	19.0	19.0	19.0	19.0		10.8	10.8		10.8	10.8	10.8
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.48		0.27	0.27		0.27	0.27	0.27
v/c Ratio	0.13	0.66	0.20	0.31	0.41		0.19	0.62		0.06	0.54	0.05
Control Delay	6.9	12.9	7.0	10.0	8.5		13.5	17.2		11.5	17.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	6.9	12.9	7.0	10.0	8.5		13.5	17.2		11.5	17.0	0.6
LOS	A	B	A	A	A		B	B		B	B	A
Approach Delay		11.2			8.8			16.7			15.4	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	7	84	18	12	45		8	43		2	52	0
Queue Length 95th (ft)	21	164	41	36	88		26	#109		11	104	2
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	453	835	771	310	868		248	473		241	520	514
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.13	0.66	0.20	0.31	0.41		0.19	0.61		0.06	0.53	0.05

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 39.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 12.3

Intersection LOS: B

Intersection Capacity Utilization 72.6%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

 Ø2	 Ø4
24 s	16 s
 Ø6	 Ø8
24 s	16 s

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	530	149	93	328	11	45	185	90	13	265	25
Future Volume (veh/h)	59	530	149	93	328	11	45	185	90	13	265	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1803	1818	1920	1905	1905	1816	1784	1869	1812	1761	1905	1950
Adj Flow Rate, veh/h	61	552	110	97	342	11	47	193	94	14	276	9
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
Percent Heavy Veh, %	5	4	2	3	3	9	9	3	7	8	3	0
Cap, veh/h	546	880	788	377	888	29	325	310	151	317	498	431
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.46	0.26	0.26	0.24	0.26	0.26	0.26
Sat Flow, veh/h	991	1818	1627	787	1835	59	1044	1187	578	1028	1905	1652
Grp Volume(v), veh/h	61	552	110	97	0	353	47	0	287	14	276	9
Grp Sat Flow(s),veh/h/ln	991	1818	1627	787	0	1895	1044	0	1765	1028	1905	1652
Q Serve(g_s), s	1.6	8.8	1.5	4.2	0.0	4.6	1.6	0.0	5.7	0.5	4.9	0.2
Cycle Q Clear(g_c), s	6.3	8.8	1.5	13.5	0.0	4.6	6.5	0.0	5.7	5.6	4.9	0.2
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.33	1.00		1.00
Lane Grp Cap(c), veh/h	546	880	788	377	0	917	325	0	461	317	498	431
V/C Ratio(X)	0.11	0.63	0.14	0.26	0.00	0.38	0.14	0.00	0.62	0.04	0.55	0.02
Avail Cap(c_a), veh/h	546	880	788	377	0	917	345	0	495	336	534	463
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.4	7.5	5.6	12.7	0.0	6.4	15.3	0.0	12.9	15.1	12.5	10.8
Incr Delay (d2), s/veh	0.4	3.4	0.4	1.6	0.0	1.2	0.4	0.0	3.5	0.1	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	5.1	0.7	1.4	0.0	2.9	0.6	0.0	3.9	0.2	3.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.8	10.9	6.0	14.4	0.0	7.7	15.8	0.0	16.4	15.2	14.7	10.8
LnGrp LOS	A	B	A	B	A	A	B	A	B	B	B	B
Approach Vol, veh/h	723			450			334			299		
Approach Delay, s/veh	10.0			9.1			16.3			14.6		
Approach LOS	A			A			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	24.0			15.3			24.0			15.3		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	18.0			10.0			18.0			10.0		
Max Q Clear Time (g_c+I1), s	11.3			9.0			15.5			8.1		
Green Ext Time (p_c), s	3.1			0.2			0.9			0.4		
Intersection Summary												
HCM 6th Ctrl Delay	11.7											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	260	13	30	136	13	16	4	52	4	4	6
Future Volume (vph)	0	260	13	30	136	13	16	4	52	4	4	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.990			0.903			0.940	
Flt Protected					0.992			0.989			0.986	
Satd. Flow (prot)	0	1767	0	0	1723	0	0	1747	0	0	1711	0
Flt Permitted					0.992			0.989			0.986	
Satd. Flow (perm)	0	1767	0	0	1723	0	0	1747	0	0	1711	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		19.9			29.5			12.1			26.9	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles (%)	0%	6%	0%	10%	6%	0%	6%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	351	18	41	184	18	22	5	70	5	5	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	369	0	0	243	0	0	97	0	0	18	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 39.4% ICU Level of Service A

Analysis Period (min) 15

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh	10.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	260	13	30	136	13	16	4	52	4	4	6
Future Vol, veh/h	0	260	13	30	136	13	16	4	52	4	4	6
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	0	6	0	10	6	0	6	0	0	0	0	0
Mvmt Flow	0	351	18	41	184	18	22	5	70	5	5	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

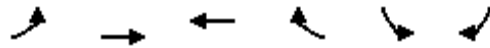
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.5	10	8.9	8.5
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	0%	17%	29%
Vol Thru, %	6%	95%	76%	29%
Vol Right, %	72%	5%	7%	43%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	273	179	14
LT Vol	16	0	30	4
Through Vol	4	260	136	4
RT Vol	52	13	13	6
Lane Flow Rate	97	369	242	19
Geometry Grp	1	1	1	1
Degree of Util (X)	0.136	0.466	0.32	0.028
Departure Headway (Hd)	5.023	4.543	4.758	5.241
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	709	789	752	678
Service Time	3.084	2.583	2.803	3.314
HCM Lane V/C Ratio	0.137	0.468	0.322	0.028
HCM Control Delay	8.9	11.5	10	8.5
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	0.5	2.5	1.4	0.1

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰			↰	
Traffic Volume (vph)	0	5	0	0	0	1
Future Volume (vph)	0	5	0	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected						
Satd. Flow (prot)	0	1909	0	0	1744	0
Flt Permitted						
Satd. Flow (perm)	0	1909	0	0	1744	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		1091	171		70	
Travel Time (s)		29.8	4.7		1.9	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	7	0	0	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	7	0	0	1	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 0 5 0 0 0 1

Future Vol, veh/h 0 5 0 0 0 1

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - -1 0 - 1 -

Peak Hour Factor 75 75 75 75 75 75

Heavy Vehicles, % 0 0 0 0 0 0

Mvmt Flow 0 7 0 0 0 1

Major/Minor Major1 Minor2

Conflicting Flow All 0 0 7 0

Stage 1 - - 0 -

Stage 2 - - 7 -

Critical Hdwy 4.1 - 6.6 6.3

Critical Hdwy Stg 1 - - - -

Critical Hdwy Stg 2 - - 5.6 -

Follow-up Hdwy 2.2 - 3.5 3.3

Pot Cap-1 Maneuver - - 1019 -

Stage 1 - - - -

Stage 2 - - 1021 -

Platoon blocked, % -

Mov Cap-1 Maneuver - - 1019 -

Mov Cap-2 Maneuver - - 1019 -

Stage 1 - - - -

Stage 2 - - 1021 -

Approach EB SB

HCM Control Delay, s 0

HCM LOS -

Minor Lane/Major Mvmt EBL EBT SBLn1

Capacity (veh/h) - - -

HCM Lane V/C Ratio - - -

HCM Control Delay (s) 0 - -

HCM Lane LOS A - -

HCM 95th %tile Q(veh) - - -

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	53	40	28	453	415	68
Future Volume (vph)	53	40	28	453	415	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.942					0.850
Flt Protected	0.972		0.950			
Satd. Flow (prot)	1587	0	1661	1665	1665	1542
Flt Permitted	0.972		0.465			
Satd. Flow (perm)	1587	0	813	1665	1665	1542
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	28					69
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	0%	0%	5%	4%	2%
Adj. Flow (vph)	54	41	29	462	423	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	29	462	423	69
Number of Detectors	1		1	1	1	0
Detector Template						
Leading Detector (ft)	35		35	356	356	0
Trailing Detector (ft)	-5		-5	350	350	0
Detector 1 Position(ft)	-5		-5	350	350	-5
Detector 1 Size(ft)	40		40	6	6	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases			2			6
Detector Phase	4		5	2	6	6
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	15.0
Minimum Split (s)	13.0		13.0	21.0	21.0	21.0
Total Split (s)	25.0		13.0	95.0	82.0	82.0
Total Split (%)	20.8%		10.8%	79.2%	68.3%	68.3%
Maximum Green (s)	20.0		7.0	89.0	76.0	76.0
Yellow Time (s)	3.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

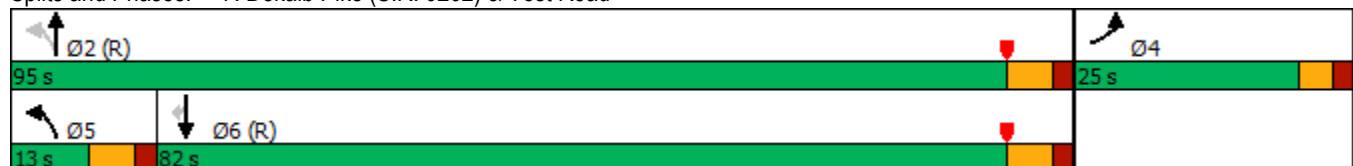


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	6.0	6.0	6.0
Minimum Gap (s)	3.0		3.0	3.9	3.9	3.9
Time Before Reduce (s)	0.0		0.0	37.0	37.0	37.0
Time To Reduce (s)	0.0		0.0	15.0	15.0	15.0
Recall Mode	None		None	C-Min	C-Min	C-Min
Walk Time (s)	7.0					
Flash Dont Walk (s)	18.0					
Pedestrian Calls (#/hr)	0					
Act Effect Green (s)	11.6		99.4	99.4	92.0	92.0
Actuated g/C Ratio	0.10		0.83	0.83	0.77	0.77
v/c Ratio	0.53		0.04	0.34	0.33	0.06
Control Delay	46.3		2.5	3.5	4.8	0.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	46.3		2.5	3.5	4.8	0.8
LOS	D		A	A	A	A
Approach Delay	46.3			3.4	4.2	
Approach LOS	D			A	A	
Queue Length 50th (ft)	50		3	65	73	0
Queue Length 95th (ft)	102		10	126	m120	m7
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	300		729	1379	1277	1198
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.32		0.04	0.34	0.33	0.06

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 100 (83%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.53
Intersection Signal Delay: 7.6
Intersection LOS: A
Intersection Capacity Utilization 38.4%
ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		W	↑	↑	W
Traffic Volume (veh/h)	53	40	28	453	415	68
Future Volume (veh/h)	53	40	28	453	415	68
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1694	1820	1837	1766	1738	1837
Adj Flow Rate, veh/h	54	41	29	462	423	69
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	4	0	0	5	4	2
Cap, veh/h	76	58	722	1478	1341	1201
Arrive On Green	0.09	0.08	0.02	0.84	0.77	0.77
Sat Flow, veh/h	862	655	1750	1766	1738	1557
Grp Volume(v), veh/h	96	0	29	462	423	69
Grp Sat Flow(s),veh/h/ln	1533	0	1750	1766	1738	1557
Q Serve(g_s), s	7.3	0.0	0.4	6.9	8.8	1.3
Cycle Q Clear(g_c), s	7.3	0.0	0.4	6.9	8.8	1.3
Prop In Lane	0.56	0.43	1.00			1.00
Lane Grp Cap(c), veh/h	135	0	722	1478	1341	1201
V/C Ratio(X)	0.71	0.00	0.04	0.31	0.32	0.06
Avail Cap(c_a), veh/h	268	0	797	1478	1341	1201
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.85	0.85
Uniform Delay (d), s/veh	53.4	0.0	2.6	2.2	4.1	3.3
Incr Delay (d2), s/veh	6.7	0.0	0.0	0.6	0.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.6	0.0	0.2	2.8	4.7	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	60.1	0.0	2.6	2.7	4.7	3.4
LnGrp LOS	E	A	A	A	A	A
Approach Vol, veh/h	96			491	492	
Approach Delay, s/veh	60.1			2.7	4.5	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	105.4			14.6	7.9	97.6
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	89.0			20.0	7.0	76.0
Max Q Clear Time (g_c+I1), s	9.4			9.8	2.9	11.3
Green Ext Time (p_c), s	23.7			0.2	0.0	17.4

Intersection Summary

HCM 6th Ctrl Delay	8.6
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	20	5	284	0	106	0	447	166	55	277	0
Future Volume (vph)	12	20	5	284	0	106	0	447	166	55	277	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	0		0	0		300	150		0	250		0
Storage Lanes	0		0	1		1	0		0	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983				0.850		0.963				
Flt Protected		0.984		0.950						0.950		
Satd. Flow (prot)	0	1772	0	1710	0	1616	0	1623	0	1653	1706	0
Flt Permitted		0.984		0.732						0.256		
Satd. Flow (perm)	0	1772	0	1318	0	1616	0	1623	0	445	1706	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)								26				
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	3%	0%	0%	2%	0%
Adj. Flow (vph)	13	21	5	302	0	113	0	476	177	59	295	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	302	0	113	0	653	0	59	295	0
Number of Detectors	1	1		1		1		1		1	1	
Detector Template												
Leading Detector (ft)	35	35		35		35		306		35	306	
Trailing Detector (ft)	-5	-5		-5		-5		300		-5	300	
Detector 1 Position(ft)	-5	-5		-5		-5		300		-5	300	
Detector 1 Size(ft)	40	40		40		40		6		40	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0		0.0		0.0		0.0	0.0	
Turn Type	Perm	NA		Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Detector Phase	4	4		8		8		2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0		8.0		15.0		3.0	15.0	
Minimum Split (s)	14.0	14.0		14.0		14.0		21.0		13.0	21.0	
Total Split (s)	34.0	34.0		34.0		34.0		73.0		13.0	86.0	
Total Split (%)	28.3%	28.3%		28.3%		28.3%		60.8%		10.8%	71.7%	
Maximum Green (s)	28.0	28.0		28.0		28.0		67.0		7.0	80.0	
Yellow Time (s)	4.0	4.0		4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0		-1.0		-1.0		-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0		5.0		5.0		5.0		5.0		5.0	
Lead/Lag	Lag								Lead			
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0		5.0		5.0		3.0		5.0	
Minimum Gap (s)	3.0	3.0	3.0		3.0		3.0		3.0		3.0	
Time Before Reduce (s)	0.0	0.0	0.0		0.0		32.0		0.0		32.0	
Time To Reduce (s)	0.0	0.0	0.0		0.0		15.0		0.0		15.0	
Recall Mode	None	None	None		None		C-Min		None		C-Min	
Walk Time (s)	7.0	7.0	7.0		7.0							
Flash Dont Walk (s)	16.0	16.0	16.0		16.0							
Pedestrian Calls (#/hr)	0	0	0		0							
Act Effct Green (s)	29.0		29.0		29.0		70.7		81.0		81.0	
Actuated g/C Ratio	0.24		0.24		0.24		0.59		0.68		0.68	
v/c Ratio	0.09		0.95		0.29		0.68		0.16		0.26	
Control Delay	36.1		84.7		39.6		25.4		7.5		8.3	
Queue Delay	0.0		0.0		0.0		0.0		0.0		0.0	
Total Delay	36.1		84.7		39.6		25.4		7.5		8.3	
LOS	D		F		D		C		A		A	
Approach Delay	36.1		72.4				25.4		8.2			
Approach LOS	D		E				C		A			
Queue Length 50th (ft)	24		231		72		364		14		82	
Queue Length 95th (ft)	53		#409		126		m455		28		122	
Internal Link Dist (ft)	348		2013				1161		1077			
Turn Bay Length (ft)					300						250	
Base Capacity (vph)	428		318		390		966		380		1151	
Starvation Cap Reductn	0		0		0		0		0		0	
Spillback Cap Reductn	0		0		0		0		0		0	
Storage Cap Reductn	0		0		0		0		0		0	
Reduced v/c Ratio	0.09		0.95		0.29		0.68		0.16		0.26	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 102 (85%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 34.9

Intersection LOS: C

Intersection Capacity Utilization 73.8%

ICU Level of Service D

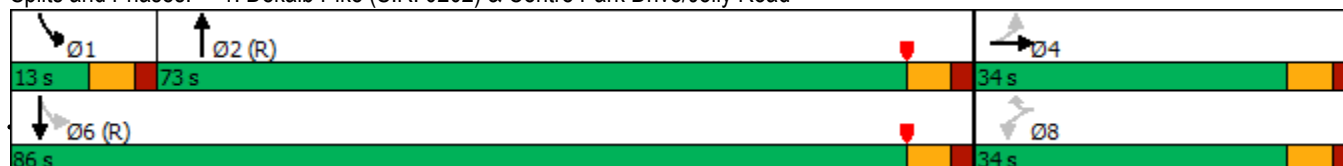
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

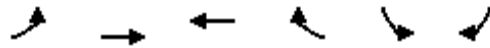
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road



Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/02/2023

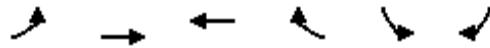


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	152	117	288	237	196	146
Future Volume (vph)	152	117	288	237	196	146
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	12	14	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	0			25	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.939		0.942	
Flt Protected		0.973			0.972	
Satd. Flow (prot)	0	2013	1649	0	1765	0
Flt Permitted		0.562			0.972	
Satd. Flow (perm)	0	1163	1649	0	1765	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			58		32	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	1%	2%	1%	0%
Adj. Flow (vph)	157	121	297	244	202	151
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	278	541	0	353	0
Number of Detectors	1	2	1		4	
Detector Template	Left					
Leading Detector (ft)	20	306	306		41	
Trailing Detector (ft)	0	-5	300		-10	
Detector 1 Position(ft)	0	-5	300		-10	
Detector 1 Size(ft)	20	40	6		6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		300			0	
Detector 2 Size(ft)		6			6	
Detector 2 Type		Cl+Ex			Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)		0.0			0.0	
Detector 3 Position(ft)					15	
Detector 3 Size(ft)					6	
Detector 3 Type					Cl+Ex	
Detector 3 Channel						
Detector 3 Extend (s)					0.0	
Detector 4 Position(ft)					35	
Detector 4 Size(ft)					6	
Detector 4 Type					Cl+Ex	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector 4 Channel						
Detector 4 Extend (s)					0.0	
Turn Type	pm+pt	NA	NA		Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6					
Detector Phase	1	6	2		4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0		3.0	
Minimum Split (s)	13.0	16.0	16.0		13.0	
Total Split (s)	26.0	80.0	54.0		20.0	
Total Split (%)	26.0%	80.0%	54.0%		20.0%	
Maximum Green (s)	20.0	74.0	48.0		15.0	
Yellow Time (s)	4.0	4.0	4.0		3.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0	
Total Lost Time (s)		5.0	5.0		4.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0		3.0	
Minimum Gap (s)	3.0	2.5	2.5		3.0	
Time Before Reduce (s)	0.0	32.0	32.0		0.0	
Time To Reduce (s)	0.0	16.0	16.0		0.0	
Recall Mode	None	Max	C-Max		None	
Act Effct Green (s)		75.0	75.0		16.0	
Actuated g/C Ratio		0.75	0.75		0.16	
v/c Ratio		0.32	0.43		1.14	
Control Delay		5.2	5.3		131.6	
Queue Delay		0.0	0.0		0.0	
Total Delay		5.2	5.3		131.6	
LOS		A	A		F	
Approach Delay		5.2	5.3		131.6	
Approach LOS		A	A		F	
Queue Length 50th (ft)		48	91		~247	
Queue Length 95th (ft)		80	141		#426	
Internal Link Dist (ft)		2013	1686		775	
Turn Bay Length (ft)						
Base Capacity (vph)		872	1251		309	
Starvation Cap Reductn		0	0		0	
Spillback Cap Reductn		0	0		0	
Storage Cap Reductn		0	0		0	
Reduced v/c Ratio		0.32	0.43		1.14	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 8 (8%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/02/2023

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 43.3

Intersection LOS: D

Intersection Capacity Utilization 79.2%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Jolly Road & Wentz Road



Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	121	217	135	305	208	110
Future Volume (vph)	121	217	135	305	208	110
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.953	
Flt Protected				0.985	0.968	
Satd. Flow (prot)	1723	1435	0	1690	1691	0
Flt Permitted				0.851	0.968	
Satd. Flow (perm)	1723	1435	0	1460	1691	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		247				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	2%	4%	1%	2%	2%
Adj. Flow (vph)	138	247	153	347	236	125
Shared Lane Traffic (%)						
Lane Group Flow (vph)	138	247	0	500	361	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	25.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	55.9%	55.9%	19.6%	75.5%	24.5%	
Maximum Green (s)	51.0	51.0	14.0	71.0	19.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	26.4	26.4		26.4	20.2	
Actuated g/C Ratio	0.47	0.47		0.47	0.36	
v/c Ratio	0.17	0.31		0.74	0.60	
Control Delay	8.9	2.4		19.4	22.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	8.9	2.4		19.4	22.1	
LOS	A	A		B	C	
Approach Delay	4.7			19.4	22.1	
Approach LOS	A			B	C	
Queue Length 50th (ft)	25	0		127	89	
Queue Length 95th (ft)	48	25		212	#220	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1593	1345		1460	601	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.09	0.18		0.34	0.60	

Intersection Summary

Area Type: Other
 Cycle Length: 102
 Actuated Cycle Length: 56.7
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 15.6
 Intersection LOS: B
 Intersection Capacity Utilization 74.1%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	434	155	103	614	15	111	213	94	31	234	86
Future Volume (vph)	70	434	155	103	614	15	111	213	94	31	234	86
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.996			0.954				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1629	1800	1632	1767	1832	0	1573	1604	0	1612	1883	1648
Flt Permitted	0.225			0.418			0.603			0.480		
Satd. Flow (perm)	386	1800	1632	777	1832	0	998	1604	0	814	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					4			50				92
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	1%	1%	1%	2%	7%	3%	2%	0%	0%	3%	0%
Adj. Flow (vph)	75	467	167	111	660	16	119	229	101	33	252	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	467	167	111	676	0	119	330	0	33	252	92
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0		18.0	18.0		18.0	18.0	18.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0		12.0	12.0		12.0	12.0	12.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	19.7	20.7	20.7	19.7	20.7		13.0	13.0		13.0	13.0	12.0
Actuated g/C Ratio	0.45	0.47	0.47	0.45	0.47		0.30	0.30		0.30	0.30	0.27
v/c Ratio	0.43	0.55	0.22	0.32	0.78		0.40	0.64		0.14	0.45	0.18
Control Delay	17.5	11.1	7.5	10.6	17.8		17.9	19.5		13.7	16.2	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	17.5	11.1	7.5	10.6	17.8		17.9	19.5		13.7	16.2	4.9
LOS	B	B	A	B	B		B	B		B	B	A
Approach Delay		10.9			16.8			19.1			13.2	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	12	74	22	16	125		24	61		6	53	0
Queue Length 95th (ft)	#44	138	47	43	#288		61	#154		22	103	24
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	185	907	822	373	925		297	512		242	560	519
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.41	0.51	0.20	0.30	0.73		0.40	0.64		0.14	0.45	0.18

Intersection Summary

Area Type: Other

Cycle Length: 45

Actuated Cycle Length: 43.8

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 14.9

Intersection LOS: B

Intersection Capacity Utilization 80.4%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

					
Ø2			Ø4		
18 s			27 s		
					
Ø6			Ø8		
18 s			27 s		

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	434	155	103	614	15	111	213	94	31	234	86
Future Volume (veh/h)	70	434	155	103	614	15	111	213	94	31	234	86
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1789	1860	1935	1935	1920	1846	1869	1883	1912	1875	1905	1950
Adj Flow Rate, veh/h	75	467	122	111	660	16	119	229	92	33	252	50
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	1	1	1	2	7	3	2	0	0	3	0
Cap, veh/h	286	885	780	392	888	22	367	378	152	327	564	452
Arrive On Green	0.45	0.48	0.48	0.45	0.48	0.45	0.30	0.30	0.27	0.30	0.30	0.27
Sat Flow, veh/h	730	1860	1640	856	1867	45	1077	1278	513	1061	1905	1652
Grp Volume(v), veh/h	75	467	122	111	0	676	119	0	321	33	252	50
Grp Sat Flow(s),veh/h/ln	730	1860	1640	856	0	1912	1077	0	1791	1061	1905	1652
Q Serve(g_s), s	4.2	7.7	1.8	4.8	0.0	12.6	4.4	0.0	6.8	1.2	4.7	1.0
Cycle Q Clear(g_c), s	16.8	7.7	1.8	13.0	0.0	12.6	9.1	0.0	6.8	7.5	4.7	1.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	286	885	780	392	0	910	367	0	530	327	564	452
V/C Ratio(X)	0.26	0.53	0.16	0.28	0.00	0.74	0.32	0.00	0.61	0.10	0.45	0.11
Avail Cap(c_a), veh/h	304	932	822	413	0	958	367	0	530	327	564	452
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.0	8.0	6.5	13.6	0.0	9.3	16.2	0.0	13.4	16.2	12.5	11.9
Incr Delay (d2), s/veh	1.0	1.0	0.2	0.8	0.0	3.8	2.3	0.0	5.1	0.6	2.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	4.1	0.9	1.6	0.0	8.5	2.1	0.0	5.2	0.5	3.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.0	9.1	6.7	14.4	0.0	13.1	18.6	0.0	18.4	16.9	15.1	12.4
LnGrp LOS	B	A	A	B	A	B	B	A	B	B	B	B
Approach Vol, veh/h	664			787			440			335		
Approach Delay, s/veh	9.7			13.3			18.5			14.9		
Approach LOS	A			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	18.0			25.9			18.0			25.9		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	12.0			21.0			12.0			21.0		
Max Q Clear Time (g_c+I1), s	11.6			15.0			10.0			18.8		
Green Ext Time (p_c), s	0.1			3.2			0.5			1.1		
Intersection Summary												
HCM 6th Ctrl Delay	13.5											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	131	5	39	154	68	13	10	33	11	9	4
Future Volume (vph)	19	131	5	39	154	68	13	10	33	11	9	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.965			0.921			0.977	
Flt Protected		0.994			0.993			0.989			0.977	
Satd. Flow (prot)	0	1847	0	0	1777	0	0	1806	0	0	1762	0
Flt Permitted		0.994			0.993			0.989			0.977	
Satd. Flow (perm)	0	1847	0	0	1777	0	0	1806	0	0	1762	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	164	6	49	193	85	16	13	41	14	11	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	194	0	0	327	0	0	70	0	0	30	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	30.6%				ICU Level of Service A							
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh 9.3
Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	131	5	39	154	68	13	10	33	11	9	4
Future Vol, veh/h	19	131	5	39	154	68	13	10	33	11	9	4
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	0	1	0	0	0	2	0	0	0	0	0	0
Mvmt Flow	24	164	6	49	193	85	16	13	41	14	11	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

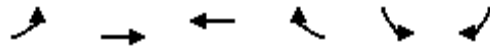
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	9.9	8.3	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	12%	15%	46%
Vol Thru, %	18%	85%	59%	38%
Vol Right, %	59%	3%	26%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	56	155	261	24
LT Vol	13	19	39	11
Through Vol	10	131	154	9
RT Vol	33	5	68	4
Lane Flow Rate	70	194	326	30
Geometry Grp	1	1	1	1
Degree of Util (X)	0.093	0.241	0.383	0.043
Departure Headway (Hd)	4.761	4.482	4.227	5.118
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	751	800	852	698
Service Time	2.8	2.512	2.253	3.162
HCM Lane V/C Ratio	0.093	0.242	0.383	0.043
HCM Control Delay	8.3	8.9	9.9	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.9	1.8	0.1

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	33	0	0	2	2
Future Volume (vph)	4	33	0	0	2	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.932	
Flt Protected		0.994			0.976	
Satd. Flow (prot)	0	1898	0	0	1834	0
Flt Permitted		0.994			0.976	
Satd. Flow (perm)	0	1898	0	0	1834	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1091	171		70	
Travel Time (s)		24.8	3.9		1.6	
Peak Hour Factor	0.47	0.47	0.47	0.47	0.47	0.47
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	9	70	0	0	4	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	79	0	0	8	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4			4	
Traffic Vol, veh/h	4	33	0	0	2	2
Future Vol, veh/h	4	33	0	0	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	1	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	9	70	0	0	4	4

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	88	0
Stage 1	-	-	0	-
Stage 2	-	-	88	-
Critical Hdwy	4.1	-	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.6	-
Follow-up Hdwy	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	913	-
Stage 1	-	-	-	-
Stage 2	-	-	936	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	913	-
Mov Cap-2 Maneuver	-	-	913	-
Stage 1	-	-	-	-
Stage 2	-	-	936	-

Approach	EB	SB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	SBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	120	92	59	516	353	177
Future Volume (vph)	120	92	59	516	353	177
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.941					0.850
Flt Protected	0.972		0.950			
Satd. Flow (prot)	1613	0	1661	1714	1714	1573
Flt Permitted	0.972		0.478			
Satd. Flow (perm)	1613	0	836	1714	1714	1573
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	27					188
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Adj. Flow (vph)	128	98	63	549	376	188
Shared Lane Traffic (%)						
Lane Group Flow (vph)	226	0	63	549	376	188
Number of Detectors	1		1	1	1	0
Detector Template						
Leading Detector (ft)	35		35	356	356	0
Trailing Detector (ft)	-5		-5	350	350	0
Detector 1 Position(ft)	-5		-5	350	350	-5
Detector 1 Size(ft)	40		40	6	6	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases			2			6
Detector Phase	4		5	2	6	6
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	15.0
Minimum Split (s)	13.0		13.0	21.0	21.0	21.0
Total Split (s)	21.0		13.0	99.0	86.0	86.0
Total Split (%)	17.5%		10.8%	82.5%	71.7%	71.7%
Maximum Green (s)	16.0		7.0	93.0	80.0	80.0
Yellow Time (s)	3.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	6.0	6.0	6.0
Minimum Gap (s)	3.0		3.0	3.9	3.9	3.9
Time Before Reduce (s)	0.0		0.0	37.0	37.0	37.0
Time To Reduce (s)	0.0		0.0	15.0	15.0	15.0
Recall Mode	None		None	C-Min	C-Min	C-Min
Walk Time (s)				7.0	7.0	7.0
Flash Dont Walk (s)				18.0	18.0	18.0
Pedestrian Calls (#/hr)				0	0	0
Act Effect Green (s)	16.8		94.2	94.2	84.0	84.0
Actuated g/C Ratio	0.14		0.78	0.78	0.70	0.70
v/c Ratio	0.91		0.09	0.41	0.31	0.16
Control Delay	82.6		3.2	5.1	4.8	0.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	82.6		3.2	5.1	4.8	0.8
LOS	F		A	A	A	A
Approach Delay	82.6			5.0	3.5	
Approach LOS	F			A	A	
Queue Length 50th (ft)	155		9	112	48	0
Queue Length 95th (ft)	#304		18	158	m95	m2
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	251		710	1344	1199	1157
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.90		0.09	0.41	0.31	0.16

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 97 (81%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 16.9

Intersection LOS: B

Intersection Capacity Utilization 49.1%

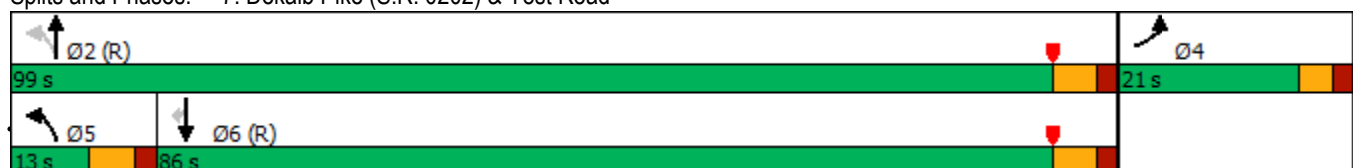
ICU Level of Service A

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		W	U	U	W
Traffic Volume (veh/h)	120	92	59	516	353	177
Future Volume (veh/h)	120	92	59	516	353	177
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1736	1820	1837	1809	1780	1866
Adj Flow Rate, veh/h	128	98	63	549	376	188
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	2	1	0
Cap, veh/h	125	96	641	1417	1265	1124
Arrive On Green	0.14	0.13	0.03	0.78	0.71	0.71
Sat Flow, veh/h	885	678	1750	1809	1780	1582
Grp Volume(v), veh/h	227	0	63	549	376	188
Grp Sat Flow(s),veh/h/ln	1570	0	1750	1809	1780	1582
Q Serve(g_s), s	17.0	0.0	1.1	11.3	9.3	4.7
Cycle Q Clear(g_c), s	17.0	0.0	1.1	11.3	9.3	4.7
Prop In Lane	0.56	0.43	1.00			1.00
Lane Grp Cap(c), veh/h	222	0	641	1417	1265	1124
V/C Ratio(X)	1.02	0.00	0.10	0.39	0.30	0.17
Avail Cap(c_a), veh/h	222	0	703	1417	1265	1124
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.76	0.76
Uniform Delay (d), s/veh	51.7	0.0	4.2	4.0	6.4	5.7
Incr Delay (d2), s/veh	65.9	0.0	0.1	0.8	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	16.4	0.0	0.6	6.1	5.7	2.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	117.6	0.0	4.3	4.8	6.8	6.0
LnGrp LOS	F	A	A	A	A	A
Approach Vol, veh/h	227			612	564	
Approach Delay, s/veh	117.6			4.8	6.5	
Approach LOS	F			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	99.0			21.0	8.7	90.3
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	93.0			16.0	7.0	80.0
Max Q Clear Time (g_c+I1), s	13.3			19.0	3.1	11.3
Green Ext Time (p_c), s	30.3			0.0	0.0	11.7

Intersection Summary

HCM 6th Ctrl Delay	23.7
HCM 6th LOS	C

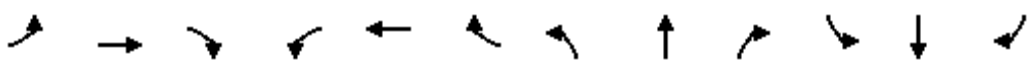
Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔		↔		↔		↔	↔	
Traffic Volume (vph)	0	0	0	42	0	73	0	599	72	51	487	0
Future Volume (vph)	0	0	0	42	0	73	0	599	72	51	487	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	0		0	0		300	150		0	250		0
Storage Lanes	0		0	1		1	0		0	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850		0.986				
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1832	0	1727	0	1648	0	1665	0	1653	1689	0
Flt Permitted				0.757						0.264		
Satd. Flow (perm)	0	1832	0	1376	0	1648	0	1665	0	459	1689	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)								14				
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	3%	0%
Adj. Flow (vph)	0	0	0	46	0	80	0	658	79	56	535	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	46	0	80	0	737	0	56	535	0
Number of Detectors	1	1		1		1		1		1	1	
Detector Template												
Leading Detector (ft)	35	35		35		35		306		35	306	
Trailing Detector (ft)	-5	-5		-5		-5		300		-5	300	
Detector 1 Position(ft)	-5	-5		-5		-5		300		-5	300	
Detector 1 Size(ft)	40	40		40		40		6		40	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0		0.0		0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0		0.0		0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0		0.0		0.0		0.0	0.0	
Turn Type				Perm		Perm		NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			8		8				6		
Detector Phase	4	4		8		8		2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0		8.0		15.0		3.0	15.0	
Minimum Split (s)	14.0	14.0		14.0		14.0		21.0		13.0	21.0	
Total Split (s)	14.0	14.0		14.0		14.0		59.0		13.0	72.0	
Total Split (%)	16.3%	16.3%		16.3%		16.3%		68.6%		15.1%	83.7%	
Maximum Green (s)	8.0	8.0		8.0		8.0		53.0		7.0	66.0	
Yellow Time (s)	4.0	4.0		4.0		4.0		4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0		2.0		2.0		2.0	2.0	
Lost Time Adjust (s)		-1.0		-1.0		-1.0		-1.0		-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

													
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Total Lost Time (s)	5.0			5.0			5.0			5.0			
Lead/Lag	Lag								Lead				
Lead-Lag Optimize?													
Vehicle Extension (s)	5.0	5.0		5.0		5.0		3.0		3.0	3.0		
Recall Mode	None	None		None		None		C-Min		None	C-Min		
Walk Time (s)	7.0	7.0		7.0		7.0							
Flash Dont Walk (s)	19.0	19.0		23.0		23.0							
Pedestrian Calls (#/hr)	0	0		0		0							
Act Effct Green (s)				9.0		9.0		60.9		69.8	70.8		
Actuated g/C Ratio				0.10		0.10		0.71		0.81	0.82		
v/c Ratio				0.32		0.47		0.62		0.12	0.38		
Control Delay				42.2		45.8		12.1		2.7	3.7		
Queue Delay				0.0		0.0		0.0		0.0	0.0		
Total Delay				42.2		45.8		12.1		2.7	3.7		
LOS				D		D		B		A	A		
Approach Delay					44.5					12.1			3.6
Approach LOS					D					B			A
Queue Length 50th (ft)				23				41	227			5	71
Queue Length 95th (ft)				57				86	368			12	109
Internal Link Dist (ft)	348			2013			1161			1077			
Turn Bay Length (ft)						300						250	
Base Capacity (vph)				144				172	1182			483	1390
Starvation Cap Reductn				0				0	0			0	0
Spillback Cap Reductn				0				0	0			0	0
Storage Cap Reductn				0				0	0			0	0
Reduced v/c Ratio				0.32				0.47	0.62			0.12	0.38

Intersection Summary

Area Type: Other

Cycle Length: 86

Actuated Cycle Length: 86

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 11.4

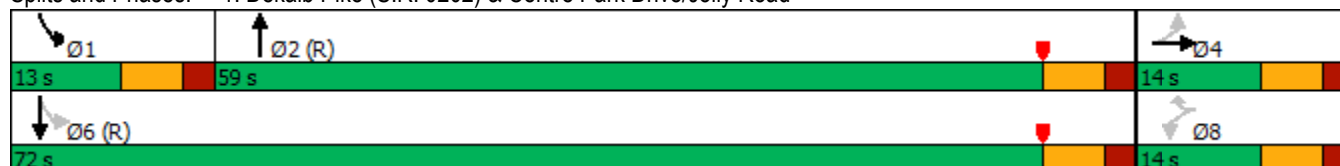
Intersection LOS: B

Intersection Capacity Utilization 55.6%

ICU Level of Service B

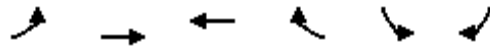
Analysis Period (min) 15

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road



Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/02/2023

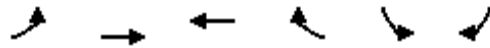


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	137	170	113	172	132	72
Future Volume (vph)	137	170	113	172	132	72
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	16	16	12	14	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	0			25	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.919		0.952	
Flt Protected		0.978			0.969	
Satd. Flow (prot)	0	2024	1628	0	1777	0
Flt Permitted		0.665			0.969	
Satd. Flow (perm)	0	1376	1628	0	1777	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			134		28	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%
Adj. Flow (vph)	193	239	159	242	186	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	432	401	0	287	0
Number of Detectors	1	2	1		4	
Detector Template	Left					
Leading Detector (ft)	20	306	306		41	
Trailing Detector (ft)	0	-5	300		-10	
Detector 1 Position(ft)	0	-5	300		-10	
Detector 1 Size(ft)	20	40	6		6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	
Detector 2 Position(ft)		300			0	
Detector 2 Size(ft)		6			6	
Detector 2 Type		Cl+Ex			Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)		0.0			0.0	
Detector 3 Position(ft)					15	
Detector 3 Size(ft)					6	
Detector 3 Type					Cl+Ex	
Detector 3 Channel						
Detector 3 Extend (s)					0.0	
Detector 4 Position(ft)					35	
Detector 4 Size(ft)					6	
Detector 4 Type					Cl+Ex	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector 4 Channel						
Detector 4 Extend (s)					0.0	
Turn Type	pm+pt	NA	NA		Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6					
Detector Phase	1	6	2		4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0		3.0	
Minimum Split (s)	13.0	16.0	16.0		13.0	
Total Split (s)	13.0	67.0	54.0		23.0	
Total Split (%)	14.4%	74.4%	60.0%		25.6%	
Maximum Green (s)	7.0	61.0	48.0		18.0	
Yellow Time (s)	4.0	4.0	4.0		3.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)		-1.0	-1.0		-1.0	
Total Lost Time (s)		5.0	5.0		4.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.0	5.0	5.0		3.0	
Minimum Gap (s)	2.5	2.5	2.5		3.0	
Time Before Reduce (s)	32.0	32.0	32.0		0.0	
Time To Reduce (s)	16.0	16.0	16.0		0.0	
Recall Mode	None	Max	C-Max		None	
Act Effct Green (s)		63.6	63.6		17.4	
Actuated g/C Ratio		0.71	0.71		0.19	
v/c Ratio		0.44	0.34		0.78	
Control Delay		7.8	4.3		46.7	
Queue Delay		0.0	0.0		0.0	
Total Delay		7.8	4.3		46.7	
LOS		A	A		D	
Approach Delay		7.8	4.3		46.7	
Approach LOS		A	A		D	
Queue Length 50th (ft)		96	49		138	
Queue Length 95th (ft)		106	56		165	
Internal Link Dist (ft)		2013	1686		775	
Turn Bay Length (ft)						
Base Capacity (vph)		971	1189		397	
Starvation Cap Reductn		0	0		0	
Spillback Cap Reductn		0	0		0	
Storage Cap Reductn		0	0		0	
Reduced v/c Ratio		0.44	0.34		0.72	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 8 (9%), Referenced to phase 2:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Lanes, Volumes, Timings 2: Jolly Road & Wentz Road

11/02/2023

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 16.5

Intersection LOS: B

Intersection Capacity Utilization 58.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: Jolly Road & Wentz Road



Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

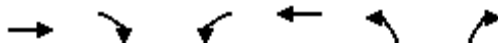
11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	195	201	88	231	228	45
Future Volume (vph)	195	201	88	231	228	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.978	
Flt Protected				0.986	0.960	
Satd. Flow (prot)	1723	1464	0	1724	1755	0
Flt Permitted				0.873	0.960	
Satd. Flow (perm)	1723	1464	0	1527	1755	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		223				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	217	223	98	257	253	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	217	223	0	355	303	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	49.0	49.0	20.0	69.0	21.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	54.4%	54.4%	22.2%	76.7%	23.3%	
Maximum Green (s)	43.0	43.0	14.0	63.0	15.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	Max	None	None	
Act Effect Green (s)	22.0	22.0		42.0	16.0	
Actuated g/C Ratio	0.32	0.32		0.62	0.24	
v/c Ratio	0.39	0.36		0.36	0.74	
Control Delay	20.4	4.6		7.8	36.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	20.4	4.6		7.8	36.8	
LOS	C	A		A	D	
Approach Delay	12.4			7.8	36.8	
Approach LOS	B			A	D	
Queue Length 50th (ft)	69	0		62	117	
Queue Length 95th (ft)	124	43		104	#226	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1114	1026		1480	412	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.19	0.22		0.24	0.74	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 68

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 17.6

Intersection LOS: B

Intersection Capacity Utilization 64.2%

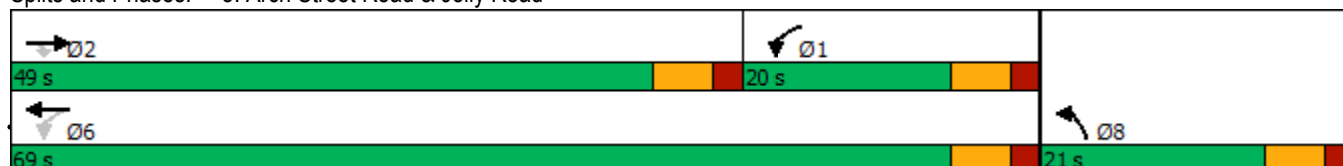
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	452	268	51	535	31	75	209	52	21	195	90
Future Volume (vph)	52	452	268	51	535	31	75	209	52	21	195	90
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.992			0.970				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1693	1800	1632	1785	1846	0	1620	1628	0	1612	1939	1648
Flt Permitted	0.268			0.354			0.625			0.586		
Satd. Flow (perm)	478	1800	1632	665	1846	0	1066	1628	0	994	1939	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					9			35				98
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
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
Heavy Vehicles (%)	2%	1%	1%	0%	1%	0%	0%	1%	4%	0%	0%	0%
Adj. Flow (vph)	57	491	291	55	582	34	82	227	57	23	212	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	491	291	55	616	0	82	284	0	23	212	98
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0		19.0	19.0		19.0	19.0	19.0
Total Split (%)	52.5%	52.5%	52.5%	52.5%	52.5%		47.5%	47.5%		47.5%	47.5%	47.5%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0		13.0	13.0		13.0	13.0	13.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	14.9	15.9	15.9	14.9	15.9		14.0	14.0		14.0	14.0	13.0
Actuated g/C Ratio	0.37	0.40	0.40	0.37	0.40		0.35	0.35		0.35	0.35	0.33
v/c Ratio	0.32	0.68	0.45	0.22	0.83		0.22	0.48		0.07	0.31	0.16
Control Delay	14.9	16.5	11.5	11.4	24.2		11.1	12.1		9.4	11.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	14.9	16.5	11.5	11.4	24.2		11.1	12.1		9.4	11.1	3.8
LOS	B	B	B	B	C		B	B		A	B	A
Approach Delay		14.7			23.1			11.9			8.8	
Approach LOS		B			C			B			A	
Queue Length 50th (ft)	9	85	44	8	113		12	41		3	33	0
Queue Length 95th (ft)	31	#175	91	26	#269		34	89		13	69	21
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	179	722	654	250	745		374	593		348	680	602
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.32	0.68	0.44	0.22	0.83		0.22	0.48		0.07	0.31	0.16

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 39.9

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 15.9

Intersection LOS: B

Intersection Capacity Utilization 74.2%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

					
Ø2			Ø4		
19 s			21 s		
					
Ø6			Ø8		
19 s			21 s		

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	452	268	51	535	31	75	209	52	21	195	90
Future Volume (veh/h)	52	452	268	51	535	31	75	209	52	21	195	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1846	1860	1935	1950	1935	1950	1912	1898	1855	1875	1950	1950
Adj Flow Rate, veh/h	57	491	233	55	582	33	82	227	55	23	212	60
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
Percent Heavy Veh, %	2	1	1	0	1	0	0	1	4	0	0	0
Cap, veh/h	253	744	656	292	725	41	486	516	125	448	682	537
Arrive On Green	0.38	0.40	0.40	0.38	0.40	0.38	0.35	0.35	0.32	0.35	0.35	0.32
Sat Flow, veh/h	797	1860	1640	761	1813	103	1132	1476	358	1100	1950	1652
Grp Volume(v), veh/h	57	491	233	55	0	615	82	0	282	23	212	60
Grp Sat Flow(s),veh/h/ln	797	1860	1640	761	0	1916	1132	0	1833	1100	1950	1652
Q Serve(g_s), s	2.8	8.6	4.0	2.7	0.0	11.4	2.3	0.0	4.8	0.6	3.2	1.0
Cycle Q Clear(g_c), s	14.2	8.6	4.0	11.8	0.0	11.4	5.5	0.0	4.8	4.9	3.2	1.0
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	253	744	656	292	0	766	486	0	642	448	682	537
V/C Ratio(X)	0.23	0.66	0.36	0.19	0.00	0.80	0.17	0.00	0.44	0.05	0.31	0.11
Avail Cap(c_a), veh/h	253	744	656	292	0	766	486	0	642	448	682	537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.8	9.8	8.4	15.7	0.0	10.6	11.5	0.0	10.1	11.7	9.5	9.5
Incr Delay (d2), s/veh	1.0	2.9	0.7	0.7	0.0	7.0	0.7	0.0	2.2	0.2	1.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	5.3	2.0	0.8	0.0	8.8	1.0	0.0	3.2	0.3	2.2	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.7	12.7	9.1	16.3	0.0	17.6	12.2	0.0	12.2	11.9	10.7	9.9
LnGrp LOS	B	B	A	B	A	B	B	A	B	B	B	A
Approach Vol, veh/h	781			670			364			295		
Approach Delay, s/veh	12.1			17.5			12.2			10.6		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	19.0			21.0			19.0			21.0		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	13.0			15.0			13.0			15.0		
Max Q Clear Time (g_c+I1), s	8.0			13.8			7.4			16.2		
Green Ext Time (p_c), s	1.2			0.7			1.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	13.6											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	300	11	39	255	58	13	12	32	37	16	17
Future Volume (vph)	32	300	11	39	255	58	13	12	32	37	16	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.978			0.923			0.967	
Flt Protected		0.995			0.994			0.989			0.974	
Satd. Flow (prot)	0	1848	0	0	1799	0	0	1810	0	0	1739	0
Flt Permitted		0.995			0.994			0.989			0.974	
Satd. Flow (perm)	0	1848	0	0	1799	0	0	1810	0	0	1739	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	38	353	13	46	300	68	15	14	38	44	19	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	404	0	0	414	0	0	67	0	0	83	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	41.2%				ICU Level of Service A							
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh	12.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	32	300	11	39	255	58	13	12	32	37	16	17
Future Vol, veh/h	32	300	11	39	255	58	13	12	32	37	16	17
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	38	353	13	46	300	68	15	14	38	44	19	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

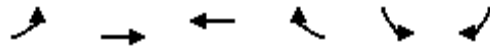
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.4	13.3	9.4	9.9
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	9%	11%	53%
Vol Thru, %	21%	87%	72%	23%
Vol Right, %	56%	3%	16%	24%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	57	343	352	70
LT Vol	13	32	39	37
Through Vol	12	300	255	16
RT Vol	32	11	58	17
Lane Flow Rate	67	404	414	82
Geometry Grp	1	1	1	1
Degree of Util (X)	0.107	0.537	0.542	0.136
Departure Headway (Hd)	5.727	4.787	4.708	5.938
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	629	742	758	607
Service Time	3.732	2.882	2.8	3.942
HCM Lane V/C Ratio	0.107	0.544	0.546	0.135
HCM Control Delay	9.4	13.4	13.3	9.9
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.4	3.2	3.3	0.5

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	0	0	0	4	0
Future Volume (vph)	4	0	0	0	4	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected		0.950			0.950	
Satd. Flow (prot)	0	1814	0	0	1916	0
Flt Permitted		0.950			0.950	
Satd. Flow (perm)	0	1814	0	0	1916	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1091	171		70	
Travel Time (s)		24.8	3.9		1.6	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	6	0	0	0	6	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	6	0	0	6	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 4 0 0 0 4 0

Future Vol, veh/h 4 0 0 0 4 0

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - -1 0 - 1 -

Peak Hour Factor 67 67 67 67 67 67

Heavy Vehicles, % 0 0 0 0 0 0

Mvmt Flow 6 0 0 0 6 0

Major/Minor Major1 Minor2

Conflicting Flow All 0 0 12 0

Stage 1 - - 0 -

Stage 2 - - 12 -

Critical Hdwy 4.1 - 6.6 6.3

Critical Hdwy Stg 1 - - - -

Critical Hdwy Stg 2 - - 5.6 -

Follow-up Hdwy 2.2 - 3.5 3.3

Pot Cap-1 Maneuver - - 1012 -

Stage 1 - - - -

Stage 2 - - 1015 -

Platoon blocked, % -

Mov Cap-1 Maneuver - - 1012 -

Mov Cap-2 Maneuver - - 1012 -

Stage 1 - - - -

Stage 2 - - 1015 -

Approach EB SB

HCM Control Delay, s

HCM LOS -

Minor Lane/Major Mvmt EBL EBT SBLn1

Capacity (veh/h) - - -

HCM Lane V/C Ratio - - -

HCM Control Delay (s) - - -

HCM Lane LOS - - -

HCM 95th %tile Q(veh) - - -

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	156	231	96	508	468	229
Future Volume (vph)	156	231	96	508	468	229
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.919					0.850
Flt Protected	0.980		0.950			
Satd. Flow (prot)	1587	0	1661	1714	1681	1558
Flt Permitted	0.980		0.379			
Satd. Flow (perm)	1587	0	663	1714	1681	1558
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	64					244
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	2%	3%	1%
Adj. Flow (vph)	166	246	102	540	498	244
Shared Lane Traffic (%)						
Lane Group Flow (vph)	412	0	102	540	498	244
Number of Detectors	1		1	1	1	0
Detector Template						
Leading Detector (ft)	35		35	356	356	0
Trailing Detector (ft)	-5		-5	350	350	0
Detector 1 Position(ft)	-5		-5	350	350	-5
Detector 1 Size(ft)	40		40	6	6	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	21.0		13.0	79.0	66.0	21.0
Total Split (%)	21.0%		13.0%	79.0%	66.0%	21.0%
Maximum Green (s)	16.0		7.0	73.0	60.0	16.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

EX SAT Weekend Midday Peak Hour 2:04 pm 10/18/2023

Synchro 11 Report
Page 18

Lanes, Volumes, Timings

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

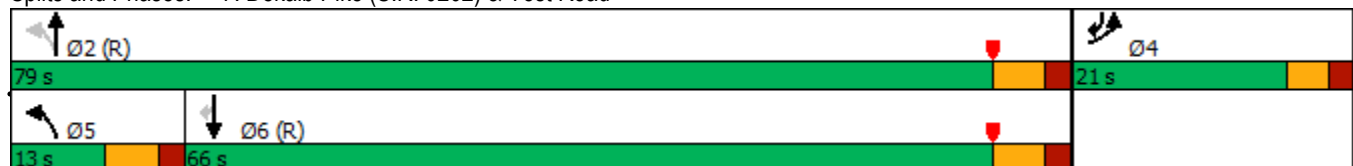


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	6.0	6.0	3.0
Minimum Gap (s)	3.0		3.0	3.9	3.9	3.0
Time Before Reduce (s)	0.0		0.0	37.0	37.0	0.0
Time To Reduce (s)	0.0		0.0	15.0	15.0	0.0
Recall Mode	None		None	C-Min	C-Min	None
Walk Time (s)				7.0	7.0	
Flash Dont Walk (s)				18.0	18.0	
Pedestrian Calls (#/hr)				0	0	
Act Effect Green (s)	17.0		74.0	74.0	63.7	86.5
Actuated g/C Ratio	0.17		0.74	0.74	0.64	0.86
v/c Ratio	1.28		0.18	0.43	0.47	0.18
Control Delay	178.4		4.4	6.1	11.9	0.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	178.4		4.4	6.1	11.9	0.5
LOS	F		A	A	B	A
Approach Delay	178.4			5.9	8.2	
Approach LOS	F			A	A	
Queue Length 50th (ft)	~300		15	110	162	0
Queue Length 95th (ft)	#489		28	162	241	10
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	322		570	1268	1070	1380
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	1.28		0.18	0.43	0.47	0.18

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 99 (99%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.28
 Intersection Signal Delay: 46.4
 Intersection LOS: D
 Intersection Capacity Utilization 67.4%
 ICU Level of Service C
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	156	231	96	508	468	229
Future Volume (veh/h)	156	231	96	508	468	229
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1750	1805	1837	1809	1752	1852
Adj Flow Rate, veh/h	166	244	102	540	498	235
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	0	2	3	1
Cap, veh/h	107	157	510	1339	1128	1026
Arrive On Green	0.17	0.16	0.05	0.74	0.64	0.64
Sat Flow, veh/h	627	922	1750	1809	1752	1569
Grp Volume(v), veh/h	411	0	102	540	498	235
Grp Sat Flow(s),veh/h/ln	1553	0	1750	1809	1752	1569
Q Serve(g_s), s	17.0	0.0	1.8	11.1	14.1	6.1
Cycle Q Clear(g_c), s	17.0	0.0	1.8	11.1	14.1	6.1
Prop In Lane	0.40	0.59	1.00			1.00
Lane Grp Cap(c), veh/h	264	0	510	1339	1128	1026
V/C Ratio(X)	1.56	0.00	0.20	0.40	0.44	0.23
Avail Cap(c_a), veh/h	264	0	569	1339	1128	1026
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.93	0.93
Uniform Delay (d), s/veh	41.8	0.0	6.0	4.8	8.9	7.1
Incr Delay (d2), s/veh	268.6	0.0	0.2	0.9	1.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	41.2	0.0	1.0	6.0	8.4	3.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	310.3	0.0	6.2	5.7	10.0	7.5
LnGrp LOS	F	A	A	A	B	A
Approach Vol, veh/h	411			642	733	
Approach Delay, s/veh	310.3			5.8	9.2	
Approach LOS	F			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	79.0			21.0	9.6	69.4
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	73.0			16.0	7.0	60.0
Max Q Clear Time (g_c+I1), s	13.1			19.0	3.8	16.1
Green Ext Time (p_c), s	26.3			0.0	0.1	15.9

Intersection Summary

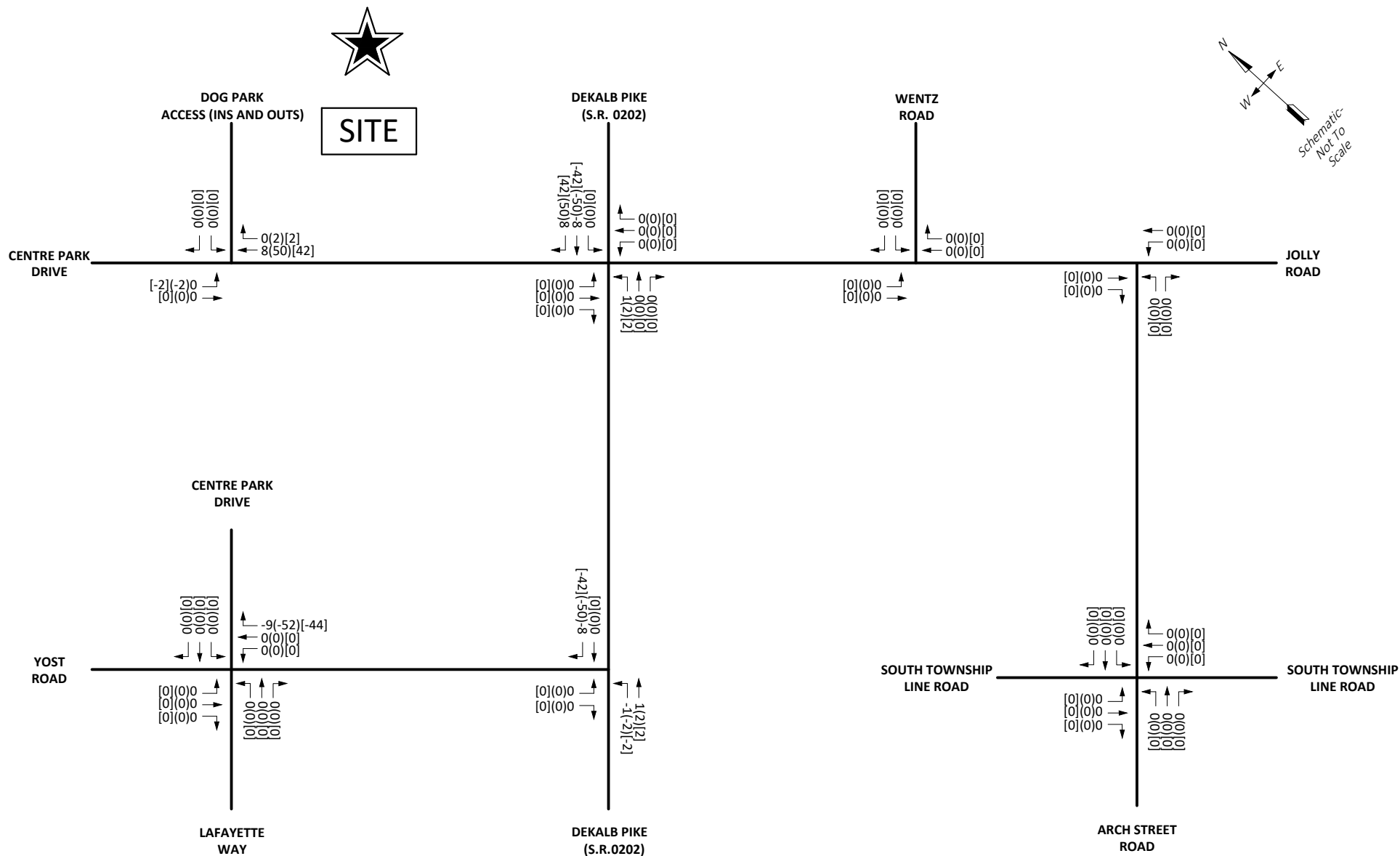
HCM 6th Ctrl Delay	77.3
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Attachment D

Centre Park Drive Redistributions



Attachment E

2025 Future Capacity/Levels-of-Service Analysis Worksheets Without Development

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

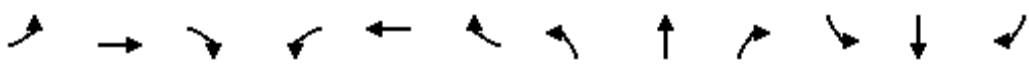
11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	11	1	129	0	76	1	458	193	182	525	8
Future Volume (vph)	7	11	1	129	0	76	1	458	193	182	525	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.988			0.883				0.850		0.998	
Flt Protected	0.950			0.950	0.989		0.950			0.950		
Satd. Flow (prot)	1628	1552	0	1548	1552	0	1636	3117	1394	1605	3086	0
Flt Permitted	0.950			0.950	0.989		0.442			0.425		
Satd. Flow (perm)	1628	1552	0	1548	1552	0	761	3117	1394	718	3086	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									203		1	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	18%	0%	6%	0%	3%	0%	5%	5%	3%	7%	0%
Adj. Flow (vph)	7	12	1	136	0	80	1	482	203	192	553	8
Shared Lane Traffic (%)				17%								
Lane Group Flow (vph)	7	13	0	113	103	0	1	482	203	192	561	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		31.0	31.0	13.0	14.0	31.0	
Total Split (s)	33.0	33.0		30.0	30.0		43.0	43.0	30.0	14.0	57.0	
Total Split (%)	27.5%	27.5%		25.0%	25.0%		35.8%	35.8%	25.0%	11.7%	47.5%	
Maximum Green (s)	27.0	27.0		23.0	23.0		36.0	36.0	23.0	7.0	50.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effct Green (s)	7.7	7.7		15.3	15.3		73.2	73.2	94.5	87.2	87.2	
Actuated g/C Ratio	0.06	0.06		0.13	0.13		0.61	0.61	0.79	0.73	0.73	
v/c Ratio	0.07	0.13		0.57	0.52		0.00	0.25	0.18	0.33	0.25	
Control Delay	53.4	55.2		59.9	57.4		14.0	12.5	1.0	8.6	7.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	53.4	55.2		59.9	57.4		14.0	12.5	1.0	8.6	7.3	
LOS	D	E		E	E		B	B	A	A	A	
Approach Delay		54.6			58.7			9.1			7.6	
Approach LOS		D			E			A			A	
Queue Length 50th (ft)	5	10		88	80		0	68	0	32	53	
Queue Length 95th (ft)	21	31		144	132		m3	164	33	101	138	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	362		309	310		464	1900	1227	580	2241	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.02	0.04		0.37	0.33		0.00	0.25	0.17	0.33	0.25	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 78 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 15.4

Intersection LOS: B

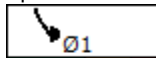
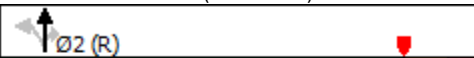
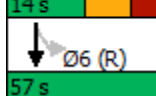
Intersection Capacity Utilization 56.0%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

 14 s	 43 s	 30 s	 33 s
 57 s			

HCM 6th Signalized Intersection Summary

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	11	1	129	0	76	1	458	193	182	525	8
Future Volume (veh/h)	7	11	1	129	0	76	1	458	193	182	525	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1557	1820	1789	1950	1905	1778	1707	1707	1758	1702	1800
Adj Flow Rate, veh/h	7	12	1	86	69	37	1	482	184	192	553	8
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
Percent Heavy Veh, %	0	18	0	6	0	3	0	5	5	3	7	0
Cap, veh/h	34	29	2	145	102	54	574	2069	1046	585	2456	36
Arrive On Green	0.02	0.02	0.01	0.09	0.09	0.09	0.64	0.64	0.64	0.06	0.75	0.74
Sat Flow, veh/h	1666	1418	118	1704	1194	640	807	3244	1447	1674	3263	47
Grp Volume(v), veh/h	7	0	13	86	0	106	1	482	184	192	274	287
Grp Sat Flow(s),veh/h/ln	1666	0	1536	1704	0	1834	807	1622	1447	1674	1617	1693
Q Serve(g_s), s	0.5	0.0	1.0	5.8	0.0	6.7	0.1	7.6	4.8	4.3	6.1	6.1
Cycle Q Clear(g_c), s	0.5	0.0	1.0	5.8	0.0	6.7	0.1	7.6	4.8	4.3	6.1	6.1
Prop In Lane	1.00		0.08	1.00		0.35	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	34	0	32	145	0	156	574	2069	1046	585	1217	1274
V/C Ratio(X)	0.20	0.00	0.41	0.59	0.00	0.68	0.00	0.23	0.18	0.33	0.23	0.23
Avail Cap(c_a), veh/h	389	0	358	341	0	367	574	2069	1046	587	1217	1274
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.98	0.00	0.98	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.8	0.0	58.1	52.9	0.0	53.3	7.9	9.3	5.3	5.8	4.4	4.4
Incr Delay (d2), s/veh	2.9	0.0	8.3	3.8	0.0	5.0	0.0	0.3	0.4	0.3	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.0	0.8	4.7	0.0	5.9	0.0	4.6	3.5	2.4	3.2	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.7	0.0	66.4	56.7	0.0	58.3	7.9	9.5	5.6	6.1	4.8	4.8
LnGrp LOS	E	A	E	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h	20			192			667			753		
Approach Delay, s/veh	64.4			57.6			8.4			5.2		
Approach LOS	E			E			A			A		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	13.8	82.5		16.2		96.3		7.5				
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		6.0				
Max Green Setting (Gmax), s	7.0	36.0		23.0		50.0		27.0				
Max Q Clear Time (g_c+I1), s	6.8	10.1		8.7		8.6		3.0				
Green Ext Time (p_c), s	0.0	2.6		0.5		1.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay 13.4

HCM 6th LOS B

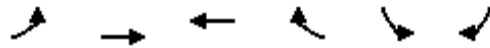
Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

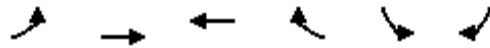


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	106	345	124	132	156	83
Future Volume (vph)	106	345	124	132	156	83
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.953	
Flt Protected	0.950				0.968	
Satd. Flow (prot)	1550	1842	1641	1435	1736	0
Flt Permitted	0.615				0.968	
Satd. Flow (perm)	1004	1842	1641	1435	1736	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				139	27	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	3%	5%	2%	2%	5%
Adj. Flow (vph)	112	363	131	139	164	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	112	363	131	139	251	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	13.0	67.0	54.0	54.0	23.0	
Total Split (%)	14.4%	74.4%	60.0%	60.0%	25.6%	
Maximum Green (s)	7.0	61.0	48.0	48.0	18.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	3.0	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	0.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	0.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	64.4	64.4	54.1	54.1	16.6	
Actuated g/C Ratio	0.72	0.72	0.60	0.60	0.18	
v/c Ratio	0.15	0.28	0.13	0.15	0.74	
Control Delay	4.9	5.5	9.9	2.3	43.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.9	5.5	9.9	2.3	43.9	
LOS	A	A	A	A	D	
Approach Delay		5.4	6.0		43.9	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 61 (68%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 15.2

Intersection LOS: B

Intersection Capacity Utilization 41.1%

ICU Level of Service A

Analysis Period (min) 15

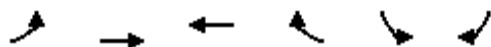
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	106	345	124	132	156	83
Future Volume (veh/h)	106	345	124	132	156	83
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1878	1983	1707	1750	1920	1876
Adj Flow Rate, veh/h	112	363	131	104	164	63
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	3	5	2	2	5
Cap, veh/h	861	1457	1064	924	210	81
Arrive On Green	0.06	0.73	0.62	0.62	0.17	0.17
Sat Flow, veh/h	1789	1983	1707	1483	1272	489
Grp Volume(v), veh/h	112	363	131	104	228	0
Grp Sat Flow(s),veh/h/ln	1789	1983	1707	1483	1768	0
Q Serve(g_s), s	1.8	5.3	2.8	2.6	11.1	0.0
Cycle Q Clear(g_c), s	1.8	5.3	2.8	2.6	11.1	0.0
Prop In Lane	1.00			1.00	0.72	0.28
Lane Grp Cap(c), veh/h	861	1457	1064	924	292	0
V/C Ratio(X)	0.13	0.25	0.12	0.11	0.78	0.00
Avail Cap(c_a), veh/h	919	1457	1064	924	373	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.90	0.90	1.00	0.00
Uniform Delay (d), s/veh	4.3	3.9	6.9	6.9	36.0	0.0
Incr Delay (d2), s/veh	0.1	0.4	0.2	0.2	7.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	3.1	1.7	1.4	9.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.4	4.3	7.1	7.1	43.9	0.0
LnGrp LOS	A	A	A	A	D	A
Approach Vol, veh/h		475	235		228	
Approach Delay, s/veh		4.3	7.1		43.9	
Approach LOS		A	A		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	10.1	61.1		18.9		71.1
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	7.0	48.0		18.0		61.0
Max Q Clear Time (g_c+I1), s	4.3	5.3		13.6		7.8
Green Ext Time (p_c), s	0.1	2.0		0.3		3.3

Intersection Summary

HCM 6th Ctrl Delay	14.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	277	241	49	78	176	101
Future Volume (vph)	277	241	49	78	176	101
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.951	
Flt Protected				0.981	0.969	
Satd. Flow (prot)	1689	1422	0	1630	1678	0
Flt Permitted				0.817	0.969	
Satd. Flow (perm)	1689	1422	0	1358	1678	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		248				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	4%	6%	3%	2%
Adj. Flow (vph)	286	248	51	80	181	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	286	248	0	131	285	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	30.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	53.3%	53.3%	18.7%	72.0%	28.0%	
Maximum Green (s)	51.0	51.0	14.0	71.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	5.8	3.0	
Minimum Gap (s)	4.1	4.1	3.0	4.1	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	32.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	15.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	22.1	22.1		22.1	14.4	
Actuated g/C Ratio	0.48	0.48		0.48	0.31	
v/c Ratio	0.36	0.31		0.20	0.55	
Control Delay	10.1	2.8		9.1	17.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	10.1	2.8		9.1	17.7	
LOS	B	A		A	B	
Approach Delay	6.7			9.1	17.7	
Approach LOS	A			A	B	
Queue Length 50th (ft)	44	0		18	62	
Queue Length 95th (ft)	104	31		52	117	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1689	1422		1358	905	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.17	0.17		0.10	0.31	

Intersection Summary

Area Type: Other

Cycle Length: 107

Actuated Cycle Length: 46.5

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 10.3

Intersection LOS: B

Intersection Capacity Utilization 64.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	532	150	93	329	11	45	186	90	13	266	25
Future Volume (vph)	59	532	150	93	329	11	45	186	90	13	266	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.995			0.951				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1645	1748	1616	1733	1811	0	1486	1555	0	1493	1883	1648
Flt Permitted	0.547			0.355			0.574			0.555		
Satd. Flow (perm)	947	1748	1616	647	1811	0	898	1555	0	872	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					5			60				82
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
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
Heavy Vehicles (%)	5%	4%	2%	3%	3%	9%	9%	3%	7%	8%	3%	0%
Adj. Flow (vph)	61	554	156	97	343	11	47	194	94	14	277	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	554	156	97	354	0	47	288	0	14	277	26
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	2	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0		16.0	16.0		16.0	16.0	16.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		10.0	10.0		10.0	10.0	10.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	Max	Max	Max	Max	Max		None	None		None	None	None
Act Effect Green (s)	19.0	19.0	19.0	19.0	19.0		10.8	10.8		10.8	10.8	10.8
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.48		0.27	0.27		0.27	0.27	0.27
v/c Ratio	0.13	0.66	0.20	0.31	0.41		0.19	0.62		0.06	0.54	0.05
Control Delay	6.9	13.0	7.0	10.0	8.5		13.6	17.3		11.5	17.1	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	6.9	13.0	7.0	10.0	8.5		13.6	17.3		11.5	17.1	0.6
LOS	A	B	A	B	A		B	B		B	B	A
Approach Delay		11.3			8.9			16.8			15.5	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	7	85	18	12	45		8	43		2	52	0
Queue Length 95th (ft)	21	164	41	36	89		26	#120		11	104	2
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	452	835	771	309	867		247	473		240	520	514
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.13	0.66	0.20	0.31	0.41		0.19	0.61		0.06	0.53	0.05

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 39.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 12.4

Intersection LOS: B

Intersection Capacity Utilization 72.8%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

 Ø2	 Ø4
24 s	16 s
 Ø6	 Ø8
24 s	16 s

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	532	150	93	329	11	45	186	90	13	266	25
Future Volume (veh/h)	59	532	150	93	329	11	45	186	90	13	266	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1803	1818	1920	1905	1905	1816	1784	1869	1812	1761	1905	1950
Adj Flow Rate, veh/h	61	554	111	97	343	11	47	194	94	14	277	9
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
Percent Heavy Veh, %	5	4	2	3	3	9	9	3	7	8	3	0
Cap, veh/h	545	879	787	376	888	28	325	311	151	316	498	432
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.46	0.26	0.26	0.24	0.26	0.26	0.26
Sat Flow, veh/h	990	1818	1627	785	1836	59	1043	1189	576	1027	1905	1652
Grp Volume(v), veh/h	61	554	111	97	0	354	47	0	288	14	277	9
Grp Sat Flow(s),veh/h/ln	990	1818	1627	785	0	1895	1043	0	1765	1027	1905	1652
Q Serve(g_s), s	1.6	8.9	1.5	4.2	0.0	4.7	1.6	0.0	5.7	0.5	4.9	0.2
Cycle Q Clear(g_c), s	6.3	8.9	1.5	13.6	0.0	4.7	6.5	0.0	5.7	5.7	4.9	0.2
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.33	1.00		1.00
Lane Grp Cap(c), veh/h	545	879	787	376	0	917	325	0	462	316	498	432
V/C Ratio(X)	0.11	0.63	0.14	0.26	0.00	0.39	0.14	0.00	0.62	0.04	0.56	0.02
Avail Cap(c_a), veh/h	545	879	787	376	0	917	344	0	495	336	534	463
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.4	7.5	5.6	12.8	0.0	6.4	15.4	0.0	13.0	15.1	12.5	10.8
Incr Delay (d2), s/veh	0.4	3.4	0.4	1.7	0.0	1.2	0.4	0.0	3.5	0.1	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	5.1	0.7	1.4	0.0	2.9	0.6	0.0	3.9	0.2	3.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.9	10.9	6.0	14.4	0.0	7.7	15.8	0.0	16.4	15.2	14.7	10.8
LnGrp LOS	A	B	A	B	A	A	B	A	B	B	B	B
Approach Vol, veh/h	726				451				335			
Approach Delay, s/veh	10.0				9.1				16.3			
Approach LOS	B				A				B			
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	24.0			15.3			24.0			15.3		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	18.0			10.0			18.0			10.0		
Max Q Clear Time (g_c+I1), s	11.4			9.0			15.6			8.2		
Green Ext Time (p_c), s	3.1			0.2			0.9			0.4		
Intersection Summary												
HCM 6th Ctrl Delay	11.7											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	261	13	30	137	4	16	4	52	4	4	6
Future Volume (vph)	0	261	13	30	137	4	16	4	52	4	4	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.997			0.903			0.940	
Flt Protected					0.991			0.989			0.986	
Satd. Flow (prot)	0	1767	0	0	1728	0	0	1747	0	0	1711	0
Flt Permitted					0.991			0.989			0.986	
Satd. Flow (perm)	0	1767	0	0	1728	0	0	1747	0	0	1711	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		19.9			29.5			12.1			26.9	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles (%)	0%	6%	0%	10%	6%	0%	6%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	353	18	41	185	5	22	5	70	5	5	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	371	0	0	231	0	0	97	0	0	18	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	38.9%						ICU Level of Service A					
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh 10.6
Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	261	13	30	137	4	16	4	52	4	4	6
Future Vol, veh/h	0	261	13	30	137	4	16	4	52	4	4	6
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	0	6	0	10	6	0	6	0	0	0	0	0
Mvmt Flow	0	353	18	41	185	5	22	5	70	5	5	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

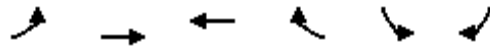
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.5	10	8.8	8.4
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	0%	18%	29%
Vol Thru, %	6%	95%	80%	29%
Vol Right, %	72%	5%	2%	43%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	274	171	14
LT Vol	16	0	30	4
Through Vol	4	261	137	4
RT Vol	52	13	4	6
Lane Flow Rate	97	370	231	19
Geometry Grp	1	1	1	1
Degree of Util (X)	0.135	0.466	0.307	0.027
Departure Headway (Hd)	5.005	4.531	4.788	5.221
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	713	792	749	681
Service Time	3.061	2.567	2.83	3.29
HCM Lane V/C Ratio	0.136	0.467	0.308	0.028
HCM Control Delay	8.8	11.5	10	8.4
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	0.5	2.5	1.3	0.1

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	5	8	0	0	1
Future Volume (vph)	0	5	8	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected						
Satd. Flow (prot)	0	1909	1900	0	1744	0
Flt Permitted						
Satd. Flow (perm)	0	1909	1900	0	1744	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		1091	171		70	
Travel Time (s)		29.8	4.7		1.9	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	7	11	0	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	7	11	0	1	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	8	0	0	1
Future Vol, veh/h	0	5	8	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	1	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	7	11	0	0	1
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	11	0	-	0	18	11
Stage 1	-	-	-	-	11	-
Stage 2	-	-	-	-	7	-
Critical Hdwy	4.1	-	-	-	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1621	-	-	-	1004	1076
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1021	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1621	-	-	-	1004	1076
Mov Cap-2 Maneuver	-	-	-	-	1004	-
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1021	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		8.4		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1621	-	-	-	1076	
HCM Lane V/C Ratio	-	-	-	-	0.001	
HCM Control Delay (s)	0	-	-	-	8.4	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (vph)	53	40	27	456	417	60
Future Volume (vph)	53	40	27	456	417	60
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.935					0.850
Flt Protected	0.972		0.950			
Satd. Flow (prot)	3057	0	1661	3164	3163	1542
Flt Permitted	0.972		0.478			
Satd. Flow (perm)	3057	0	836	3164	3163	1542
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	41					61
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	0%	0%	5%	4%	2%
Adj. Flow (vph)	54	41	28	465	426	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	28	465	426	61
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	8.8		102.2	102.2	95.0	110.3
Actuated g/C Ratio	0.07		0.85	0.85	0.79	0.92
v/c Ratio	0.36		0.04	0.17	0.17	0.04
Control Delay	34.9		1.6	1.8	3.4	1.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	34.9		1.6	1.8	3.4	1.1
LOS	C		A	A	A	A
Approach Delay	34.9			1.8	3.1	
Approach LOS	C			A	A	
Queue Length 50th (ft)	20		2	23	47	2
Queue Length 95th (ft)	47		7	38	61	7
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	870		767	2695	2502	1542
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.11		0.04	0.17	0.17	0.04

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 90 (75%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.36

Intersection Signal Delay: 5.3

Intersection LOS: A

Intersection Capacity Utilization 30.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		W	W	W	W
Traffic Volume (veh/h)	53	40	27	456	417	60
Future Volume (veh/h)	53	40	27	456	417	60
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1694	1820	1837	1766	1738	1837
Adj Flow Rate, veh/h	48	48	28	465	426	61
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	4	0	0	5	4	2
Cap, veh/h	94	77	790	2908	2647	1339
Arrive On Green	0.06	0.05	0.02	0.87	0.80	0.80
Sat Flow, veh/h	1613	1542	1750	3444	3390	1557
Grp Volume(v), veh/h	48	48	28	465	426	61
Grp Sat Flow(s),veh/h/ln	1613	1542	1750	1678	1651	1557
Q Serve(g_s), s	3.5	3.7	0.3	2.6	3.5	0.7
Cycle Q Clear(g_c), s	3.5	3.7	0.3	2.6	3.5	0.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	94	77	790	2908	2647	1339
V/C Ratio(X)	0.51	0.62	0.04	0.16	0.16	0.05
Avail Cap(c_a), veh/h	444	411	866	2908	2647	1339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.96	0.96
Uniform Delay (d), s/veh	54.8	55.9	1.6	1.2	2.7	1.2
Incr Delay (d2), s/veh	4.2	7.9	0.0	0.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	5.9	0.1	0.6	1.5	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	59.0	63.8	1.6	1.4	2.8	1.3
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	96			493	487	
Approach Delay, s/veh	61.4			1.4	2.6	
Approach LOS	E			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		109.0		11.0	7.8	101.2
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0
Max Green Setting (Gmax), s		77.0		32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s		5.1		6.0	2.8	6.0
Green Ext Time (p_c), s		1.9		0.3	0.0	1.9

Intersection Summary

HCM 6th Ctrl Delay	7.3
HCM 6th LOS	A

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

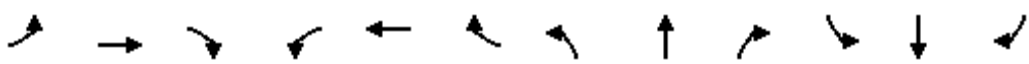
11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	20	5	285	0	106	2	449	167	55	228	50
Future Volume (vph)	12	20	5	285	0	106	2	449	167	55	228	50
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.971			0.916				0.850		0.973	
Flt Protected	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (prot)	1628	1779	0	1624	1627	0	1636	3178	1464	1653	3165	0
Flt Permitted	0.950			0.950	0.979		0.571			0.407		
Satd. Flow (perm)	1628	1779	0	1624	1627	0	984	3178	1464	708	3165	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									178		26	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	3%	0%	0%	2%	0%
Adj. Flow (vph)	13	21	5	303	0	113	2	478	178	59	243	53
Shared Lane Traffic (%)				29%								
Lane Group Flow (vph)	13	26	0	215	201	0	2	478	178	59	296	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	14.0	14.0		13.0	13.0		22.0	22.0	13.0	13.0	22.0	
Total Split (s)	33.0	33.0		33.0	33.0		40.0	40.0	33.0	14.0	54.0	
Total Split (%)	27.5%	27.5%		27.5%	27.5%		33.3%	33.3%	27.5%	11.7%	45.0%	
Maximum Green (s)	27.0	27.0		26.0	26.0		33.0	33.0	26.0	7.0	47.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0	5.0	3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effect Green (s)	10.4	10.4		23.6	23.6		63.6	63.6	94.3	74.6	74.6	
Actuated g/C Ratio	0.09	0.09		0.20	0.20		0.53	0.53	0.79	0.62	0.62	
v/c Ratio	0.09	0.17		0.67	0.63		0.00	0.28	0.15	0.12	0.15	
Control Delay	51.1	52.7		55.2	52.9		24.0	21.7	1.3	12.7	10.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	51.1	52.7		55.2	52.9		24.0	21.7	1.3	12.7	10.7	
LOS	D	D		E	D		C	C	A	B	B	
Approach Delay		52.2			54.1			16.2			11.0	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	9	19		160	148		1	135	0	20	50	
Queue Length 95th (ft)	30	48		245	230		m5	192	24	43	80	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	415		365	366		521	1683	1203	503	1978	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.03	0.06		0.59	0.55		0.00	0.28	0.15	0.12	0.15	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 107 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 26.6

Intersection LOS: C

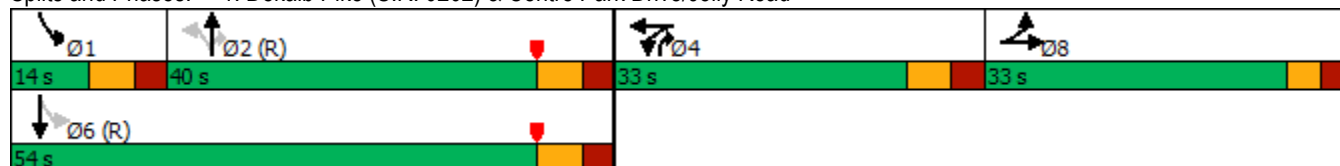
Intersection Capacity Utilization 58.4%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road



HCM 6th Signalized Intersection Summary

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

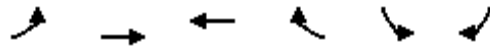
11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	20	5	285	0	106	2	449	167	55	228	50
Future Volume (veh/h)	12	20	5	285	0	106	2	449	167	55	228	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1820	1820	1860	1950	1920	1778	1736	1778	1800	1772	1800
Adj Flow Rate, veh/h	13	21	5	352	0	0	2	478	127	59	243	53
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	1	0	2	0	3	0	0	2	0
Cap, veh/h	53	45	11	504	277	0	675	1969	1114	538	1887	404
Arrive On Green	0.03	0.03	0.02	0.14	0.00	0.00	0.60	0.60	0.60	0.04	0.68	0.68
Sat Flow, veh/h	1666	1421	338	3543	1950	0	1030	3298	1507	1714	2758	591
Grp Volume(v), veh/h	13	0	26	352	0	0	2	478	127	59	147	149
Grp Sat Flow(s),veh/h/ln	1666	0	1759	1772	1950	0	1030	1649	1507	1714	1683	1666
Q Serve(g_s), s	0.9	0.0	1.7	11.4	0.0	0.0	0.1	8.2	2.9	1.5	3.6	3.8
Cycle Q Clear(g_c), s	0.9	0.0	1.7	11.4	0.0	0.0	0.1	8.2	2.9	1.5	3.6	3.8
Prop In Lane	1.00		0.19	1.00		0.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	53	0	56	504	277	0	675	1969	1114	538	1152	1140
V/C Ratio(X)	0.24	0.00	0.46	0.70	0.00	0.00	0.00	0.24	0.11	0.11	0.13	0.13
Avail Cap(c_a), veh/h	389	0	410	797	439	0	675	1969	1114	589	1152	1140
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.90	0.00	0.00	0.96	0.96	0.96	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.7	0.0	57.2	49.0	0.0	0.0	9.8	11.4	4.5	7.9	6.6	6.6
Incr Delay (d2), s/veh	5.0	0.0	12.1	3.4	0.0	0.0	0.0	0.3	0.2	0.1	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	0.0	1.7	8.8	0.0	0.0	0.0	5.2	2.6	0.9	2.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.6	0.0	69.2	52.4	0.0	0.0	9.8	11.7	4.7	8.0	6.8	6.9
LnGrp LOS	E	A	E	D	A	A	A	B	A	A	A	A
Approach Vol, veh/h	39			352			607			355		
Approach Delay, s/veh	66.7			52.4			10.2			7.0		
Approach LOS	E			D			B			A		
Timer - Assigned Phs	1	2	4			6	8					
Phs Duration (G+Y+Rc), s	10.4	77.7	23.1			88.1	8.8					
Change Period (Y+Rc), s	7.0	7.0	7.0			7.0	6.0					
Max Green Setting (Gmax), s	7.0	33.0	26.0			47.0	27.0					
Max Q Clear Time (g_c+I1), s	4.0	10.7	13.9			6.1	3.7					
Green Ext Time (p_c), s	0.0	2.3	2.2			2.4	0.2					
Intersection Summary												
HCM 6th Ctrl Delay	22.0											
HCM 6th LOS	C											

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023

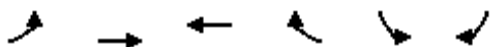


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	153	117	289	238	197	147
Future Volume (vph)	153	117	289	238	197	147
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.942	
Flt Protected	0.950				0.972	
Satd. Flow (prot)	1612	1897	1706	1435	1765	0
Flt Permitted	0.486				0.972	
Satd. Flow (perm)	825	1897	1706	1435	1765	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				245	36	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	1%	2%	1%	0%
Adj. Flow (vph)	158	121	298	245	203	152
Shared Lane Traffic (%)						
Lane Group Flow (vph)	158	121	298	245	355	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	26.0	71.0	45.0	45.0	29.0	
Total Split (%)	26.0%	71.0%	45.0%	45.0%	29.0%	
Maximum Green (s)	20.0	65.0	39.0	39.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	3.0	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	0.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	0.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	68.3	68.3	53.1	53.1	22.7	
Actuated g/C Ratio	0.68	0.68	0.53	0.53	0.23	
v/c Ratio	0.25	0.09	0.33	0.28	0.83	
Control Delay	7.1	6.1	15.7	2.8	49.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.1	6.1	15.7	2.8	49.8	
LOS	A	A	B	A	D	
Approach Delay		6.6	9.9		49.8	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 8 (8%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 21.2

Intersection LOS: C

Intersection Capacity Utilization 57.7%

ICU Level of Service B

Analysis Period (min) 15

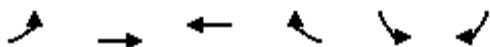
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	153	117	289	238	197	147
Future Volume (veh/h)	153	117	289	238	197	147
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1935	2027	1764	1750	1935	1950
Adj Flow Rate, veh/h	158	121	298	181	203	126
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	0	1	2	1	0
Cap, veh/h	658	1400	1007	847	237	147
Arrive On Green	0.07	0.69	0.57	0.57	0.22	0.22
Sat Flow, veh/h	1843	2027	1764	1483	1082	672
Grp Volume(v), veh/h	158	121	298	181	330	0
Grp Sat Flow(s),veh/h/ln	1843	2027	1764	1483	1760	0
Q Serve(g_s), s	3.1	2.0	8.7	6.0	18.0	0.0
Cycle Q Clear(g_c), s	3.1	2.0	8.7	6.0	18.0	0.0
Prop In Lane	1.00			1.00	0.62	0.38
Lane Grp Cap(c), veh/h	658	1400	1007	847	386	0
V/C Ratio(X)	0.24	0.09	0.30	0.21	0.86	0.00
Avail Cap(c_a), veh/h	917	1400	1007	847	440	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.67	0.67	1.00	0.00
Uniform Delay (d), s/veh	6.9	5.1	11.1	10.5	37.5	0.0
Incr Delay (d2), s/veh	0.2	0.1	0.5	0.4	13.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.0	1.4	5.7	3.4	14.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.1	5.2	11.6	10.9	51.3	0.0
LnGrp LOS	A	A	B	B	D	A
Approach Vol, veh/h		279	479		330	
Approach Delay, s/veh		6.3	11.3		51.3	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	11.9	62.1		25.9		74.1
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	20.0	39.0		24.0		65.0
Max Q Clear Time (g_c+I1), s	5.6	11.2		20.5		4.5
Green Ext Time (p_c), s	0.4	4.1		0.4		1.0

Intersection Summary

HCM 6th Ctrl Delay	22.1
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

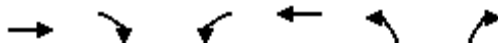
11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	122	218	136	306	209	110
Future Volume (vph)	122	218	136	306	209	110
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.954	
Flt Protected				0.985	0.968	
Satd. Flow (prot)	1723	1435	0	1690	1692	0
Flt Permitted				0.849	0.968	
Satd. Flow (perm)	1723	1435	0	1457	1692	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		248				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	2%	4%	1%	2%	2%
Adj. Flow (vph)	139	248	155	348	238	125
Shared Lane Traffic (%)						
Lane Group Flow (vph)	139	248	0	503	363	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	25.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	55.9%	55.9%	19.6%	75.5%	24.5%	
Maximum Green (s)	51.0	51.0	14.0	71.0	19.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	26.6	26.6		26.6	20.2	
Actuated g/C Ratio	0.47	0.47		0.47	0.36	
v/c Ratio	0.17	0.31		0.74	0.60	
Control Delay	8.9	2.4		19.5	22.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	8.9	2.4		19.5	22.4	
LOS	A	A		B	C	
Approach Delay	4.7			19.5	22.4	
Approach LOS	A			B	C	
Queue Length 50th (ft)	25	0		128	91	
Queue Length 95th (ft)	48	25		213	#237	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1589	1342		1457	600	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.09	0.18		0.35	0.60	

Intersection Summary

Area Type: Other

Cycle Length: 102

Actuated Cycle Length: 56.9

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 15.8

Intersection LOS: B

Intersection Capacity Utilization 74.3%

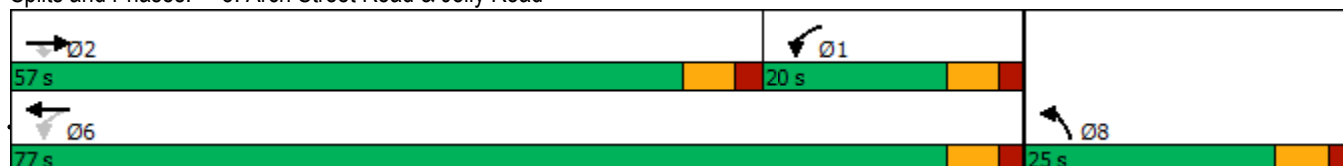
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	436	156	103	617	15	111	214	94	31	235	86
Future Volume (vph)	70	436	156	103	617	15	111	214	94	31	235	86
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.996			0.954				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1629	1800	1632	1767	1832	0	1573	1604	0	1612	1883	1648
Flt Permitted	0.222			0.416			0.601			0.478		
Satd. Flow (perm)	381	1800	1632	774	1832	0	995	1604	0	811	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					4			49				92
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	1%	1%	1%	2%	7%	3%	2%	0%	0%	3%	0%
Adj. Flow (vph)	75	469	168	111	663	16	119	230	101	33	253	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	469	168	111	679	0	119	331	0	33	253	92
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0		18.0	18.0		18.0	18.0	18.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0		12.0	12.0		12.0	12.0	12.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	19.7	20.7	20.7	19.7	20.7		13.0	13.0		13.0	13.0	12.0
Actuated g/C Ratio	0.45	0.47	0.47	0.45	0.47		0.30	0.30		0.30	0.30	0.27
v/c Ratio	0.44	0.55	0.22	0.32	0.78		0.40	0.65		0.14	0.45	0.18
Control Delay	17.9	11.1	7.5	10.7	18.0		17.9	19.7		13.7	16.2	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	17.9	11.1	7.5	10.7	18.0		17.9	19.7		13.7	16.2	4.9
LOS	B	B	A	B	B		B	B		B	B	A
Approach Delay		11.0			17.0			19.2			13.2	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	12	75	22	16	126		24	62		6	53	0
Queue Length 95th (ft)	#46	138	47	43	#290		61	#156		22	103	24
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	183	907	822	372	925		296	512		241	560	519
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.41	0.52	0.20	0.30	0.73		0.40	0.65		0.14	0.45	0.18

Intersection Summary

Area Type: Other

Cycle Length: 45

Actuated Cycle Length: 43.8

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 15.0

Intersection LOS: B

Intersection Capacity Utilization 80.7%

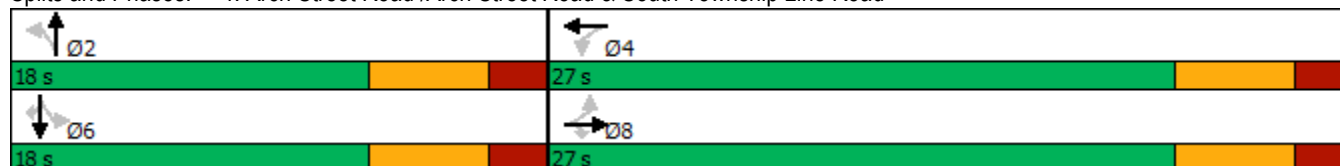
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road



HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	436	156	103	617	15	111	214	94	31	235	86
Future Volume (veh/h)	70	436	156	103	617	15	111	214	94	31	235	86
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1789	1860	1935	1935	1920	1846	1869	1883	1912	1875	1905	1950
Adj Flow Rate, veh/h	75	469	123	111	663	16	119	230	92	33	253	50
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	1	1	1	2	7	3	2	0	0	3	0
Cap, veh/h	284	887	782	391	890	21	366	378	151	325	563	451
Arrive On Green	0.45	0.48	0.48	0.45	0.48	0.45	0.30	0.30	0.27	0.30	0.30	0.27
Sat Flow, veh/h	728	1860	1640	853	1867	45	1076	1279	512	1060	1905	1652
Grp Volume(v), veh/h	75	469	123	111	0	679	119	0	322	33	253	50
Grp Sat Flow(s),veh/h/ln	728	1860	1640	853	0	1912	1076	0	1791	1060	1905	1652
Q Serve(g_s), s	4.2	7.8	1.9	4.8	0.0	12.7	4.4	0.0	6.8	1.2	4.7	1.0
Cycle Q Clear(g_c), s	16.9	7.8	1.9	13.1	0.0	12.7	9.2	0.0	6.8	7.5	4.7	1.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	284	887	782	391	0	911	366	0	530	325	563	451
V/C Ratio(X)	0.26	0.53	0.16	0.28	0.00	0.74	0.33	0.00	0.61	0.10	0.45	0.11
Avail Cap(c_a), veh/h	302	931	821	411	0	957	366	0	530	325	563	451
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.1	8.0	6.5	13.6	0.0	9.3	16.3	0.0	13.4	16.3	12.6	12.0
Incr Delay (d2), s/veh	1.0	1.1	0.2	0.8	0.0	3.8	2.4	0.0	5.1	0.6	2.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	4.2	0.9	1.6	0.0	8.5	2.1	0.0	5.3	0.5	3.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.1	9.1	6.7	14.4	0.0	13.2	18.7	0.0	18.5	16.9	15.1	12.5
LnGrp LOS	B	A	A	B	A	B	B	A	B	B	B	B
Approach Vol, veh/h	667			790			441			336		
Approach Delay, s/veh	9.7			13.4			18.6			14.9		
Approach LOS	A			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	18.0			26.0			18.0			26.0		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	12.0			21.0			12.0			21.0		
Max Q Clear Time (g_c+I1), s	11.7			15.1			10.0			18.9		
Green Ext Time (p_c), s	0.1			3.2			0.5			1.1		
Intersection Summary												
HCM 6th Ctrl Delay	13.5											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	132	5	39	155	16	13	10	33	11	9	4
Future Volume (vph)	19	132	5	39	155	16	13	10	33	11	9	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.990			0.921			0.977	
Flt Protected		0.994			0.991			0.989			0.977	
Satd. Flow (prot)	0	1847	0	0	1826	0	0	1806	0	0	1762	0
Flt Permitted		0.994			0.991			0.989			0.977	
Satd. Flow (perm)	0	1847	0	0	1826	0	0	1806	0	0	1762	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	165	6	49	194	20	16	13	41	14	11	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	195	0	0	263	0	0	70	0	0	30	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	27.7%						ICU Level of Service A					
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh

9

Intersection LOS

A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	132	5	39	155	16	13	10	33	11	9	4
Future Vol, veh/h	19	132	5	39	155	16	13	10	33	11	9	4
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	0	1	0	0	0	2	0	0	0	0	0	0
Mvmt Flow	24	165	6	49	194	20	16	13	41	14	11	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

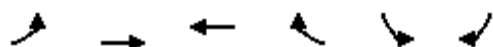
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.8	9.4	8.1	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	12%	19%	46%
Vol Thru, %	18%	85%	74%	38%
Vol Right, %	59%	3%	8%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	56	156	210	24
LT Vol	13	19	39	11
Through Vol	10	132	155	9
RT Vol	33	5	16	4
Lane Flow Rate	70	195	262	30
Geometry Grp	1	1	1	1
Degree of Util (X)	0.09	0.239	0.316	0.042
Departure Headway (Hd)	4.641	4.419	4.339	4.995
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	771	813	830	716
Service Time	2.674	2.444	2.361	3.03
HCM Lane V/C Ratio	0.091	0.24	0.316	0.042
HCM Control Delay	8.1	8.8	9.4	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.9	1.4	0.1

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	33	50	2	2	2
Future Volume (vph)	2	33	50	2	2	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.932	
Flt Protected		0.997			0.976	
Satd. Flow (prot)	0	1904	1890	0	1834	0
Flt Permitted		0.997			0.976	
Satd. Flow (perm)	0	1904	1890	0	1834	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1091	171		70	
Travel Time (s)		24.8	3.9		1.6	
Peak Hour Factor	0.47	0.47	0.47	0.47	0.47	0.47
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	70	106	4	4	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	74	110	0	8	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.4% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	33	50	2	2	2
Future Vol, veh/h	2	33	50	2	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	1	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	70	106	4	4	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	110	0	-	0	186	108
Stage 1	-	-	-	-	108	-
Stage 2	-	-	-	-	78	-
Critical Hdwy	4.1	-	-	-	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1493	-	-	-	799	948
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	946	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1493	-	-	-	797	948
Mov Cap-2 Maneuver	-	-	-	-	797	-
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	946	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		9.2		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1493	-	-	-	866	
HCM Lane V/C Ratio	0.003	-	-	-	0.01	
HCM Control Delay (s)	7.4	0	-	-	9.2	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		LT	TT	TT	LT
Traffic Volume (vph)	121	92	57	520	354	128
Future Volume (vph)	121	92	57	520	354	128
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.935					0.850
Flt Protected	0.972		0.950			
Satd. Flow (prot)	3108	0	1661	3257	3257	1573
Flt Permitted	0.972		0.500			
Satd. Flow (perm)	3108	0	874	3257	3257	1573
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	98					136
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Adj. Flow (vph)	129	98	61	553	377	136
Shared Lane Traffic (%)						
Lane Group Flow (vph)	227	0	61	553	377	136
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	11.6		99.4	99.4	89.4	106.8
Actuated g/C Ratio	0.10		0.83	0.83	0.74	0.89
v/c Ratio	0.59		0.08	0.21	0.16	0.10
Control Delay	34.9		2.4	2.5	2.3	0.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	34.9		2.4	2.5	2.3	0.1
LOS	C		A	A	A	A
Approach Delay	34.9			2.5	1.7	
Approach LOS	C			A	A	
Queue Length 50th (ft)	49		6	35	17	0
Queue Length 95th (ft)	87		17	60	27	0
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	925		776	2697	2426	1573
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.25		0.08	0.21	0.16	0.09

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 89 (74%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 7.6

Intersection LOS: A

Intersection Capacity Utilization 34.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔↔↔		↔	↕↕	↕↕	↔↔
Traffic Volume (veh/h)	121	92	57	520	354	128
Future Volume (veh/h)	121	92	57	520	354	128
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1736	1820	1837	1809	1780	1866
Adj Flow Rate, veh/h	114	115	61	553	377	136
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	2	1	0
Cap, veh/h	172	148	738	2821	2534	1349
Arrive On Green	0.10	0.10	0.03	0.82	0.75	0.75
Sat Flow, veh/h	1653	1542	1750	3527	3472	1582
Grp Volume(v), veh/h	114	115	61	553	377	136
Grp Sat Flow(s),veh/h/ln	1653	1542	1750	1718	1691	1582
Q Serve(g_s), s	8.0	8.7	0.9	4.1	3.8	1.7
Cycle Q Clear(g_c), s	8.0	8.7	0.9	4.1	3.8	1.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	172	148	738	2821	2534	1349
V/C Ratio(X)	0.66	0.78	0.08	0.20	0.15	0.10
Avail Cap(c_a), veh/h	455	411	802	2821	2534	1349
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.94	0.94
Uniform Delay (d), s/veh	51.7	53.0	2.7	2.3	4.3	1.4
Incr Delay (d2), s/veh	4.3	8.4	0.0	0.2	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.4	12.2	0.4	1.7	2.0	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.0	61.4	2.8	2.5	4.4	1.6
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	229			614	513	
Approach Delay, s/veh	58.7			2.5	3.6	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	103.5			16.5	8.6	94.9
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	77.0			32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s	6.1			10.7	2.9	5.8
Green Ext Time (p_c), s	2.3			0.8	0.0	2.0
Intersection Summary						
HCM 6th Ctrl Delay			12.4			
HCM 6th LOS			B			
Notes						

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	42	0	73	2	602	72	51	447	42
Future Volume (vph)	0	0	0	42	0	73	2	602	72	51	447	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt					0.859				0.850			0.987
Flt Protected				0.950	0.997		0.950			0.950		
Satd. Flow (prot)	1714	1832	0	1641	1578	0	1636	3209	1435	1653	3176	0
Flt Permitted				0.950	0.997		0.452			0.361		
Satd. Flow (perm)	1714	1832	0	1641	1578	0	779	3209	1435	628	3176	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									82			9
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	3%	0%
Adj. Flow (vph)	0	0	0	46	0	80	2	662	79	56	491	46
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	0	0	41	85	0	2	662	79	56	537	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split			Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		21.0	21.0	14.0	13.0	21.0	
Total Split (s)	33.0	33.0		36.0	36.0		37.0	37.0	36.0	14.0	51.0	
Total Split (%)	27.5%	27.5%		30.0%	30.0%		30.8%	30.8%	30.0%	11.7%	42.5%	
Maximum Green (s)	27.0	27.0		30.0	30.0		31.0	31.0	30.0	8.0	45.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0	5.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effect Green (s)				14.8	14.8		85.0	85.0	105.8	95.2	95.2	
Actuated g/C Ratio				0.12	0.12		0.71	0.71	0.88	0.79	0.79	
v/c Ratio				0.20	0.44		0.00	0.29	0.06	0.10	0.21	
Control Delay				48.1	54.9		7.0	6.5	0.6	3.6	3.5	
Queue Delay				0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay				48.1	54.9		7.0	6.5	0.6	3.6	3.5	
LOS				D	D		A	A	A	A	A	
Approach Delay					52.7			5.9			3.5	
Approach LOS					D			A			A	
Queue Length 50th (ft)				30	65		0	77	0	8	43	
Queue Length 95th (ft)				65	115		m2	106	5	20	72	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)							150			250		
Base Capacity (vph)				423	407		552	2273	1407	575	2521	
Starvation Cap Reductn				0	0		0	0	0	0	0	
Spillback Cap Reductn				0	0		0	0	0	0	0	
Storage Cap Reductn				0	0		0	0	0	0	0	
Reduced v/c Ratio				0.10	0.21		0.00	0.29	0.06	0.10	0.21	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 102 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 9.0

Intersection LOS: A

Intersection Capacity Utilization 43.1%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

Ø1	Ø2 (R)	Ø4	Ø8
14 s	37 s	36 s	33 s
Ø6 (R)			
51 s			

HCM 6th Signalized Intersection Summary

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	42	0	73	2	602	72	51	447	42
Future Volume (veh/h)	0	0	0	42	0	73	2	602	72	51	447	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1820	1820	1875	1950	1950	1778	1750	1750	1800	1758	1800
Adj Flow Rate, veh/h	0	0	0	46	0	69	2	662	69	56	491	46
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
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	2	0	3	0
Cap, veh/h	1	2	0	126	0	116	698	2571	1251	614	2613	244
Arrive On Green	0.00	0.00	0.00	0.07	0.00	0.07	0.77	0.77	0.77	0.03	0.85	0.84
Sat Flow, veh/h	1666	1820	0	1785	0	1652	825	3324	1483	1714	3088	288
Grp Volume(v), veh/h	0	0	0	46	0	69	2	662	69	56	265	272
Grp Sat Flow(s),veh/h/ln	1666	1820	0	1785	0	1652	825	1662	1483	1714	1670	1706
Q Serve(g_s), s	0.0	0.0	0.0	3.0	0.0	4.9	0.1	6.8	0.9	0.7	3.5	3.5
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.0	0.0	4.9	0.1	6.8	0.9	0.7	3.5	3.5
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	1	2	0	126	0	116	698	2571	1251	614	1413	1444
V/C Ratio(X)	0.00	0.00	0.00	0.37	0.00	0.59	0.00	0.26	0.06	0.09	0.19	0.19
Avail Cap(c_a), veh/h	389	425	0	461	0	427	698	2571	1251	689	1413	1444
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	0.00	0.95	0.00	0.95	0.91	0.91	0.91	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	53.2	0.0	54.1	3.1	3.8	1.5	2.3	1.7	1.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	3.6	0.0	9.4	0.0	0.2	0.1	0.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	2.6	0.0	4.2	0.0	3.3	0.6	0.3	1.2	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	56.8	0.0	63.6	3.1	4.1	1.6	2.3	2.0	2.0
LnGrp LOS	A	A	A	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h	0				115				733			
Approach Delay, s/veh	0.0				60.9				3.8			
Approach LOS					E				A			
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.7	97.8		13.4		106.6		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	8.0	31.0		30.0		45.0		27.0				
Max Q Clear Time (g_c+I1), s	3.2	9.3		6.9		6.0		0.0				
Green Ext Time (p_c), s	0.0	2.9		0.7		1.8		0.0				

Intersection Summary

HCM 6th Ctrl Delay 7.6

HCM 6th LOS A

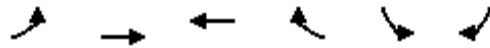
Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

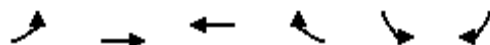


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	138	171	113	173	133	72
Future Volume (vph)	138	171	113	173	133	72
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.953	
Flt Protected	0.950				0.969	
Satd. Flow (prot)	1628	1878	1723	1450	1779	0
Flt Permitted	0.597				0.969	
Satd. Flow (perm)	1023	1878	1723	1450	1779	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				244	27	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%
Adj. Flow (vph)	194	241	159	244	187	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	194	241	159	244	288	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	13.0	67.0	54.0	54.0	23.0	
Total Split (%)	14.4%	74.4%	60.0%	60.0%	25.6%	
Maximum Green (s)	7.0	61.0	48.0	48.0	18.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	5.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	2.5	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	32.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	16.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	63.6	63.6	50.6	50.6	17.4	
Actuated g/C Ratio	0.71	0.71	0.56	0.56	0.19	
v/c Ratio	0.25	0.18	0.16	0.26	0.79	
Control Delay	5.6	5.1	10.5	2.2	47.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.6	5.1	10.5	2.2	47.2	
LOS	A	A	B	A	D	
Approach Delay		5.3	5.5		47.3	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 8 (9%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 16.1

Intersection LOS: B

Intersection Capacity Utilization 34.7%

ICU Level of Service A

Analysis Period (min) 15

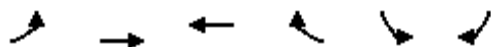
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	138	171	113	173	133	72
Future Volume (veh/h)	138	171	113	173	133	72
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1949	2012	1778	1764	1935	1950
Adj Flow Rate, veh/h	194	241	159	244	187	101
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	0	1	0	1	1	0
Cap, veh/h	764	1414	1011	850	226	122
Arrive On Green	0.08	0.70	0.57	0.57	0.20	0.20
Sat Flow, veh/h	1856	2012	1778	1495	1143	617
Grp Volume(v), veh/h	194	241	159	244	289	0
Grp Sat Flow(s),veh/h/ln	1856	2012	1778	1495	1766	0
Q Serve(g_s), s	3.4	3.6	3.8	7.6	14.1	0.0
Cycle Q Clear(g_c), s	3.4	3.6	3.8	7.6	14.1	0.0
Prop In Lane	1.00			1.00	0.65	0.35
Lane Grp Cap(c), veh/h	764	1414	1011	850	349	0
V/C Ratio(X)	0.25	0.17	0.16	0.29	0.83	0.00
Avail Cap(c_a), veh/h	784	1414	1011	850	373	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.83	0.83	1.00	0.00
Uniform Delay (d), s/veh	5.6	4.5	9.2	10.0	34.7	0.0
Incr Delay (d2), s/veh	0.4	0.3	0.3	0.7	13.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	2.3	2.6	4.3	11.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.0	4.8	9.5	10.7	48.4	0.0
LnGrp LOS	A	A	A	B	D	A
Approach Vol, veh/h		435	403		289	
Approach Delay, s/veh		5.3	10.2		48.4	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.0	56.2		21.8		68.2
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	7.0	48.0		18.0		61.0
Max Q Clear Time (g_c+I1), s	5.9	10.1		16.6		6.1
Green Ext Time (p_c), s	0.1	3.6		0.2		2.1

Intersection Summary

HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

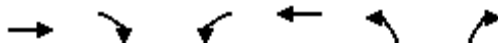
11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	196	202	88	232	229	45
Future Volume (vph)	196	202	88	232	229	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.978	
Flt Protected				0.986	0.960	
Satd. Flow (prot)	1723	1464	0	1724	1755	0
Flt Permitted				0.873	0.960	
Satd. Flow (perm)	1723	1464	0	1527	1755	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		224				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	218	224	98	258	254	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	218	224	0	356	304	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	49.0	49.0	20.0	69.0	21.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	54.4%	54.4%	22.2%	76.7%	23.3%	
Maximum Green (s)	43.0	43.0	14.0	63.0	15.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	Max	None	None	
Act Effect Green (s)	22.0	22.0		42.0	16.0	
Actuated g/C Ratio	0.32	0.32		0.62	0.24	
v/c Ratio	0.39	0.36		0.36	0.74	
Control Delay	20.4	4.6		7.8	37.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	20.4	4.6		7.8	37.0	
LOS	C	A		A	D	
Approach Delay	12.4			7.8	37.0	
Approach LOS	B			A	D	
Queue Length 50th (ft)	69	0		62	118	
Queue Length 95th (ft)	125	43		105	#227	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1114	1026		1480	412	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.20	0.22		0.24	0.74	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 68

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 17.7

Intersection LOS: B

Intersection Capacity Utilization 64.3%

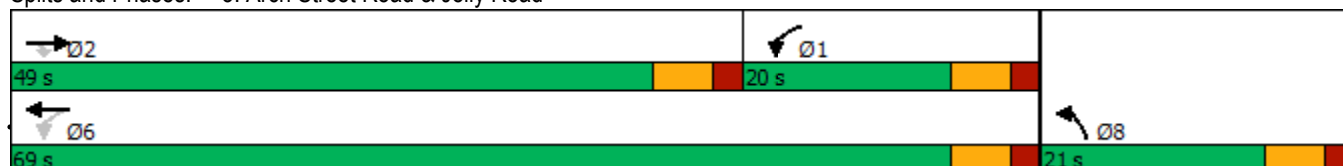
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	454	269	51	537	31	75	210	52	21	196	90
Future Volume (vph)	52	454	269	51	537	31	75	210	52	21	196	90
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.992			0.970				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1693	1800	1632	1785	1846	0	1620	1628	0	1612	1939	1648
Flt Permitted	0.268			0.352			0.625			0.585		
Satd. Flow (perm)	478	1800	1632	661	1846	0	1066	1628	0	993	1939	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					9			35				98
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
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
Heavy Vehicles (%)	2%	1%	1%	0%	1%	0%	0%	1%	4%	0%	0%	0%
Adj. Flow (vph)	57	493	292	55	584	34	82	228	57	23	213	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	493	292	55	618	0	82	285	0	23	213	98
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0		19.0	19.0		19.0	19.0	19.0
Total Split (%)	52.5%	52.5%	52.5%	52.5%	52.5%		47.5%	47.5%		47.5%	47.5%	47.5%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0		13.0	13.0		13.0	13.0	13.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	14.9	15.9	15.9	14.9	15.9		14.0	14.0		14.0	14.0	13.0
Actuated g/C Ratio	0.37	0.40	0.40	0.37	0.40		0.35	0.35		0.35	0.35	0.33
v/c Ratio	0.32	0.69	0.45	0.22	0.83		0.22	0.48		0.07	0.31	0.16
Control Delay	14.9	16.6	11.6	11.4	24.3		11.1	12.2		9.4	11.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	14.9	16.6	11.6	11.4	24.3		11.1	12.2		9.4	11.1	3.8
LOS	B	B	B	B	C		B	B		A	B	A
Approach Delay		14.8			23.3			11.9			8.8	
Approach LOS		B			C			B			A	
Queue Length 50th (ft)	9	85	45	8	114		12	41		3	33	0
Queue Length 95th (ft)	31	#177	91	26	#270		34	89		13	69	21
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	179	721	653	248	745		374	593		348	679	602
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.32	0.68	0.45	0.22	0.83		0.22	0.48		0.07	0.31	0.16

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 39.9

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 16.0

Intersection LOS: B

Intersection Capacity Utilization 74.3%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

			
Ø2			Ø4
19 s			21 s
			
Ø6			Ø8
19 s			21 s

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	454	269	51	537	31	75	210	52	21	196	90
Future Volume (veh/h)	52	454	269	51	537	31	75	210	52	21	196	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1846	1860	1935	1950	1935	1950	1912	1898	1855	1875	1950	1950
Adj Flow Rate, veh/h	57	493	234	55	584	33	82	228	55	23	213	60
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
Percent Heavy Veh, %	2	1	1	0	1	0	0	1	4	0	0	0
Cap, veh/h	252	744	656	291	726	41	486	517	125	447	682	537
Arrive On Green	0.38	0.40	0.40	0.38	0.40	0.38	0.35	0.35	0.32	0.35	0.35	0.32
Sat Flow, veh/h	795	1860	1640	758	1814	102	1131	1477	356	1099	1950	1652
Grp Volume(v), veh/h	57	493	234	55	0	617	82	0	283	23	213	60
Grp Sat Flow(s),veh/h/ln	795	1860	1640	758	0	1916	1131	0	1833	1099	1950	1652
Q Serve(g_s), s	2.8	8.7	4.0	2.7	0.0	11.4	2.3	0.0	4.8	0.6	3.2	1.0
Cycle Q Clear(g_c), s	14.2	8.7	4.0	11.8	0.0	11.4	5.5	0.0	4.8	4.9	3.2	1.0
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	252	744	656	291	0	767	486	0	642	447	682	537
V/C Ratio(X)	0.23	0.66	0.36	0.19	0.00	0.80	0.17	0.00	0.44	0.05	0.31	0.11
Avail Cap(c_a), veh/h	252	744	656	291	0	767	486	0	642	447	682	537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.8	9.8	8.4	15.7	0.0	10.6	11.5	0.0	10.1	11.7	9.5	9.5
Incr Delay (d2), s/veh	1.0	3.0	0.7	0.7	0.0	7.1	0.8	0.0	2.2	0.2	1.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	5.4	2.0	0.8	0.0	8.9	1.0	0.0	3.2	0.3	2.2	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.8	12.8	9.1	16.4	0.0	17.7	12.2	0.0	12.3	11.9	10.7	9.9
LnGrp LOS	B	B	A	B	A	B	B	A	B	B	B	A
Approach Vol, veh/h	784			672			365			296		
Approach Delay, s/veh	12.1			17.6			12.3			10.6		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	19.0			21.0			19.0			21.0		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	13.0			15.0			13.0			15.0		
Max Q Clear Time (g_c+I1), s	8.0			13.8			7.4			16.2		
Green Ext Time (p_c), s	1.2			0.6			1.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	13.7											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	301	11	39	256	14	13	12	32	37	16	17
Future Volume (vph)	32	301	11	39	256	14	13	12	32	37	16	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.994			0.923			0.967	
Flt Protected		0.995			0.994			0.989			0.974	
Satd. Flow (prot)	0	1848	0	0	1827	0	0	1810	0	0	1739	0
Flt Permitted		0.995			0.994			0.989			0.974	
Satd. Flow (perm)	0	1848	0	0	1827	0	0	1810	0	0	1739	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	38	354	13	46	301	16	15	14	38	44	19	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	405	0	0	363	0	0	67	0	0	83	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	38.7%						ICU Level of Service A					
Analysis Period (min)	15											

Intersection

Intersection Delay, s/veh 12.2

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	32	301	11	39	256	14	13	12	32	37	16	17
Future Vol, veh/h	32	301	11	39	256	14	13	12	32	37	16	17
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	38	354	13	46	301	16	15	14	38	44	19	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

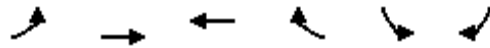
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.2	12.3	9.3	9.7
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	9%	13%	53%
Vol Thru, %	21%	88%	83%	23%
Vol Right, %	56%	3%	5%	24%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	57	344	309	70
LT Vol	13	32	39	37
Through Vol	12	301	256	16
RT Vol	32	11	14	17
Lane Flow Rate	67	405	364	82
Geometry Grp	1	1	1	1
Degree of Util (X)	0.105	0.532	0.482	0.133
Departure Headway (Hd)	5.611	4.728	4.772	5.825
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	642	753	745	618
Service Time	3.616	2.814	2.86	3.829
HCM Lane V/C Ratio	0.104	0.538	0.489	0.133
HCM Control Delay	9.3	13.2	12.3	9.7
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.4	3.2	2.6	0.5

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	0	42	2	4	0
Future Volume (vph)	2	0	42	2	4	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994			
Flt Protected		0.950			0.950	
Satd. Flow (prot)	0	1814	1889	0	1916	0
Flt Permitted		0.950			0.950	
Satd. Flow (perm)	0	1814	1889	0	1916	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		1091	171		70	
Travel Time (s)		29.8	4.7		1.9	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	0	63	3	6	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	3	66	0	6	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3%

ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	0	42	2	4	0
Future Vol, veh/h	2	0	42	2	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	1	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	0	63	3	6	0
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	66	0	-	0	71	65
Stage 1	-	-	-	-	65	-
Stage 2	-	-	-	-	6	-
Critical Hdwy	4.1	-	-	-	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1549	-	-	-	935	1003
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1549	-	-	-	933	1003
Mov Cap-2 Maneuver	-	-	-	-	933	-
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	1022	-
Approach	EB	WB		SB		
HCM Control Delay, s	7.3	0		8.9		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1549	-	-	-	933	
HCM Lane V/C Ratio	0.002	-	-	-	0.006	
HCM Control Delay (s)	7.3	0	-	-	8.9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (vph)	157	232	94	512	470	188
Future Volume (vph)	157	232	94	512	470	188
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.911					0.850
Flt Protected	0.980		0.950			
Satd. Flow (prot)	3053	0	1661	3257	3194	1558
Flt Permitted	0.980		0.436			
Satd. Flow (perm)	3053	0	762	3257	3194	1558
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	247					200
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	2%	3%	1%
Adj. Flow (vph)	167	247	100	545	500	200
Shared Lane Traffic (%)						
Lane Group Flow (vph)	414	0	100	545	500	200
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	6.0	6.0	3.0
Minimum Gap (s)	3.0		3.0	3.9	3.9	3.0
Time Before Reduce (s)	0.0		0.0	37.0	37.0	0.0
Time To Reduce (s)	0.0		0.0	15.0	15.0	0.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	14.3		96.7	96.7	84.0	103.3
Actuated g/C Ratio	0.12		0.81	0.81	0.70	0.86
v/c Ratio	0.71		0.15	0.21	0.22	0.15
Control Delay	26.6		3.5	3.3	6.2	0.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	26.6		3.5	3.3	6.2	0.4
LOS	C		A	A	A	A
Approach Delay	26.6			3.3	4.5	
Approach LOS	C			A	A	
Queue Length 50th (ft)	62		13	42	56	0
Queue Length 95th (ft)	110		32	76	76	0
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	1018		673	2624	2236	1543
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.41		0.15	0.21	0.22	0.13

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 101 (84%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 9.3

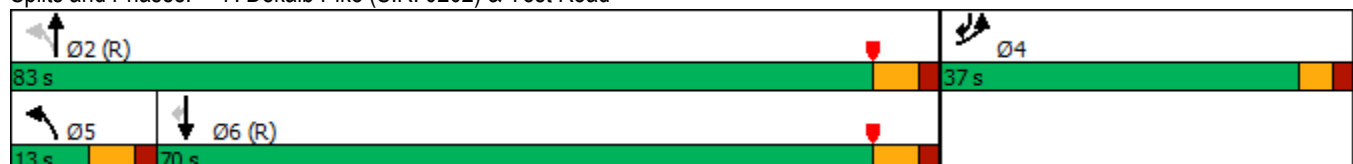
Intersection LOS: A

Intersection Capacity Utilization 43.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WY		W	↑↑	↑↑	W
Traffic Volume (veh/h)	157	232	94	512	470	188
Future Volume (veh/h)	157	232	94	512	470	188
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1750	1805	1837	1809	1752	1852
Adj Flow Rate, veh/h	167	245	100	545	500	191
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	0	2	3	1
Cap, veh/h	319	280	568	2522	2165	1320
Arrive On Green	0.19	0.18	0.04	0.73	0.65	0.65
Sat Flow, veh/h	1666	1530	1750	3527	3417	1569
Grp Volume(v), veh/h	167	245	100	545	500	191
Grp Sat Flow(s),veh/h/ln	1666	1530	1750	1718	1665	1569
Q Serve(g_s), s	10.8	18.7	2.1	6.0	7.4	2.6
Cycle Q Clear(g_c), s	10.8	18.7	2.1	6.0	7.4	2.6
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	319	280	568	2522	2165	1320
V/C Ratio(X)	0.52	0.88	0.18	0.22	0.23	0.14
Avail Cap(c_a), veh/h	458	408	612	2522	2165	1320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.99	0.99
Uniform Delay (d), s/veh	43.6	47.7	5.8	5.1	8.6	1.7
Incr Delay (d2), s/veh	1.3	13.6	0.1	0.2	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.2	22.4	1.2	3.3	4.5	3.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	45.0	61.3	6.0	5.3	8.9	1.9
LnGrp LOS	D	E	A	A	A	A
Approach Vol, veh/h	412			645	691	
Approach Delay, s/veh	54.7			5.4	7.0	
Approach LOS	D			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	93.1			26.9	10.0	83.0
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	77.0			32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s	8.0			20.7	4.1	9.4
Green Ext Time (p_c), s	7.8			1.3	0.1	10.1

Intersection Summary

HCM 6th Ctrl Delay	17.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Attachment F

2030 Future Capacity/Levels-of-Service Analysis Worksheets Without Development

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	11	1	130	0	77	1	463	195	184	531	8
Future Volume (vph)	7	11	1	130	0	77	1	463	195	184	531	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%				0%
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.988			0.883				0.850		0.998	
Flt Protected	0.950			0.950	0.989		0.950			0.950		
Satd. Flow (prot)	1628	1552	0	1548	1552	0	1636	3117	1394	1605	3086	0
Flt Permitted	0.950			0.950	0.989		0.439			0.422		
Satd. Flow (perm)	1628	1552	0	1548	1552	0	756	3117	1394	713	3086	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									205			1
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	18%	0%	6%	0%	3%	0%	5%	5%	3%	7%	0%
Adj. Flow (vph)	7	12	1	137	0	81	1	487	205	194	559	8
Shared Lane Traffic (%)				17%								
Lane Group Flow (vph)	7	13	0	114	104	0	1	487	205	194	567	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		31.0	31.0	13.0	14.0	31.0	
Total Split (s)	33.0	33.0		30.0	30.0		43.0	43.0	30.0	14.0	57.0	
Total Split (%)	27.5%	27.5%		25.0%	25.0%		35.8%	35.8%	25.0%	11.7%	47.5%	
Maximum Green (s)	27.0	27.0		23.0	23.0		36.0	36.0	23.0	7.0	50.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effect Green (s)	7.7	7.7		15.4	15.4		73.1	73.1	94.5	87.1	87.1	
Actuated g/C Ratio	0.06	0.06		0.13	0.13		0.61	0.61	0.79	0.73	0.73	
v/c Ratio	0.07	0.13		0.58	0.53		0.00	0.26	0.18	0.34	0.25	
Control Delay	53.4	55.2		59.9	57.4		14.0	12.3	0.8	8.7	7.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	53.4	55.2		59.9	57.4		14.0	12.3	0.8	8.7	7.3	
LOS	D	E		E	E		B	B	A	A	A	
Approach Delay		54.6			58.7			8.9			7.7	
Approach LOS		D			E			A			A	
Queue Length 50th (ft)	5	10		88	81		0	70	0	33	53	
Queue Length 95th (ft)	21	31		145	133		m3	128	8	102	140	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	362		309	310		460	1898	1226	576	2239	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.02	0.04		0.37	0.34		0.00	0.26	0.17	0.34	0.25	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 15.3

Intersection LOS: B

Intersection Capacity Utilization 56.2%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

 14 s	 43 s	 30 s	 33 s
 57 s			

HCM 6th Signalized Intersection Summary

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	11	1	130	0	77	1	463	195	184	531	8
Future Volume (veh/h)	7	11	1	130	0	77	1	463	195	184	531	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1557	1820	1789	1950	1905	1778	1707	1707	1758	1702	1800
Adj Flow Rate, veh/h	7	12	1	87	69	38	1	487	186	194	559	8
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
Percent Heavy Veh, %	0	18	0	6	0	3	0	5	5	3	7	0
Cap, veh/h	34	29	2	146	101	56	571	2065	1045	581	2454	35
Arrive On Green	0.02	0.02	0.01	0.09	0.09	0.09	0.64	0.64	0.64	0.07	0.75	0.74
Sat Flow, veh/h	1666	1418	118	1704	1182	651	802	3244	1447	1674	3263	47
Grp Volume(v), veh/h	7	0	13	87	0	107	1	487	186	194	277	290
Grp Sat Flow(s),veh/h/ln	1666	0	1536	1704	0	1832	802	1622	1447	1674	1617	1693
Q Serve(g_s), s	0.5	0.0	1.0	5.9	0.0	6.8	0.1	7.7	4.9	4.4	6.1	6.2
Cycle Q Clear(g_c), s	0.5	0.0	1.0	5.9	0.0	6.8	0.1	7.7	4.9	4.4	6.1	6.2
Prop In Lane	1.00		0.08	1.00		0.36	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	34	0	32	146	0	157	571	2065	1045	581	1216	1273
V/C Ratio(X)	0.20	0.00	0.41	0.60	0.00	0.68	0.00	0.24	0.18	0.33	0.23	0.23
Avail Cap(c_a), veh/h	389	0	358	341	0	366	571	2065	1045	583	1216	1273
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.98	0.00	0.98	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.8	0.0	58.1	52.9	0.0	53.3	7.9	9.3	5.3	5.8	4.5	4.5
Incr Delay (d2), s/veh	2.9	0.0	8.3	3.8	0.0	5.0	0.0	0.3	0.4	0.3	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.0	0.8	4.8	0.0	6.0	0.0	4.7	3.6	2.4	3.2	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.7	0.0	66.4	56.6	0.0	58.3	7.9	9.6	5.7	6.1	4.9	4.9
LnGrp LOS	E	A	E	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h	20			194			674			761		
Approach Delay, s/veh	64.4			57.5			8.5			5.2		
Approach LOS	E			E			A			A		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	13.9	82.4		16.3		96.2		7.5				
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		6.0				
Max Green Setting (Gmax), s	7.0	36.0		23.0		50.0		27.0				
Max Q Clear Time (g_c+I1), s	6.9	10.2		8.8		8.6		3.0				
Green Ext Time (p_c), s	0.0	2.7		0.5		1.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay 13.4

HCM 6th LOS B

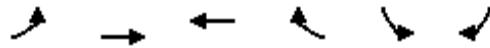
Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

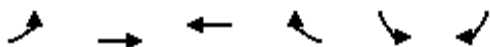


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	108	349	125	133	157	84
Future Volume (vph)	108	349	125	133	157	84
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.953	
Flt Protected	0.950				0.968	
Satd. Flow (prot)	1550	1842	1641	1435	1736	0
Flt Permitted	0.614				0.968	
Satd. Flow (perm)	1002	1842	1641	1435	1736	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				140	27	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	3%	5%	2%	2%	5%
Adj. Flow (vph)	114	367	132	140	165	88
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	367	132	140	253	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	13.0	67.0	54.0	54.0	23.0	
Total Split (%)	14.4%	74.4%	60.0%	60.0%	25.6%	
Maximum Green (s)	7.0	61.0	48.0	48.0	18.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	3.0	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	0.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	0.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	64.4	64.4	54.0	54.0	16.6	
Actuated g/C Ratio	0.72	0.72	0.60	0.60	0.18	
v/c Ratio	0.15	0.28	0.13	0.15	0.74	
Control Delay	4.9	5.6	9.9	2.3	44.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.9	5.6	9.9	2.3	44.2	
LOS	A	A	A	A	D	
Approach Delay		5.4	6.0		44.2	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 61 (68%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 15.3

Intersection LOS: B

Intersection Capacity Utilization 41.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	108	349	125	133	157	84
Future Volume (veh/h)	108	349	125	133	157	84
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1878	1983	1707	1750	1920	1876
Adj Flow Rate, veh/h	114	367	132	105	165	64
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	3	5	2	2	5
Cap, veh/h	858	1455	1061	921	211	82
Arrive On Green	0.06	0.73	0.62	0.62	0.17	0.17
Sat Flow, veh/h	1789	1983	1707	1483	1268	492
Grp Volume(v), veh/h	114	367	132	105	230	0
Grp Sat Flow(s),veh/h/ln	1789	1983	1707	1483	1768	0
Q Serve(g_s), s	1.8	5.4	2.9	2.6	11.2	0.0
Cycle Q Clear(g_c), s	1.8	5.4	2.9	2.6	11.2	0.0
Prop In Lane	1.00			1.00	0.72	0.28
Lane Grp Cap(c), veh/h	858	1455	1061	921	294	0
V/C Ratio(X)	0.13	0.25	0.12	0.11	0.78	0.00
Avail Cap(c_a), veh/h	916	1455	1061	921	373	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.90	0.90	1.00	0.00
Uniform Delay (d), s/veh	4.3	3.9	7.0	6.9	36.0	0.0
Incr Delay (d2), s/veh	0.1	0.4	0.2	0.2	8.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	3.2	1.8	1.4	9.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.4	4.3	7.2	7.2	44.0	0.0
LnGrp LOS	A	A	A	A	D	A
Approach Vol, veh/h		481	237		230	
Approach Delay, s/veh		4.3	7.2		44.0	
Approach LOS		A	A		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	10.1	60.9		19.0		71.0
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	7.0	48.0		18.0		61.0
Max Q Clear Time (g_c+I1), s	4.3	5.4		13.7		7.9
Green Ext Time (p_c), s	0.1	2.0		0.3		3.4

Intersection Summary

HCM 6th Ctrl Delay	14.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	280	244	50	79	178	102
Future Volume (vph)	280	244	50	79	178	102
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.951	
Flt Protected				0.981	0.969	
Satd. Flow (prot)	1689	1422	0	1630	1678	0
Flt Permitted				0.814	0.969	
Satd. Flow (perm)	1689	1422	0	1353	1678	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		252				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	4%	6%	3%	2%
Adj. Flow (vph)	289	252	52	81	184	105
Shared Lane Traffic (%)						
Lane Group Flow (vph)	289	252	0	133	289	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	30.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	53.3%	53.3%	18.7%	72.0%	28.0%	
Maximum Green (s)	51.0	51.0	14.0	71.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	5.8	3.0	
Minimum Gap (s)	4.1	4.1	3.0	4.1	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	32.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	15.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	22.1	22.1		22.1	14.6	
Actuated g/C Ratio	0.47	0.47		0.47	0.31	
v/c Ratio	0.36	0.31		0.21	0.55	
Control Delay	10.3	2.8		9.3	17.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	10.3	2.8		9.3	17.7	
LOS	B	A		A	B	
Approach Delay	6.8			9.3	17.7	
Approach LOS	A			A	B	
Queue Length 50th (ft)	45	0		19	63	
Queue Length 95th (ft)	106	32		53	118	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1689	1422		1353	902	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.17	0.18		0.10	0.32	

Intersection Summary

Area Type: Other

Cycle Length: 107

Actuated Cycle Length: 46.7

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 10.4

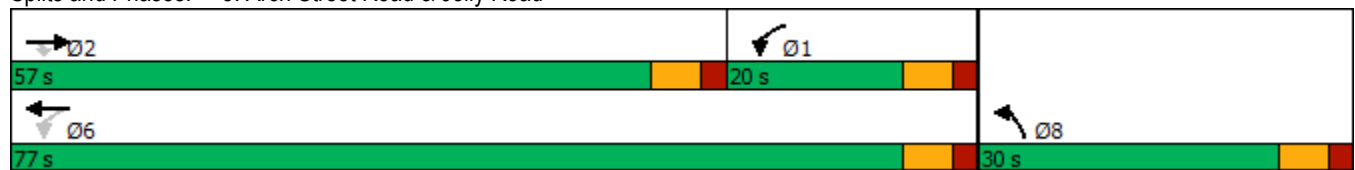
Intersection LOS: B

Intersection Capacity Utilization 64.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	538	151	94	333	11	46	188	91	13	269	25
Future Volume (vph)	60	538	151	94	333	11	46	188	91	13	269	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.995			0.951				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1645	1748	1616	1733	1812	0	1486	1555	0	1493	1883	1648
Flt Permitted	0.542			0.349			0.569			0.550		
Satd. Flow (perm)	938	1748	1616	637	1812	0	890	1555	0	864	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					5			60				82
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
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
Heavy Vehicles (%)	5%	4%	2%	3%	3%	9%	9%	3%	7%	8%	3%	0%
Adj. Flow (vph)	63	560	157	98	347	11	48	196	95	14	280	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	560	157	98	358	0	48	291	0	14	280	26
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	2	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0		16.0	16.0		16.0	16.0	16.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		10.0	10.0		10.0	10.0	10.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	Max	Max	Max	Max	Max		None	None		None	None	None
Act Effect Green (s)	19.0	19.0	19.0	19.0	19.0		10.8	10.8		10.8	10.8	10.8
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.48		0.27	0.27		0.27	0.27	0.27
v/c Ratio	0.14	0.67	0.20	0.32	0.41		0.20	0.63		0.06	0.55	0.05
Control Delay	7.0	13.3	7.0	10.2	8.6		13.7	17.7		11.5	17.2	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	7.0	13.3	7.0	10.2	8.6		13.7	17.7		11.5	17.2	0.6
LOS	A	B	A	B	A		B	B		B	B	A
Approach Delay		11.5			8.9			17.1			15.6	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	7	86	18	12	46		8	43		2	53	0
Queue Length 95th (ft)	21	#170	41	37	90		27	#122		11	105	2
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	448	835	771	304	868		245	473		238	520	514
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.14	0.67	0.20	0.32	0.41		0.20	0.62		0.06	0.54	0.05

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 39.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 12.6

Intersection LOS: B

Intersection Capacity Utilization 73.3%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

 Ø2	 Ø4
24 s	16 s
 Ø6	 Ø8
24 s	16 s

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	538	151	94	333	11	46	188	91	13	269	25
Future Volume (veh/h)	60	538	151	94	333	11	46	188	91	13	269	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1803	1818	1920	1905	1905	1816	1784	1869	1812	1761	1905	1950
Adj Flow Rate, veh/h	62	560	112	98	347	11	48	196	95	14	280	9
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
Percent Heavy Veh, %	5	4	2	3	3	9	9	3	7	8	3	0
Cap, veh/h	540	878	786	370	887	28	324	313	152	316	501	435
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.46	0.26	0.26	0.24	0.26	0.26	0.26
Sat Flow, veh/h	987	1818	1627	780	1836	58	1040	1189	576	1024	1905	1652
Grp Volume(v), veh/h	62	560	112	98	0	358	48	0	291	14	280	9
Grp Sat Flow(s),veh/h/ln	987	1818	1627	780	0	1895	1040	0	1765	1024	1905	1652
Q Serve(g_s), s	1.7	9.1	1.5	4.3	0.0	4.7	1.6	0.0	5.8	0.5	5.0	0.2
Cycle Q Clear(g_c), s	6.4	9.1	1.5	13.9	0.0	4.7	6.6	0.0	5.8	5.7	5.0	0.2
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.33	1.00		1.00
Lane Grp Cap(c), veh/h	540	878	786	370	0	915	324	0	464	316	501	435
V/C Ratio(X)	0.11	0.64	0.14	0.26	0.00	0.39	0.15	0.00	0.63	0.04	0.56	0.02
Avail Cap(c_a), veh/h	540	878	786	370	0	915	342	0	493	333	533	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.5	7.6	5.7	13.0	0.0	6.5	15.4	0.0	12.9	15.1	12.5	10.7
Incr Delay (d2), s/veh	0.4	3.5	0.4	1.7	0.0	1.3	0.4	0.0	3.6	0.1	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	5.2	0.7	1.5	0.0	3.0	0.6	0.0	4.0	0.2	3.5	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	11.1	6.0	14.7	0.0	7.8	15.8	0.0	16.5	15.2	14.7	10.8
LnGrp LOS	A	B	A	B	A	A	B	A	B	B	B	B
Approach Vol, veh/h	734				456				339			
Approach Delay, s/veh	10.2				9.3				16.4			
Approach LOS	B				A				B			
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	24.0			15.4			24.0			15.4		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	18.0			10.0			18.0			10.0		
Max Q Clear Time (g_c+I1), s	11.6			9.1			15.9			8.2		
Green Ext Time (p_c), s	3.0			0.2			0.8			0.4		
Intersection Summary												
HCM 6th Ctrl Delay	11.8											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	264	13	30	138	4	16	4	53	4	4	6
Future Volume (vph)	0	264	13	30	138	4	16	4	53	4	4	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.997			0.902			0.940	
Flt Protected					0.991			0.989			0.986	
Satd. Flow (prot)	0	1769	0	0	1728	0	0	1746	0	0	1711	0
Flt Permitted					0.991			0.989			0.986	
Satd. Flow (perm)	0	1769	0	0	1728	0	0	1746	0	0	1711	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		19.9			29.5			12.1			26.9	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles (%)	0%	6%	0%	10%	6%	0%	6%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	357	18	41	186	5	22	5	72	5	5	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	375	0	0	232	0	0	99	0	0	18	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	39.2%				ICU Level of Service A							
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh 10.6
Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	264	13	30	138	4	16	4	53	4	4	6
Future Vol, veh/h	0	264	13	30	138	4	16	4	53	4	4	6
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	0	6	0	10	6	0	6	0	0	0	0	0
Mvmt Flow	0	357	18	41	186	5	22	5	72	5	5	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

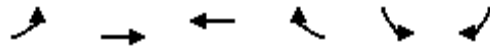
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.6	10	8.9	8.5
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	0%	17%	29%
Vol Thru, %	5%	95%	80%	29%
Vol Right, %	73%	5%	2%	43%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	73	277	172	14
LT Vol	16	0	30	4
Through Vol	4	264	138	4
RT Vol	53	13	4	6
Lane Flow Rate	99	374	232	19
Geometry Grp	1	1	1	1
Degree of Util (X)	0.137	0.472	0.31	0.028
Departure Headway (Hd)	5.014	4.537	4.797	5.236
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	711	794	746	678
Service Time	3.075	2.577	2.842	3.309
HCM Lane V/C Ratio	0.139	0.471	0.311	0.028
HCM Control Delay	8.9	11.6	10	8.5
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	0.5	2.6	1.3	0.1

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	5	8	0	0	1
Future Volume (vph)	0	5	8	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected						
Satd. Flow (prot)	0	1909	1900	0	1744	0
Flt Permitted						
Satd. Flow (perm)	0	1909	1900	0	1744	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		1091	171		70	
Travel Time (s)		29.8	4.7		1.9	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	7	11	0	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	7	11	0	1	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	8	0	0	1
Future Vol, veh/h	0	5	8	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	1	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	7	11	0	0	1
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	11	0	-	0	18	11
Stage 1	-	-	-	-	11	-
Stage 2	-	-	-	-	7	-
Critical Hdwy	4.1	-	-	-	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1621	-	-	-	1004	1076
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1021	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1621	-	-	-	1004	1076
Mov Cap-2 Maneuver	-	-	-	-	1004	-
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1021	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		8.4		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1621	-	-	-	1076	
HCM Lane V/C Ratio	-	-	-	-	0.001	
HCM Control Delay (s)	0	-	-	-	8.4	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (vph)	54	41	27	461	421	61
Future Volume (vph)	54	41	27	461	421	61
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.935					0.850
Flt Protected	0.972		0.950			
Satd. Flow (prot)	3057	0	1661	3164	3163	1542
Flt Permitted	0.972		0.476			
Satd. Flow (perm)	3057	0	832	3164	3163	1542
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	42					62
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	0%	0%	5%	4%	2%
Adj. Flow (vph)	55	42	28	470	430	62
Shared Lane Traffic (%)						
Lane Group Flow (vph)	97	0	28	470	430	62
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	8.8		102.2	102.2	94.9	110.3
Actuated g/C Ratio	0.07		0.85	0.85	0.79	0.92
v/c Ratio	0.37		0.04	0.17	0.17	0.04
Control Delay	34.9		1.7	1.8	5.0	0.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	34.9		1.7	1.8	5.0	0.2
LOS	C		A	A	A	A
Approach Delay	34.9			1.8	4.4	
Approach LOS	C			A	A	
Queue Length 50th (ft)	21		2	23	82	0
Queue Length 95th (ft)	47		7	38	47	0
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	871		763	2694	2501	1542
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.11		0.04	0.17	0.17	0.04

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 90 (75%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 5.9

Intersection LOS: A

Intersection Capacity Utilization 30.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	54	41	27	461	421	61
Future Volume (veh/h)	54	41	27	461	421	61
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1694	1820	1837	1766	1738	1837
Adj Flow Rate, veh/h	48	49	28	470	430	62
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	4	0	0	5	4	2
Cap, veh/h	94	77	787	2908	2647	1339
Arrive On Green	0.06	0.05	0.02	0.87	0.80	0.80
Sat Flow, veh/h	1613	1542	1750	3444	3390	1557
Grp Volume(v), veh/h	48	49	28	470	430	62
Grp Sat Flow(s),veh/h/ln	1613	1542	1750	1678	1651	1557
Q Serve(g_s), s	3.5	3.7	0.3	2.6	3.6	0.7
Cycle Q Clear(g_c), s	3.5	3.7	0.3	2.6	3.6	0.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	94	77	787	2908	2647	1339
V/C Ratio(X)	0.51	0.63	0.04	0.16	0.16	0.05
Avail Cap(c_a), veh/h	444	411	862	2908	2647	1339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.96	0.96
Uniform Delay (d), s/veh	54.8	55.9	1.6	1.2	2.7	1.2
Incr Delay (d2), s/veh	4.2	8.3	0.0	0.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	6.1	0.1	0.6	1.5	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	59.0	64.2	1.6	1.4	2.8	1.3
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	97			498	492	
Approach Delay, s/veh	61.6			1.4	2.7	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	109.0			11.0	7.8	101.2
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	77.0			32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s	5.1			6.0	2.8	6.1
Green Ext Time (p_c), s	1.9			0.3	0.0	2.0
Intersection Summary						
HCM 6th Ctrl Delay			7.3			
HCM 6th LOS			A			
Notes						
User approved pedestrian interval to be less than phase max green.						
User approved volume balancing among the lanes for turning movement.						

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	20	5	288	0	108	2	454	168	56	231	50
Future Volume (vph)	12	20	5	288	0	108	2	454	168	56	231	50
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%				0%
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.971			0.915				0.850		0.973	
Flt Protected	0.950			0.950	0.979		0.950			0.950		
Satd. Flow (prot)	1628	1779	0	1624	1625	0	1636	3178	1464	1653	3165	0
Flt Permitted	0.950			0.950	0.979		0.569			0.404		
Satd. Flow (perm)	1628	1779	0	1624	1625	0	980	3178	1464	703	3165	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									179		25	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	3%	0%	0%	2%	0%
Adj. Flow (vph)	13	21	5	306	0	115	2	483	179	60	246	53
Shared Lane Traffic (%)				29%								
Lane Group Flow (vph)	13	26	0	217	204	0	2	483	179	60	299	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	14.0	14.0		13.0	13.0		22.0	22.0	13.0	13.0	22.0	
Total Split (s)	33.0	33.0		33.0	33.0		40.0	40.0	33.0	14.0	54.0	
Total Split (%)	27.5%	27.5%		27.5%	27.5%		33.3%	33.3%	27.5%	11.7%	45.0%	
Maximum Green (s)	27.0	27.0		26.0	26.0		33.0	33.0	26.0	7.0	47.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0	5.0	3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effect Green (s)	10.4	10.4		23.7	23.7		63.5	63.5	94.3	74.5	74.5	
Actuated g/C Ratio	0.09	0.09		0.20	0.20		0.53	0.53	0.79	0.62	0.62	
v/c Ratio	0.09	0.17		0.68	0.64		0.00	0.29	0.15	0.12	0.15	
Control Delay	51.1	52.7		55.3	53.2		24.0	21.7	1.3	12.7	10.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	51.1	52.7		55.3	53.2		24.0	21.7	1.3	12.7	10.7	
LOS	D	D		E	D		C	C	A	B	B	
Approach Delay		52.2			54.3			16.2			11.1	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	9	19		162	150		1	137	0	20	51	
Queue Length 95th (ft)	30	48		248	233		m5	193	24	44	81	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	415		365	365		518	1681	1202	499	1975	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.03	0.06		0.59	0.56		0.00	0.29	0.15	0.12	0.15	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 107 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 26.7

Intersection LOS: C

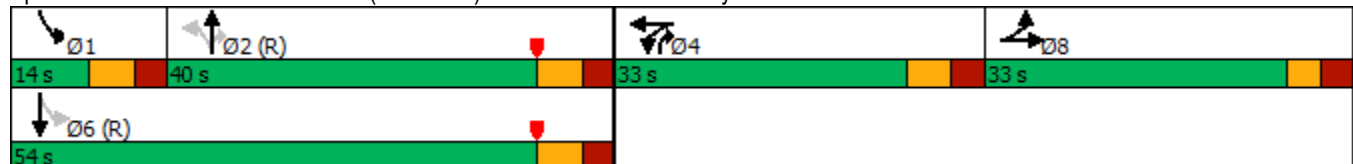
Intersection Capacity Utilization 58.6%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road



HCM 6th Signalized Intersection Summary

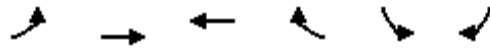
1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	20	5	288	0	108	2	454	168	56	231	50
Future Volume (veh/h)	12	20	5	288	0	108	2	454	168	56	231	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1820	1820	1860	1950	1920	1778	1736	1778	1800	1772	1800
Adj Flow Rate, veh/h	13	21	5	357	0	0	2	483	128	60	246	53
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	1	0	2	0	3	0	0	2	0
Cap, veh/h	53	45	11	509	280	0	671	1963	1113	534	1887	400
Arrive On Green	0.03	0.03	0.02	0.14	0.00	0.00	0.60	0.60	0.60	0.04	0.68	0.67
Sat Flow, veh/h	1666	1421	338	3543	1950	0	1027	3298	1507	1714	2765	585
Grp Volume(v), veh/h	13	0	26	357	0	0	2	483	128	60	148	151
Grp Sat Flow(s),veh/h/ln	1666	0	1759	1772	1950	0	1027	1649	1507	1714	1683	1667
Q Serve(g_s), s	0.9	0.0	1.7	11.5	0.0	0.0	0.1	8.3	2.9	1.5	3.7	3.8
Cycle Q Clear(g_c), s	0.9	0.0	1.7	11.5	0.0	0.0	0.1	8.3	2.9	1.5	3.7	3.8
Prop In Lane	1.00		0.19	1.00		0.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	53	0	56	509	280	0	671	1963	1113	534	1149	1138
V/C Ratio(X)	0.24	0.00	0.46	0.70	0.00	0.00	0.00	0.25	0.11	0.11	0.13	0.13
Avail Cap(c_a), veh/h	389	0	410	797	439	0	671	1963	1113	584	1149	1138
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.90	0.00	0.00	0.96	0.96	0.96	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.7	0.0	57.2	48.9	0.0	0.0	9.8	11.5	4.5	8.0	6.6	6.7
Incr Delay (d2), s/veh	5.0	0.0	12.1	3.4	0.0	0.0	0.0	0.3	0.2	0.1	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	0.0	1.7	8.9	0.0	0.0	0.0	5.3	2.7	0.9	2.3	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.6	0.0	69.2	52.3	0.0	0.0	9.9	11.8	4.7	8.1	6.9	7.0
LnGrp LOS	E	A	E	D	A	A	A	B	A	A	A	A
Approach Vol, veh/h	39			357			613			359		
Approach Delay, s/veh	66.7			52.3			10.3			7.1		
Approach LOS	E			D			B			A		
Timer - Assigned Phs	1	2	4			6	8					
Phs Duration (G+Y+Rc), s	10.5	77.4	23.2			87.9	8.8					
Change Period (Y+Rc), s	7.0	7.0	7.0			7.0	6.0					
Max Green Setting (Gmax), s	7.0	33.0	26.0			47.0	27.0					
Max Q Clear Time (g_c+I1), s	4.0	10.8	14.0			6.2	3.7					
Green Ext Time (p_c), s	0.0	2.3	2.2			2.5	0.2					
Intersection Summary												
HCM 6th Ctrl Delay	22.0											
HCM 6th LOS	C											

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

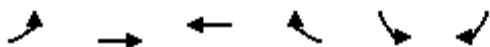


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	154	119	292	241	199	148
Future Volume (vph)	154	119	292	241	199	148
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.942	
Flt Protected	0.950				0.972	
Satd. Flow (prot)	1612	1897	1706	1435	1765	0
Flt Permitted	0.483				0.972	
Satd. Flow (perm)	819	1897	1706	1435	1765	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				248	36	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	1%	2%	1%	0%
Adj. Flow (vph)	159	123	301	248	205	153
Shared Lane Traffic (%)						
Lane Group Flow (vph)	159	123	301	248	358	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	26.0	71.0	45.0	45.0	29.0	
Total Split (%)	26.0%	71.0%	45.0%	45.0%	29.0%	
Maximum Green (s)	20.0	65.0	39.0	39.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	3.0	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	0.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	0.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	68.2	68.2	53.0	53.0	22.8	
Actuated g/C Ratio	0.68	0.68	0.53	0.53	0.23	
v/c Ratio	0.25	0.10	0.33	0.28	0.83	
Control Delay	7.1	6.1	15.8	2.8	50.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.1	6.1	15.8	2.8	50.3	
LOS	A	A	B	A	D	
Approach Delay		6.7	9.9		50.3	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 8 (8%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 21.3

Intersection LOS: C

Intersection Capacity Utilization 58.1%

ICU Level of Service B

Analysis Period (min) 15

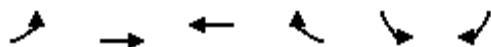
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	154	119	292	241	199	148
Future Volume (veh/h)	154	119	292	241	199	148
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1935	2027	1764	1750	1935	1950
Adj Flow Rate, veh/h	159	123	301	184	205	127
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	0	1	2	1	0
Cap, veh/h	653	1397	1004	844	239	148
Arrive On Green	0.07	0.69	0.57	0.57	0.22	0.22
Sat Flow, veh/h	1843	2027	1764	1483	1083	671
Grp Volume(v), veh/h	159	123	301	184	333	0
Grp Sat Flow(s),veh/h/ln	1843	2027	1764	1483	1760	0
Q Serve(g_s), s	3.2	2.0	8.9	6.1	18.2	0.0
Cycle Q Clear(g_c), s	3.2	2.0	8.9	6.1	18.2	0.0
Prop In Lane	1.00			1.00	0.62	0.38
Lane Grp Cap(c), veh/h	653	1397	1004	844	389	0
V/C Ratio(X)	0.24	0.09	0.30	0.22	0.86	0.00
Avail Cap(c_a), veh/h	912	1397	1004	844	440	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.66	0.66	1.00	0.00
Uniform Delay (d), s/veh	7.0	5.1	11.2	10.6	37.4	0.0
Incr Delay (d2), s/veh	0.2	0.1	0.5	0.4	14.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.0	1.4	5.8	3.5	14.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.1	5.3	11.7	11.0	51.5	0.0
LnGrp LOS	A	A	B	B	D	A
Approach Vol, veh/h		282	485		333	
Approach Delay, s/veh		6.3	11.4		51.5	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.0	61.9		26.1		73.9
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	20.0	39.0		24.0		65.0
Max Q Clear Time (g_c+I1), s	5.7	11.4		20.7		4.5
Green Ext Time (p_c), s	0.4	4.1		0.4		1.0

Intersection Summary

HCM 6th Ctrl Delay	22.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

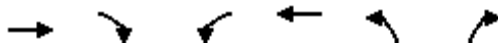
11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	123	220	137	310	211	112
Future Volume (vph)	123	220	137	310	211	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.953	
Flt Protected				0.985	0.968	
Satd. Flow (prot)	1723	1435	0	1690	1691	0
Flt Permitted				0.849	0.968	
Satd. Flow (perm)	1723	1435	0	1457	1691	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		250				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	2%	4%	1%	2%	2%
Adj. Flow (vph)	140	250	156	352	240	127
Shared Lane Traffic (%)						
Lane Group Flow (vph)	140	250	0	508	367	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	25.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	55.9%	55.9%	19.6%	75.5%	24.5%	
Maximum Green (s)	51.0	51.0	14.0	71.0	19.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	26.8	26.8		26.8	20.2	
Actuated g/C Ratio	0.47	0.47		0.47	0.35	
v/c Ratio	0.17	0.31		0.74	0.61	
Control Delay	8.9	2.3		19.7	22.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	8.9	2.3		19.7	22.9	
LOS	A	A		B	C	
Approach Delay	4.7			19.7	22.9	
Approach LOS	A			B	C	
Queue Length 50th (ft)	25	0		130	93	
Queue Length 95th (ft)	48	25		216	#244	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1583	1339		1457	597	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.09	0.19		0.35	0.61	

Intersection Summary

Area Type: Other

Cycle Length: 102

Actuated Cycle Length: 57.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 16.0

Intersection LOS: B

Intersection Capacity Utilization 74.8%

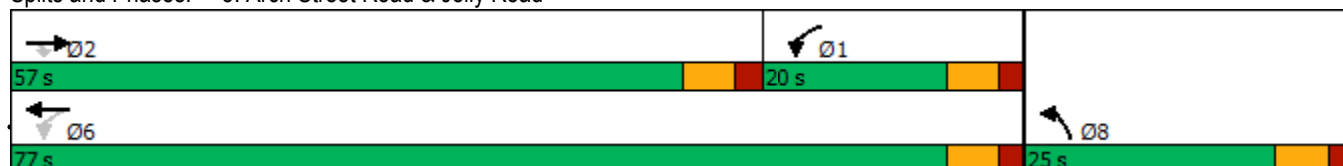
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	440	157	105	623	15	113	216	95	31	237	87
Future Volume (vph)	71	440	157	105	623	15	113	216	95	31	237	87
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.997			0.954				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1629	1800	1632	1767	1834	0	1573	1604	0	1612	1883	1648
Flt Permitted	0.217			0.413			0.597			0.473		
Satd. Flow (perm)	372	1800	1632	768	1834	0	988	1604	0	803	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					4			49				94
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	1%	1%	1%	2%	7%	3%	2%	0%	0%	3%	0%
Adj. Flow (vph)	76	473	169	113	670	16	122	232	102	33	255	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	473	169	113	686	0	122	334	0	33	255	94
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0		18.0	18.0		18.0	18.0	18.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0		12.0	12.0		12.0	12.0	12.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	19.7	20.8	20.8	19.7	20.8		13.0	13.0		13.0	13.0	12.0
Actuated g/C Ratio	0.45	0.47	0.47	0.45	0.47		0.30	0.30		0.30	0.30	0.27
v/c Ratio	0.46	0.55	0.22	0.33	0.79		0.42	0.65		0.14	0.46	0.18
Control Delay	19.0	11.2	7.5	10.8	18.3		18.3	20.0		13.7	16.3	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	19.0	11.2	7.5	10.8	18.3		18.3	20.0		13.7	16.3	4.9
LOS	B	B	A	B	B		B	C		B	B	A
Approach Delay		11.1			17.3			19.6			13.3	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	12	76	22	17	129		25	63		6	53	0
Queue Length 95th (ft)	#55	140	48	44	#295		63	#158		22	104	24
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	178	906	821	369	925		293	511		238	559	520
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.43	0.52	0.21	0.31	0.74		0.42	0.65		0.14	0.46	0.18

Intersection Summary

Area Type: Other

Cycle Length: 45

Actuated Cycle Length: 43.8

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 15.2

Intersection LOS: B

Intersection Capacity Utilization 81.2%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

					
Ø2			Ø4		
18 s			27 s		
					
Ø6			Ø8		
18 s			27 s		

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	440	157	105	623	15	113	216	95	31	237	87
Future Volume (veh/h)	71	440	157	105	623	15	113	216	95	31	237	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1789	1860	1935	1935	1920	1846	1869	1883	1912	1875	1905	1950
Adj Flow Rate, veh/h	76	473	124	113	670	16	122	232	93	33	255	52
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	1	1	1	2	7	3	2	0	0	3	0
Cap, veh/h	282	891	785	390	894	21	362	377	151	320	561	449
Arrive On Green	0.46	0.48	0.48	0.46	0.48	0.46	0.29	0.29	0.27	0.29	0.29	0.27
Sat Flow, veh/h	723	1860	1640	849	1867	45	1072	1279	513	1057	1905	1652
Grp Volume(v), veh/h	76	473	124	113	0	686	122	0	325	33	255	52
Grp Sat Flow(s),veh/h/ln	723	1860	1640	849	0	1912	1072	0	1791	1057	1905	1652
Q Serve(g_s), s	4.3	7.8	1.9	5.0	0.0	12.9	4.6	0.0	6.9	1.2	4.8	1.0
Cycle Q Clear(g_c), s	17.2	7.8	1.9	13.3	0.0	12.9	9.4	0.0	6.9	7.6	4.8	1.0
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	282	891	785	390	0	916	362	0	528	320	561	449
V/C Ratio(X)	0.27	0.53	0.16	0.29	0.00	0.75	0.34	0.00	0.62	0.10	0.45	0.12
Avail Cap(c_a), veh/h	296	927	817	407	0	953	362	0	528	320	561	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.2	8.0	6.5	13.7	0.0	9.4	16.5	0.0	13.5	16.5	12.7	12.1
Incr Delay (d2), s/veh	1.1	1.1	0.2	0.9	0.0	4.0	2.5	0.0	5.3	0.6	2.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	4.2	0.9	1.6	0.0	8.7	2.2	0.0	5.4	0.6	3.7	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.3	9.1	6.7	14.5	0.0	13.3	19.0	0.0	18.9	17.1	15.3	12.6
LnGrp LOS	B	A	A	B	A	B	B	A	B	B	B	B
Approach Vol, veh/h	673			799			447			340		
Approach Delay, s/veh	9.7			13.5			18.9			15.1		
Approach LOS	A			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	18.0			26.1			18.0			26.1		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	12.0			21.0			12.0			21.0		
Max Q Clear Time (g_c+I1), s	11.9			15.3			10.1			19.2		
Green Ext Time (p_c), s	0.0			3.2			0.4			0.9		
Intersection Summary												
HCM 6th Ctrl Delay	13.7											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	133	5	40	156	17	13	10	33	11	9	4
Future Volume (vph)	19	133	5	40	156	17	13	10	33	11	9	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.989			0.921			0.977	
Flt Protected		0.994			0.991			0.989			0.977	
Satd. Flow (prot)	0	1847	0	0	1824	0	0	1806	0	0	1762	0
Flt Permitted		0.994			0.991			0.989			0.977	
Satd. Flow (perm)	0	1847	0	0	1824	0	0	1806	0	0	1762	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	166	6	50	195	21	16	13	41	14	11	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	196	0	0	266	0	0	70	0	0	30	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	28.1%				ICU Level of Service A							
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh

9

Intersection LOS

A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	133	5	40	156	17	13	10	33	11	9	4
Future Vol, veh/h	19	133	5	40	156	17	13	10	33	11	9	4
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	0	1	0	0	0	2	0	0	0	0	0	0
Mvmt Flow	24	166	6	50	195	21	16	13	41	14	11	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

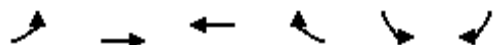
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	9.4	8.1	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	12%	19%	46%
Vol Thru, %	18%	85%	73%	38%
Vol Right, %	59%	3%	8%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	56	157	213	24
LT Vol	13	19	40	11
Through Vol	10	133	156	9
RT Vol	33	5	17	4
Lane Flow Rate	70	196	266	30
Geometry Grp	1	1	1	1
Degree of Util (X)	0.09	0.241	0.321	0.042
Departure Headway (Hd)	4.654	4.423	4.339	5.008
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	769	812	831	714
Service Time	2.686	2.448	2.361	3.043
HCM Lane V/C Ratio	0.091	0.241	0.32	0.042
HCM Control Delay	8.1	8.9	9.4	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.9	1.4	0.1

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	33	50	2	2	2
Future Volume (vph)	2	33	50	2	2	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.932	
Flt Protected		0.997			0.976	
Satd. Flow (prot)	0	1904	1890	0	1834	0
Flt Permitted		0.997			0.976	
Satd. Flow (perm)	0	1904	1890	0	1834	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1091	171		70	
Travel Time (s)		24.8	3.9		1.6	
Peak Hour Factor	0.47	0.47	0.47	0.47	0.47	0.47
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	70	106	4	4	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	74	110	0	8	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.4%

ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	33	50	2	2	2
Future Vol, veh/h	2	33	50	2	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	1	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	70	106	4	4	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	110	0	-	0	186	108
Stage 1	-	-	-	-	108	-
Stage 2	-	-	-	-	78	-
Critical Hdwy	4.1	-	-	-	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1493	-	-	-	799	948
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	946	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1493	-	-	-	797	948
Mov Cap-2 Maneuver	-	-	-	-	797	-
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	946	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		9.2		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1493	-	-	-	866	
HCM Lane V/C Ratio	0.003	-	-	-	0.01	
HCM Control Delay (s)	7.4	0	-	-	9.2	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (vph)	122	93	58	526	358	130
Future Volume (vph)	122	93	58	526	358	130
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.935					0.850
Flt Protected	0.972		0.950			
Satd. Flow (prot)	3108	0	1661	3257	3257	1573
Flt Permitted	0.972		0.498			
Satd. Flow (perm)	3108	0	871	3257	3257	1573
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	99					138
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Adj. Flow (vph)	130	99	62	560	381	138
Shared Lane Traffic (%)						
Lane Group Flow (vph)	229	0	62	560	381	138
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

												
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR						
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0						
Lead/Lag			Lead		Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0						
Recall Mode	None		None	C-Max	C-Max	None						
Act Effect Green (s)	11.6		99.4	99.4	89.3	106.8						
Actuated g/C Ratio	0.10		0.83	0.83	0.74	0.89						
v/c Ratio	0.59		0.08	0.21	0.16	0.10						
Control Delay	34.9		2.4	2.5	2.3	0.1						
Queue Delay	0.0		0.0	0.0	0.0	0.0						
Total Delay	34.9		2.4	2.5	2.3	0.1						
LOS	C		A	A	A	A						
Approach Delay	34.9			2.5	1.7							
Approach LOS	C			A	A							
Queue Length 50th (ft)	49		7	36	17	0						
Queue Length 95th (ft)	88		17	61	28	0						
Internal Link Dist (ft)	1000			755	1161							
Turn Bay Length (ft)	450		250			420						
Base Capacity (vph)	926		773	2696	2425	1573						
Starvation Cap Reductn	0		0	0	0	0						
Spillback Cap Reductn	0		0	0	0	0						
Storage Cap Reductn	0		0	0	0	0						
Reduced v/c Ratio	0.25		0.08	0.21	0.16	0.09						

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 89 (74%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 7.6

Intersection LOS: A

Intersection Capacity Utilization 34.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary 7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	🚗🚗🚗		🚗	🚗🚗	🚗🚗	🚗
Traffic Volume (veh/h)	122	93	58	526	358	130
Future Volume (veh/h)	122	93	58	526	358	130
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1736	1820	1837	1809	1780	1866
Adj Flow Rate, veh/h	114	116	62	560	381	138
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	2	1	0
Cap, veh/h	174	149	734	2818	2531	1349
Arrive On Green	0.10	0.10	0.03	0.82	0.75	0.75
Sat Flow, veh/h	1653	1542	1750	3527	3472	1582
Grp Volume(v), veh/h	114	116	62	560	381	138
Grp Sat Flow(s),veh/h/ln	1653	1542	1750	1718	1691	1582
Q Serve(g_s), s	8.0	8.8	0.9	4.2	3.8	1.7
Cycle Q Clear(g_c), s	8.0	8.8	0.9	4.2	3.8	1.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	174	149	734	2818	2531	1349
V/C Ratio(X)	0.66	0.78	0.08	0.20	0.15	0.10
Avail Cap(c_a), veh/h	455	411	798	2818	2531	1349
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.94	0.94
Uniform Delay (d), s/veh	51.6	52.9	2.8	2.3	4.3	1.4
Incr Delay (d2), s/veh	4.2	8.4	0.0	0.2	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.4	12.3	0.4	1.7	2.0	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	55.8	61.4	2.8	2.5	4.4	1.6
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	230			622	519	
Approach Delay, s/veh	58.6			2.5	3.6	
Approach LOS	E			A	A	
Timer - Assigned Phs	2		4		5	6
Phs Duration (G+Y+Rc), s	103.4		16.6		8.6	94.8
Change Period (Y+Rc), s	6.0		5.0		6.0	6.0
Max Green Setting (Gmax), s	77.0		32.0		7.0	64.0
Max Q Clear Time (g_c+I1), s	6.2		10.8		2.9	5.8
Green Ext Time (p_c), s	2.3		0.8		0.0	2.0
Intersection Summary						
HCM 6th Ctrl Delay			12.4			
HCM 6th LOS			B			

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	43	0	74	2	608	73	52	452	42
Future Volume (vph)	0	0	0	43	0	74	2	608	73	52	452	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt					0.859				0.850			0.987
Flt Protected				0.950	0.997		0.950			0.950		
Satd. Flow (prot)	1714	1832	0	1641	1578	0	1636	3209	1435	1653	3176	0
Flt Permitted				0.950	0.997		0.449			0.358		
Satd. Flow (perm)	1714	1832	0	1641	1578	0	773	3209	1435	623	3176	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									82			9
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	3%	0%
Adj. Flow (vph)	0	0	0	47	0	81	2	668	80	57	497	46
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	0	0	42	86	0	2	668	80	57	543	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split			Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		21.0	21.0	14.0	13.0	21.0	
Total Split (s)	33.0	33.0		36.0	36.0		37.0	37.0	36.0	14.0	51.0	
Total Split (%)	27.5%	27.5%		30.0%	30.0%		30.8%	30.8%	30.0%	11.7%	42.5%	
Maximum Green (s)	27.0	27.0		30.0	30.0		31.0	31.0	30.0	8.0	45.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0	5.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effect Green (s)				14.9	14.9		84.9	84.9	105.8	95.1	95.1	
Actuated g/C Ratio				0.12	0.12		0.71	0.71	0.88	0.79	0.79	
v/c Ratio				0.21	0.44		0.00	0.29	0.06	0.10	0.22	
Control Delay				48.1	54.9		7.0	6.6	0.6	3.6	3.5	
Queue Delay				0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay				48.1	54.9		7.0	6.6	0.6	3.6	3.5	
LOS				D	D		A	A	A	A	A	
Approach Delay					52.6			5.9			3.5	
Approach LOS					D			A			A	
Queue Length 50th (ft)				31	66		0	78	0	8	44	
Queue Length 95th (ft)				65	116		m2	107	5	20	73	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)							150			250		
Base Capacity (vph)				423	407		546	2270	1407	570	2518	
Starvation Cap Reductn				0	0		0	0	0	0	0	
Spillback Cap Reductn				0	0		0	0	0	0	0	
Storage Cap Reductn				0	0		0	0	0	0	0	
Reduced v/c Ratio				0.10	0.21		0.00	0.29	0.06	0.10	0.22	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 102 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 9.0

Intersection LOS: A

Intersection Capacity Utilization 43.3%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

Ø1	Ø2 (R)	Ø4	Ø8
14 s	37 s	36 s	33 s
Ø6 (R)			
51 s			

HCM 6th Signalized Intersection Summary

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	43	0	74	2	608	73	52	452	42
Future Volume (veh/h)	0	0	0	43	0	74	2	608	73	52	452	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1820	1820	1875	1950	1950	1778	1750	1750	1800	1758	1800
Adj Flow Rate, veh/h	0	0	0	47	0	70	2	668	70	57	497	46
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
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	2	0	3	0
Cap, veh/h	1	2	0	127	0	118	694	2568	1251	610	2614	241
Arrive On Green	0.00	0.00	0.00	0.07	0.00	0.07	0.77	0.77	0.77	0.03	0.85	0.84
Sat Flow, veh/h	1666	1820	0	1785	0	1652	820	3324	1483	1714	3091	285
Grp Volume(v), veh/h	0	0	0	47	0	70	2	668	70	57	268	275
Grp Sat Flow(s),veh/h/ln	1666	1820	0	1785	0	1652	820	1662	1483	1714	1670	1707
Q Serve(g_s), s	0.0	0.0	0.0	3.0	0.0	4.9	0.1	6.9	0.9	0.7	3.5	3.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.0	0.0	4.9	0.1	6.9	0.9	0.7	3.5	3.6
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	1	2	0	127	0	118	694	2568	1251	610	1412	1443
V/C Ratio(X)	0.00	0.00	0.00	0.37	0.00	0.60	0.00	0.26	0.06	0.09	0.19	0.19
Avail Cap(c_a), veh/h	389	425	0	461	0	427	694	2568	1251	684	1412	1443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.00	0.00	0.00	0.95	0.00	0.95	0.91	0.91	0.91	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	53.2	0.0	54.1	3.1	3.9	1.5	2.3	1.7	1.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	3.6	0.0	9.4	0.0	0.2	0.1	0.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	2.6	0.0	4.2	0.0	3.3	0.6	0.3	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	56.8	0.0	63.5	3.1	4.1	1.6	2.4	2.0	2.0
LnGrp LOS	A	A	A	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h	0				117				740			
Approach Delay, s/veh	0.0				60.8				3.9			
Approach LOS					E				A			
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.8	97.7		13.5		106.5		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	8.0	31.0		30.0		45.0		27.0				
Max Q Clear Time (g_c+I1), s	3.2	9.4		6.9		6.0		0.0				
Green Ext Time (p_c), s	0.0	2.9		0.8		1.8		0.0				

Intersection Summary

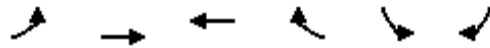
HCM 6th Ctrl Delay	7.7
HCM 6th LOS	A

Notes

- User approved pedestrian interval to be less than phase max green.
- User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

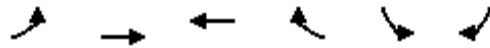


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	139	173	115	175	134	73
Future Volume (vph)	139	173	115	175	134	73
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.952	
Flt Protected	0.950				0.969	
Satd. Flow (prot)	1628	1878	1723	1450	1777	0
Flt Permitted	0.595				0.969	
Satd. Flow (perm)	1020	1878	1723	1450	1777	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				246	28	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%
Adj. Flow (vph)	196	244	162	246	189	103
Shared Lane Traffic (%)						
Lane Group Flow (vph)	196	244	162	246	292	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	13.0	67.0	54.0	54.0	23.0	
Total Split (%)	14.4%	74.4%	60.0%	60.0%	25.6%	
Maximum Green (s)	7.0	61.0	48.0	48.0	18.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	5.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	2.5	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	32.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	16.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	63.5	63.5	50.5	50.5	17.5	
Actuated g/C Ratio	0.71	0.71	0.56	0.56	0.19	
v/c Ratio	0.25	0.18	0.17	0.27	0.79	
Control Delay	5.6	5.2	10.6	2.2	47.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.6	5.2	10.6	2.2	47.7	
LOS	A	A	B	A	D	
Approach Delay		5.4	5.5		47.7	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 8 (9%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 16.3

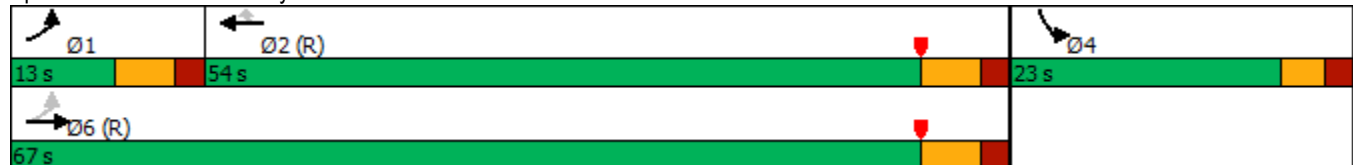
Intersection LOS: B

Intersection Capacity Utilization 34.8%

ICU Level of Service A

Analysis Period (min) 15

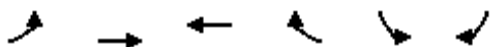
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	139	173	115	175	134	73
Future Volume (veh/h)	139	173	115	175	134	73
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1949	2012	1778	1764	1935	1950
Adj Flow Rate, veh/h	196	244	162	246	189	103
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	0	1	0	1	1	0
Cap, veh/h	759	1410	1006	846	227	124
Arrive On Green	0.08	0.70	0.57	0.57	0.20	0.20
Sat Flow, veh/h	1856	2012	1778	1495	1139	621
Grp Volume(v), veh/h	196	244	162	246	293	0
Grp Sat Flow(s),veh/h/ln	1856	2012	1778	1495	1766	0
Q Serve(g_s), s	3.5	3.7	3.9	7.7	14.3	0.0
Cycle Q Clear(g_c), s	3.5	3.7	3.9	7.7	14.3	0.0
Prop In Lane	1.00			1.00	0.65	0.35
Lane Grp Cap(c), veh/h	759	1410	1006	846	352	0
V/C Ratio(X)	0.26	0.17	0.16	0.29	0.83	0.00
Avail Cap(c_a), veh/h	777	1410	1006	846	373	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.82	0.82	1.00	0.00
Uniform Delay (d), s/veh	5.7	4.6	9.3	10.1	34.6	0.0
Incr Delay (d2), s/veh	0.4	0.3	0.3	0.7	14.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	2.4	2.6	4.4	11.8	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.1	4.9	9.6	10.9	48.7	0.0
LnGrp LOS	A	A	A	B	D	A
Approach Vol, veh/h		440	408		293	
Approach Delay, s/veh		5.4	10.4		48.7	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.1	55.9		22.0		68.0
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	7.0	48.0		18.0		61.0
Max Q Clear Time (g_c+I1), s	6.0	10.2		16.8		6.2
Green Ext Time (p_c), s	0.1	3.7		0.1		2.1
Intersection Summary						
HCM 6th Ctrl Delay			18.3			
HCM 6th LOS			B			

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

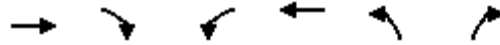
11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	198	204	89	234	231	46
Future Volume (vph)	198	204	89	234	231	46
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.978	
Flt Protected				0.986	0.960	
Satd. Flow (prot)	1723	1464	0	1724	1755	0
Flt Permitted				0.872	0.960	
Satd. Flow (perm)	1723	1464	0	1525	1755	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		227				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	220	227	99	260	257	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	220	227	0	359	308	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	49.0	49.0	20.0	69.0	21.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

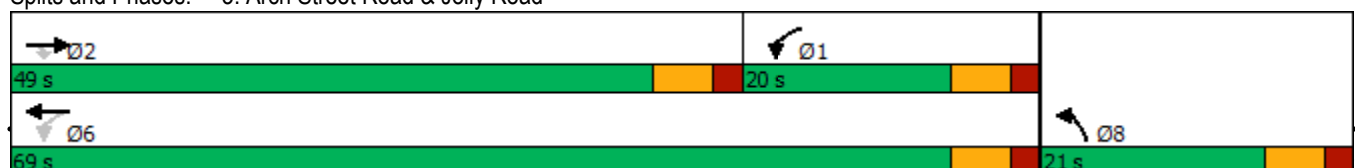


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	54.4%	54.4%	22.2%	76.7%	23.3%	
Maximum Green (s)	43.0	43.0	14.0	63.0	15.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	Max	None	None	
Act Effect Green (s)	22.0	22.0		42.0	16.0	
Actuated g/C Ratio	0.32	0.32		0.62	0.24	
v/c Ratio	0.39	0.36		0.36	0.75	
Control Delay	20.5	4.6		7.8	37.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	20.5	4.6		7.8	37.6	
LOS	C	A		A	D	
Approach Delay	12.4			7.8	37.6	
Approach LOS	B			A	D	
Queue Length 50th (ft)	70	0		63	119	
Queue Length 95th (ft)	125	43		106	#231	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1114	1027		1479	412	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.20	0.22		0.24	0.75	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 68
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 17.9
 Intersection LOS: B
 Intersection Capacity Utilization 64.7%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	459	272	52	543	31	76	212	53	21	198	91
Future Volume (vph)	53	459	272	52	543	31	76	212	53	21	198	91
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.992			0.970				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1693	1800	1632	1785	1846	0	1620	1628	0	1612	1939	1648
Flt Permitted	0.267			0.346			0.624			0.583		
Satd. Flow (perm)	476	1800	1632	650	1846	0	1064	1628	0	989	1939	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					9			35				99
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
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
Heavy Vehicles (%)	2%	1%	1%	0%	1%	0%	0%	1%	4%	0%	0%	0%
Adj. Flow (vph)	58	499	296	57	590	34	83	230	58	23	215	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	499	296	57	624	0	83	288	0	23	215	99
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0		19.0	19.0		19.0	19.0	19.0
Total Split (%)	52.5%	52.5%	52.5%	52.5%	52.5%		47.5%	47.5%		47.5%	47.5%	47.5%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0		13.0	13.0		13.0	13.0	13.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	15.0	16.0	16.0	15.0	16.0		14.0	14.0		14.0	14.0	13.0
Actuated g/C Ratio	0.38	0.40	0.40	0.38	0.40		0.35	0.35		0.35	0.35	0.32
v/c Ratio	0.33	0.69	0.45	0.23	0.84		0.22	0.49		0.07	0.32	0.16
Control Delay	15.1	17.0	11.6	11.7	24.9		11.1	12.3		9.4	11.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	15.1	17.0	11.6	11.7	24.9		11.1	12.3		9.4	11.1	3.8
LOS	B	B	B	B	C		B	B		A	B	A
Approach Delay		15.0			23.8			12.0			8.9	
Approach LOS		B			C			B			A	
Queue Length 50th (ft)	9	86	45	8	116		13	42		3	34	0
Queue Length 95th (ft)	32	#202	92	28	#274		35	91		13	70	21
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	178	721	653	243	744		372	593		346	679	602
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.33	0.69	0.45	0.23	0.84		0.22	0.49		0.07	0.32	0.16

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 16.3

Intersection LOS: B

Intersection Capacity Utilization 74.8%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

					
19 s			21 s		
					
19 s			21 s		

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	459	272	52	543	31	76	212	53	21	198	91
Future Volume (veh/h)	53	459	272	52	543	31	76	212	53	21	198	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1846	1860	1935	1950	1935	1950	1912	1898	1855	1875	1950	1950
Adj Flow Rate, veh/h	58	499	238	57	590	33	83	230	56	23	215	61
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
Percent Heavy Veh, %	2	1	1	0	1	0	0	1	4	0	0	0
Cap, veh/h	248	744	656	287	726	41	484	516	126	445	682	537
Arrive On Green	0.38	0.40	0.40	0.38	0.40	0.38	0.35	0.35	0.32	0.35	0.35	0.32
Sat Flow, veh/h	791	1860	1640	751	1815	102	1128	1474	359	1096	1950	1652
Grp Volume(v), veh/h	58	499	238	57	0	623	83	0	286	23	215	61
Grp Sat Flow(s),veh/h/ln	791	1860	1640	751	0	1916	1128	0	1833	1096	1950	1652
Q Serve(g_s), s	2.9	8.8	4.1	2.8	0.0	11.6	2.3	0.0	4.8	0.7	3.2	1.0
Cycle Q Clear(g_c), s	14.5	8.8	4.1	12.1	0.0	11.6	5.5	0.0	4.8	5.0	3.2	1.0
Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	248	744	656	287	0	767	484	0	642	445	682	537
V/C Ratio(X)	0.23	0.67	0.36	0.20	0.00	0.81	0.17	0.00	0.45	0.05	0.32	0.11
Avail Cap(c_a), veh/h	248	744	656	287	0	767	484	0	642	445	682	537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.0	9.8	8.4	15.9	0.0	10.7	11.5	0.0	10.1	11.7	9.5	9.5
Incr Delay (d2), s/veh	1.0	3.1	0.7	0.7	0.0	7.5	0.8	0.0	2.2	0.2	1.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	5.5	2.0	0.9	0.0	9.1	1.0	0.0	3.2	0.3	2.2	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.1	13.0	9.1	16.6	0.0	18.2	12.3	0.0	12.3	12.0	10.7	9.9
LnGrp LOS	B	B	A	B	A	B	B	A	B	B	B	A
Approach Vol, veh/h	795			680			369			299		
Approach Delay, s/veh	12.3			18.0			12.3			10.6		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	19.0			21.0			19.0			21.0		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	13.0			15.0			13.0			15.0		
Max Q Clear Time (g_c+I1), s	8.0			14.1			7.5			16.5		
Green Ext Time (p_c), s	1.2			0.5			1.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	13.9											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	304	11	40	259	15	13	12	32	38	16	17
Future Volume (vph)	32	304	11	40	259	15	13	12	32	38	16	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.993			0.923			0.968	
Flt Protected		0.995			0.994			0.989			0.974	
Satd. Flow (prot)	0	1848	0	0	1825	0	0	1810	0	0	1740	0
Flt Permitted		0.995			0.994			0.989			0.974	
Satd. Flow (perm)	0	1848	0	0	1825	0	0	1810	0	0	1740	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	38	358	13	47	305	18	15	14	38	45	19	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	409	0	0	370	0	0	67	0	0	84	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	39.4%											
Analysis Period (min)	15											
ICU Level of Service A												

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh 12.4
Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	32	304	11	40	259	15	13	12	32	38	16	17
Future Vol, veh/h	32	304	11	40	259	15	13	12	32	38	16	17
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	38	358	13	47	305	18	15	14	38	45	19	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

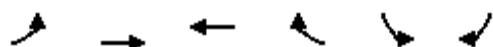
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.3	12.5	9.3	9.8
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	9%	13%	54%
Vol Thru, %	21%	88%	82%	23%
Vol Right, %	56%	3%	5%	24%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	57	347	314	71
LT Vol	13	32	40	38
Through Vol	12	304	259	16
RT Vol	32	11	15	17
Lane Flow Rate	67	408	369	84
Geometry Grp	1	1	1	1
Degree of Util (X)	0.105	0.538	0.491	0.136
Departure Headway (Hd)	5.642	4.742	4.781	5.855
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	638	751	746	616
Service Time	3.646	2.829	2.871	3.858
HCM Lane V/C Ratio	0.105	0.543	0.495	0.136
HCM Control Delay	9.3	13.3	12.5	9.8
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.4	3.2	2.7	0.5

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	0	42	2	4	0
Future Volume (vph)	2	0	42	2	4	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994			
Flt Protected		0.950			0.950	
Satd. Flow (prot)	0	1814	1889	0	1916	0
Flt Permitted		0.950			0.950	
Satd. Flow (perm)	0	1814	1889	0	1916	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1091	171		70	
Travel Time (s)		24.8	3.9		1.6	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	0	63	3	6	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	3	66	0	6	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	0	42	2	4	0
Future Vol, veh/h	2	0	42	2	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	1	-
Peak Hour Factor	67	67	67	67	67	67
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	0	63	3	6	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	66	0	71
Stage 1	-	-	65
Stage 2	-	-	6
Critical Hdwy	4.1	-	6.6
Critical Hdwy Stg 1	-	-	5.6
Critical Hdwy Stg 2	-	-	5.6
Follow-up Hdwy	2.2	-	3.5
Pot Cap-1 Maneuver	1549	-	935
Stage 1	-	-	959
Stage 2	-	-	1022
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1549	-	933
Mov Cap-2 Maneuver	-	-	933
Stage 1	-	-	957
Stage 2	-	-	1022

Approach	EB	WB	SB
HCM Control Delay, s	7.3	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1549	-	-	-	933
HCM Lane V/C Ratio	0.002	-	-	-	0.006
HCM Control Delay (s)	7.3	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (vph)	158	234	95	518	475	190
Future Volume (vph)	158	234	95	518	475	190
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.910					0.850
Flt Protected	0.980		0.950			
Satd. Flow (prot)	3049	0	1661	3257	3194	1558
Flt Permitted	0.980		0.434			
Satd. Flow (perm)	3049	0	759	3257	3194	1558
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	249					202
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	2%	3%	1%
Adj. Flow (vph)	168	249	101	551	505	202
Shared Lane Traffic (%)						
Lane Group Flow (vph)	417	0	101	551	505	202
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	6.0	6.0	3.0
Minimum Gap (s)	3.0		3.0	3.9	3.9	3.0
Time Before Reduce (s)	0.0		0.0	37.0	37.0	0.0
Time To Reduce (s)	0.0		0.0	15.0	15.0	0.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	14.4		96.6	96.6	83.9	103.3
Actuated g/C Ratio	0.12		0.80	0.80	0.70	0.86
v/c Ratio	0.71		0.15	0.21	0.23	0.15
Control Delay	26.6		3.6	3.3	6.2	0.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	26.6		3.6	3.3	6.2	0.4
LOS	C		A	A	A	A
Approach Delay	26.6			3.4	4.6	
Approach LOS	C			A	A	
Queue Length 50th (ft)	63		13	42	57	0
Queue Length 95th (ft)	110		33	77	77	0
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	1019		671	2622	2234	1543
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.41		0.15	0.21	0.23	0.13

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 101 (84%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 9.3

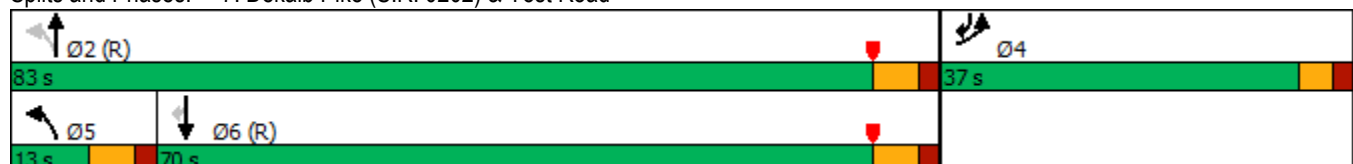
Intersection LOS: A

Intersection Capacity Utilization 43.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↱		↰	↰↱	↰↱	↰
Traffic Volume (veh/h)	158	234	95	518	475	190
Future Volume (veh/h)	158	234	95	518	475	190
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1750	1805	1837	1809	1752	1852
Adj Flow Rate, veh/h	168	247	101	551	505	193
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	0	2	3	1
Cap, veh/h	321	282	564	2517	2160	1320
Arrive On Green	0.19	0.18	0.04	0.73	0.65	0.65
Sat Flow, veh/h	1666	1530	1750	3527	3417	1569
Grp Volume(v), veh/h	168	247	101	551	505	193
Grp Sat Flow(s),veh/h/ln	1666	1530	1750	1718	1665	1569
Q Serve(g_s), s	10.9	18.8	2.2	6.1	7.5	2.7
Cycle Q Clear(g_c), s	10.9	18.8	2.2	6.1	7.5	2.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	321	282	564	2517	2160	1320
V/C Ratio(X)	0.52	0.88	0.18	0.22	0.23	0.15
Avail Cap(c_a), veh/h	458	408	607	2517	2160	1320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.99	0.99
Uniform Delay (d), s/veh	43.5	47.6	5.9	5.1	8.7	1.7
Incr Delay (d2), s/veh	1.3	13.9	0.2	0.2	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.2	22.6	1.3	3.4	4.6	3.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.8	61.5	6.0	5.3	9.0	2.0
LnGrp LOS	D	E	A	A	A	A
Approach Vol, veh/h	415			652	698	
Approach Delay, s/veh	54.7			5.4	7.0	
Approach LOS	D			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	92.9			27.1	10.1	82.8
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	77.0			32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s	8.1			20.8	4.2	9.5
Green Ext Time (p_c), s	7.9			1.3	0.1	10.2
Intersection Summary						
HCM 6th Ctrl Delay			17.7			
HCM 6th LOS			B			

Notes

User approved volume balancing among the lanes for turning movement.

Attachment G

2025 Future with Development Capacity/Levels-of-Service Analysis Worksheets – Alternative Site ‘A’ (Phase 1)

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	17	2	129	12	76	3	458	193	182	525	19
Future Volume (vph)	12	17	2	129	12	76	3	458	193	182	525	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.985			0.890				0.850		0.995	
Flt Protected	0.950			0.950	0.993		0.950			0.950		
Satd. Flow (prot)	1628	1553	0	1548	1579	0	1636	3117	1394	1605	3081	0
Flt Permitted	0.950			0.950	0.993		0.436			0.421		
Satd. Flow (perm)	1628	1553	0	1548	1579	0	751	3117	1394	711	3081	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									203			4
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	18%	0%	6%	0%	3%	0%	5%	5%	3%	7%	0%
Adj. Flow (vph)	13	18	2	136	13	80	3	482	203	192	553	20
Shared Lane Traffic (%)				12%								
Lane Group Flow (vph)	13	20	0	120	109	0	3	482	203	192	573	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		31.0	31.0	13.0	14.0	31.0	
Total Split (s)	33.0	33.0		30.0	30.0		43.0	43.0	30.0	14.0	57.0	
Total Split (%)	27.5%	27.5%		25.0%	25.0%		35.8%	35.8%	25.0%	11.7%	47.5%	
Maximum Green (s)	27.0	27.0		23.0	23.0		36.0	36.0	23.0	7.0	50.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effct Green (s)	8.2	8.2		15.8	15.8		69.7	69.7	91.5	83.7	83.7	
Actuated g/C Ratio	0.07	0.07		0.13	0.13		0.58	0.58	0.76	0.70	0.70	
v/c Ratio	0.12	0.19		0.59	0.52		0.01	0.27	0.18	0.35	0.27	
Control Delay	53.9	56.2		60.0	56.7		15.7	13.9	0.8	10.1	8.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	53.9	56.2		60.0	56.7		15.7	13.9	0.8	10.1	8.6	
LOS	D	E		E	E		B	B	A	B	A	
Approach Delay		55.3			58.4			10.1			9.0	
Approach LOS		E			E			B			A	
Queue Length 50th (ft)	10	15		93	84		1	93	0	53	88	
Queue Length 95th (ft)	30	40		151	138		6	168	7	105	146	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	362		309	315		436	1810	1192	555	2149	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.03	0.06		0.39	0.35		0.01	0.27	0.17	0.35	0.27	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 16.9

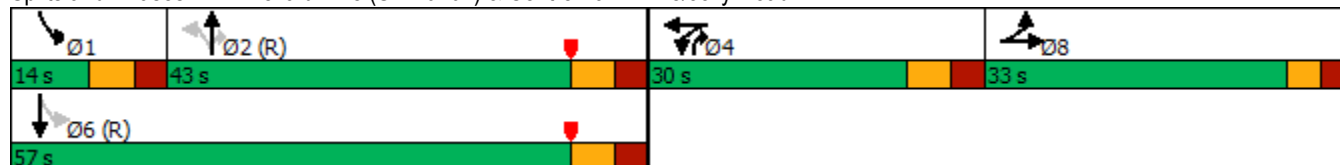
Intersection LOS: B

Intersection Capacity Utilization 56.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road



HCM 6th Signalized Intersection Summary

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	17	2	129	12	76	3	458	193	182	525	19
Future Volume (veh/h)	12	17	2	129	12	76	3	458	193	182	525	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1557	1820	1789	1950	1905	1778	1707	1707	1758	1702	1800
Adj Flow Rate, veh/h	13	18	2	93	73	37	3	482	184	192	553	20
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
Percent Heavy Veh, %	0	18	0	6	0	3	0	5	5	3	7	0
Cap, veh/h	47	39	4	149	106	54	560	2032	1033	577	2364	85
Arrive On Green	0.03	0.03	0.02	0.09	0.09	0.09	0.63	0.63	0.63	0.07	0.74	0.73
Sat Flow, veh/h	1666	1376	153	1704	1220	618	798	3244	1447	1674	3183	115
Grp Volume(v), veh/h	13	0	20	93	0	110	3	482	184	192	281	292
Grp Sat Flow(s),veh/h/ln	1666	0	1529	1704	0	1838	798	1622	1447	1674	1617	1681
Q Serve(g_s), s	0.9	0.0	1.5	6.3	0.0	7.0	0.2	7.8	5.0	4.5	6.5	6.5
Cycle Q Clear(g_c), s	0.9	0.0	1.5	6.3	0.0	7.0	0.2	7.8	5.0	4.5	6.5	6.5
Prop In Lane	1.00		0.10	1.00		0.34	1.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	47	0	43	149	0	160	560	2032	1033	577	1201	1248
V/C Ratio(X)	0.28	0.00	0.46	0.63	0.00	0.69	0.01	0.24	0.18	0.33	0.23	0.23
Avail Cap(c_a), veh/h	389	0	357	341	0	368	560	2032	1033	578	1201	1248
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.98	0.00	0.98	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.1	0.0	57.4	52.9	0.0	53.2	8.4	9.8	5.6	6.2	4.8	4.8
Incr Delay (d2), s/veh	3.1	0.0	7.4	4.2	0.0	5.0	0.0	0.3	0.4	0.3	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	0.0	1.2	5.1	0.0	6.2	0.1	4.8	3.7	2.5	3.5	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.2	0.0	64.9	57.0	0.0	58.2	8.4	10.1	6.0	6.5	5.3	5.3
LnGrp LOS	E	A	E	E	A	E	A	B	A	A	A	A
Approach Vol, veh/h	33			203			669			765		
Approach Delay, s/veh	63.0			57.6			9.0			5.6		
Approach LOS	E			E			A			A		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	13.9	81.2		16.5		95.1		8.4				
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		6.0				
Max Green Setting (Gmax), s	7.0	36.0		23.0		50.0		27.0				
Max Q Clear Time (g_c+I1), s	7.0	10.3		9.0		9.0		3.5				
Green Ext Time (p_c), s	0.0	2.7		0.5		1.9		0.1				

Intersection Summary

HCM 6th Ctrl Delay 14.4

HCM 6th LOS B

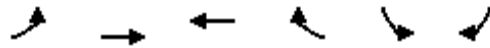
Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

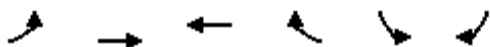


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	108	349	132	132	156	87
Future Volume (vph)	108	349	132	132	156	87
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.951	
Flt Protected	0.950				0.969	
Satd. Flow (prot)	1550	1842	1641	1435	1734	0
Flt Permitted	0.610				0.969	
Satd. Flow (perm)	996	1842	1641	1435	1734	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				139	28	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	3%	5%	2%	2%	5%
Adj. Flow (vph)	114	367	139	139	164	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	367	139	139	256	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	13.0	67.0	54.0	54.0	23.0	
Total Split (%)	14.4%	74.4%	60.0%	60.0%	25.6%	
Maximum Green (s)	7.0	61.0	48.0	48.0	18.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	3.0	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	0.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	0.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	64.3	64.3	54.0	54.0	16.7	
Actuated g/C Ratio	0.71	0.71	0.60	0.60	0.19	
v/c Ratio	0.15	0.28	0.14	0.15	0.75	
Control Delay	4.9	5.6	10.0	2.3	44.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.9	5.6	10.0	2.3	44.4	
LOS	A	A	A	A	D	
Approach Delay		5.4	6.1		44.4	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 61 (68%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 15.4

Intersection LOS: B

Intersection Capacity Utilization 41.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	108	349	132	132	156	87
Future Volume (veh/h)	108	349	132	132	156	87
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1878	1983	1707	1750	1920	1876
Adj Flow Rate, veh/h	114	367	139	104	164	68
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	3	5	2	2	5
Cap, veh/h	850	1451	1057	918	209	87
Arrive On Green	0.06	0.73	0.62	0.62	0.17	0.17
Sat Flow, veh/h	1789	1983	1707	1483	1242	515
Grp Volume(v), veh/h	114	367	139	104	233	0
Grp Sat Flow(s),veh/h/ln	1789	1983	1707	1483	1765	0
Q Serve(g_s), s	1.8	5.5	3.0	2.6	11.4	0.0
Cycle Q Clear(g_c), s	1.8	5.5	3.0	2.6	11.4	0.0
Prop In Lane	1.00			1.00	0.70	0.29
Lane Grp Cap(c), veh/h	850	1451	1057	918	297	0
V/C Ratio(X)	0.13	0.25	0.13	0.11	0.78	0.00
Avail Cap(c_a), veh/h	907	1451	1057	918	373	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.90	0.90	1.00	0.00
Uniform Delay (d), s/veh	4.4	4.0	7.1	7.0	35.9	0.0
Incr Delay (d2), s/veh	0.1	0.4	0.2	0.2	8.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	3.2	1.9	1.4	9.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.5	4.4	7.3	7.2	44.3	0.0
LnGrp LOS	A	A	A	A	D	A
Approach Vol, veh/h		481	243		233	
Approach Delay, s/veh		4.4	7.3		44.3	
Approach LOS		A	A		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	10.1	60.7		19.1		70.9
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	7.0	48.0		18.0		61.0
Max Q Clear Time (g_c+I1), s	4.3	5.5		13.9		8.0
Green Ext Time (p_c), s	0.1	2.1		0.3		3.4

Intersection Summary

HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	278	244	49	80	182	101
Future Volume (vph)	278	244	49	80	182	101
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.952	
Flt Protected				0.981	0.969	
Satd. Flow (prot)	1689	1422	0	1630	1680	0
Flt Permitted				0.818	0.969	
Satd. Flow (perm)	1689	1422	0	1359	1680	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		252				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	4%	6%	3%	2%
Adj. Flow (vph)	287	252	51	82	188	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	287	252	0	133	292	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	30.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	53.3%	53.3%	18.7%	72.0%	28.0%	
Maximum Green (s)	51.0	51.0	14.0	71.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	5.8	3.0	
Minimum Gap (s)	4.1	4.1	3.0	4.1	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	32.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	15.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	22.1	22.1		22.1	14.7	
Actuated g/C Ratio	0.47	0.47		0.47	0.31	
v/c Ratio	0.36	0.31		0.21	0.56	
Control Delay	10.3	2.8		9.3	17.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	10.3	2.8		9.3	17.7	
LOS	B	A		A	B	
Approach Delay	6.8			9.3	17.7	
Approach LOS	A			A	B	
Queue Length 50th (ft)	45	0		19	64	
Queue Length 95th (ft)	105	32		53	119	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1689	1422		1359	901	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.17	0.18		0.10	0.32	

Intersection Summary

Area Type: Other

Cycle Length: 107

Actuated Cycle Length: 46.8

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 10.5

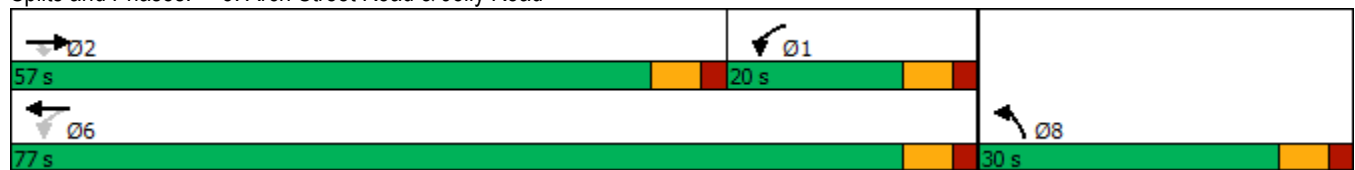
Intersection LOS: B

Intersection Capacity Utilization 64.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	532	150	93	329	15	45	188	90	15	267	25
Future Volume (vph)	59	532	150	93	329	15	45	188	90	15	267	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.993			0.951				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1645	1748	1616	1733	1806	0	1486	1555	0	1493	1883	1648
Flt Permitted	0.541			0.355			0.573			0.552		
Satd. Flow (perm)	937	1748	1616	647	1806	0	896	1555	0	867	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					8			60				82
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
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
Heavy Vehicles (%)	5%	4%	2%	3%	3%	9%	9%	3%	7%	8%	3%	0%
Adj. Flow (vph)	61	554	156	97	343	16	47	196	94	16	278	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	554	156	97	359	0	47	290	0	16	278	26
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	2	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0		16.0	16.0		16.0	16.0	16.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		10.0	10.0		10.0	10.0	10.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	Max	Max	Max	Max	Max		None	None		None	None	None
Act Effect Green (s)	19.0	19.0	19.0	19.0	19.0		10.8	10.8		10.8	10.8	10.8
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.48		0.27	0.27		0.27	0.27	0.27
v/c Ratio	0.14	0.66	0.20	0.31	0.41		0.19	0.62		0.07	0.55	0.05
Control Delay	6.9	13.0	7.0	10.0	8.5		13.6	17.6		11.7	17.1	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	6.9	13.0	7.0	10.0	8.5		13.6	17.6		11.7	17.1	0.6
LOS	A	B	A	B	A		B	B		B	B	A
Approach Delay		11.3			8.8			17.0			15.5	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	7	85	18	12	46		8	43		3	52	0
Queue Length 95th (ft)	21	164	41	36	90		26	#121		12	104	2
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	447	835	771	309	867		247	473		239	520	514
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.14	0.66	0.20	0.31	0.41		0.19	0.61		0.07	0.53	0.05

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 39.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 12.4

Intersection LOS: B

Intersection Capacity Utilization 72.9%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

 Ø2	 Ø4
24 s	16 s
 Ø6	 Ø8
24 s	16 s

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	532	150	93	329	15	45	188	90	15	267	25
Future Volume (veh/h)	59	532	150	93	329	15	45	188	90	15	267	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1803	1818	1920	1905	1905	1816	1784	1869	1812	1761	1905	1950
Adj Flow Rate, veh/h	61	554	111	97	343	16	47	196	94	16	278	9
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
Percent Heavy Veh, %	5	4	2	3	3	9	9	3	7	8	3	0
Cap, veh/h	540	879	787	375	873	41	325	313	150	315	499	433
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.46	0.26	0.26	0.24	0.26	0.26	0.26
Sat Flow, veh/h	986	1818	1627	785	1806	84	1042	1194	572	1025	1905	1652
Grp Volume(v), veh/h	61	554	111	97	0	359	47	0	290	16	278	9
Grp Sat Flow(s),veh/h/ln	986	1818	1627	785	0	1890	1042	0	1766	1025	1905	1652
Q Serve(g_s), s	1.7	8.9	1.5	4.2	0.0	4.8	1.6	0.0	5.7	0.5	5.0	0.2
Cycle Q Clear(g_c), s	6.4	8.9	1.5	13.6	0.0	4.8	6.6	0.0	5.7	5.8	5.0	0.2
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	540	879	787	375	0	914	325	0	463	315	499	433
V/C Ratio(X)	0.11	0.63	0.14	0.26	0.00	0.39	0.14	0.00	0.63	0.05	0.56	0.02
Avail Cap(c_a), veh/h	540	879	787	375	0	914	344	0	494	334	533	463
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.5	7.5	5.6	12.8	0.0	6.5	15.4	0.0	13.0	15.1	12.5	10.8
Incr Delay (d2), s/veh	0.4	3.4	0.4	1.7	0.0	1.3	0.4	0.0	3.6	0.1	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	5.1	0.7	1.4	0.0	3.0	0.6	0.0	3.9	0.2	3.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.9	11.0	6.0	14.5	0.0	7.8	15.8	0.0	16.5	15.3	14.7	10.8
LnGrp LOS	A	B	A	B	A	A	B	A	B	B	B	B
Approach Vol, veh/h	726			456			337			303		
Approach Delay, s/veh	10.0			9.2			16.4			14.6		
Approach LOS	B			A			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	24.0			15.3			24.0			15.3		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	18.0			10.0			18.0			10.0		
Max Q Clear Time (g_c+I1), s	11.4			9.1			15.6			8.3		
Green Ext Time (p_c), s	3.0			0.2			0.9			0.4		
Intersection Summary												
HCM 6th Ctrl Delay	11.8											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	261	13	30	137	14	16	6	52	9	5	7
Future Volume (vph)	1	261	13	30	137	14	16	6	52	9	5	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.990			0.905			0.957	
Flt Protected					0.992			0.989			0.979	
Satd. Flow (prot)	0	1767	0	0	1724	0	0	1752	0	0	1729	0
Flt Permitted					0.992			0.989			0.979	
Satd. Flow (perm)	0	1767	0	0	1724	0	0	1752	0	0	1729	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		19.9			29.5			12.1			26.9	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles (%)	0%	6%	0%	10%	6%	0%	6%	0%	0%	0%	0%	0%
Adj. Flow (vph)	1	353	18	41	185	19	22	8	70	12	7	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	372	0	0	245	0	0	100	0	0	28	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	39.1%				ICU Level of Service A							
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	261	13	30	137	14	16	6	52	9	5	7
Future Vol, veh/h	1	261	13	30	137	14	16	6	52	9	5	7
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	0	6	0	10	6	0	6	0	0	0	0	0
Mvmt Flow	1	353	18	41	185	19	22	8	70	12	7	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

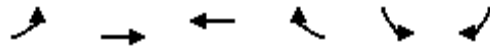
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.4	10.1	8.9	8.6
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	0%	17%	43%
Vol Thru, %	8%	95%	76%	24%
Vol Right, %	70%	5%	8%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	74	275	181	21
LT Vol	16	1	30	9
Through Vol	6	261	137	5
RT Vol	52	13	14	7
Lane Flow Rate	100	372	245	28
Geometry Grp	1	1	1	1
Degree of Util (X)	0.14	0.463	0.325	0.042
Departure Headway (Hd)	5.051	4.483	4.788	5.333
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	705	803	748	666
Service Time	3.116	2.523	2.835	3.41
HCM Lane V/C Ratio	0.142	0.463	0.328	0.042
HCM Control Delay	8.9	11.4	10.1	8.6
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.5	2.5	1.4	0.1

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	5	8	25	12	8
Future Volume (vph)	13	5	8	25	12	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.899		0.945	
Flt Protected		0.966			0.971	
Satd. Flow (prot)	0	1845	1708	0	1850	0
Flt Permitted		0.966			0.971	
Satd. Flow (perm)	0	1845	1708	0	1850	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		1091	171		70	
Travel Time (s)		29.8	4.7		1.9	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	17	7	11	33	16	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	24	44	0	27	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 17.6% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 3.8

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 13 5 8 25 12 8

Future Vol, veh/h 13 5 8 25 12 8

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - -1 0 - 1 -

Peak Hour Factor 75 75 75 75 75 75

Heavy Vehicles, % 0 0 0 0 0 0

Mvmt Flow 17 7 11 33 16 11

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 44 0 - 0 69 28

Stage 1 - - - - 28 -

Stage 2 - - - - 41 -

Critical Hdwy 4.1 - - - 6.6 6.3

Critical Hdwy Stg 1 - - - - 5.6 -

Critical Hdwy Stg 2 - - - - 5.6 -

Follow-up Hdwy 2.2 - - - 3.5 3.3

Pot Cap-1 Maneuver 1577 - - - 937 1052

Stage 1 - - - - 998 -

Stage 2 - - - - 984 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1577 - - - 927 1052

Mov Cap-2 Maneuver - - - - 927 -

Stage 1 - - - - 987 -

Stage 2 - - - - 984 -

Approach EB WB SB

HCM Control Delay, s 5.3 0 8.8

HCM LOS A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1577 - - - 973

HCM Lane V/C Ratio 0.011 - - - 0.027

HCM Control Delay (s) 7.3 0 - - 8.8

HCM Lane LOS A A - - A

HCM 95th %tile Q(veh) 0 - - - 0.1

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (vph)	53	45	37	458	418	60
Future Volume (vph)	53	45	37	458	418	60
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.931					0.850
Flt Protected	0.974		0.950			
Satd. Flow (prot)	3053	0	1661	3164	3163	1542
Flt Permitted	0.974		0.477			
Satd. Flow (perm)	3053	0	834	3164	3163	1542
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	46					61
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	0%	0%	5%	4%	2%
Adj. Flow (vph)	54	46	38	467	427	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	0	38	467	427	61
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

												
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR						
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0						
Lead/Lag			Lead		Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0						
Recall Mode	None		None	C-Max	C-Max	None						
Act Effect Green (s)	8.8		102.2	102.2	94.8	110.2						
Actuated g/C Ratio	0.07		0.85	0.85	0.79	0.92						
v/c Ratio	0.38		0.05	0.17	0.17	0.04						
Control Delay	33.7		1.7	1.8	4.5	0.1						
Queue Delay	0.0		0.0	0.0	0.0	0.0						
Total Delay	33.7		1.7	1.8	4.5	0.1						
LOS	C		A	A	A	A						
Approach Delay	33.7			1.8	4.0							
Approach LOS	C			A	A							
Queue Length 50th (ft)	20		3	23	37	0						
Queue Length 95th (ft)	47		9	38	48	0						
Internal Link Dist (ft)	1000			755	1161							
Turn Bay Length (ft)	450		250			420						
Base Capacity (vph)	872		765	2694	2499	1542						
Starvation Cap Reductn	0		0	0	0	0						
Spillback Cap Reductn	0		0	0	0	0						
Storage Cap Reductn	0		0	0	0	0						
Reduced v/c Ratio	0.11		0.05	0.17	0.17	0.04						

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 90 (75%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.38

Intersection Signal Delay: 5.7

Intersection LOS: A

Intersection Capacity Utilization 30.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary 7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (veh/h)	53	45	37	458	418	60
Future Volume (veh/h)	53	45	37	458	418	60
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1694	1820	1837	1766	1738	1837
Adj Flow Rate, veh/h	50	50	38	467	427	61
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	4	0	0	5	4	2
Cap, veh/h	97	80	790	2903	2633	1334
Arrive On Green	0.06	0.05	0.03	0.87	0.80	0.80
Sat Flow, veh/h	1613	1542	1750	3444	3390	1557
Grp Volume(v), veh/h	50	50	38	467	427	61
Grp Sat Flow(s),veh/h/ln	1613	1542	1750	1678	1651	1557
Q Serve(g_s), s	3.6	3.8	0.4	2.6	3.6	0.7
Cycle Q Clear(g_c), s	3.6	3.8	0.4	2.6	3.6	0.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	97	80	790	2903	2633	1334
V/C Ratio(X)	0.52	0.63	0.05	0.16	0.16	0.05
Avail Cap(c_a), veh/h	444	411	861	2903	2633	1334
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.96	0.96
Uniform Delay (d), s/veh	54.7	55.8	1.7	1.3	2.8	1.3
Incr Delay (d2), s/veh	4.2	7.9	0.0	0.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	6.2	0.1	0.6	1.6	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	59.0	63.7	1.7	1.4	3.0	1.3
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	100			505	488	
Approach Delay, s/veh	61.3			1.4	2.8	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	108.8			11.2	8.2	100.7
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	77.0			32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s	5.1			6.1	2.9	6.1
Green Ext Time (p_c), s	1.9			0.3	0.0	1.9

Intersection Summary

HCM 6th Ctrl Delay	7.5
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	32	7	285	11	106	4	449	167	55	228	60
Future Volume (vph)	24	32	7	285	11	106	4	449	167	55	228	60
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.974			0.918				0.850		0.969	
Flt Protected	0.950			0.950	0.981		0.950			0.950		
Satd. Flow (prot)	1628	1784	0	1624	1635	0	1636	3178	1464	1653	3154	0
Flt Permitted	0.950			0.950	0.981		0.565			0.401		
Satd. Flow (perm)	1628	1784	0	1624	1635	0	973	3178	1464	698	3154	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									178		33	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	3%	0%	0%	2%	0%
Adj. Flow (vph)	26	34	7	303	12	113	4	478	178	59	243	64
Shared Lane Traffic (%)				27%								
Lane Group Flow (vph)	26	41	0	221	207	0	4	478	178	59	307	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	14.0	14.0		13.0	13.0		22.0	22.0	13.0	13.0	22.0	
Total Split (s)	33.0	33.0		33.0	33.0		40.0	40.0	33.0	14.0	54.0	
Total Split (%)	27.5%	27.5%		27.5%	27.5%		33.3%	33.3%	27.5%	11.7%	45.0%	
Maximum Green (s)	27.0	27.0		26.0	26.0		33.0	33.0	26.0	7.0	47.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0	5.0	3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effect Green (s)	11.3	11.3		23.8	23.8		59.5	59.5	90.5	70.7	70.7	
Actuated g/C Ratio	0.09	0.09		0.20	0.20		0.50	0.50	0.75	0.59	0.59	
v/c Ratio	0.17	0.25		0.69	0.64		0.01	0.30	0.16	0.13	0.16	
Control Delay	51.7	53.3		55.7	53.2		24.2	23.8	1.4	14.0	11.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	51.7	53.3		55.7	53.2		24.2	23.8	1.4	14.0	11.8	
LOS	D	D		E	D		C	C	A	B	B	
Approach Delay		52.6			54.5			17.8			12.2	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	19	30		165	152		2	137	0	20	52	
Queue Length 95th (ft)	47	65		253	236		m10	194	25	45	83	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	416		365	367		482	1576	1160	474	1871	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.10		0.61	0.56		0.01	0.30	0.15	0.12	0.16	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 107 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 28.3

Intersection LOS: C

Intersection Capacity Utilization 58.7%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

Ø1	Ø2 (R)	Ø4	Ø8
14 s	40 s	33 s	33 s
Ø6 (R)			
54 s			

HCM 6th Signalized Intersection Summary

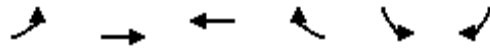
1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	32	7	285	11	106	4	449	167	55	228	60
Future Volume (veh/h)	24	32	7	285	11	106	4	449	167	55	228	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1820	1820	1860	1950	1920	1778	1736	1778	1800	1772	1800
Adj Flow Rate, veh/h	26	34	7	360	0	0	4	478	127	59	243	64
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	1	0	2	0	3	0	0	2	0
Cap, veh/h	77	67	14	512	282	0	651	1914	1092	524	1769	456
Arrive On Green	0.05	0.05	0.04	0.14	0.00	0.00	0.58	0.58	0.58	0.04	0.67	0.66
Sat Flow, veh/h	1666	1464	301	3543	1950	0	1019	3298	1507	1714	2649	683
Grp Volume(v), veh/h	26	0	41	360	0	0	4	478	127	59	153	154
Grp Sat Flow(s),veh/h/ln	1666	0	1766	1772	1950	0	1019	1649	1507	1714	1683	1649
Q Serve(g_s), s	1.8	0.0	2.7	11.6	0.0	0.0	0.2	8.5	3.0	1.5	4.0	4.2
Cycle Q Clear(g_c), s	1.8	0.0	2.7	11.6	0.0	0.0	0.2	8.5	3.0	1.5	4.0	4.2
Prop In Lane	1.00		0.17	1.00		0.00	1.00		1.00	1.00		0.41
Lane Grp Cap(c), veh/h	77	0	81	512	282	0	651	1914	1092	524	1124	1101
V/C Ratio(X)	0.34	0.00	0.50	0.70	0.00	0.00	0.01	0.25	0.12	0.11	0.14	0.14
Avail Cap(c_a), veh/h	389	0	412	797	439	0	651	1914	1092	574	1124	1101
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.90	0.00	0.00	0.96	0.96	0.96	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.5	0.0	56.0	48.9	0.0	0.0	10.6	12.4	5.0	8.7	7.3	7.4
Incr Delay (d2), s/veh	5.5	0.0	10.0	3.4	0.0	0.0	0.0	0.3	0.2	0.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	0.0	2.6	8.9	0.0	0.0	0.1	5.5	2.8	1.0	2.5	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.9	0.0	66.0	52.3	0.0	0.0	10.6	12.7	5.2	8.8	7.5	7.7
LnGrp LOS	E	A	E	D	A	A	B	B	A	A	A	A
Approach Vol, veh/h	67			360			609			366		
Approach Delay, s/veh	64.0			52.3			11.1			7.8		
Approach LOS	E			D			B			A		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.5	75.6		23.3		86.1		10.5				
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		6.0				
Max Green Setting (Gmax), s	7.0	33.0		26.0		47.0		27.0				
Max Q Clear Time (g_c+I1), s	4.0	11.0		14.1		6.5		4.7				
Green Ext Time (p_c), s	0.0	2.3		2.2		2.5		0.3				
Intersection Summary												
HCM 6th Ctrl Delay	23.3											
HCM 6th LOS	C											
Notes												

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

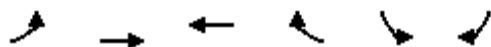


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	157	125	296	238	197	151
Future Volume (vph)	157	125	296	238	197	151
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.941	
Flt Protected	0.950				0.973	
Satd. Flow (prot)	1612	1897	1706	1435	1766	0
Flt Permitted	0.479				0.973	
Satd. Flow (perm)	813	1897	1706	1435	1766	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				245	37	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	1%	2%	1%	0%
Adj. Flow (vph)	162	129	305	245	203	156
Shared Lane Traffic (%)						
Lane Group Flow (vph)	162	129	305	245	359	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	26.0	71.0	45.0	45.0	29.0	
Total Split (%)	26.0%	71.0%	45.0%	45.0%	29.0%	
Maximum Green (s)	20.0	65.0	39.0	39.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	3.0	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	0.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	0.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	68.2	68.2	52.9	52.9	22.8	
Actuated g/C Ratio	0.68	0.68	0.53	0.53	0.23	
v/c Ratio	0.25	0.10	0.34	0.28	0.83	
Control Delay	7.2	6.1	15.9	2.8	50.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.2	6.1	15.9	2.8	50.2	
LOS	A	A	B	A	D	
Approach Delay		6.7	10.1		50.2	
Approach LOS		A	B		D	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 8 (8%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 21.3

Intersection LOS: C

Intersection Capacity Utilization 58.6%

ICU Level of Service B

Analysis Period (min) 15

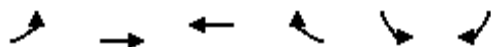
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	157	125	296	238	197	151
Future Volume (veh/h)	157	125	296	238	197	151
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1935	2027	1764	1750	1935	1950
Adj Flow Rate, veh/h	162	129	305	181	203	130
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	0	1	2	1	0
Cap, veh/h	652	1395	1001	842	237	152
Arrive On Green	0.07	0.69	0.57	0.57	0.22	0.22
Sat Flow, veh/h	1843	2027	1764	1483	1069	684
Grp Volume(v), veh/h	162	129	305	181	334	0
Grp Sat Flow(s),veh/h/ln	1843	2027	1764	1483	1758	0
Q Serve(g_s), s	3.2	2.1	9.0	6.0	18.3	0.0
Cycle Q Clear(g_c), s	3.2	2.1	9.0	6.0	18.3	0.0
Prop In Lane	1.00			1.00	0.61	0.39
Lane Grp Cap(c), veh/h	652	1395	1001	842	390	0
V/C Ratio(X)	0.25	0.09	0.30	0.22	0.86	0.00
Avail Cap(c_a), veh/h	908	1395	1001	842	440	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.67	0.67	1.00	0.00
Uniform Delay (d), s/veh	7.0	5.2	11.3	10.6	37.4	0.0
Incr Delay (d2), s/veh	0.2	0.1	0.5	0.4	14.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.0	1.5	5.9	3.5	14.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.2	5.3	11.8	11.0	51.6	0.0
LnGrp LOS	A	A	B	B	D	A
Approach Vol, veh/h		291	486		334	
Approach Delay, s/veh		6.4	11.5		51.6	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.1	61.8		26.2		73.8
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	20.0	39.0		24.0		65.0
Max Q Clear Time (g_c+I1), s	5.7	11.5		20.8		4.6
Green Ext Time (p_c), s	0.4	4.1		0.4		1.0

Intersection Summary

HCM 6th Ctrl Delay	22.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

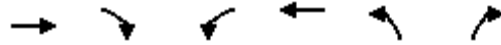
11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	124	224	136	308	214	110
Future Volume (vph)	124	224	136	308	214	110
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.954	
Flt Protected				0.985	0.968	
Satd. Flow (prot)	1723	1435	0	1690	1692	0
Flt Permitted				0.849	0.968	
Satd. Flow (perm)	1723	1435	0	1457	1692	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		255				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	2%	4%	1%	2%	2%
Adj. Flow (vph)	141	255	155	350	243	125
Shared Lane Traffic (%)						
Lane Group Flow (vph)	141	255	0	505	368	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	25.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	55.9%	55.9%	19.6%	75.5%	24.5%	
Maximum Green (s)	51.0	51.0	14.0	71.0	19.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	26.7	26.7		26.7	20.2	
Actuated g/C Ratio	0.47	0.47		0.47	0.35	
v/c Ratio	0.17	0.32		0.74	0.61	
Control Delay	8.9	2.4		19.6	22.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	8.9	2.4		19.6	22.8	
LOS	A	A		B	C	
Approach Delay	4.7			19.6	22.8	
Approach LOS	A			B	C	
Queue Length 50th (ft)	26	0		129	92	
Queue Length 95th (ft)	49	26		214	#243	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1587	1342		1457	599	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.09	0.19		0.35	0.61	

Intersection Summary

Area Type: Other
 Cycle Length: 102
 Actuated Cycle Length: 57
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 15.9
 Intersection LOS: B
 Intersection Capacity Utilization 74.7%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	436	156	103	617	18	111	216	94	35	237	86
Future Volume (vph)	70	436	156	103	617	18	111	216	94	35	237	86
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.996			0.955				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1629	1800	1632	1767	1832	0	1573	1606	0	1612	1883	1648
Flt Permitted	0.220			0.416			0.598			0.475		
Satd. Flow (perm)	377	1800	1632	774	1832	0	990	1606	0	806	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					4			49				92
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	1%	1%	1%	2%	7%	3%	2%	0%	0%	3%	0%
Adj. Flow (vph)	75	469	168	111	663	19	119	232	101	38	255	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	75	469	168	111	682	0	119	333	0	38	255	92
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0		18.0	18.0		18.0	18.0	18.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0		12.0	12.0		12.0	12.0	12.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	19.7	20.7	20.7	19.7	20.7		13.0	13.0		13.0	13.0	12.0
Actuated g/C Ratio	0.45	0.47	0.47	0.45	0.47		0.30	0.30		0.30	0.30	0.27
v/c Ratio	0.44	0.55	0.22	0.32	0.78		0.40	0.65		0.16	0.46	0.18
Control Delay	18.2	11.1	7.5	10.7	18.2		18.0	19.9		14.1	16.3	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	18.2	11.1	7.5	10.7	18.2		18.0	19.9		14.1	16.3	4.9
LOS	B	B	A	B	B		B	B		B	B	A
Approach Delay		11.0			17.1			19.4			13.3	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	12	75	22	16	128		24	62		7	53	0
Queue Length 95th (ft)	#47	138	47	43	#292		61	#157		24	104	24
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	180	906	821	372	924		295	512		239	560	519
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.42	0.52	0.20	0.30	0.74		0.40	0.65		0.16	0.46	0.18

Intersection Summary

Area Type: Other

Cycle Length: 45

Actuated Cycle Length: 43.8

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 15.1

Intersection LOS: B

Intersection Capacity Utilization 81.0%

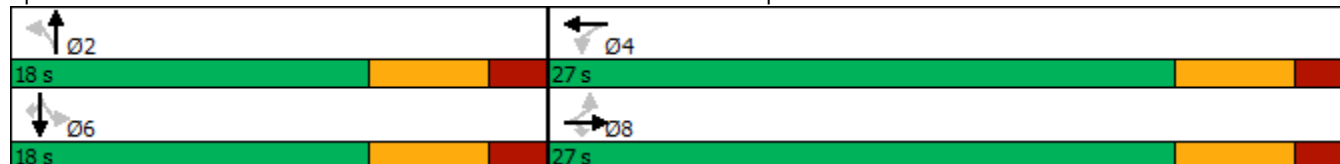
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road



HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	436	156	103	617	18	111	216	94	35	237	86
Future Volume (veh/h)	70	436	156	103	617	18	111	216	94	35	237	86
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1789	1860	1935	1935	1920	1846	1869	1883	1912	1875	1905	1950
Adj Flow Rate, veh/h	75	469	123	111	663	19	119	232	92	38	255	50
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	1	1	1	2	7	3	2	0	0	3	0
Cap, veh/h	283	888	783	392	887	25	364	379	150	323	563	450
Arrive On Green	0.45	0.48	0.48	0.45	0.48	0.45	0.30	0.30	0.27	0.30	0.30	0.27
Sat Flow, veh/h	726	1860	1640	853	1857	53	1074	1283	509	1058	1905	1652
Grp Volume(v), veh/h	75	469	123	111	0	682	119	0	324	38	255	50
Grp Sat Flow(s),veh/h/ln	726	1860	1640	853	0	1910	1074	0	1792	1058	1905	1652
Q Serve(g_s), s	4.2	7.8	1.9	4.8	0.0	12.8	4.5	0.0	6.9	1.4	4.8	1.0
Cycle Q Clear(g_c), s	17.0	7.8	1.9	13.1	0.0	12.8	9.3	0.0	6.9	7.8	4.8	1.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	283	888	783	392	0	912	364	0	529	323	563	450
V/C Ratio(X)	0.26	0.53	0.16	0.28	0.00	0.75	0.33	0.00	0.61	0.12	0.45	0.11
Avail Cap(c_a), veh/h	299	930	819	411	0	955	364	0	529	323	563	450
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.1	8.0	6.5	13.6	0.0	9.4	16.4	0.0	13.5	16.5	12.6	12.0
Incr Delay (d2), s/veh	1.1	1.1	0.2	0.8	0.0	3.9	2.4	0.0	5.2	0.7	2.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	4.1	0.9	1.6	0.0	8.6	2.1	0.0	5.4	0.6	3.7	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.2	9.1	6.7	14.4	0.0	13.3	18.8	0.0	18.7	17.2	15.2	12.5
LnGrp LOS	B	A	A	B	A	B	B	A	B	B	B	B
Approach Vol, veh/h	667			793			443			343		
Approach Delay, s/veh	9.7			13.4			18.7			15.1		
Approach LOS	A			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	18.0			26.0			18.0			26.0		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	12.0			21.0			12.0			21.0		
Max Q Clear Time (g_c+I1), s	11.8			15.1			10.3			19.0		
Green Ext Time (p_c), s	0.1			3.2			0.4			1.0		
Intersection Summary												
HCM 6th Ctrl Delay	13.6											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	132	5	39	155	25	13	12	33	21	11	6
Future Volume (vph)	20	132	5	39	155	25	13	12	33	21	11	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.985			0.923			0.977	
Flt Protected		0.994			0.991			0.989			0.974	
Satd. Flow (prot)	0	1847	0	0	1816	0	0	1810	0	0	1757	0
Flt Permitted		0.994			0.991			0.989			0.974	
Satd. Flow (perm)	0	1847	0	0	1816	0	0	1810	0	0	1757	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	25	165	6	49	194	31	16	15	41	26	14	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	196	0	0	274	0	0	72	0	0	48	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	28.9%				ICU Level of Service A							
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	132	5	39	155	25	13	12	33	21	11	6
Future Vol, veh/h	20	132	5	39	155	25	13	12	33	21	11	6
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	0	1	0	0	0	2	0	0	0	0	0	0
Mvmt Flow	25	165	6	49	194	31	16	15	41	26	14	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

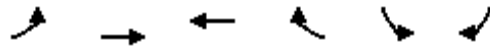
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9	9.6	8.3	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	13%	18%	55%
Vol Thru, %	21%	84%	71%	29%
Vol Right, %	57%	3%	11%	16%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	58	157	219	38
LT Vol	13	20	39	21
Through Vol	12	132	155	11
RT Vol	33	5	25	6
Lane Flow Rate	72	196	274	48
Geometry Grp	1	1	1	1
Degree of Util (X)	0.095	0.245	0.333	0.067
Departure Headway (Hd)	4.712	4.491	4.374	5.058
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	758	799	821	706
Service Time	2.755	2.522	2.403	3.103
HCM Lane V/C Ratio	0.095	0.245	0.334	0.068
HCM Control Delay	8.3	9	9.6	8.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	1	1.5	0.2

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	14	33	50	25	28	16
Future Volume (vph)	14	33	50	25	28	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.955		0.951	
Flt Protected		0.985			0.969	
Satd. Flow (prot)	0	1881	1814	0	1858	0
Flt Permitted		0.985			0.969	
Satd. Flow (perm)	0	1881	1814	0	1858	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1091	171		70	
Travel Time (s)		24.8	3.9		1.6	
Peak Hour Factor	0.47	0.47	0.47	0.47	0.47	0.47
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	30	70	106	53	60	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	100	159	0	94	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 19.2%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 3.4

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 14 33 50 25 28 16

Future Vol, veh/h 14 33 50 25 28 16

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - -1 0 - 1 -

Peak Hour Factor 47 47 47 47 47 47

Heavy Vehicles, % 0 0 0 0 0 0

Mvmt Flow 30 70 106 53 60 34

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 159 0 - 0 263 133

Stage 1 - - - - 133 -

Stage 2 - - - - 130 -

Critical Hdwy 4.1 - - - 6.6 6.3

Critical Hdwy Stg 1 - - - - 5.6 -

Critical Hdwy Stg 2 - - - - 5.6 -

Follow-up Hdwy 2.2 - - - 3.5 3.3

Pot Cap-1 Maneuver 1433 - - - 720 918

Stage 1 - - - - 892 -

Stage 2 - - - - 894 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1433 - - - 704 918

Mov Cap-2 Maneuver - - - - 704 -

Stage 1 - - - - 872 -

Stage 2 - - - - 894 -

Approach EB WB SB

HCM Control Delay, s 2.3 0 10.3

HCM LOS B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1433 - - - 769

HCM Lane V/C Ratio 0.021 - - - 0.122

HCM Control Delay (s) 7.6 0 - - 10.3

HCM Lane LOS A A - - B

HCM 95th %tile Q(veh) 0.1 - - - 0.4

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		LT	TT	TT	LT
Traffic Volume (vph)	121	102	66	522	356	128
Future Volume (vph)	121	102	66	522	356	128
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.931					0.850
Flt Protected	0.974		0.950			
Satd. Flow (prot)	3102	0	1661	3257	3257	1573
Flt Permitted	0.974		0.499			
Satd. Flow (perm)	3102	0	873	3257	3257	1573
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	109					136
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Adj. Flow (vph)	129	109	70	555	379	136
Shared Lane Traffic (%)						
Lane Group Flow (vph)	238	0	70	555	379	136
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

												
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR						
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0						
Lead/Lag			Lead		Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0						
Recall Mode	None		None	C-Max	C-Max	None						
Act Effect Green (s)	11.6		99.4	99.4	89.3	106.7						
Actuated g/C Ratio	0.10		0.83	0.83	0.74	0.89						
v/c Ratio	0.60		0.09	0.21	0.16	0.10						
Control Delay	33.7		2.5	2.5	2.3	0.1						
Queue Delay	0.0		0.0	0.0	0.0	0.0						
Total Delay	33.7		2.5	2.5	2.3	0.1						
LOS	C		A	A	A	A						
Approach Delay	33.7			2.5	1.7							
Approach LOS	C			A	A							
Queue Length 50th (ft)	49		7	35	17	0						
Queue Length 95th (ft)	88		19	60	27	0						
Internal Link Dist (ft)	1000			755	1161							
Turn Bay Length (ft)	450		250			420						
Base Capacity (vph)	932		775	2696	2422	1573						
Starvation Cap Reductn	0		0	0	0	0						
Spillback Cap Reductn	0		0	0	0	0						
Storage Cap Reductn	0		0	0	0	0						
Reduced v/c Ratio	0.26		0.09	0.21	0.16	0.09						

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 89 (74%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 7.6

Intersection LOS: A

Intersection Capacity Utilization 35.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WY		W	↑↑	↑↑	W
Traffic Volume (veh/h)	121	102	66	522	356	128
Future Volume (veh/h)	121	102	66	522	356	128
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1736	1820	1837	1809	1780	1866
Adj Flow Rate, veh/h	119	120	70	555	379	136
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	2	1	0
Cap, veh/h	178	153	734	2809	2517	1347
Arrive On Green	0.11	0.10	0.03	0.82	0.74	0.74
Sat Flow, veh/h	1653	1542	1750	3527	3472	1582
Grp Volume(v), veh/h	119	120	70	555	379	136
Grp Sat Flow(s),veh/h/ln	1653	1542	1750	1718	1691	1582
Q Serve(g_s), s	8.3	9.1	1.0	4.2	3.9	1.7
Cycle Q Clear(g_c), s	8.3	9.1	1.0	4.2	3.9	1.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	178	153	734	2809	2517	1347
V/C Ratio(X)	0.67	0.78	0.10	0.20	0.15	0.10
Avail Cap(c_a), veh/h	455	411	796	2809	2517	1347
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.93	0.93
Uniform Delay (d), s/veh	51.5	52.8	2.9	2.4	4.4	1.4
Incr Delay (d2), s/veh	4.3	8.4	0.1	0.2	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.6	12.6	0.5	1.8	2.1	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	55.7	61.2	2.9	2.5	4.5	1.6
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	239			625	515	
Approach Delay, s/veh	58.5			2.6	3.8	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	103.1			16.9	8.8	94.3
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	77.0			32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s	6.2			11.1	3.0	5.9
Green Ext Time (p_c), s	2.3			0.8	0.0	2.0

Intersection Summary

HCM 6th Ctrl Delay	12.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

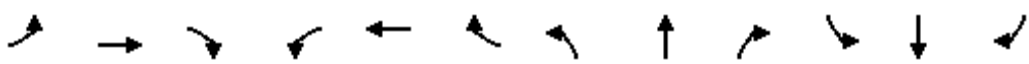
11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	5	1	42	5	73	3	602	72	51	447	47
Future Volume (vph)	4	5	1	42	5	73	3	602	72	51	447	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.975			0.867				0.850		0.986	
Flt Protected	0.950			0.950	0.997		0.950			0.950		
Satd. Flow (prot)	1628	1786	0	1641	1592	0	1636	3209	1435	1653	3174	0
Flt Permitted	0.950			0.950	0.997		0.449			0.344		
Satd. Flow (perm)	1628	1786	0	1641	1592	0	773	3209	1435	599	3174	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									82		11	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	3%	0%
Adj. Flow (vph)	4	5	1	46	5	80	3	662	79	56	491	52
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	4	6	0	41	90	0	3	662	79	56	543	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		21.0	21.0	14.0	13.0	21.0	
Total Split (s)	33.0	33.0		36.0	36.0		37.0	37.0	36.0	14.0	51.0	
Total Split (%)	27.5%	27.5%		30.0%	30.0%		30.8%	30.8%	30.0%	11.7%	42.5%	
Maximum Green (s)	27.0	27.0		30.0	30.0		31.0	31.0	30.0	8.0	45.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0	5.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effect Green (s)	9.1	9.1		15.1	15.1		78.6	78.6	99.7	89.0	89.0	
Actuated g/C Ratio	0.08	0.08		0.13	0.13		0.66	0.66	0.83	0.74	0.74	
v/c Ratio	0.03	0.04		0.20	0.45		0.01	0.31	0.07	0.11	0.23	
Control Delay	51.5	51.8		47.7	54.9		12.7	11.2	1.5	6.9	6.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	51.5	51.8		47.7	54.9		12.7	11.2	1.5	6.9	6.3	
LOS	D	D		D	D		B	B	A	A	A	
Approach Delay		51.7			52.7			10.2			6.3	
Approach LOS		D			D			B			A	
Queue Length 50th (ft)	3	4		30	68		1	77	0	8	44	
Queue Length 95th (ft)	15	18		65	120		m5	232	12	32	120	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	416		423	411		506	2102	1336	523	2357	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.01	0.01		0.10	0.22		0.01	0.31	0.06	0.11	0.23	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 102 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 12.7

Intersection LOS: B

Intersection Capacity Utilization 50.0%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

 Ø1	 Ø2 (R)	 Ø4	 Ø8
14 s	37 s	36 s	33 s
 Ø6 (R)			
51 s			

HCM 6th Signalized Intersection Summary

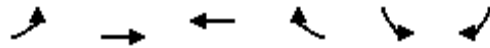
1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	5	1	42	5	73	3	602	72	51	447	47
Future Volume (veh/h)	4	5	1	42	5	73	3	602	72	51	447	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1820	1820	1875	1950	1950	1778	1750	1750	1800	1758	1800
Adj Flow Rate, veh/h	4	5	1	46	5	69	3	662	69	56	491	52
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
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	2	0	3	0
Cap, veh/h	26	23	5	131	8	114	644	2366	1164	563	2397	253
Arrive On Green	0.02	0.02	0.01	0.07	0.07	0.07	0.71	0.71	0.71	0.03	0.79	0.78
Sat Flow, veh/h	1666	1472	294	1785	113	1557	820	3324	1483	1714	3048	322
Grp Volume(v), veh/h	4	0	6	46	0	74	3	662	69	56	268	275
Grp Sat Flow(s),veh/h/ln	1666	0	1767	1785	0	1669	820	1662	1483	1714	1670	1700
Q Serve(g_s), s	0.3	0.0	0.4	2.9	0.0	5.2	0.1	8.6	1.3	1.0	4.9	5.0
Cycle Q Clear(g_c), s	0.3	0.0	0.4	2.9	0.0	5.2	0.1	8.6	1.3	1.0	4.9	5.0
Prop In Lane	1.00		0.17	1.00		0.93	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	26	0	27	131	0	122	644	2366	1164	563	1313	1337
V/C Ratio(X)	0.16	0.00	0.22	0.35	0.00	0.60	0.00	0.28	0.06	0.10	0.20	0.21
Avail Cap(c_a), veh/h	389	0	412	461	0	431	644	2366	1164	635	1313	1337
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.95	0.00	0.95	0.91	0.91	0.91	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.3	0.0	58.4	52.9	0.0	53.9	5.0	6.2	2.9	4.0	3.3	3.3
Incr Delay (d2), s/veh	5.9	0.0	8.4	3.2	0.0	9.4	0.0	0.3	0.1	0.1	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.4	2.6	0.0	4.4	0.0	4.8	0.9	0.5	2.4	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.2	0.0	66.9	56.1	0.0	63.3	5.0	6.5	3.0	4.0	3.6	3.6
LnGrp LOS	E	A	E	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h	10			120			734			599		
Approach Delay, s/veh	65.8			60.6			6.2			3.7		
Approach LOS	E			E			A			A		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.9	90.4		13.8		99.4		6.9				
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	8.0	31.0		30.0		45.0		27.0				
Max Q Clear Time (g_c+I1), s	3.5	11.1		7.2		7.4		2.8				
Green Ext Time (p_c), s	0.0	2.9		0.8		1.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	10.0											
HCM 6th LOS	B											
Notes												
User approved pedestrian interval to be less than phase max green.												
User approved volume balancing among the lanes for turning movement.												

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

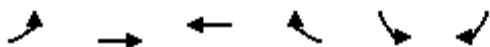


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	140	174	116	173	133	74
Future Volume (vph)	140	174	116	173	133	74
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.952	
Flt Protected	0.950				0.969	
Satd. Flow (prot)	1628	1878	1723	1450	1777	0
Flt Permitted	0.595				0.969	
Satd. Flow (perm)	1020	1878	1723	1450	1777	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				244	28	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%
Adj. Flow (vph)	197	245	163	244	187	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	245	163	244	291	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	13.0	67.0	54.0	54.0	23.0	
Total Split (%)	14.4%	74.4%	60.0%	60.0%	25.6%	
Maximum Green (s)	7.0	61.0	48.0	48.0	18.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	5.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	2.5	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	32.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	16.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	63.5	63.5	50.5	50.5	17.5	
Actuated g/C Ratio	0.71	0.71	0.56	0.56	0.19	
v/c Ratio	0.25	0.18	0.17	0.27	0.79	
Control Delay	5.6	5.2	10.6	2.2	47.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.6	5.2	10.6	2.2	47.5	
LOS	A	A	B	A	D	
Approach Delay		5.4	5.6		47.5	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 8 (9%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 16.2

Intersection LOS: B

Intersection Capacity Utilization 34.9%

ICU Level of Service A

Analysis Period (min) 15

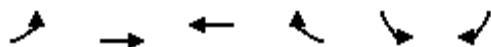
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	140	174	116	173	133	74
Future Volume (veh/h)	140	174	116	173	133	74
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1949	2012	1778	1764	1935	1950
Adj Flow Rate, veh/h	197	245	163	244	187	104
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	0	1	0	1	1	0
Cap, veh/h	760	1410	1007	846	225	125
Arrive On Green	0.08	0.70	0.57	0.57	0.20	0.20
Sat Flow, veh/h	1856	2012	1778	1495	1130	629
Grp Volume(v), veh/h	197	245	163	244	292	0
Grp Sat Flow(s),veh/h/ln	1856	2012	1778	1495	1765	0
Q Serve(g_s), s	3.5	3.7	3.9	7.6	14.3	0.0
Cycle Q Clear(g_c), s	3.5	3.7	3.9	7.6	14.3	0.0
Prop In Lane	1.00			1.00	0.64	0.36
Lane Grp Cap(c), veh/h	760	1410	1007	846	351	0
V/C Ratio(X)	0.26	0.17	0.16	0.29	0.83	0.00
Avail Cap(c_a), veh/h	778	1410	1007	846	373	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.83	0.83	1.00	0.00
Uniform Delay (d), s/veh	5.7	4.6	9.3	10.1	34.6	0.0
Incr Delay (d2), s/veh	0.4	0.3	0.3	0.7	14.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	2.4	2.6	4.4	11.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.0	4.9	9.6	10.8	48.6	0.0
LnGrp LOS	A	A	A	B	D	A
Approach Vol, veh/h		442	407		292	
Approach Delay, s/veh		5.4	10.3		48.6	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.1	56.0		21.9		68.1
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	7.0	48.0		18.0		61.0
Max Q Clear Time (g_c+I1), s	6.0	10.1		16.8		6.2
Green Ext Time (p_c), s	0.1	3.7		0.1		2.1
Intersection Summary						
HCM 6th Ctrl Delay			18.2			
HCM 6th LOS			B			

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

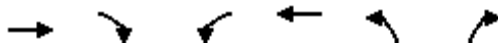
11/02/2023

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	197	204	88	233	231	45
Future Volume (vph)	197	204	88	233	231	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.978	
Flt Protected				0.986	0.960	
Satd. Flow (prot)	1723	1464	0	1724	1755	0
Flt Permitted				0.873	0.960	
Satd. Flow (perm)	1723	1464	0	1527	1755	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		227				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	219	227	98	259	257	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	219	227	0	357	307	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	49.0	49.0	20.0	69.0	21.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	54.4%	54.4%	22.2%	76.7%	23.3%	
Maximum Green (s)	43.0	43.0	14.0	63.0	15.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	Max	None	None	
Act Effect Green (s)	22.0	22.0		42.0	16.0	
Actuated g/C Ratio	0.32	0.32		0.62	0.24	
v/c Ratio	0.39	0.36		0.36	0.75	
Control Delay	20.4	4.6		7.8	37.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	20.4	4.6		7.8	37.4	
LOS	C	A		A	D	
Approach Delay	12.4			7.8	37.4	
Approach LOS	B			A	D	
Queue Length 50th (ft)	70	0		63	119	
Queue Length 95th (ft)	125	43		105	#230	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1114	1027		1480	412	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.20	0.22		0.24	0.75	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 68

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 17.8

Intersection LOS: B

Intersection Capacity Utilization 64.5%

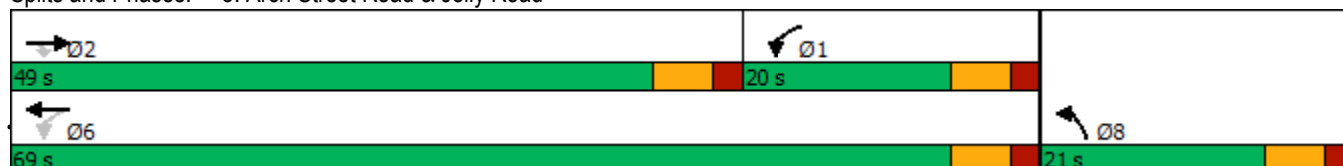
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	454	269	51	537	32	75	211	52	22	197	90
Future Volume (vph)	52	454	269	51	537	32	75	211	52	22	197	90
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.992			0.970				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1693	1800	1632	1785	1846	0	1620	1628	0	1612	1939	1648
Flt Permitted	0.268			0.352			0.624			0.584		
Satd. Flow (perm)	478	1800	1632	661	1846	0	1064	1628	0	991	1939	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					9			34				98
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
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
Heavy Vehicles (%)	2%	1%	1%	0%	1%	0%	0%	1%	4%	0%	0%	0%
Adj. Flow (vph)	57	493	292	55	584	35	82	229	57	24	214	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	493	292	55	619	0	82	286	0	24	214	98
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0		19.0	19.0		19.0	19.0	19.0
Total Split (%)	52.5%	52.5%	52.5%	52.5%	52.5%		47.5%	47.5%		47.5%	47.5%	47.5%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0		13.0	13.0		13.0	13.0	13.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	14.9	15.9	15.9	14.9	15.9		14.0	14.0		14.0	14.0	13.0
Actuated g/C Ratio	0.37	0.40	0.40	0.37	0.40		0.35	0.35		0.35	0.35	0.33
v/c Ratio	0.32	0.69	0.45	0.22	0.84		0.22	0.48		0.07	0.32	0.16
Control Delay	14.9	16.6	11.6	11.4	24.4		11.1	12.3		9.4	11.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	14.9	16.6	11.6	11.4	24.4		11.1	12.3		9.4	11.1	3.8
LOS	B	B	B	B	C		B	B		A	B	A
Approach Delay		14.8			23.4			12.0			8.9	
Approach LOS		B			C			B			A	
Queue Length 50th (ft)	9	85	45	8	114		12	41		3	34	0
Queue Length 95th (ft)	31	#177	91	26	#270		34	90		14	70	21
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	179	721	653	248	745		373	592		347	679	602
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.32	0.68	0.45	0.22	0.83		0.22	0.48		0.07	0.32	0.16

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 39.9

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 16.0

Intersection LOS: B

Intersection Capacity Utilization 74.4%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

					
19 s			21 s		
					
19 s			21 s		

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	454	269	51	537	32	75	211	52	22	197	90
Future Volume (veh/h)	52	454	269	51	537	32	75	211	52	22	197	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1846	1860	1935	1950	1935	1950	1912	1898	1855	1875	1950	1950
Adj Flow Rate, veh/h	57	493	234	55	584	34	82	229	55	24	214	60
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
Percent Heavy Veh, %	2	1	1	0	1	0	0	1	4	0	0	0
Cap, veh/h	251	744	656	291	724	42	485	517	124	446	682	537
Arrive On Green	0.38	0.40	0.40	0.38	0.40	0.38	0.35	0.35	0.32	0.35	0.35	0.32
Sat Flow, veh/h	795	1860	1640	758	1810	105	1130	1479	355	1098	1950	1652
Grp Volume(v), veh/h	57	493	234	55	0	618	82	0	284	24	214	60
Grp Sat Flow(s),veh/h/ln	795	1860	1640	758	0	1916	1130	0	1834	1098	1950	1652
Q Serve(g_s), s	2.8	8.7	4.0	2.7	0.0	11.4	2.3	0.0	4.8	0.7	3.2	1.0
Cycle Q Clear(g_c), s	14.3	8.7	4.0	11.8	0.0	11.4	5.5	0.0	4.8	5.0	3.2	1.0
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	251	744	656	291	0	766	485	0	642	446	682	537
V/C Ratio(X)	0.23	0.66	0.36	0.19	0.00	0.81	0.17	0.00	0.44	0.05	0.31	0.11
Avail Cap(c_a), veh/h	251	744	656	291	0	766	485	0	642	446	682	537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	9.8	8.4	15.7	0.0	10.7	11.5	0.0	10.1	11.7	9.5	9.5
Incr Delay (d2), s/veh	1.0	3.0	0.7	0.7	0.0	7.2	0.8	0.0	2.2	0.2	1.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	5.4	2.0	0.8	0.0	8.9	1.0	0.0	3.2	0.3	2.2	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.9	12.8	9.1	16.4	0.0	17.8	12.3	0.0	12.3	12.0	10.7	9.9
LnGrp LOS	B	B	A	B	A	B	B	A	B	B	B	A
Approach Vol, veh/h	784			673			366			298		
Approach Delay, s/veh	12.1			17.7			12.3			10.6		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	19.0			21.0			19.0			21.0		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	13.0			15.0			13.0			15.0		
Max Q Clear Time (g_c+I1), s	8.0			13.8			7.5			16.3		
Green Ext Time (p_c), s	1.2			0.6			1.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	13.7											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	301	11	39	256	18	13	13	32	41	16	18
Future Volume (vph)	33	301	11	39	256	18	13	13	32	41	16	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.992			0.925			0.968	
Flt Protected		0.995			0.994			0.989			0.973	
Satd. Flow (prot)	0	1848	0	0	1823	0	0	1814	0	0	1739	0
Flt Permitted		0.995			0.994			0.989			0.973	
Satd. Flow (perm)	0	1848	0	0	1823	0	0	1814	0	0	1739	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	39	354	13	46	301	21	15	15	38	48	19	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	406	0	0	368	0	0	68	0	0	88	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	39.6%				ICU Level of Service A							
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh 12.4
Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	33	301	11	39	256	18	13	13	32	41	16	18
Future Vol, veh/h	33	301	11	39	256	18	13	13	32	41	16	18
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	39	354	13	46	301	21	15	15	38	48	19	21
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

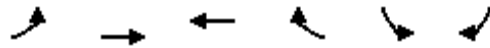
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.3	12.5	9.3	9.8
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	10%	12%	55%
Vol Thru, %	22%	87%	82%	21%
Vol Right, %	55%	3%	6%	24%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	58	345	313	75
LT Vol	13	33	39	41
Through Vol	13	301	256	16
RT Vol	32	11	18	18
Lane Flow Rate	68	406	368	88
Geometry Grp	1	1	1	1
Degree of Util (X)	0.107	0.537	0.49	0.144
Departure Headway (Hd)	5.654	4.759	4.79	5.857
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	637	747	744	616
Service Time	3.66	2.85	2.885	3.86
HCM Lane V/C Ratio	0.107	0.544	0.495	0.143
HCM Control Delay	9.3	13.3	12.5	9.8
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.4	3.2	2.7	0.5

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	0	42	13	14	5
Future Volume (vph)	8	0	42	13	14	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.969		0.966	
Flt Protected		0.950			0.964	
Satd. Flow (prot)	0	1814	1841	0	1878	0
Flt Permitted		0.950			0.964	
Satd. Flow (perm)	0	1814	1841	0	1878	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1091	171		70	
Travel Time (s)		24.8	3.9		1.6	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	0	63	19	21	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	12	82	0	28	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 16.6%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.8

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 8 0 42 13 14 5

Future Vol, veh/h 8 0 42 13 14 5

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - -1 0 - 1 -

Peak Hour Factor 67 67 67 67 67 67

Heavy Vehicles, % 0 0 0 0 0 0

Mvmt Flow 12 0 63 19 21 7

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 82 0 - 0 97 73

Stage 1 - - - - 73 -

Stage 2 - - - - 24 -

Critical Hdwy 4.1 - - - 6.6 6.3

Critical Hdwy Stg 1 - - - - 5.6 -

Critical Hdwy Stg 2 - - - - 5.6 -

Follow-up Hdwy 2.2 - - - 3.5 3.3

Pot Cap-1 Maneuver 1528 - - - 902 993

Stage 1 - - - - 951 -

Stage 2 - - - - 1002 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1528 - - - 895 993

Mov Cap-2 Maneuver - - - - 895 -

Stage 1 - - - - 943 -

Stage 2 - - - - 1002 -

Approach EB WB SB

HCM Control Delay, s 7.4 0 9

HCM LOS A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1528 - - - 919

HCM Lane V/C Ratio 0.008 - - - 0.031

HCM Control Delay (s) 7.4 0 - - 9

HCM Lane LOS A A - - A

HCM 95th %tile Q(veh) 0 - - - 0.1

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		LT	TT	TT	LT
Traffic Volume (vph)	157	236	98	513	471	188
Future Volume (vph)	157	236	98	513	471	188
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.910					0.850
Flt Protected	0.980		0.950			
Satd. Flow (prot)	3049	0	1661	3257	3194	1558
Flt Permitted	0.980		0.436			
Satd. Flow (perm)	3049	0	762	3257	3194	1558
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	251					200
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	2%	3%	1%
Adj. Flow (vph)	167	251	104	546	501	200
Shared Lane Traffic (%)						
Lane Group Flow (vph)	418	0	104	546	501	200
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	6.0	6.0	3.0
Minimum Gap (s)	3.0		3.0	3.9	3.9	3.0
Time Before Reduce (s)	0.0		0.0	37.0	37.0	0.0
Time To Reduce (s)	0.0		0.0	15.0	15.0	0.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	14.3		96.7	96.7	84.0	103.3
Actuated g/C Ratio	0.12		0.81	0.81	0.70	0.86
v/c Ratio	0.72		0.15	0.21	0.22	0.15
Control Delay	26.5		3.6	3.3	6.2	0.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	26.5		3.6	3.3	6.2	0.4
LOS	C		A	A	A	A
Approach Delay	26.5			3.4	4.6	
Approach LOS	C			A	A	
Queue Length 50th (ft)	62		13	42	56	0
Queue Length 95th (ft)	110		34	76	77	0
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	1020		673	2624	2235	1543
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.41		0.15	0.21	0.22	0.13

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 101 (84%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 9.3

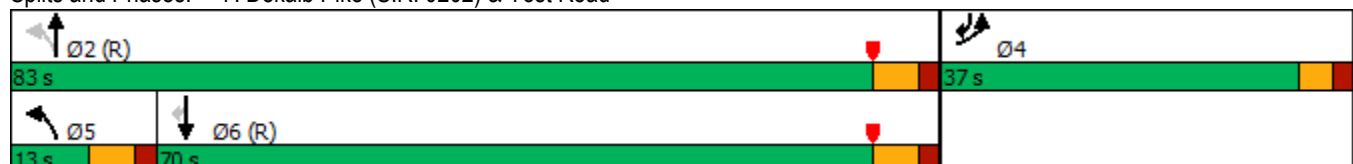
Intersection LOS: A

Intersection Capacity Utilization 43.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	🚗🚗🚗		🚗	🚗🚗	🚗🚗	🚗
Traffic Volume (veh/h)	157	236	98	513	471	188
Future Volume (veh/h)	157	236	98	513	471	188
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1750	1805	1837	1809	1752	1852
Adj Flow Rate, veh/h	167	249	104	546	501	191
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	0	2	3	1
Cap, veh/h	323	284	566	2513	2153	1319
Arrive On Green	0.19	0.19	0.04	0.73	0.65	0.65
Sat Flow, veh/h	1666	1530	1750	3527	3417	1569
Grp Volume(v), veh/h	167	249	104	546	501	191
Grp Sat Flow(s),veh/h/ln	1666	1530	1750	1718	1665	1569
Q Serve(g_s), s	10.8	19.0	2.2	6.1	7.5	2.7
Cycle Q Clear(g_c), s	10.8	19.0	2.2	6.1	7.5	2.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	323	284	566	2513	2153	1319
V/C Ratio(X)	0.52	0.88	0.18	0.22	0.23	0.14
Avail Cap(c_a), veh/h	458	408	608	2513	2153	1319
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.98	0.98
Uniform Delay (d), s/veh	43.3	47.6	5.9	5.2	8.8	1.7
Incr Delay (d2), s/veh	1.3	14.1	0.2	0.2	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.1	22.8	1.3	3.4	4.6	3.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.6	61.7	6.1	5.4	9.1	2.0
LnGrp LOS	D	E	A	A	A	A
Approach Vol, veh/h	416			650	692	
Approach Delay, s/veh	54.8			5.5	7.1	
Approach LOS	D			A	A	
Timer - Assigned Phs	2		4		5	6
Phs Duration (G+Y+Rc), s	92.7		27.3		10.2	82.6
Change Period (Y+Rc), s	6.0		5.0		6.0	6.0
Max Green Setting (Gmax), s	77.0		32.0		7.0	64.0
Max Q Clear Time (g_c+I1), s	8.1		21.0		4.2	9.5
Green Ext Time (p_c), s	7.8		1.2		0.1	10.1
Intersection Summary						
HCM 6th Ctrl Delay			17.8			
HCM 6th LOS			B			
Notes						

Attachment H

2030 Future with Development Capacity/Levels-of-Service Analysis Worksheets – Alternative Site ‘A’ (Phase 2)

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	31	4	130	38	77	7	463	195	184	531	45
Future Volume (vph)	27	31	4	130	38	77	7	463	195	184	531	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%				0%
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.984			0.910				0.850		0.988	
Flt Protected	0.950			0.950	0.995		0.950			0.950		
Satd. Flow (prot)	1628	1553	0	1548	1629	0	1636	3117	1394	1605	3068	0
Flt Permitted	0.950			0.950	0.995		0.423			0.412		
Satd. Flow (perm)	1628	1553	0	1548	1629	0	729	3117	1394	696	3068	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									205			9
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	18%	0%	6%	0%	3%	0%	5%	5%	3%	7%	0%
Adj. Flow (vph)	28	33	4	137	40	81	7	487	205	194	559	47
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	28	37	0	123	135	0	7	487	205	194	606	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		31.0	31.0	13.0	14.0	31.0	
Total Split (s)	33.0	33.0		30.0	30.0		43.0	43.0	30.0	14.0	57.0	
Total Split (%)	27.5%	27.5%		25.0%	25.0%		35.8%	35.8%	25.0%	11.7%	47.5%	
Maximum Green (s)	27.0	27.0		23.0	23.0		36.0	36.0	23.0	7.0	50.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effct Green (s)	9.4	9.4		16.5	16.5		65.4	65.4	87.9	79.4	79.4	
Actuated g/C Ratio	0.08	0.08		0.14	0.14		0.54	0.54	0.73	0.66	0.66	
v/c Ratio	0.22	0.30		0.58	0.61		0.02	0.29	0.19	0.37	0.30	
Control Delay	54.9	57.8		58.6	59.4		16.4	16.0	0.9	12.0	10.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	54.9	57.8		58.6	59.4		16.4	16.0	0.9	12.0	10.3	
LOS	D	E		E	E		B	B	A	B	B	
Approach Delay		56.5			59.0			11.6			10.7	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)	21	28		95	105		2	94	0	56	99	
Queue Length 95th (ft)	50	62		153	165		11	176	7	113	165	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	362		309	325		397	1699	1150	521	2033	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.10		0.40	0.42		0.02	0.29	0.18	0.37	0.30	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 19.5

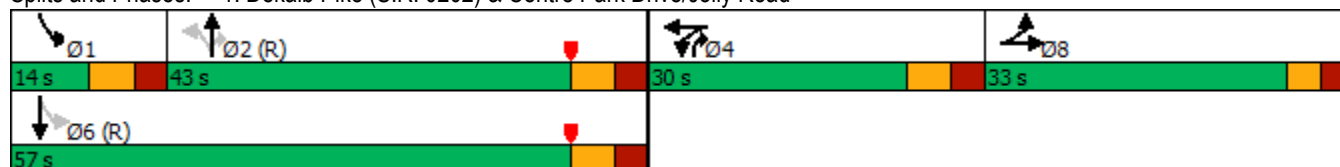
Intersection LOS: B

Intersection Capacity Utilization 58.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road



HCM 6th Signalized Intersection Summary

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	31	4	130	38	77	7	463	195	184	531	45
Future Volume (veh/h)	27	31	4	130	38	77	7	463	195	184	531	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1557	1820	1789	1950	1905	1778	1707	1707	1758	1702	1800
Adj Flow Rate, veh/h	28	33	4	107	81	38	7	487	186	194	559	47
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
Percent Heavy Veh, %	0	18	0	6	0	3	0	5	5	3	7	0
Cap, veh/h	75	62	7	161	119	56	526	1953	1008	554	2170	182
Arrive On Green	0.05	0.05	0.04	0.09	0.09	0.09	0.60	0.60	0.60	0.07	0.72	0.71
Sat Flow, veh/h	1666	1362	165	1704	1255	589	774	3244	1447	1674	3019	253
Grp Volume(v), veh/h	28	0	37	107	0	119	7	487	186	194	299	307
Grp Sat Flow(s),veh/h/ln	1666	0	1527	1704	0	1844	774	1622	1447	1674	1617	1656
Q Serve(g_s), s	2.0	0.0	2.8	7.3	0.0	7.5	0.4	8.4	5.4	4.9	7.7	7.7
Cycle Q Clear(g_c), s	2.0	0.0	2.8	7.3	0.0	7.5	0.4	8.4	5.4	4.9	7.7	7.7
Prop In Lane	1.00		0.11	1.00		0.32	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	75	0	69	161	0	174	526	1953	1008	554	1162	1190
V/C Ratio(X)	0.37	0.00	0.54	0.66	0.00	0.68	0.01	0.25	0.18	0.35	0.26	0.26
Avail Cap(c_a), veh/h	389	0	356	341	0	369	526	1953	1008	554	1162	1190
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.98	0.00	0.98	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.6	0.0	56.1	52.5	0.0	52.6	9.6	11.2	6.3	7.2	5.8	5.9
Incr Delay (d2), s/veh	3.0	0.0	6.3	4.5	0.0	4.6	0.0	0.3	0.4	0.4	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.6	0.0	2.2	5.9	0.0	6.6	0.1	5.3	4.0	2.8	4.3	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.7	0.0	62.4	57.0	0.0	57.1	9.6	11.5	6.7	7.6	6.4	6.4
LnGrp LOS	E	A	E	E	A	E	A	B	A	A	A	A
Approach Vol, veh/h	65			226			680			800		
Approach Delay, s/veh	60.8			57.1			10.2			6.7		
Approach LOS	E			E			B			A		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	14.0	78.2		17.3		92.2		10.4				
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		6.0				
Max Green Setting (Gmax), s	7.0	36.0		23.0		50.0		27.0				
Max Q Clear Time (g_c+I1), s	7.4	10.9		9.8		10.2		4.8				
Green Ext Time (p_c), s	0.0	2.7		0.6		2.1		0.1				

Intersection Summary

HCM 6th Ctrl Delay 16.4

HCM 6th LOS B

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023

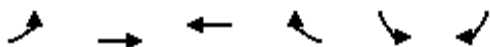


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	115	362	151	133	157	97
Future Volume (vph)	115	362	151	133	157	97
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.948	
Flt Protected	0.950				0.970	
Satd. Flow (prot)	1550	1842	1641	1435	1729	0
Flt Permitted	0.598				0.970	
Satd. Flow (perm)	976	1842	1641	1435	1729	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				140	31	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	3%	5%	2%	2%	5%
Adj. Flow (vph)	121	381	159	140	165	102
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	381	159	140	267	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	13.0	67.0	54.0	54.0	23.0	
Total Split (%)	14.4%	74.4%	60.0%	60.0%	25.6%	
Maximum Green (s)	7.0	61.0	48.0	48.0	18.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	3.0	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	0.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	0.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	64.0	64.0	51.2	51.2	17.0	
Actuated g/C Ratio	0.71	0.71	0.57	0.57	0.19	
v/c Ratio	0.16	0.29	0.17	0.16	0.76	
Control Delay	5.1	5.8	10.5	2.3	44.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.1	5.8	10.5	2.3	44.9	
LOS	A	A	B	A	D	
Approach Delay		5.6	6.7		44.9	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 61 (68%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 15.7

Intersection LOS: B

Intersection Capacity Utilization 43.1%

ICU Level of Service A

Analysis Period (min) 15

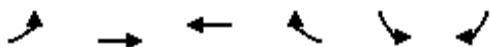
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	115	362	151	133	157	97
Future Volume (veh/h)	115	362	151	133	157	97
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1878	1983	1707	1750	1920	1876
Adj Flow Rate, veh/h	121	381	159	105	165	78
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	3	5	2	2	5
Cap, veh/h	825	1438	1043	906	208	98
Arrive On Green	0.06	0.73	0.61	0.61	0.17	0.17
Sat Flow, veh/h	1789	1983	1707	1483	1190	562
Grp Volume(v), veh/h	121	381	159	105	244	0
Grp Sat Flow(s),veh/h/ln	1789	1983	1707	1483	1759	0
Q Serve(g_s), s	2.0	5.9	3.6	2.7	12.0	0.0
Cycle Q Clear(g_c), s	2.0	5.9	3.6	2.7	12.0	0.0
Prop In Lane	1.00			1.00	0.68	0.32
Lane Grp Cap(c), veh/h	825	1438	1043	906	307	0
V/C Ratio(X)	0.15	0.26	0.15	0.12	0.79	0.00
Avail Cap(c_a), veh/h	878	1438	1043	906	371	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.97	0.97	0.89	0.89	1.00	0.00
Uniform Delay (d), s/veh	4.6	4.2	7.5	7.3	35.6	0.0
Incr Delay (d2), s/veh	0.1	0.4	0.3	0.2	9.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	3.5	2.2	1.5	9.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.7	4.6	7.8	7.6	45.1	0.0
LnGrp LOS	A	A	A	A	D	A
Approach Vol, veh/h		502	264		244	
Approach Delay, s/veh		4.7	7.7		45.1	
Approach LOS		A	A		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	10.3	60.0		19.7		70.3
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	7.0	48.0		18.0		61.0
Max Q Clear Time (g_c+I1), s	4.5	6.1		14.5		8.4
Green Ext Time (p_c), s	0.1	2.3		0.3		3.5

Intersection Summary

HCM 6th Ctrl Delay	15.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	283	254	50	86	197	102
Future Volume (vph)	283	254	50	86	197	102
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.954	
Flt Protected				0.982	0.968	
Satd. Flow (prot)	1689	1422	0	1631	1682	0
Flt Permitted				0.820	0.968	
Satd. Flow (perm)	1689	1422	0	1362	1682	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		262				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	4%	6%	3%	2%
Adj. Flow (vph)	292	262	52	89	203	105
Shared Lane Traffic (%)						
Lane Group Flow (vph)	292	262	0	141	308	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	30.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

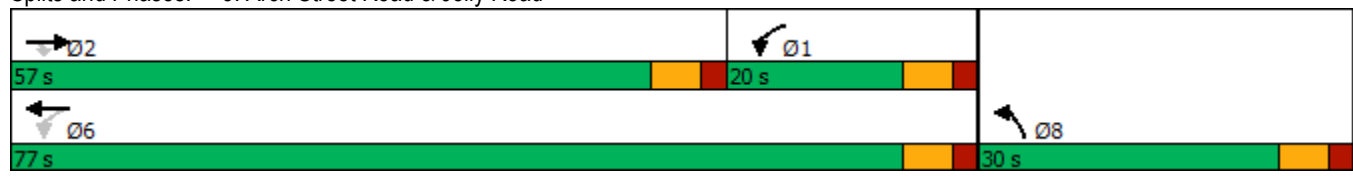
11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	53.3%	53.3%	18.7%	72.0%	28.0%	
Maximum Green (s)	51.0	51.0	14.0	71.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	5.8	3.0	
Minimum Gap (s)	4.1	4.1	3.0	4.1	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	32.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	15.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	22.1	22.1		22.1	15.6	
Actuated g/C Ratio	0.46	0.46		0.46	0.33	
v/c Ratio	0.37	0.33		0.22	0.56	
Control Delay	11.0	2.9		10.0	17.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	11.0	2.9		10.0	17.5	
LOS	B	A		A	B	
Approach Delay	7.2			10.0	17.5	
Approach LOS	A			A	B	
Queue Length 50th (ft)	48	0		21	68	
Queue Length 95th (ft)	113	34		58	126	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1684	1419		1362	884	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.17	0.18		0.10	0.35	

Intersection Summary

Area Type:	Other
Cycle Length:	107
Actuated Cycle Length:	47.7
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.56
Intersection Signal Delay:	10.7
Intersection Capacity Utilization	65.6%
Analysis Period (min)	15
Intersection LOS:	B
ICU Level of Service	C

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	538	151	94	333	24	46	194	91	20	272	25
Future Volume (vph)	60	538	151	94	333	24	46	194	91	20	272	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.990			0.952				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1645	1748	1616	1733	1799	0	1486	1557	0	1493	1883	1648
Flt Permitted	0.528			0.349			0.564			0.539		
Satd. Flow (perm)	914	1748	1616	637	1799	0	882	1557	0	847	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					12			58				82
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
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
Heavy Vehicles (%)	5%	4%	2%	3%	3%	9%	9%	3%	7%	8%	3%	0%
Adj. Flow (vph)	63	560	157	98	347	25	48	202	95	21	283	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	560	157	98	372	0	48	297	0	21	283	26
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	2	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0		16.0	16.0		16.0	16.0	16.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		10.0	10.0		10.0	10.0	10.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	Max	Max	Max	Max	Max		None	None		None	None	None
Act Effect Green (s)	19.0	19.0	19.0	19.0	19.0		10.8	10.8		10.8	10.8	10.8
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.48		0.27	0.27		0.27	0.27	0.27
v/c Ratio	0.14	0.67	0.20	0.32	0.43		0.20	0.64		0.09	0.55	0.05
Control Delay	7.0	13.3	7.0	10.2	8.6		13.7	18.5		12.1	17.3	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	7.0	13.3	7.0	10.2	8.6		13.7	18.5		12.1	17.3	0.6
LOS	A	B	A	B	A		B	B		B	B	A
Approach Delay		11.5			9.0			17.8			15.7	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	7	86	18	12	47		8	45		3	53	0
Queue Length 95th (ft)	22	#170	41	37	93		27	#127		15	106	2
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	436	834	771	304	864		243	472		233	520	514
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.14	0.67	0.20	0.32	0.43		0.20	0.63		0.09	0.54	0.05

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 39.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 12.7

Intersection LOS: B

Intersection Capacity Utilization 73.7%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

 Ø2	 Ø4
24 s	16 s
 Ø6	 Ø8
24 s	16 s

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	538	151	94	333	24	46	194	91	20	272	25
Future Volume (veh/h)	60	538	151	94	333	24	46	194	91	20	272	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1803	1818	1920	1905	1905	1816	1784	1869	1812	1761	1905	1950
Adj Flow Rate, veh/h	62	560	112	98	347	25	48	202	95	21	283	9
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
Percent Heavy Veh, %	5	4	2	3	3	9	9	3	7	8	3	0
Cap, veh/h	528	876	784	369	846	61	324	318	149	313	503	436
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.46	0.26	0.26	0.24	0.26	0.26	0.26
Sat Flow, veh/h	974	1818	1627	780	1756	127	1037	1202	565	1019	1905	1652
Grp Volume(v), veh/h	62	560	112	98	0	372	48	0	297	21	283	9
Grp Sat Flow(s),veh/h/ln	974	1818	1627	780	0	1882	1037	0	1767	1019	1905	1652
Q Serve(g_s), s	1.7	9.1	1.5	4.3	0.0	5.0	1.7	0.0	5.9	0.7	5.1	0.2
Cycle Q Clear(g_c), s	6.8	9.1	1.5	13.9	0.0	5.0	6.7	0.0	5.9	6.1	5.1	0.2
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	528	876	784	369	0	907	324	0	467	313	503	436
V/C Ratio(X)	0.12	0.64	0.14	0.27	0.00	0.41	0.15	0.00	0.64	0.07	0.56	0.02
Avail Cap(c_a), veh/h	528	876	784	369	0	907	339	0	493	328	532	461
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.8	7.6	5.7	13.1	0.0	6.6	15.4	0.0	13.0	15.3	12.5	10.7
Incr Delay (d2), s/veh	0.5	3.6	0.4	1.8	0.0	1.4	0.4	0.0	3.8	0.2	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	5.3	0.7	1.5	0.0	3.1	0.6	0.0	4.1	0.3	3.5	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.2	11.2	6.1	14.8	0.0	8.0	15.9	0.0	16.7	15.5	14.8	10.8
LnGrp LOS	A	B	A	B	A	A	B	A	B	B	B	B
Approach Vol, veh/h	734			470			345			313		
Approach Delay, s/veh	10.2			9.4			16.6			14.7		
Approach LOS	B			A			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	24.0			15.4			24.0			15.4		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	18.0			10.0			18.0			10.0		
Max Q Clear Time (g_c+I1), s	11.6			9.2			15.9			8.6		
Green Ext Time (p_c), s	3.0			0.2			0.8			0.3		
Intersection Summary												
HCM 6th Ctrl Delay	12.0											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	264	13	30	138	36	16	10	53	21	7	9
Future Volume (vph)	7	264	13	30	138	36	16	10	53	21	7	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.976			0.910			0.967	
Flt Protected		0.999			0.993			0.990			0.972	
Satd. Flow (prot)	0	1769	0	0	1712	0	0	1765	0	0	1735	0
Flt Permitted		0.999			0.993			0.990			0.972	
Satd. Flow (perm)	0	1769	0	0	1712	0	0	1765	0	0	1735	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		19.9			29.5			12.1			26.9	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles (%)	0%	6%	0%	10%	6%	0%	6%	0%	0%	0%	0%	0%
Adj. Flow (vph)	9	357	18	41	186	49	22	14	72	28	9	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	384	0	0	276	0	0	108	0	0	49	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	36.9%				ICU Level of Service A							
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh	11.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	264	13	30	138	36	16	10	53	21	7	9
Future Vol, veh/h	7	264	13	30	138	36	16	10	53	21	7	9
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	0	6	0	10	6	0	6	0	0	0	0	0
Mvmt Flow	9	357	18	41	186	49	22	14	72	28	9	12
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

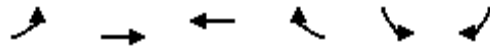
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.1	10.8	9.3	9.1
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	2%	15%	57%
Vol Thru, %	13%	93%	68%	19%
Vol Right, %	67%	5%	18%	24%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	79	284	204	37
LT Vol	16	7	30	21
Through Vol	10	264	138	7
RT Vol	53	13	36	9
Lane Flow Rate	107	384	276	50
Geometry Grp	1	1	1	1
Degree of Util (X)	0.155	0.492	0.37	0.077
Departure Headway (Hd)	5.217	4.613	4.838	5.545
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	680	775	739	639
Service Time	3.306	2.673	2.906	3.645
HCM Lane V/C Ratio	0.157	0.495	0.373	0.078
HCM Control Delay	9.3	12.1	10.8	9.1
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.5	2.8	1.7	0.2

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	44	5	8	82	42	24
Future Volume (vph)	44	5	8	82	42	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.877		0.951	
Flt Protected		0.957			0.969	
Satd. Flow (prot)	0	1827	1666	0	1858	0
Flt Permitted		0.957			0.969	
Satd. Flow (perm)	0	1827	1666	0	1858	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		1091	171		70	
Travel Time (s)		29.8	4.7		1.9	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	59	7	11	109	56	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	66	120	0	88	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 19.8%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 4.8

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 44 5 8 82 42 24

Future Vol, veh/h 44 5 8 82 42 24

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - -1 0 - 1 -

Peak Hour Factor 75 75 75 75 75 75

Heavy Vehicles, % 0 0 0 0 0 0

Mvmt Flow 59 7 11 109 56 32

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 120 0 - 0 191 66

Stage 1 - - - - 66 -

Stage 2 - - - - 125 -

Critical Hdwy 4.1 - - - 6.6 6.3

Critical Hdwy Stg 1 - - - - 5.6 -

Critical Hdwy Stg 2 - - - - 5.6 -

Follow-up Hdwy 2.2 - - - 3.5 3.3

Pot Cap-1 Maneuver 1480 - - - 794 1002

Stage 1 - - - - 958 -

Stage 2 - - - - 899 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1480 - - - 762 1002

Mov Cap-2 Maneuver - - - - 762 -

Stage 1 - - - - 920 -

Stage 2 - - - - 899 -

Approach EB WB SB

HCM Control Delay, s 6.8 0 9.8

HCM LOS A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1480 - - - 835

HCM Lane V/C Ratio 0.04 - - - 0.105

HCM Control Delay (s) 7.5 0 - - 9.8

HCM Lane LOS A A - - A

HCM 95th %tile Q(veh) 0.1 - - - 0.4

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (vph)	54	58	59	467	424	61
Future Volume (vph)	54	58	59	467	424	61
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.922					0.850
Flt Protected	0.976		0.950			
Satd. Flow (prot)	3037	0	1661	3164	3163	1542
Flt Permitted	0.976		0.474			
Satd. Flow (perm)	3037	0	829	3164	3163	1542
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	59					62
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	0%	0%	5%	4%	2%
Adj. Flow (vph)	55	59	60	477	433	62
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	0	60	477	433	62
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	8.9		102.1	102.1	92.2	106.9
Actuated g/C Ratio	0.07		0.85	0.85	0.77	0.89
v/c Ratio	0.41		0.08	0.18	0.18	0.04
Control Delay	31.2		1.8	1.8	5.0	0.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	31.2		1.8	1.8	5.0	0.1
LOS	C		A	A	A	A
Approach Delay	31.2			1.8	4.4	
Approach LOS	C			A	A	
Queue Length 50th (ft)	21		5	24	37	0
Queue Length 95th (ft)	49		13	40	48	0
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	877		760	2692	2430	1542
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.13		0.08	0.18	0.18	0.04

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 90 (75%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.41
 Intersection Signal Delay: 5.8
 Intersection LOS: A
 Intersection Capacity Utilization 31.2%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	🔴🔴		🔴	🔴🔴	🔴🔴	🔴
Traffic Volume (veh/h)	54	58	59	467	424	61
Future Volume (veh/h)	54	58	59	467	424	61
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1694	1820	1837	1766	1738	1837
Adj Flow Rate, veh/h	55	59	60	477	433	62
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	4	0	0	5	4	2
Cap, veh/h	104	86	785	2888	2601	1326
Arrive On Green	0.06	0.06	0.03	0.86	0.79	0.79
Sat Flow, veh/h	1613	1542	1750	3444	3390	1557
Grp Volume(v), veh/h	55	59	60	477	433	62
Grp Sat Flow(s),veh/h/ln	1613	1542	1750	1678	1651	1557
Q Serve(g_s), s	4.0	4.5	0.7	2.8	3.8	0.7
Cycle Q Clear(g_c), s	4.0	4.5	0.7	2.8	3.8	0.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	104	86	785	2888	2601	1326
V/C Ratio(X)	0.53	0.68	0.08	0.17	0.17	0.05
Avail Cap(c_a), veh/h	444	411	846	2888	2601	1326
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.95	0.95
Uniform Delay (d), s/veh	54.4	55.6	1.8	1.4	3.1	1.4
Incr Delay (d2), s/veh	4.2	9.1	0.0	0.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	7.3	0.2	0.7	1.8	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.5	64.7	1.8	1.5	3.2	1.4
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	114			537	495	
Approach Delay, s/veh	61.8			1.5	3.0	
Approach LOS	E			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		108.3		11.7	8.8	99.5
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0
Max Green Setting (Gmax), s		77.0		32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s		5.3		6.5	3.2	6.3
Green Ext Time (p_c), s		1.9		0.4	0.0	2.0
Intersection Summary						
HCM 6th Ctrl Delay			8.2			
HCM 6th LOS			A			
Notes						
User approved pedestrian interval to be less than phase max green.						
User approved volume balancing among the lanes for turning movement.						

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	60	12	288	35	108	8	454	168	56	231	86
Future Volume (vph)	51	60	12	288	35	108	8	454	168	56	231	86
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%				0%
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.975			0.922				0.850		0.959	
Flt Protected	0.950			0.950	0.984		0.950			0.950		
Satd. Flow (prot)	1628	1786	0	1624	1649	0	1636	3178	1464	1653	3125	0
Flt Permitted	0.950			0.950	0.984		0.549			0.391		
Satd. Flow (perm)	1628	1786	0	1624	1649	0	946	3178	1464	680	3125	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									179		53	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	3%	0%	0%	2%	0%
Adj. Flow (vph)	54	64	13	306	37	115	9	483	179	60	246	91
Shared Lane Traffic (%)				23%								
Lane Group Flow (vph)	54	77	0	236	222	0	9	483	179	60	337	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	14.0	14.0		13.0	13.0		22.0	22.0	13.0	13.0	22.0	
Total Split (s)	33.0	33.0		33.0	33.0		40.0	40.0	33.0	14.0	54.0	
Total Split (%)	27.5%	27.5%		27.5%	27.5%		33.3%	33.3%	27.5%	11.7%	45.0%	
Maximum Green (s)	27.0	27.0		26.0	26.0		33.0	33.0	26.0	7.0	47.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0	5.0	3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effect Green (s)	13.5	13.5		24.4	24.4		56.8	56.8	88.4	68.0	68.0	
Actuated g/C Ratio	0.11	0.11		0.20	0.20		0.47	0.47	0.74	0.57	0.57	
v/c Ratio	0.30	0.38		0.72	0.66		0.02	0.32	0.16	0.13	0.19	
Control Delay	51.9	54.0		57.0	53.8		26.9	25.5	1.8	15.7	12.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	51.9	54.0		57.0	53.8		26.9	25.5	1.8	15.7	12.6	
LOS	D	D		E	D		C	C	A	B	B	
Approach Delay		53.2			55.5			19.2			13.0	
Approach LOS		D			E			B			B	
Queue Length 50th (ft)	39	56		175	163		4	144	0	22	58	
Queue Length 95th (ft)	77	102		270	252		17	204	31	49	93	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	416		365	371		448	1505	1133	450	1793	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.14	0.19		0.65	0.60		0.02	0.32	0.16	0.13	0.19	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 107 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 30.4

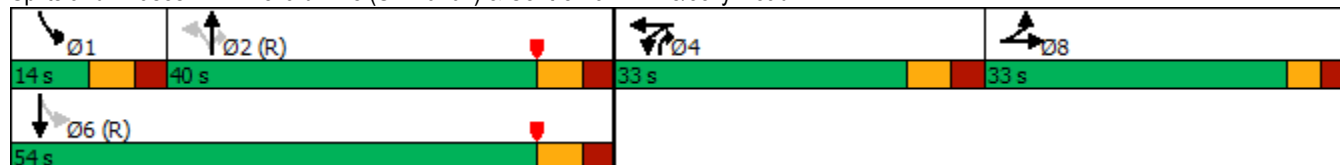
Intersection LOS: C

Intersection Capacity Utilization 61.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road



HCM 6th Signalized Intersection Summary

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

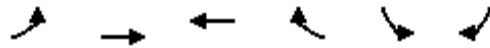
11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	60	12	288	35	108	8	454	168	56	231	86
Future Volume (veh/h)	51	60	12	288	35	108	8	454	168	56	231	86
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1820	1820	1860	1950	1920	1778	1736	1778	1800	1772	1800
Adj Flow Rate, veh/h	54	64	13	199	187	54	9	483	128	60	246	91
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	1	0	2	0	3	0	0	2	0
Cap, veh/h	122	107	22	295	242	70	585	1747	1049	478	1501	541
Arrive On Green	0.07	0.07	0.06	0.17	0.17	0.17	0.53	0.53	0.53	0.04	0.62	0.61
Sat Flow, veh/h	1666	1468	298	1772	1454	420	992	3298	1507	1714	2425	873
Grp Volume(v), veh/h	54	0	77	199	0	241	9	483	128	60	169	168
Grp Sat Flow(s),veh/h/ln	1666	0	1766	1772	0	1874	992	1649	1507	1714	1683	1615
Q Serve(g_s), s	3.7	0.0	5.1	12.7	0.0	14.8	0.5	9.7	3.4	1.8	5.1	5.4
Cycle Q Clear(g_c), s	3.7	0.0	5.1	12.7	0.0	14.8	0.5	9.7	3.4	1.8	5.1	5.4
Prop In Lane	1.00		0.17	1.00		0.22	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	122	0	129	295	0	312	585	1747	1049	478	1042	1000
V/C Ratio(X)	0.44	0.00	0.60	0.68	0.00	0.77	0.02	0.28	0.12	0.13	0.16	0.17
Avail Cap(c_a), veh/h	389	0	412	399	0	422	585	1747	1049	525	1042	1000
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.89	0.00	0.89	0.95	0.95	0.95	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	0.0	54.0	47.0	0.0	47.9	13.4	15.5	6.1	11.1	9.7	9.8
Incr Delay (d2), s/veh	5.4	0.0	9.2	5.1	0.0	8.7	0.0	0.4	0.2	0.1	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	0.0	4.6	9.7	0.0	11.8	0.2	6.4	3.2	1.2	3.3	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.7	0.0	63.2	52.0	0.0	56.6	13.4	15.9	6.3	11.2	10.0	10.2
LnGrp LOS	E	A	E	D	A	E	B	B	A	B	B	B
Approach Vol, veh/h	131			440			620			397		
Approach Delay, s/veh	61.3			54.5			13.9			10.3		
Approach LOS	E			D			B			B		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.7	69.6		26.0		80.3		13.7				
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		6.0				
Max Green Setting (Gmax), s	7.0	33.0		26.0		47.0		27.0				
Max Q Clear Time (g_c+I1), s	4.3	12.2		16.8		7.6		7.1				
Green Ext Time (p_c), s	0.0	2.3		2.2		2.8		0.8				
Intersection Summary												
HCM 6th Ctrl Delay	28.2											
HCM 6th LOS	C											

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023

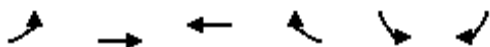


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	167	146	315	241	199	160
Future Volume (vph)	167	146	315	241	199	160
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.940	
Flt Protected	0.950				0.973	
Satd. Flow (prot)	1612	1897	1706	1435	1764	0
Flt Permitted	0.461				0.973	
Satd. Flow (perm)	782	1897	1706	1435	1764	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				248	39	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	1%	2%	1%	0%
Adj. Flow (vph)	172	151	325	248	205	165
Shared Lane Traffic (%)						
Lane Group Flow (vph)	172	151	325	248	370	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	26.0	71.0	45.0	45.0	29.0	
Total Split (%)	26.0%	71.0%	45.0%	45.0%	29.0%	
Maximum Green (s)	20.0	65.0	39.0	39.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	3.0	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	0.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	0.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	68.0	68.0	52.4	52.4	23.0	
Actuated g/C Ratio	0.68	0.68	0.52	0.52	0.23	
v/c Ratio	0.28	0.12	0.36	0.29	0.85	
Control Delay	7.4	6.3	16.5	2.9	51.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.4	6.3	16.5	2.9	51.5	
LOS	A	A	B	A	D	
Approach Delay		6.9	10.6		51.5	
Approach LOS		A	B		D	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 8 (8%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 21.6

Intersection LOS: C

Intersection Capacity Utilization 60.9%

ICU Level of Service B

Analysis Period (min) 15

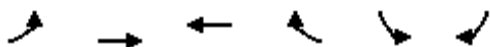
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	167	146	315	241	199	160
Future Volume (veh/h)	167	146	315	241	199	160
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1935	2027	1764	1750	1935	1950
Adj Flow Rate, veh/h	172	151	325	184	205	139
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	0	1	2	1	0
Cap, veh/h	631	1384	985	828	237	161
Arrive On Green	0.07	0.68	0.56	0.56	0.23	0.23
Sat Flow, veh/h	1843	2027	1764	1483	1043	707
Grp Volume(v), veh/h	172	151	325	184	345	0
Grp Sat Flow(s),veh/h/ln	1843	2027	1764	1483	1755	0
Q Serve(g_s), s	3.5	2.6	10.0	6.3	18.9	0.0
Cycle Q Clear(g_c), s	3.5	2.6	10.0	6.3	18.9	0.0
Prop In Lane	1.00			1.00	0.59	0.40
Lane Grp Cap(c), veh/h	631	1384	985	828	399	0
V/C Ratio(X)	0.27	0.11	0.33	0.22	0.86	0.00
Avail Cap(c_a), veh/h	882	1384	985	828	439	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.64	0.64	1.00	0.00
Uniform Delay (d), s/veh	7.4	5.4	11.9	11.1	37.1	0.0
Incr Delay (d2), s/veh	0.2	0.2	0.6	0.4	15.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	1.8	6.4	3.6	14.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.7	5.6	12.5	11.5	52.4	0.0
LnGrp LOS	A	A	B	B	D	A
Approach Vol, veh/h		323	509		345	
Approach Delay, s/veh		6.7	12.2		52.4	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.4	60.9		26.7		73.3
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	20.0	39.0		24.0		65.0
Max Q Clear Time (g_c+I1), s	6.0	12.5		21.4		5.1
Green Ext Time (p_c), s	0.4	4.3		0.3		1.2

Intersection Summary

HCM 6th Ctrl Delay	22.5
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

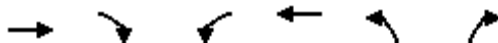
11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	130	240	137	316	228	112
Future Volume (vph)	130	240	137	316	228	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.956	
Flt Protected				0.985	0.968	
Satd. Flow (prot)	1723	1435	0	1690	1696	0
Flt Permitted				0.848	0.968	
Satd. Flow (perm)	1723	1435	0	1455	1696	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		273				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	2%	4%	1%	2%	2%
Adj. Flow (vph)	148	273	156	359	259	127
Shared Lane Traffic (%)						
Lane Group Flow (vph)	148	273	0	515	386	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	25.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	55.9%	55.9%	19.6%	75.5%	24.5%	
Maximum Green (s)	51.0	51.0	14.0	71.0	19.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	27.2	27.2		27.2	20.2	
Actuated g/C Ratio	0.47	0.47		0.47	0.35	
v/c Ratio	0.18	0.33		0.75	0.65	
Control Delay	8.9	2.4		19.9	24.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	8.9	2.4		19.9	24.4	
LOS	A	A		B	C	
Approach Delay	4.6			19.9	24.4	
Approach LOS	A			B	C	
Queue Length 50th (ft)	27	0		133	100	
Queue Length 95th (ft)	51	26		220	#267	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1575	1335		1455	596	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.09	0.20		0.35	0.65	

Intersection Summary

Area Type: Other

Cycle Length: 102

Actuated Cycle Length: 57.5

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 16.4

Intersection LOS: B

Intersection Capacity Utilization 76.1%

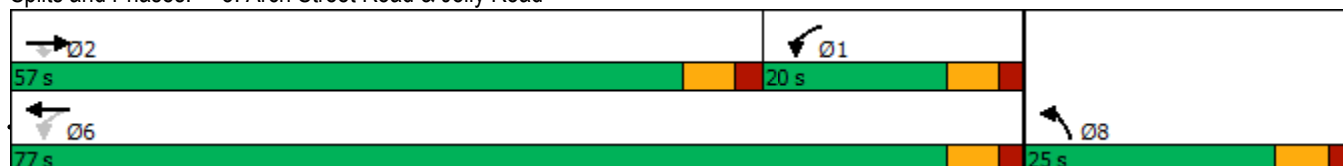
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	440	157	105	623	27	113	222	95	44	244	87
Future Volume (vph)	71	440	157	105	623	27	113	222	95	44	244	87
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.994			0.955				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1629	1800	1632	1767	1827	0	1573	1606	0	1612	1883	1648
Flt Permitted	0.207			0.413			0.585			0.461		
Satd. Flow (perm)	355	1800	1632	768	1827	0	968	1606	0	782	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					7			48				94
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	1%	1%	1%	2%	7%	3%	2%	0%	0%	3%	0%
Adj. Flow (vph)	76	473	169	113	670	29	122	239	102	47	262	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	473	169	113	699	0	122	341	0	47	262	94
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0		18.0	18.0		18.0	18.0	18.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0		12.0	12.0		12.0	12.0	12.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	19.8	20.9	20.9	19.8	20.9		13.0	13.0		13.0	13.0	12.0
Actuated g/C Ratio	0.45	0.48	0.48	0.45	0.48		0.30	0.30		0.30	0.30	0.27
v/c Ratio	0.47	0.55	0.22	0.33	0.80		0.43	0.67		0.20	0.47	0.18
Control Delay	21.2	11.1	7.5	10.8	19.2		18.7	20.8		14.9	16.5	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	21.2	11.1	7.5	10.8	19.2		18.7	20.8		14.9	16.5	4.9
LOS	C	B	A	B	B		B	C		B	B	A
Approach Delay		11.4			18.0			20.2			13.6	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)	12	76	22	17	132		25	65		9	55	0
Queue Length 95th (ft)	#58	140	48	44	#304		63	#164		29	107	24
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	170	904	819	368	920		287	510		231	558	519
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.45	0.52	0.21	0.31	0.76		0.43	0.67		0.20	0.47	0.18

Intersection Summary

Area Type: Other

Cycle Length: 45

Actuated Cycle Length: 43.9

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 15.7

Intersection LOS: B

Intersection Capacity Utilization 82.3%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

					
Ø2			Ø4		
18 s			27 s		
					
Ø6			Ø8		
18 s			27 s		

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	440	157	105	623	27	113	222	95	44	244	87
Future Volume (veh/h)	71	440	157	105	623	27	113	222	95	44	244	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1789	1860	1935	1935	1920	1846	1869	1883	1912	1875	1905	1950
Adj Flow Rate, veh/h	76	473	124	113	670	29	122	239	93	47	262	52
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	1	1	1	2	7	3	2	0	0	3	0
Cap, veh/h	276	897	791	393	881	38	354	378	147	312	558	446
Arrive On Green	0.46	0.48	0.48	0.46	0.48	0.46	0.29	0.29	0.27	0.29	0.29	0.27
Sat Flow, veh/h	714	1860	1640	849	1827	79	1065	1291	502	1050	1905	1652
Grp Volume(v), veh/h	76	473	124	113	0	699	122	0	332	47	262	52
Grp Sat Flow(s),veh/h/ln	714	1860	1640	849	0	1906	1065	0	1793	1050	1905	1652
Q Serve(g_s), s	4.4	7.8	1.9	5.0	0.0	13.3	4.7	0.0	7.2	1.8	5.0	1.1
Cycle Q Clear(g_c), s	17.8	7.8	1.9	13.3	0.0	13.3	9.7	0.0	7.2	8.5	5.0	1.1
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	276	897	791	393	0	919	354	0	525	312	558	446
V/C Ratio(X)	0.28	0.53	0.16	0.29	0.00	0.76	0.35	0.00	0.63	0.15	0.47	0.12
Avail Cap(c_a), veh/h	285	921	812	404	0	944	354	0	525	312	558	446
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.6	8.0	6.4	13.6	0.0	9.4	16.9	0.0	13.8	17.1	12.9	12.2
Incr Delay (d2), s/veh	1.1	1.1	0.2	0.9	0.0	4.3	2.7	0.0	5.7	1.0	2.8	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	4.2	0.9	1.6	0.0	8.9	2.2	0.0	5.7	0.8	3.9	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.7	9.0	6.6	14.4	0.0	13.7	19.5	0.0	19.5	18.1	15.7	12.7
LnGrp LOS	B	A	A	B	A	B	B	A	B	B	B	B
Approach Vol, veh/h	673			812			454			361		
Approach Delay, s/veh	9.7			13.8			19.5			15.6		
Approach LOS	A			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	18.0			26.4			18.0			26.4		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	12.0			21.0			12.0			21.0		
Max Q Clear Time (g_c+I1), s	12.2			15.3			11.0			19.8		
Green Ext Time (p_c), s	0.0			3.2			0.3			0.6		
Intersection Summary												
HCM 6th Ctrl Delay	14.0											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	133	5	40	156	47	13	16	33	44	16	11
Future Volume (vph)	25	133	5	40	156	47	13	16	33	44	16	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.974			0.928			0.979	
Flt Protected		0.992			0.992			0.990			0.970	
Satd. Flow (prot)	0	1843	0	0	1794	0	0	1822	0	0	1753	0
Flt Permitted		0.992			0.992			0.990			0.970	
Satd. Flow (perm)	0	1843	0	0	1794	0	0	1822	0	0	1753	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	31	166	6	50	195	59	16	20	41	55	20	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	203	0	0	304	0	0	77	0	0	89	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	34.5%				ICU Level of Service A							
Analysis Period (min)	15											

Intersection

Intersection Delay, s/veh 9.6

Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	133	5	40	156	47	13	16	33	44	16	11
Future Vol, veh/h	25	133	5	40	156	47	13	16	33	44	16	11
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	0	1	0	0	0	2	0	0	0	0	0	0
Mvmt Flow	31	166	6	50	195	59	16	20	41	55	20	14
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

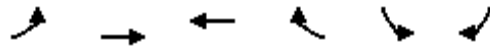
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.4	10.2	8.5	9
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	15%	16%	62%
Vol Thru, %	26%	82%	64%	23%
Vol Right, %	53%	3%	19%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	62	163	243	71
LT Vol	13	25	40	44
Through Vol	16	133	156	16
RT Vol	33	5	47	11
Lane Flow Rate	78	204	304	89
Geometry Grp	1	1	1	1
Degree of Util (X)	0.105	0.264	0.377	0.128
Departure Headway (Hd)	4.897	4.67	4.471	5.183
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	727	766	802	688
Service Time	2.961	2.717	2.514	3.246
HCM Lane V/C Ratio	0.107	0.266	0.379	0.129
HCM Control Delay	8.5	9.4	10.2	9
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.4	1.1	1.8	0.4

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	43	33	50	78	88	49
Future Volume (vph)	43	33	50	78	88	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.918		0.952	
Flt Protected		0.973			0.969	
Satd. Flow (prot)	0	1858	1744	0	1860	0
Flt Permitted		0.973			0.969	
Satd. Flow (perm)	0	1858	1744	0	1860	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1091	171		70	
Travel Time (s)		24.8	3.9		1.6	
Peak Hour Factor	0.47	0.47	0.47	0.47	0.47	0.47
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	91	70	106	166	187	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	161	272	0	291	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 29.4% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 7.6

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 43 33 50 78 88 49

Future Vol, veh/h 43 33 50 78 88 49

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - -1 0 - 1 -

Peak Hour Factor 47 47 47 47 47 47

Heavy Vehicles, % 0 0 0 0 0 0

Mvmt Flow 91 70 106 166 187 104

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 272 0 - 0 441 189

Stage 1 - - - - 189 -

Stage 2 - - - - 252 -

Critical Hdwy 4.1 - - - 6.6 6.3

Critical Hdwy Stg 1 - - - - 5.6 -

Critical Hdwy Stg 2 - - - - 5.6 -

Follow-up Hdwy 2.2 - - - 3.5 3.3

Pot Cap-1 Maneuver 1303 - - - 563 854

Stage 1 - - - - 839 -

Stage 2 - - - - 784 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1303 - - - 522 854

Mov Cap-2 Maneuver - - - - 522 -

Stage 1 - - - - 778 -

Stage 2 - - - - 784 -

Approach EB WB SB

HCM Control Delay, s 4.5 0 16.3

HCM LOS C

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1303 - - - 606

HCM Lane V/C Ratio 0.07 - - - 0.481

HCM Control Delay (s) 8 0 - - 16.3

HCM Lane LOS A A - - C

HCM 95th %tile Q(veh) 0.2 - - - 2.6

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (vph)	122	126	88	532	365	130
Future Volume (vph)	122	126	88	532	365	130
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.924					0.850
Flt Protected	0.976		0.950			
Satd. Flow (prot)	3087	0	1661	3257	3257	1573
Flt Permitted	0.976		0.494			
Satd. Flow (perm)	3087	0	864	3257	3257	1573
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	134					138
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Adj. Flow (vph)	130	134	94	566	388	138
Shared Lane Traffic (%)						
Lane Group Flow (vph)	264	0	94	566	388	138
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	11.7		99.3	99.3	86.7	103.4
Actuated g/C Ratio	0.10		0.83	0.83	0.72	0.86
v/c Ratio	0.63		0.12	0.21	0.16	0.10
Control Delay	31.5		2.6	2.6	2.4	0.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	31.5		2.6	2.6	2.4	0.1
LOS	C		A	A	A	A
Approach Delay	31.5			2.6	1.8	
Approach LOS	C			A	A	
Queue Length 50th (ft)	49		10	36	17	0
Queue Length 95th (ft)	90		24	63	28	m0
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	946		767	2694	2352	1572
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.28		0.12	0.21	0.16	0.09

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 89 (74%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 7.6

Intersection LOS: A

Intersection Capacity Utilization 37.2%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary 7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	LT
Traffic Volume (veh/h)	122	126	88	532	365	130
Future Volume (veh/h)	122	126	88	532	365	130
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1736	1820	1837	1809	1780	1866
Adj Flow Rate, veh/h	130	134	94	566	388	138
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	2	1	0
Cap, veh/h	194	168	722	2776	2468	1339
Arrive On Green	0.12	0.11	0.04	0.81	0.73	0.73
Sat Flow, veh/h	1653	1542	1750	3527	3472	1582
Grp Volume(v), veh/h	130	134	94	566	388	138
Grp Sat Flow(s),veh/h/ln	1653	1542	1750	1718	1691	1582
Q Serve(g_s), s	9.0	10.2	1.5	4.5	4.2	1.8
Cycle Q Clear(g_c), s	9.0	10.2	1.5	4.5	4.2	1.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	194	168	722	2776	2468	1339
V/C Ratio(X)	0.67	0.80	0.13	0.20	0.16	0.10
Avail Cap(c_a), veh/h	455	411	775	2776	2468	1339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.92	0.92
Uniform Delay (d), s/veh	50.7	52.2	3.2	2.7	5.0	1.5
Incr Delay (d2), s/veh	4.0	8.3	0.1	0.2	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.2	13.7	0.7	2.0	2.3	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	54.7	60.5	3.3	2.8	5.1	1.7
LnGrp LOS	D	E	A	A	A	A
Approach Vol, veh/h	264			660	526	
Approach Delay, s/veh	57.7			2.9	4.2	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	101.9			18.1	9.4	92.5
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	77.0			32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s	6.5			12.2	3.5	6.2
Green Ext Time (p_c), s	2.3			0.9	0.1	2.1

Intersection Summary

HCM 6th Ctrl Delay	13.3
HCM 6th LOS	B

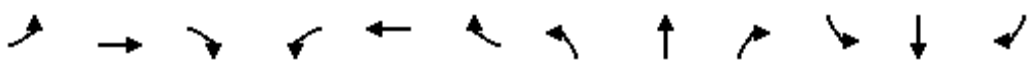
Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	16	3	43	17	74	5	608	73	52	452	59
Future Volume (vph)	15	16	3	43	17	74	5	608	73	52	452	59
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.979			0.884				0.850		0.983	
Flt Protected	0.950			0.950	0.998		0.950			0.950		
Satd. Flow (prot)	1628	1794	0	1641	1625	0	1636	3209	1435	1653	3166	0
Flt Permitted	0.950			0.950	0.998		0.441			0.334		
Satd. Flow (perm)	1628	1794	0	1641	1625	0	760	3209	1435	581	3166	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									82		14	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	3%	0%
Adj. Flow (vph)	16	18	3	47	19	81	5	668	80	57	497	65
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	16	21	0	42	105	0	5	668	80	57	562	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		21.0	21.0	14.0	13.0	21.0	
Total Split (s)	33.0	33.0		36.0	36.0		37.0	37.0	36.0	14.0	51.0	
Total Split (%)	27.5%	27.5%		30.0%	30.0%		30.8%	30.8%	30.0%	11.7%	42.5%	
Maximum Green (s)	27.0	27.0		30.0	30.0		31.0	31.0	30.0	8.0	45.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0	5.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effct Green (s)	10.1	10.1		16.1	16.1		73.9	73.9	95.9	84.4	84.4	
Actuated g/C Ratio	0.08	0.08		0.13	0.13		0.62	0.62	0.80	0.70	0.70	
v/c Ratio	0.12	0.14		0.19	0.48		0.01	0.34	0.07	0.12	0.25	
Control Delay	52.1	52.5		46.6	54.8		14.0	14.0	2.0	8.6	8.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	52.1	52.5		46.6	54.8		14.0	14.0	2.0	8.6	8.0	
LOS	D	D		D	D		B	B	A	A	A	
Approach Delay		52.3			52.5			12.7			8.1	
Approach LOS		D			D			B			A	
Queue Length 50th (ft)	12	15		30	80		2	163	0	14	84	
Queue Length 95th (ft)	34	41		64	134		m9	243	26	36	134	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	418		423	419		467	1975	1286	489	2231	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.04	0.05		0.10	0.25		0.01	0.34	0.06	0.12	0.25	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 102 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 15.6

Intersection LOS: B

Intersection Capacity Utilization 51.0%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

			
Ø1	Ø2 (R)	Ø4	Ø8
14 s	37 s	36 s	33 s
			
Ø5 (R)			
51 s			

HCM 6th Signalized Intersection Summary

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	16	3	43	17	74	5	608	73	52	452	59
Future Volume (veh/h)	15	16	3	43	17	74	5	608	73	52	452	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1820	1820	1875	1950	1950	1778	1750	1750	1800	1758	1800
Adj Flow Rate, veh/h	16	18	3	47	19	70	5	668	70	57	497	65
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
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	2	0	3	0
Cap, veh/h	51	47	8	147	30	110	614	2283	1140	539	2265	295
Arrive On Green	0.03	0.03	0.02	0.08	0.08	0.08	0.69	0.69	0.69	0.03	0.76	0.75
Sat Flow, veh/h	1666	1521	253	1785	365	1343	806	3324	1483	1714	2971	387
Grp Volume(v), veh/h	16	0	21	47	0	89	5	668	70	57	278	284
Grp Sat Flow(s),veh/h/ln	1666	0	1774	1785	0	1708	806	1662	1483	1714	1670	1688
Q Serve(g_s), s	1.1	0.0	1.4	3.0	0.0	6.1	0.2	9.5	1.4	1.1	5.7	5.8
Cycle Q Clear(g_c), s	1.1	0.0	1.4	3.0	0.0	6.1	0.2	9.5	1.4	1.1	5.7	5.8
Prop In Lane	1.00		0.14	1.00		0.79	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	51	0	54	147	0	140	614	2283	1140	539	1273	1287
V/C Ratio(X)	0.31	0.00	0.39	0.32	0.00	0.63	0.01	0.29	0.06	0.11	0.22	0.22
Avail Cap(c_a), veh/h	389	0	414	461	0	441	614	2283	1140	610	1273	1287
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.94	0.00	0.94	0.90	0.90	0.90	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.9	0.0	57.1	51.9	0.0	53.3	5.9	7.4	3.4	4.8	4.1	4.1
Incr Delay (d2), s/veh	7.3	0.0	9.3	2.5	0.0	9.2	0.0	0.3	0.1	0.1	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	0.0	1.4	2.6	0.0	5.3	0.1	5.5	1.0	0.6	3.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.2	0.0	66.4	54.4	0.0	62.5	5.9	7.7	3.5	4.9	4.5	4.5
LnGrp LOS	E	A	E	D	A	E	A	A	A	A	A	A
Approach Vol, veh/h	37			136			743			619		
Approach Delay, s/veh	65.5			59.7			7.3			4.5		
Approach LOS	E			E			A			A		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.1	87.4		14.8		96.5		8.7				
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	8.0	31.0		30.0		45.0		27.0				
Max Q Clear Time (g_c+I1), s	3.6	12.0		8.1		8.2		3.6				
Green Ext Time (p_c), s	0.0	2.9		0.9		1.9		0.2				

Intersection Summary

HCM 6th Ctrl Delay 12.2

HCM 6th LOS B

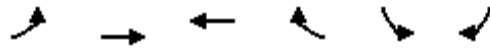
Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

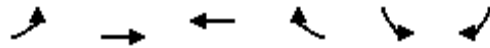


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	145	183	126	175	134	79
Future Volume (vph)	145	183	126	175	134	79
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.950	
Flt Protected	0.950				0.969	
Satd. Flow (prot)	1628	1878	1723	1450	1774	0
Flt Permitted	0.587				0.969	
Satd. Flow (perm)	1006	1878	1723	1450	1774	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				246	30	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%
Adj. Flow (vph)	204	258	177	246	189	111
Shared Lane Traffic (%)						
Lane Group Flow (vph)	204	258	177	246	300	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	13.0	67.0	54.0	54.0	23.0	
Total Split (%)	14.4%	74.4%	60.0%	60.0%	25.6%	
Maximum Green (s)	7.0	61.0	48.0	48.0	18.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	5.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	2.5	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	32.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	16.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	63.3	63.3	50.3	50.3	17.7	
Actuated g/C Ratio	0.70	0.70	0.56	0.56	0.20	
v/c Ratio	0.27	0.20	0.18	0.27	0.81	
Control Delay	5.8	5.2	10.8	2.2	48.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.8	5.2	10.8	2.2	48.5	
LOS	A	A	B	A	D	
Approach Delay		5.5	5.8		48.5	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 8 (9%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 16.5

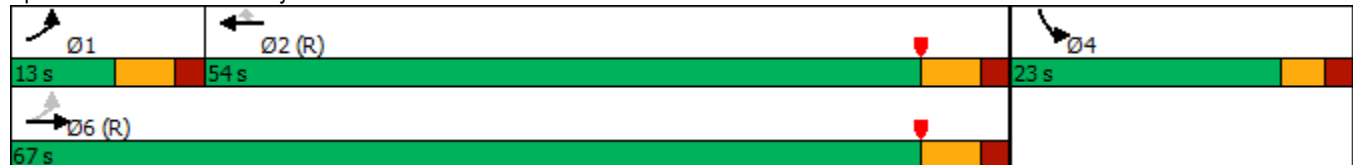
Intersection LOS: B

Intersection Capacity Utilization 41.4%

ICU Level of Service A

Analysis Period (min) 15

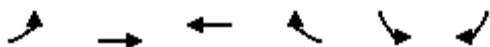
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	145	183	126	175	134	79
Future Volume (veh/h)	145	183	126	175	134	79
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1949	2012	1778	1764	1935	1950
Adj Flow Rate, veh/h	204	258	177	246	189	111
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	0	1	0	1	1	0
Cap, veh/h	744	1401	995	836	226	132
Arrive On Green	0.08	0.70	0.56	0.56	0.20	0.20
Sat Flow, veh/h	1856	2012	1778	1495	1107	650
Grp Volume(v), veh/h	204	258	177	246	301	0
Grp Sat Flow(s),veh/h/ln	1856	2012	1778	1495	1762	0
Q Serve(g_s), s	3.7	4.0	4.4	7.8	14.8	0.0
Cycle Q Clear(g_c), s	3.7	4.0	4.4	7.8	14.8	0.0
Prop In Lane	1.00			1.00	0.63	0.37
Lane Grp Cap(c), veh/h	744	1401	995	836	359	0
V/C Ratio(X)	0.27	0.18	0.18	0.29	0.84	0.00
Avail Cap(c_a), veh/h	758	1401	995	836	372	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.81	0.81	1.00	0.00
Uniform Delay (d), s/veh	5.9	4.8	9.7	10.4	34.4	0.0
Incr Delay (d2), s/veh	0.4	0.3	0.3	0.7	15.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.3	2.6	3.0	4.5	12.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.3	5.1	10.0	11.2	49.5	0.0
LnGrp LOS	A	A	B	B	D	A
Approach Vol, veh/h		462	423		301	
Approach Delay, s/veh		5.6	10.7		49.5	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.3	55.4		22.3		67.7
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	7.0	48.0		18.0		61.0
Max Q Clear Time (g_c+I1), s	6.2	10.3		17.3		6.5
Green Ext Time (p_c), s	0.1	3.8		0.1		2.2

Intersection Summary

HCM 6th Ctrl Delay	18.5
HCM 6th LOS	B

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

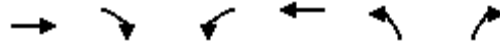
11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	201	211	89	237	240	46
Future Volume (vph)	201	211	89	237	240	46
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.978	
Flt Protected				0.987	0.960	
Satd. Flow (prot)	1723	1464	0	1726	1755	0
Flt Permitted				0.872	0.960	
Satd. Flow (perm)	1723	1464	0	1525	1755	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		234				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	223	234	99	263	267	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	223	234	0	362	318	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	49.0	49.0	20.0	69.0	21.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

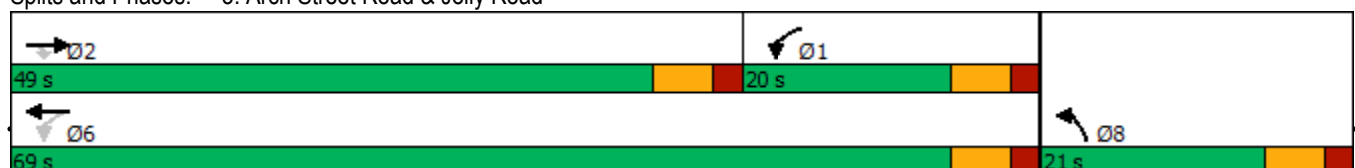


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	54.4%	54.4%	22.2%	76.7%	23.3%	
Maximum Green (s)	43.0	43.0	14.0	63.0	15.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	Max	None	None	
Act Effect Green (s)	22.0	22.0		42.0	16.0	
Actuated g/C Ratio	0.32	0.32		0.62	0.24	
v/c Ratio	0.40	0.37		0.37	0.77	
Control Delay	20.6	4.6		7.9	39.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	20.6	4.6		7.9	39.3	
LOS	C	A		A	D	
Approach Delay	12.4			7.9	39.3	
Approach LOS	B			A	D	
Queue Length 50th (ft)	71	0		64	124	
Queue Length 95th (ft)	127	43		107	#242	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1114	1029		1479	412	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.20	0.23		0.24	0.77	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 68
 Natural Cycle: 65
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 18.5
 Intersection LOS: B
 Intersection Capacity Utilization 65.4%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	459	272	52	543	37	76	215	53	26	201	91
Future Volume (vph)	53	459	272	52	543	37	76	215	53	26	201	91
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.990			0.970				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1693	1800	1632	1785	1843	0	1620	1628	0	1612	1939	1648
Flt Permitted	0.267			0.346			0.622			0.580		
Satd. Flow (perm)	476	1800	1632	650	1843	0	1061	1628	0	984	1939	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					10			34				99
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
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
Heavy Vehicles (%)	2%	1%	1%	0%	1%	0%	0%	1%	4%	0%	0%	0%
Adj. Flow (vph)	58	499	296	57	590	40	83	234	58	28	218	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	58	499	296	57	630	0	83	292	0	28	218	99
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0		19.0	19.0		19.0	19.0	19.0
Total Split (%)	52.5%	52.5%	52.5%	52.5%	52.5%		47.5%	47.5%		47.5%	47.5%	47.5%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0		13.0	13.0		13.0	13.0	13.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	15.0	16.0	16.0	15.0	16.0		14.0	14.0		14.0	14.0	13.0
Actuated g/C Ratio	0.38	0.40	0.40	0.38	0.40		0.35	0.35		0.35	0.35	0.32
v/c Ratio	0.33	0.69	0.45	0.23	0.85		0.22	0.49		0.08	0.32	0.16
Control Delay	15.1	16.9	11.6	11.7	25.6		11.2	12.5		9.5	11.2	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	15.1	16.9	11.6	11.7	25.6		11.2	12.5		9.5	11.2	3.8
LOS	B	B	B	B	C		B	B		A	B	A
Approach Delay		15.0			24.4			12.2			8.9	
Approach LOS		B			C			B			A	
Queue Length 50th (ft)	9	86	45	8	117		13	43		4	34	0
Queue Length 95th (ft)	32	#202	92	28	#278		35	92		15	71	21
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	178	720	652	243	743		371	591		344	678	602
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.33	0.69	0.45	0.23	0.85		0.22	0.49		0.08	0.32	0.16

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 16.5

Intersection LOS: B

Intersection Capacity Utilization 75.4%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

			
Ø2			Ø4
19 s			21 s
			
Ø6			Ø8
19 s			21 s

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	459	272	52	543	37	76	215	53	26	201	91
Future Volume (veh/h)	53	459	272	52	543	37	76	215	53	26	201	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1846	1860	1935	1950	1935	1950	1912	1898	1855	1875	1950	1950
Adj Flow Rate, veh/h	58	499	238	57	590	39	83	234	56	28	218	61
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
Percent Heavy Veh, %	2	1	1	0	1	0	0	1	4	0	0	0
Cap, veh/h	244	744	656	287	718	47	482	518	124	442	682	537
Arrive On Green	0.38	0.40	0.40	0.38	0.40	0.38	0.35	0.35	0.32	0.35	0.35	0.32
Sat Flow, veh/h	787	1860	1640	751	1795	119	1125	1480	354	1092	1950	1652
Grp Volume(v), veh/h	58	499	238	57	0	629	83	0	290	28	218	61
Grp Sat Flow(s),veh/h/ln	787	1860	1640	751	0	1913	1125	0	1834	1092	1950	1652
Q Serve(g_s), s	2.9	8.8	4.1	2.8	0.0	11.8	2.3	0.0	4.9	0.8	3.3	1.0
Cycle Q Clear(g_c), s	14.7	8.8	4.1	12.1	0.0	11.8	5.6	0.0	4.9	5.2	3.3	1.0
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	244	744	656	287	0	765	482	0	642	442	682	537
V/C Ratio(X)	0.24	0.67	0.36	0.20	0.00	0.82	0.17	0.00	0.45	0.06	0.32	0.11
Avail Cap(c_a), veh/h	244	744	656	287	0	765	482	0	642	442	682	537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	9.8	8.4	15.9	0.0	10.8	11.6	0.0	10.1	11.9	9.5	9.5
Incr Delay (d2), s/veh	1.1	3.1	0.7	0.7	0.0	8.0	0.8	0.0	2.3	0.3	1.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	5.5	2.0	0.9	0.0	9.3	1.0	0.0	3.3	0.3	2.2	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	13.0	9.1	16.6	0.0	18.7	12.3	0.0	12.4	12.1	10.7	9.9
LnGrp LOS	B	B	A	B	A	B	B	A	B	B	B	A
Approach Vol, veh/h	795			686			373			307		
Approach Delay, s/veh	12.3			18.6			12.4			10.7		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	19.0			21.0			19.0			21.0		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	13.0			15.0			13.0			15.0		
Max Q Clear Time (g_c+I1), s	8.1			14.1			7.7			16.7		
Green Ext Time (p_c), s	1.2			0.5			1.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	14.1											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	304	11	40	259	29	13	15	32	51	18	20
Future Volume (vph)	35	304	11	40	259	29	13	15	32	51	18	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.988			0.928			0.969	
Flt Protected		0.995			0.994			0.990			0.972	
Satd. Flow (prot)	0	1848	0	0	1816	0	0	1822	0	0	1739	0
Flt Permitted		0.995			0.994			0.990			0.972	
Satd. Flow (perm)	0	1848	0	0	1816	0	0	1822	0	0	1739	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	41	358	13	47	305	34	15	18	38	60	21	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	412	0	0	386	0	0	71	0	0	105	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	42.7%						ICU Level of Service A					
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh 13.2
Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	35	304	11	40	259	29	13	15	32	51	18	20
Future Vol, veh/h	35	304	11	40	259	29	13	15	32	51	18	20
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	41	358	13	47	305	34	15	18	38	60	21	24
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

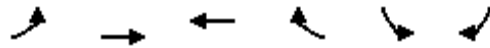
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.3	13.5	9.6	10.3
HCM LOS	B	B	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	10%	12%	57%
Vol Thru, %	25%	87%	79%	20%
Vol Right, %	53%	3%	9%	22%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	60	350	328	89
LT Vol	13	35	40	51
Through Vol	15	304	259	18
RT Vol	32	11	29	20
Lane Flow Rate	71	412	386	105
Geometry Grp	1	1	1	1
Degree of Util (X)	0.114	0.567	0.532	0.173
Departure Headway (Hd)	5.79	4.958	4.961	5.959
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	618	729	729	601
Service Time	3.84	2.97	2.974	4.008
HCM Lane V/C Ratio	0.115	0.565	0.529	0.175
HCM Control Delay	9.6	14.3	13.5	10.3
HCM Lane LOS	A	B	B	B
HCM 95th-tile Q	0.4	3.6	3.2	0.6

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	22	0	42	39	37	17
Future Volume (vph)	22	0	42	39	37	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.935		0.958	
Flt Protected		0.950			0.967	
Satd. Flow (prot)	0	1814	1776	0	1868	0
Flt Permitted		0.950			0.967	
Satd. Flow (perm)	0	1814	1776	0	1868	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1091	171		70	
Travel Time (s)		24.8	3.9		1.6	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	33	0	63	58	55	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	33	121	0	80	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 17.9%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 4.4

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 22 0 42 39 37 17

Future Vol, veh/h 22 0 42 39 37 17

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - -1 0 - 1 -

Peak Hour Factor 67 67 67 67 67 67

Heavy Vehicles, % 0 0 0 0 0 0

Mvmt Flow 33 0 63 58 55 25

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 121 0 - 0 158 92

Stage 1 - - - - 92 -

Stage 2 - - - - 66 -

Critical Hdwy 4.1 - - - 6.6 6.3

Critical Hdwy Stg 1 - - - - 5.6 -

Critical Hdwy Stg 2 - - - - 5.6 -

Follow-up Hdwy 2.2 - - - 3.5 3.3

Pot Cap-1 Maneuver 1479 - - - 831 968

Stage 1 - - - - 932 -

Stage 2 - - - - 958 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1479 - - - 813 968

Mov Cap-2 Maneuver - - - - 813 -

Stage 1 - - - - 911 -

Stage 2 - - - - 958 -

Approach EB WB SB

HCM Control Delay, s 7.5 0 9.6

HCM LOS A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1479 - - - 856

HCM Lane V/C Ratio 0.022 - - - 0.094

HCM Control Delay (s) 7.5 0 - - 9.6

HCM Lane LOS A A - - A

HCM 95th %tile Q(veh) 0.1 - - - 0.3

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (vph)	158	247	109	521	478	190
Future Volume (vph)	158	247	109	521	478	190
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.908					0.850
Flt Protected	0.981		0.950			
Satd. Flow (prot)	3045	0	1661	3257	3194	1558
Flt Permitted	0.981		0.432			
Satd. Flow (perm)	3045	0	755	3257	3194	1558
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	263					202
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	2%	3%	1%
Adj. Flow (vph)	168	263	116	554	509	202
Shared Lane Traffic (%)						
Lane Group Flow (vph)	431	0	116	554	509	202
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	6.0	6.0	3.0
Minimum Gap (s)	3.0		3.0	3.9	3.9	3.0
Time Before Reduce (s)	0.0		0.0	37.0	37.0	0.0
Time To Reduce (s)	0.0		0.0	15.0	15.0	0.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	14.4		96.6	96.6	83.9	103.3
Actuated g/C Ratio	0.12		0.80	0.80	0.70	0.86
v/c Ratio	0.72		0.17	0.21	0.23	0.15
Control Delay	26.0		3.7	3.4	6.3	0.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	26.0		3.7	3.4	6.3	0.4
LOS	C		A	A	A	A
Approach Delay	26.0			3.4	4.6	
Approach LOS	C			A	A	
Queue Length 50th (ft)	63		15	43	57	0
Queue Length 95th (ft)	111		37	78	78	0
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	1028		667	2621	2231	1542
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.42		0.17	0.21	0.23	0.13

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 101 (84%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 9.3

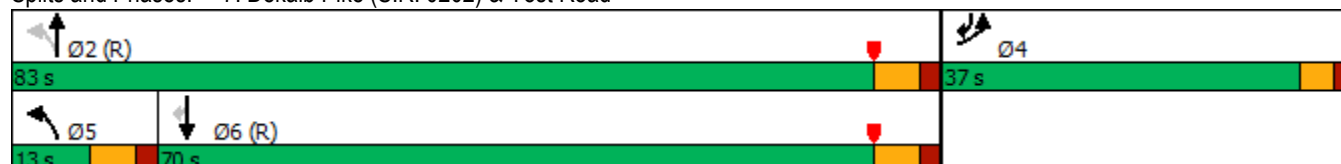
Intersection LOS: A

Intersection Capacity Utilization 45.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary 7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	🛑🛑🛑		🛑	🛑🛑	🛑🛑	🛑
Traffic Volume (veh/h)	158	247	109	521	478	190
Future Volume (veh/h)	158	247	109	521	478	190
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1750	1805	1837	1809	1752	1852
Adj Flow Rate, veh/h	168	261	116	554	509	193
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	0	2	3	1
Cap, veh/h	336	295	558	2487	2117	1314
Arrive On Green	0.20	0.19	0.05	0.72	0.64	0.64
Sat Flow, veh/h	1666	1530	1750	3527	3417	1569
Grp Volume(v), veh/h	168	261	116	554	509	193
Grp Sat Flow(s),veh/h/ln	1666	1530	1750	1718	1665	1569
Q Serve(g_s), s	10.7	19.9	2.6	6.4	7.9	2.7
Cycle Q Clear(g_c), s	10.7	19.9	2.6	6.4	7.9	2.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	336	295	558	2487	2117	1314
V/C Ratio(X)	0.50	0.88	0.21	0.22	0.24	0.15
Avail Cap(c_a), veh/h	458	408	594	2487	2117	1314
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.98	0.98
Uniform Delay (d), s/veh	42.6	47.1	6.3	5.5	9.4	1.8
Incr Delay (d2), s/veh	1.2	15.6	0.2	0.2	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.1	23.7	1.5	3.6	4.9	3.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.7	62.7	6.5	5.7	9.7	2.0
LnGrp LOS	D	E	A	A	A	A
Approach Vol, veh/h	429			670	702	
Approach Delay, s/veh	55.2			5.8	7.6	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	91.8			28.2	10.5	81.3
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	77.0			32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s	8.4			21.9	4.6	9.9
Green Ext Time (p_c), s	8.0			1.2	0.1	10.3
Intersection Summary						
HCM 6th Ctrl Delay			18.3			
HCM 6th LOS			B			
Notes						

Attachment I

2025 Future with Development Capacity/Levels-of-Service Analysis Worksheets – Alternative Site ‘B’ (Phase 1)

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

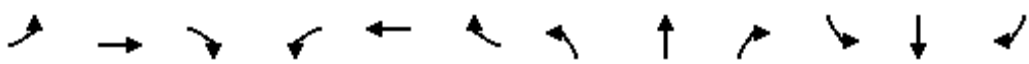
11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	11	1	131	0	82	1	458	197	193	525	8
Future Volume (vph)	7	11	1	131	0	82	1	458	197	193	525	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.988			0.879				0.850		0.998	
Flt Protected	0.950			0.950	0.990		0.950			0.950		
Satd. Flow (prot)	1628	1552	0	1548	1548	0	1636	3117	1394	1605	3086	0
Flt Permitted	0.950			0.950	0.990		0.442			0.424		
Satd. Flow (perm)	1628	1552	0	1548	1548	0	761	3117	1394	716	3086	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									207		1	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	18%	0%	6%	0%	3%	0%	5%	5%	3%	7%	0%
Adj. Flow (vph)	7	12	1	138	0	86	1	482	207	203	553	8
Shared Lane Traffic (%)				15%								
Lane Group Flow (vph)	7	13	0	117	107	0	1	482	207	203	561	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		31.0	31.0	13.0	14.0	31.0	
Total Split (s)	33.0	33.0		30.0	30.0		43.0	43.0	30.0	14.0	57.0	
Total Split (%)	27.5%	27.5%		25.0%	25.0%		35.8%	35.8%	25.0%	11.7%	47.5%	
Maximum Green (s)	27.0	27.0		23.0	23.0		36.0	36.0	23.0	7.0	50.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effct Green (s)	7.7	7.7		15.6	15.6		72.9	72.9	94.5	86.9	86.9	
Actuated g/C Ratio	0.06	0.06		0.13	0.13		0.61	0.61	0.79	0.72	0.72	
v/c Ratio	0.07	0.13		0.58	0.53		0.00	0.25	0.18	0.35	0.25	
Control Delay	53.4	55.2		60.0	57.5		15.0	12.3	0.8	9.0	7.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	53.4	55.2		60.0	57.5		15.0	12.3	0.8	9.0	7.4	
LOS	D	E		E	E		B	B	A	A	A	
Approach Delay		54.6			58.8			8.9			7.8	
Approach LOS		D			E			A			A	
Queue Length 50th (ft)	5	10		91	83		0	70	0	35	53	
Queue Length 95th (ft)	21	31		148	136		m3	127	7	108	139	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	362		309	309		462	1892	1224	577	2233	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.02	0.04		0.38	0.35		0.00	0.25	0.17	0.35	0.25	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 15.5

Intersection LOS: B

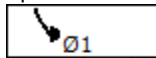
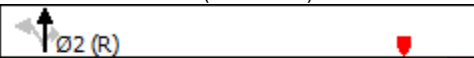
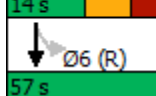
Intersection Capacity Utilization 56.2%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

 14 s	 43 s	 30 s	 33 s
 57 s			

HCM 6th Signalized Intersection Summary

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/07/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	11	1	131	0	82	1	458	197	193	525	8
Future Volume (veh/h)	7	11	1	131	0	82	1	458	197	193	525	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1557	1820	1789	1950	1905	1778	1707	1707	1758	1702	1800
Adj Flow Rate, veh/h	7	12	1	90	67	43	1	482	188	203	553	8
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
Percent Heavy Veh, %	0	18	0	6	0	3	0	5	5	3	7	0
Cap, veh/h	34	29	2	150	97	62	571	2055	1043	582	2447	35
Arrive On Green	0.02	0.02	0.01	0.09	0.09	0.09	0.63	0.63	0.63	0.07	0.75	0.74
Sat Flow, veh/h	1666	1418	118	1704	1109	712	807	3244	1447	1674	3263	47
Grp Volume(v), veh/h	7	0	13	90	0	110	1	482	188	203	274	287
Grp Sat Flow(s),veh/h/ln	1666	0	1536	1704	0	1821	807	1622	1447	1674	1617	1693
Q Serve(g_s), s	0.5	0.0	1.0	6.1	0.0	7.0	0.1	7.7	5.0	4.6	6.1	6.1
Cycle Q Clear(g_c), s	0.5	0.0	1.0	6.1	0.0	7.0	0.1	7.7	5.0	4.6	6.1	6.1
Prop In Lane	1.00		0.08	1.00		0.39	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	34	0	32	150	0	160	571	2055	1043	582	1212	1270
V/C Ratio(X)	0.20	0.00	0.41	0.60	0.00	0.69	0.00	0.23	0.18	0.35	0.23	0.23
Avail Cap(c_a), veh/h	389	0	358	341	0	364	571	2055	1043	582	1212	1270
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.98	0.00	0.98	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.8	0.0	58.1	52.7	0.0	53.1	8.1	9.5	5.4	5.9	4.5	4.5
Incr Delay (d2), s/veh	2.9	0.0	8.3	3.8	0.0	5.1	0.0	0.3	0.4	0.4	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.0	0.8	4.9	0.0	6.2	0.0	4.7	3.7	2.6	3.2	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.7	0.0	66.4	56.5	0.0	58.2	8.1	9.7	5.7	6.3	4.9	4.9
LnGrp LOS	E	A	E	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h	20			200			671			764		
Approach Delay, s/veh	64.4			57.4			8.6			5.3		
Approach LOS	E			E			A			A		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	14.0	82.0		16.5		96.0		7.5				
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		6.0				
Max Green Setting (Gmax), s	7.0	36.0		23.0		50.0		27.0				
Max Q Clear Time (g_c+I1), s	7.1	10.2		9.0		8.6		3.0				
Green Ext Time (p_c), s	0.0	2.7		0.5		1.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay 13.7

HCM 6th LOS B

Notes

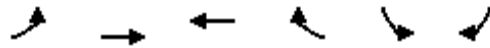
User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023

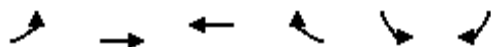


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	106	360	132	134	160	83
Future Volume (vph)	106	360	132	134	160	83
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.954	
Flt Protected	0.950				0.968	
Satd. Flow (prot)	1550	1842	1641	1435	1738	0
Flt Permitted	0.610				0.968	
Satd. Flow (perm)	996	1842	1641	1435	1738	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				141	26	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	3%	5%	2%	2%	5%
Adj. Flow (vph)	112	379	139	141	168	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	112	379	139	141	255	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	13.0	67.0	54.0	54.0	23.0	
Total Split (%)	14.4%	74.4%	60.0%	60.0%	25.6%	
Maximum Green (s)	7.0	61.0	48.0	48.0	18.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	3.0	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	0.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	0.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	64.3	64.3	54.0	54.0	16.7	
Actuated g/C Ratio	0.71	0.71	0.60	0.60	0.19	
v/c Ratio	0.15	0.29	0.14	0.15	0.74	
Control Delay	4.9	5.7	10.0	2.3	44.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.9	5.7	10.0	2.3	44.5	
LOS	A	A	A	A	D	
Approach Delay		5.5	6.1		44.5	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 61 (68%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 15.3

Intersection LOS: B

Intersection Capacity Utilization 42.2%

ICU Level of Service A

Analysis Period (min) 15

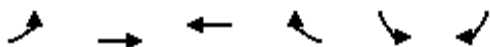
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	106	360	132	134	160	83
Future Volume (veh/h)	106	360	132	134	160	83
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1878	1983	1707	1750	1920	1876
Adj Flow Rate, veh/h	112	379	139	106	168	63
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	3	5	2	2	5
Cap, veh/h	850	1453	1060	920	214	80
Arrive On Green	0.06	0.73	0.62	0.62	0.17	0.17
Sat Flow, veh/h	1789	1983	1707	1483	1281	480
Grp Volume(v), veh/h	112	379	139	106	232	0
Grp Sat Flow(s),veh/h/ln	1789	1983	1707	1483	1769	0
Q Serve(g_s), s	1.8	5.7	3.0	2.6	11.3	0.0
Cycle Q Clear(g_c), s	1.8	5.7	3.0	2.6	11.3	0.0
Prop In Lane	1.00			1.00	0.72	0.27
Lane Grp Cap(c), veh/h	850	1453	1060	920	296	0
V/C Ratio(X)	0.13	0.26	0.13	0.12	0.78	0.00
Avail Cap(c_a), veh/h	908	1453	1060	920	374	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.97	0.97	0.89	0.89	1.00	0.00
Uniform Delay (d), s/veh	4.4	4.0	7.0	7.0	35.9	0.0
Incr Delay (d2), s/veh	0.1	0.4	0.2	0.2	8.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	3.3	1.9	1.4	9.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.4	4.4	7.3	7.2	44.1	0.0
LnGrp LOS	A	A	A	A	D	A
Approach Vol, veh/h		491	245		232	
Approach Delay, s/veh		4.4	7.2		44.1	
Approach LOS		A	A		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	10.1	60.9		19.1		70.9
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	7.0	48.0		18.0		61.0
Max Q Clear Time (g_c+l1), s	4.3	5.5		13.8		8.2
Green Ext Time (p_c), s	0.1	2.1		0.3		3.5

Intersection Summary

HCM 6th Ctrl Delay	14.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/07/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	277	260	51	78	186	102
Future Volume (vph)	277	260	51	78	186	102
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.952	
Flt Protected				0.980	0.969	
Satd. Flow (prot)	1689	1422	0	1629	1680	0
Flt Permitted				0.811	0.969	
Satd. Flow (perm)	1689	1422	0	1348	1680	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		268				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	543	
Travel Time (s)	34.4			15.4	10.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	4%	6%	3%	2%
Adj. Flow (vph)	286	268	53	80	192	105
Shared Lane Traffic (%)						
Lane Group Flow (vph)	286	268	0	133	297	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	30.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/07/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	53.3%	53.3%	18.7%	72.0%	28.0%	
Maximum Green (s)	51.0	51.0	14.0	71.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	5.8	3.0	
Minimum Gap (s)	4.1	4.1	3.0	4.1	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	32.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	15.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	22.1	22.1		22.1	15.0	
Actuated g/C Ratio	0.47	0.47		0.47	0.32	
v/c Ratio	0.36	0.33		0.21	0.56	
Control Delay	10.5	2.9		9.6	17.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	10.5	2.9		9.6	17.6	
LOS	B	A		A	B	
Approach Delay	6.8			9.6	17.6	
Approach LOS	A			A	B	
Queue Length 50th (ft)	45	0		19	65	
Queue Length 95th (ft)	107	33		54	122	
Internal Link Dist (ft)	1686			709	463	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1689	1422		1348	894	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.17	0.19		0.10	0.33	

Intersection Summary

Area Type: Other

Cycle Length: 107

Actuated Cycle Length: 47.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 10.4

Intersection LOS: B

Intersection Capacity Utilization 65.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	532	150	93	329	15	45	188	90	15	267	30
Future Volume (vph)	70	532	150	93	329	15	45	188	90	15	267	30
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.993			0.951				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1645	1748	1616	1733	1806	0	1486	1555	0	1493	1883	1648
Flt Permitted	0.541			0.355			0.573			0.552		
Satd. Flow (perm)	937	1748	1616	647	1806	0	896	1555	0	867	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					8			60				82
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2332	
Travel Time (s)		24.6			32.6			22.5			45.4	
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
Heavy Vehicles (%)	5%	4%	2%	3%	3%	9%	9%	3%	7%	8%	3%	0%
Adj. Flow (vph)	73	554	156	97	343	16	47	196	94	16	278	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	73	554	156	97	359	0	47	290	0	16	278	31
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	2	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0		16.0	16.0		16.0	16.0	16.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		10.0	10.0		10.0	10.0	10.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	Max	Max	Max	Max	Max		None	None		None	None	None
Act Effect Green (s)	19.0	19.0	19.0	19.0	19.0		10.8	10.8		10.8	10.8	10.8
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.48		0.27	0.27		0.27	0.27	0.27
v/c Ratio	0.16	0.66	0.20	0.31	0.41		0.19	0.62		0.07	0.55	0.06
Control Delay	7.2	13.0	7.0	10.0	8.5		13.6	17.6		11.7	17.1	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	7.2	13.0	7.0	10.0	8.5		13.6	17.6		11.7	17.1	1.2
LOS	A	B	A	B	A		B	B		B	B	A
Approach Delay		11.3			8.8			17.0			15.3	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	8	85	18	12	46		8	43		3	52	0
Queue Length 95th (ft)	24	164	41	36	90		26	#121		12	104	4
Internal Link Dist (ft)		1184			1116			1077			2252	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	447	835	771	309	867		247	473		239	520	514
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.16	0.66	0.20	0.31	0.41		0.19	0.61		0.07	0.53	0.06

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 39.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 12.4

Intersection LOS: B

Intersection Capacity Utilization 72.9%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

 Ø2	 Ø4
24 s	16 s
 Ø6	 Ø8
24 s	16 s

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/07/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	532	150	93	329	15	45	188	90	15	267	30
Future Volume (veh/h)	70	532	150	93	329	15	45	188	90	15	267	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1803	1818	1920	1905	1905	1816	1784	1869	1812	1761	1905	1950
Adj Flow Rate, veh/h	73	554	111	97	343	16	47	196	94	16	278	14
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
Percent Heavy Veh, %	5	4	2	3	3	9	9	3	7	8	3	0
Cap, veh/h	540	879	787	375	873	41	324	313	150	316	499	433
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.46	0.26	0.26	0.24	0.26	0.26	0.26
Sat Flow, veh/h	986	1818	1627	785	1806	84	1037	1194	572	1025	1905	1652
Grp Volume(v), veh/h	73	554	111	97	0	359	47	0	290	16	278	14
Grp Sat Flow(s),veh/h/ln	986	1818	1627	785	0	1890	1037	0	1766	1025	1905	1652
Q Serve(g_s), s	2.0	8.9	1.5	4.2	0.0	4.8	1.6	0.0	5.7	0.5	5.0	0.2
Cycle Q Clear(g_c), s	6.8	8.9	1.5	13.6	0.0	4.8	6.6	0.0	5.7	5.8	5.0	0.2
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	540	879	787	375	0	914	324	0	463	316	499	433
V/C Ratio(X)	0.14	0.63	0.14	0.26	0.00	0.39	0.14	0.00	0.63	0.05	0.56	0.03
Avail Cap(c_a), veh/h	540	879	787	375	0	914	343	0	494	334	533	462
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.6	7.5	5.6	12.8	0.0	6.5	15.4	0.0	13.0	15.1	12.5	10.8
Incr Delay (d2), s/veh	0.5	3.4	0.4	1.7	0.0	1.3	0.4	0.0	3.6	0.1	2.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	5.1	0.7	1.4	0.0	3.0	0.6	0.0	3.9	0.2	3.4	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.2	11.0	6.0	14.5	0.0	7.8	15.8	0.0	16.5	15.3	14.7	10.9
LnGrp LOS	A	B	A	B	A	A	B	A	B	B	B	B
Approach Vol, veh/h	738			456			337			308		
Approach Delay, s/veh	10.0			9.2			16.4			14.6		
Approach LOS	B			A			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	24.0			15.3			24.0			15.3		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	18.0			10.0			18.0			10.0		
Max Q Clear Time (g_c+I1), s	11.4			9.1			15.6			8.3		
Green Ext Time (p_c), s	3.1			0.2			0.9			0.4		
Intersection Summary												
HCM 6th Ctrl Delay	11.8											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	263	13	31	138	4	16	4	54	4	4	6
Future Volume (vph)	0	263	13	31	138	4	16	4	54	4	4	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.997			0.901			0.940	
Flt Protected					0.991			0.989			0.986	
Satd. Flow (prot)	0	1767	0	0	1728	0	0	1744	0	0	1711	0
Flt Permitted					0.991			0.989			0.986	
Satd. Flow (perm)	0	1767	0	0	1728	0	0	1744	0	0	1711	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		19.9			29.5			12.1			26.9	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles (%)	0%	6%	0%	10%	6%	0%	6%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	355	18	42	186	5	22	5	73	5	5	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	373	0	0	233	0	0	100	0	0	18	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	39.2%				ICU Level of Service A							
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/07/2023

Intersection

Intersection Delay, s/veh 10.6
Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	263	13	31	138	4	16	4	54	4	4	6
Future Vol, veh/h	0	263	13	31	138	4	16	4	54	4	4	6
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	0	6	0	10	6	0	6	0	0	0	0	0
Mvmt Flow	0	355	18	42	186	5	22	5	73	5	5	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

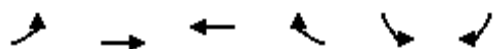
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.6	10	8.9	8.5
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	0%	18%	29%
Vol Thru, %	5%	95%	80%	29%
Vol Right, %	73%	5%	2%	43%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	74	276	173	14
LT Vol	16	0	31	4
Through Vol	4	263	138	4
RT Vol	54	13	4	6
Lane Flow Rate	100	373	234	19
Geometry Grp	1	1	1	1
Degree of Util (X)	0.139	0.471	0.312	0.028
Departure Headway (Hd)	5.013	4.543	4.801	5.24
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	711	791	746	678
Service Time	3.073	2.582	2.846	3.313
HCM Lane V/C Ratio	0.141	0.472	0.314	0.028
HCM Control Delay	8.9	11.6	10	8.5
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	0.5	2.5	1.3	0.1

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/07/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	5	8	0	0	1
Future Volume (vph)	0	5	8	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected						
Satd. Flow (prot)	0	1909	1900	0	1744	0
Flt Permitted						
Satd. Flow (perm)	0	1909	1900	0	1744	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		1091	171		70	
Travel Time (s)		29.8	4.7		1.9	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	7	11	0	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	7	11	0	1	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.6

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 0 5 8 0 0 1

Future Vol, veh/h 0 5 8 0 0 1

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - -1 0 - 1 -

Peak Hour Factor 75 75 75 75 75 75

Heavy Vehicles, % 0 0 0 0 0 0

Mvmt Flow 0 7 11 0 0 1

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 11 0 - 0 18 11

Stage 1 - - - - 11 -

Stage 2 - - - - 7 -

Critical Hdwy 4.1 - - - 6.6 6.3

Critical Hdwy Stg 1 - - - - 5.6 -

Critical Hdwy Stg 2 - - - - 5.6 -

Follow-up Hdwy 2.2 - - - 3.5 3.3

Pot Cap-1 Maneuver 1621 - - - 1004 1076

Stage 1 - - - - 1017 -

Stage 2 - - - - 1021 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1621 - - - 1004 1076

Mov Cap-2 Maneuver - - - - 1004 -

Stage 1 - - - - 1017 -

Stage 2 - - - - 1021 -

Approach EB WB SB

HCM Control Delay, s 0 0 8.4

HCM LOS A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1621 - - - 1076

HCM Lane V/C Ratio - - - - 0.001

HCM Control Delay (s) 0 - - - 8.4

HCM Lane LOS A - - - - A

HCM 95th %tile Q(veh) 0 - - - 0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/07/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (vph)	57	40	27	456	417	62
Future Volume (vph)	57	40	27	456	417	62
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.938					0.850
Flt Protected	0.972		0.950			
Satd. Flow (prot)	3064	0	1661	3164	3163	1542
Flt Permitted	0.972		0.478			
Satd. Flow (perm)	3064	0	836	3164	3163	1542
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	41					63
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	0%	0%	5%	4%	2%
Adj. Flow (vph)	58	41	28	465	426	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	99	0	28	465	426	63
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/07/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	8.9		102.1	102.1	94.8	110.3
Actuated g/C Ratio	0.07		0.85	0.85	0.79	0.92
v/c Ratio	0.37		0.04	0.17	0.17	0.04
Control Delay	35.6		1.7	1.8	5.0	0.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	35.6		1.7	1.8	5.0	0.2
LOS	D		A	A	A	A
Approach Delay	35.6			1.8	4.4	
Approach LOS	D			A	A	
Queue Length 50th (ft)	22		2	23	81	0
Queue Length 95th (ft)	49		7	38	48	0
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	872		766	2691	2499	1542
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.11		0.04	0.17	0.17	0.04

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 90 (75%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 6.1

Intersection LOS: A

Intersection Capacity Utilization 30.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/07/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	RT
Traffic Volume (veh/h)	57	40	27	456	417	62
Future Volume (veh/h)	57	40	27	456	417	62
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1694	1820	1837	1766	1738	1837
Adj Flow Rate, veh/h	50	50	28	465	426	63
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	4	0	0	5	4	2
Cap, veh/h	97	80	788	2903	2642	1339
Arrive On Green	0.06	0.05	0.02	0.87	0.80	0.80
Sat Flow, veh/h	1613	1542	1750	3444	3390	1557
Grp Volume(v), veh/h	50	50	28	465	426	63
Grp Sat Flow(s),veh/h/ln	1613	1542	1750	1678	1651	1557
Q Serve(g_s), s	3.6	3.8	0.3	2.6	3.6	0.7
Cycle Q Clear(g_c), s	3.6	3.8	0.3	2.6	3.6	0.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	97	80	788	2903	2642	1339
V/C Ratio(X)	0.52	0.63	0.04	0.16	0.16	0.05
Avail Cap(c_a), veh/h	444	411	863	2903	2642	1339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.96	0.96
Uniform Delay (d), s/veh	54.7	55.8	1.6	1.3	2.8	1.2
Incr Delay (d2), s/veh	4.2	7.9	0.0	0.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	6.2	0.1	0.6	1.5	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	59.0	63.7	1.7	1.4	2.9	1.3
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	100			493	489	
Approach Delay, s/veh	61.3			1.4	2.7	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	108.8			11.2	7.8	101.0
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	77.0			32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s	5.1			6.1	2.8	6.1
Green Ext Time (p_c), s	1.9			0.3	0.0	1.9

Intersection Summary

HCM 6th Ctrl Delay	7.5
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.
 User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
20: Arch Street Road & Site B Access

11/07/2023

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	11	256	17	21	290
Future Volume (vph)	8	11	256	17	21	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-1%			-2%
Storage Length (ft)	0	0		0	75	
Storage Lanes	1	0		0	1	
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.923		0.992			
Flt Protected	0.979				0.950	
Satd. Flow (prot)	1683	0	1857	0	1787	1881
Flt Permitted	0.979				0.950	
Satd. Flow (perm)	1683	0	1857	0	1787	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	294		2332			543
Travel Time (s)	6.7		53.0			12.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	12	278	18	23	315
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	0	296	0	23	315
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
20: Arch Street Road & Site B Access

11/07/2023

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	11	256	17	21	290
Future Vol, veh/h	8	11	256	17	21	290
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-1	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	12	278	18	23	315
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	648	287	0	0	296	0
Stage 1	287	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	435	752	-	-	1265	-
Stage 1	762	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	427	752	-	-	1265	-
Mov Cap-2 Maneuver	427	-	-	-	-	-
Stage 1	762	-	-	-	-	-
Stage 2	692	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.6	0		0.5		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 569		1265	-	
HCM Lane V/C Ratio	-	- 0.036		0.018	-	
HCM Control Delay (s)	-	- 11.6		7.9	-	
HCM Lane LOS	-	- B		A	-	
HCM 95th %tile Q(veh)	-	- 0.1		0.1	-	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

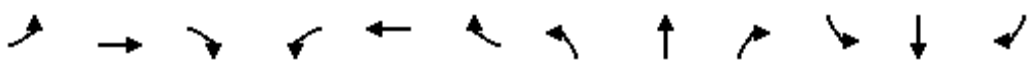
11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	20	5	289	0	118	2	449	171	65	228	50
Future Volume (vph)	12	20	5	289	0	118	2	449	171	65	228	50
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.971			0.910				0.850		0.973	
Flt Protected	0.950			0.950	0.981		0.950			0.950		
Satd. Flow (prot)	1628	1779	0	1624	1619	0	1636	3178	1464	1653	3165	0
Flt Permitted	0.950			0.950	0.981		0.571			0.407		
Satd. Flow (perm)	1628	1779	0	1624	1619	0	984	3178	1464	708	3165	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									182		26	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	3%	0%	0%	2%	0%
Adj. Flow (vph)	13	21	5	307	0	126	2	478	182	69	243	53
Shared Lane Traffic (%)				27%								
Lane Group Flow (vph)	13	26	0	224	209	0	2	478	182	69	296	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	14.0	14.0		13.0	13.0		22.0	22.0	13.0	13.0	22.0	
Total Split (s)	33.0	33.0		33.0	33.0		40.0	40.0	33.0	14.0	54.0	
Total Split (%)	27.5%	27.5%		27.5%	27.5%		33.3%	33.3%	27.5%	11.7%	45.0%	
Maximum Green (s)	27.0	27.0		26.0	26.0		33.0	33.0	26.0	7.0	47.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0	5.0	3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effect Green (s)	10.4	10.4		23.9	23.9		63.2	63.2	94.3	74.3	74.3	
Actuated g/C Ratio	0.09	0.09		0.20	0.20		0.53	0.53	0.79	0.62	0.62	
v/c Ratio	0.09	0.17		0.69	0.65		0.00	0.29	0.15	0.14	0.15	
Control Delay	51.1	52.7		56.0	53.6		24.0	22.0	1.4	12.8	10.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	51.1	52.7		56.0	53.6		24.0	22.0	1.4	12.8	10.8	
LOS	D	D		E	D		C	C	A	B	B	
Approach Delay		52.2			54.8			16.3			11.1	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	9	19		166	153		1	137	0	24	51	
Queue Length 95th (ft)	30	48		256	238		m5	192	25	50	80	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	415		365	364		518	1673	1201	501	1969	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.03	0.06		0.61	0.57		0.00	0.29	0.15	0.14	0.15	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 107 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 27.1

Intersection LOS: C

Intersection Capacity Utilization 58.9%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

 Ø1	 Ø2 (R)	 Ø4	 Ø8
14 s	40 s	33 s	33 s
 Ø6 (R)			
54 s			

HCM 6th Signalized Intersection Summary

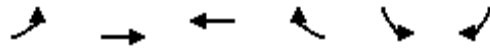
1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/07/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	20	5	289	0	118	2	449	171	65	228	50
Future Volume (veh/h)	12	20	5	289	0	118	2	449	171	65	228	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1820	1820	1860	1950	1920	1778	1736	1778	1800	1772	1800
Adj Flow Rate, veh/h	13	21	5	368	0	0	2	478	131	69	243	53
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	1	0	2	0	3	0	0	2	0
Cap, veh/h	53	45	11	520	286	0	666	1942	1108	535	1874	401
Arrive On Green	0.03	0.03	0.02	0.15	0.00	0.00	0.59	0.59	0.59	0.04	0.68	0.67
Sat Flow, veh/h	1666	1421	338	3543	1950	0	1030	3298	1507	1714	2758	591
Grp Volume(v), veh/h	13	0	26	368	0	0	2	478	131	69	147	149
Grp Sat Flow(s),veh/h/ln	1666	0	1759	1772	1950	0	1030	1649	1507	1714	1683	1666
Q Serve(g_s), s	0.9	0.0	1.7	11.9	0.0	0.0	0.1	8.4	3.0	1.8	3.7	3.8
Cycle Q Clear(g_c), s	0.9	0.0	1.7	11.9	0.0	0.0	0.1	8.4	3.0	1.8	3.7	3.8
Prop In Lane	1.00		0.19	1.00		0.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	53	0	56	520	286	0	666	1942	1108	535	1144	1132
V/C Ratio(X)	0.24	0.00	0.46	0.71	0.00	0.00	0.00	0.25	0.12	0.13	0.13	0.13
Avail Cap(c_a), veh/h	389	0	410	797	439	0	666	1942	1108	580	1144	1132
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.89	0.00	0.00	0.96	0.96	0.96	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.7	0.0	57.2	48.7	0.0	0.0	10.2	11.9	4.6	8.2	6.8	6.8
Incr Delay (d2), s/veh	5.0	0.0	12.1	3.4	0.0	0.0	0.0	0.3	0.2	0.1	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	0.0	1.7	9.0	0.0	0.0	0.0	5.4	2.8	1.1	2.3	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.6	0.0	69.2	52.1	0.0	0.0	10.2	12.1	4.8	8.3	7.0	7.1
LnGrp LOS	E	A	E	D	A	A	B	B	A	A	A	A
Approach Vol, veh/h	39			368			611			365		
Approach Delay, s/veh	66.7			52.1			10.6			7.3		
Approach LOS	E			D			B			A		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.9	76.7		23.6		87.5		8.8				
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		6.0				
Max Green Setting (Gmax), s	7.0	33.0		26.0		47.0		27.0				
Max Q Clear Time (g_c+I1), s	4.3	10.9		14.4		6.2		3.7				
Green Ext Time (p_c), s	0.0	2.3		2.3		2.4		0.2				
Intersection Summary												
HCM 6th Ctrl Delay	22.3											
HCM 6th LOS	C											

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

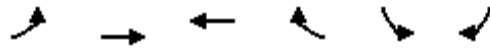


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	153	131	305	242	201	147
Future Volume (vph)	153	131	305	242	201	147
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.943	
Flt Protected	0.950				0.972	
Satd. Flow (prot)	1612	1897	1706	1435	1767	0
Flt Permitted	0.472				0.972	
Satd. Flow (perm)	801	1897	1706	1435	1767	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				249	35	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	1%	2%	1%	0%
Adj. Flow (vph)	158	135	314	249	207	152
Shared Lane Traffic (%)						
Lane Group Flow (vph)	158	135	314	249	359	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	26.0	71.0	45.0	45.0	29.0	
Total Split (%)	26.0%	71.0%	45.0%	45.0%	29.0%	
Maximum Green (s)	20.0	65.0	39.0	39.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	3.0	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	0.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	0.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	68.2	68.2	53.0	53.0	22.8	
Actuated g/C Ratio	0.68	0.68	0.53	0.53	0.23	
v/c Ratio	0.25	0.10	0.35	0.28	0.83	
Control Delay	7.2	6.2	16.0	2.8	50.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.2	6.2	16.0	2.8	50.4	
LOS	A	A	B	A	D	
Approach Delay		6.7	10.1		50.4	
Approach LOS		A	B		D	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 8 (8%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 21.2

Intersection LOS: C

Intersection Capacity Utilization 58.8%

ICU Level of Service B

Analysis Period (min) 15

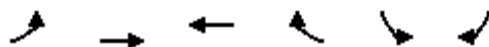
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	153	131	305	242	201	147
Future Volume (veh/h)	153	131	305	242	201	147
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1935	2027	1764	1750	1935	1950
Adj Flow Rate, veh/h	158	135	314	185	207	126
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	0	1	2	1	0
Cap, veh/h	643	1396	1004	844	241	147
Arrive On Green	0.07	0.69	0.57	0.57	0.22	0.22
Sat Flow, veh/h	1843	2027	1764	1483	1091	664
Grp Volume(v), veh/h	158	135	314	185	334	0
Grp Sat Flow(s),veh/h/ln	1843	2027	1764	1483	1761	0
Q Serve(g_s), s	3.2	2.2	9.3	6.1	18.2	0.0
Cycle Q Clear(g_c), s	3.2	2.2	9.3	6.1	18.2	0.0
Prop In Lane	1.00			1.00	0.62	0.38
Lane Grp Cap(c), veh/h	643	1396	1004	844	390	0
V/C Ratio(X)	0.25	0.10	0.31	0.22	0.86	0.00
Avail Cap(c_a), veh/h	901	1396	1004	844	440	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.65	0.65	1.00	0.00
Uniform Delay (d), s/veh	7.0	5.2	11.3	10.6	37.4	0.0
Incr Delay (d2), s/veh	0.2	0.1	0.5	0.4	14.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.0	1.5	6.0	3.5	14.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.2	5.3	11.8	11.0	51.6	0.0
LnGrp LOS	A	A	B	B	D	A
Approach Vol, veh/h		293	499		334	
Approach Delay, s/veh		6.4	11.5		51.6	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.0	61.9		26.1		73.9
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	20.0	39.0		24.0		65.0
Max Q Clear Time (g_c+I1), s	5.7	11.8		20.7		4.7
Green Ext Time (p_c), s	0.4	4.3		0.4		1.1

Intersection Summary

HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

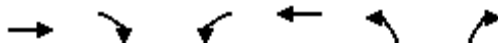
11/07/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	122	236	138	306	229	112
Future Volume (vph)	122	236	138	306	229	112
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.956	
Flt Protected				0.985	0.968	
Satd. Flow (prot)	1723	1435	0	1690	1696	0
Flt Permitted				0.848	0.968	
Satd. Flow (perm)	1723	1435	0	1455	1696	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		268				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	543	
Travel Time (s)	34.4			15.4	10.6	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	2%	4%	1%	2%	2%
Adj. Flow (vph)	139	268	157	348	260	127
Shared Lane Traffic (%)						
Lane Group Flow (vph)	139	268	0	505	387	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	25.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/07/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	55.9%	55.9%	19.6%	75.5%	24.5%	
Maximum Green (s)	51.0	51.0	14.0	71.0	19.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	26.7	26.7		26.7	20.2	
Actuated g/C Ratio	0.47	0.47		0.47	0.35	
v/c Ratio	0.17	0.33		0.74	0.65	
Control Delay	8.9	2.4		19.6	23.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	8.9	2.4		19.6	23.9	
LOS	A	A		B	C	
Approach Delay	4.6			19.6	23.9	
Approach LOS	A			B	C	
Queue Length 50th (ft)	25	0		129	99	
Queue Length 95th (ft)	48	26		214	#262	
Internal Link Dist (ft)	1686			709	463	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1586	1342		1455	600	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.09	0.20		0.35	0.65	

Intersection Summary

Area Type: Other

Cycle Length: 102

Actuated Cycle Length: 57

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 16.2

Intersection LOS: B

Intersection Capacity Utilization 75.7%

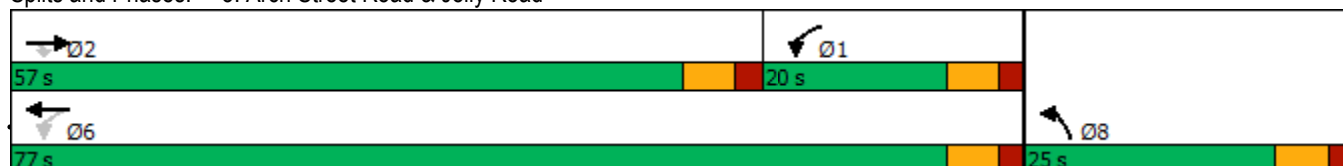
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	436	156	103	617	18	111	216	94	35	237	98
Future Volume (vph)	80	436	156	103	617	18	111	216	94	35	237	98
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.996			0.955				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1629	1800	1632	1767	1832	0	1573	1606	0	1612	1883	1648
Flt Permitted	0.220			0.416			0.598			0.475		
Satd. Flow (perm)	377	1800	1632	774	1832	0	990	1606	0	806	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					4			49				105
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2332	
Travel Time (s)		24.6			32.6			22.5			45.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	1%	1%	1%	2%	7%	3%	2%	0%	0%	3%	0%
Adj. Flow (vph)	86	469	168	111	663	19	119	232	101	38	255	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	469	168	111	682	0	119	333	0	38	255	105
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0		18.0	18.0		18.0	18.0	18.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0		12.0	12.0		12.0	12.0	12.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	19.7	20.7	20.7	19.7	20.7		13.0	13.0		13.0	13.0	12.0
Actuated g/C Ratio	0.45	0.47	0.47	0.45	0.47		0.30	0.30		0.30	0.30	0.27
v/c Ratio	0.51	0.55	0.22	0.32	0.78		0.40	0.65		0.16	0.46	0.20
Control Delay	22.5	11.1	7.5	10.7	18.2		18.0	19.9		14.1	16.3	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	22.5	11.1	7.5	10.7	18.2		18.0	19.9		14.1	16.3	4.8
LOS	C	B	A	B	B		B	B		B	B	A
Approach Delay		11.6			17.1			19.4			13.0	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	14	75	22	16	128		24	62		7	53	0
Queue Length 95th (ft)	#64	138	47	43	#292		61	#157		24	104	25
Internal Link Dist (ft)		1184			1116			1077			2252	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	180	906	821	372	924		295	512		239	560	528
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.48	0.52	0.20	0.30	0.74		0.40	0.65		0.16	0.46	0.20

Intersection Summary

Area Type: Other

Cycle Length: 45

Actuated Cycle Length: 43.8

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 15.2

Intersection LOS: B

Intersection Capacity Utilization 81.0%

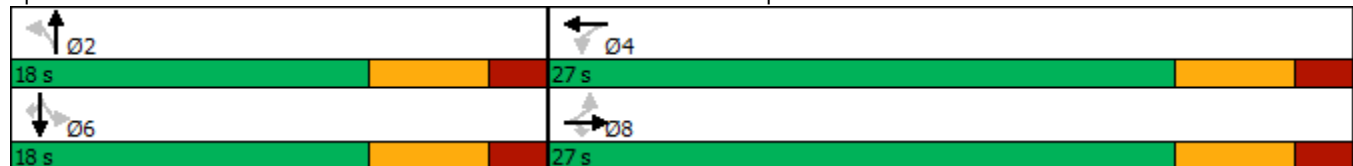
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road



HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/07/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	436	156	103	617	18	111	216	94	35	237	98
Future Volume (veh/h)	80	436	156	103	617	18	111	216	94	35	237	98
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1789	1860	1935	1935	1920	1846	1869	1883	1912	1875	1905	1950
Adj Flow Rate, veh/h	86	469	123	111	663	19	119	232	92	38	255	63
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	1	1	1	2	7	3	2	0	0	3	0
Cap, veh/h	287	897	790	396	895	26	357	376	149	318	558	447
Arrive On Green	0.46	0.48	0.48	0.46	0.48	0.46	0.29	0.29	0.27	0.29	0.29	0.27
Sat Flow, veh/h	726	1860	1640	853	1857	53	1061	1283	509	1058	1905	1652
Grp Volume(v), veh/h	86	469	123	111	0	682	119	0	324	38	255	63
Grp Sat Flow(s),veh/h/ln	726	1860	1640	853	0	1910	1061	0	1792	1058	1905	1652
Q Serve(g_s), s	4.9	7.8	1.9	4.8	0.0	12.8	4.6	0.0	7.0	1.4	4.9	1.3
Cycle Q Clear(g_c), s	17.7	7.8	1.9	13.1	0.0	12.8	9.4	0.0	7.0	7.9	4.9	1.3
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	287	897	790	396	0	921	357	0	525	318	558	447
V/C Ratio(X)	0.30	0.52	0.16	0.28	0.00	0.74	0.33	0.00	0.62	0.12	0.46	0.14
Avail Cap(c_a), veh/h	297	922	812	407	0	947	357	0	525	318	558	447
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.3	8.0	6.4	13.5	0.0	9.3	16.7	0.0	13.7	16.7	12.8	12.3
Incr Delay (d2), s/veh	1.2	1.0	0.2	0.8	0.0	3.8	2.5	0.0	5.4	0.8	2.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	4.1	0.9	1.6	0.0	8.5	2.1	0.0	5.4	0.6	3.7	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.5	9.0	6.6	14.3	0.0	13.1	19.2	0.0	19.1	17.5	15.5	13.0
LnGrp LOS	B	A	A	B	A	B	B	A	B	B	B	B
Approach Vol, veh/h	678			793			443			356		
Approach Delay, s/veh	9.8			13.2			19.1			15.3		
Approach LOS	A			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	18.0			26.4			18.0			26.4		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	12.0			21.0			12.0			21.0		
Max Q Clear Time (g_c+I1), s	11.9			15.1			10.4			19.7		
Green Ext Time (p_c), s	0.0			3.2			0.4			0.7		
Intersection Summary												
HCM 6th Ctrl Delay	13.7											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	134	5	41	157	16	13	10	35	11	9	4
Future Volume (vph)	19	134	5	41	157	16	13	10	35	11	9	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.990			0.919			0.977	
Flt Protected		0.994			0.991			0.989			0.977	
Satd. Flow (prot)	0	1847	0	0	1826	0	0	1802	0	0	1762	0
Flt Permitted		0.994			0.991			0.989			0.977	
Satd. Flow (perm)	0	1847	0	0	1826	0	0	1802	0	0	1762	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	168	6	51	196	20	16	13	44	14	11	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	198	0	0	267	0	0	73	0	0	30	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	28.5%				ICU Level of Service A							
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/07/2023

Intersection

Intersection Delay, s/veh

9

Intersection LOS

A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	134	5	41	157	16	13	10	35	11	9	4
Future Vol, veh/h	19	134	5	41	157	16	13	10	35	11	9	4
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	0	1	0	0	0	2	0	0	0	0	0	0
Mvmt Flow	24	168	6	51	196	20	16	13	44	14	11	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

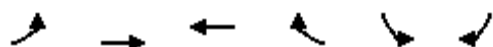
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	9.4	8.2	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	12%	19%	46%
Vol Thru, %	17%	85%	73%	38%
Vol Right, %	60%	3%	7%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	58	158	214	24
LT Vol	13	19	41	11
Through Vol	10	134	157	9
RT Vol	35	5	16	4
Lane Flow Rate	72	198	268	30
Geometry Grp	1	1	1	1
Degree of Util (X)	0.094	0.243	0.323	0.042
Departure Headway (Hd)	4.65	4.434	4.351	5.017
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	770	810	827	712
Service Time	2.683	2.458	2.375	3.055
HCM Lane V/C Ratio	0.094	0.244	0.324	0.042
HCM Control Delay	8.2	8.9	9.4	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	1	1.4	0.1

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/07/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	33	50	2	2	2
Future Volume (vph)	2	33	50	2	2	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.932	
Flt Protected		0.997			0.976	
Satd. Flow (prot)	0	1904	1890	0	1834	0
Flt Permitted		0.997			0.976	
Satd. Flow (perm)	0	1904	1890	0	1834	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1091	171		70	
Travel Time (s)		24.8	3.9		1.6	
Peak Hour Factor	0.47	0.47	0.47	0.47	0.47	0.47
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	70	106	4	4	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	74	110	0	8	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.4%

ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	33	50	2	2	2
Future Vol, veh/h	2	33	50	2	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	1	-
Peak Hour Factor	47	47	47	47	47	47
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	70	106	4	4	4

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	110	0	0 186 108
Stage 1	-	-	- 108 -
Stage 2	-	-	- 78 -
Critical Hdwy	4.1	-	- 6.6 6.3
Critical Hdwy Stg 1	-	-	- 5.6 -
Critical Hdwy Stg 2	-	-	- 5.6 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1493	-	- 799 948
Stage 1	-	-	- 916 -
Stage 2	-	-	- 946 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1493	-	- 797 948
Mov Cap-2 Maneuver	-	-	- 797 -
Stage 1	-	-	- 913 -
Stage 2	-	-	- 946 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1493	-	-	-	866
HCM Lane V/C Ratio	0.003	-	-	-	0.01
HCM Control Delay (s)	7.4	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/07/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		LT	TT	TT	LT
Traffic Volume (vph)	125	92	57	520	354	132
Future Volume (vph)	125	92	57	520	354	132
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.936					0.850
Flt Protected	0.972		0.950			
Satd. Flow (prot)	3111	0	1661	3257	3257	1573
Flt Permitted	0.972		0.500			
Satd. Flow (perm)	3111	0	874	3257	3257	1573
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	98					140
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Adj. Flow (vph)	133	98	61	553	377	140
Shared Lane Traffic (%)						
Lane Group Flow (vph)	231	0	61	553	377	140
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/07/2023

												
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR						
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0						
Lead/Lag			Lead		Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0						
Recall Mode	None		None	C-Max	C-Max	None						
Act Effect Green (s)	11.8		99.2	99.2	89.2	106.8						
Actuated g/C Ratio	0.10		0.83	0.83	0.74	0.89						
v/c Ratio	0.59		0.08	0.21	0.16	0.10						
Control Delay	35.2		2.5	2.5	2.3	0.1						
Queue Delay	0.0		0.0	0.0	0.0	0.0						
Total Delay	35.2		2.5	2.5	2.3	0.1						
LOS	D		A	A	A	A						
Approach Delay	35.2			2.5	1.7							
Approach LOS	D			A	A							
Queue Length 50th (ft)	51		7	36	17	0						
Queue Length 95th (ft)	89		17	61	27	0						
Internal Link Dist (ft)	1000			755	1161							
Turn Bay Length (ft)	450		250			420						
Base Capacity (vph)	926		775	2693	2421	1573						
Starvation Cap Reductn	0		0	0	0	0						
Spillback Cap Reductn	0		0	0	0	0						
Storage Cap Reductn	0		0	0	0	0						
Reduced v/c Ratio	0.25		0.08	0.21	0.16	0.09						

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 89 (74%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 7.8

Intersection LOS: A

Intersection Capacity Utilization 34.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary 7: Dekalb Pike (S.R. 0202) & Yost Road

11/07/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (veh/h)	125	92	57	520	354	132
Future Volume (veh/h)	125	92	57	520	354	132
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1736	1820	1837	1809	1780	1866
Adj Flow Rate, veh/h	116	117	61	553	377	140
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	2	1	0
Cap, veh/h	175	150	734	2816	2529	1349
Arrive On Green	0.11	0.10	0.03	0.82	0.75	0.75
Sat Flow, veh/h	1653	1542	1750	3527	3472	1582
Grp Volume(v), veh/h	116	117	61	553	377	140
Grp Sat Flow(s),veh/h/ln	1653	1542	1750	1718	1691	1582
Q Serve(g_s), s	8.1	8.9	0.9	4.2	3.8	1.7
Cycle Q Clear(g_c), s	8.1	8.9	0.9	4.2	3.8	1.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	175	150	734	2816	2529	1349
V/C Ratio(X)	0.66	0.78	0.08	0.20	0.15	0.10
Avail Cap(c_a), veh/h	455	411	798	2816	2529	1349
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.93	0.93
Uniform Delay (d), s/veh	51.6	52.9	2.8	2.3	4.3	1.4
Incr Delay (d2), s/veh	4.3	8.4	0.0	0.2	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.5	12.3	0.4	1.7	2.0	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	55.9	61.3	2.8	2.5	4.4	1.6
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	233			614	517	
Approach Delay, s/veh	58.6			2.5	3.6	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	103.3			16.7	8.6	94.7
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	77.0			32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s	6.2			10.9	2.9	5.8
Green Ext Time (p_c), s	2.3			0.8	0.0	2.0

Intersection Summary

HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
20: Arch Street Road & Site B Access

11/07/2023

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	18	22	299	15	20	354
Future Volume (vph)	18	22	299	15	20	354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-1%			-2%
Storage Length (ft)	0	0		0	75	
Storage Lanes	1	0		0	1	
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926		0.994			
Flt Protected	0.978				0.950	
Satd. Flow (prot)	1687	0	1861	0	1787	1881
Flt Permitted	0.978				0.950	
Satd. Flow (perm)	1687	0	1861	0	1787	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	294		2332			543
Travel Time (s)	6.7		53.0			12.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	24	325	16	22	385
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	0	341	0	22	385
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization 28.6%			ICU Level of Service A			
Analysis Period (min) 15						

HCM 6th TWSC
20: Arch Street Road & Site B Access

11/07/2023

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	22	299	15	20	354
Future Vol, veh/h	18	22	299	15	20	354
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-1	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	24	325	16	22	385
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	762	333	0	0	341	0
Stage 1	333	-	-	-	-	-
Stage 2	429	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	373	709	-	-	1218	-
Stage 1	726	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	366	709	-	-	1218	-
Mov Cap-2 Maneuver	366	-	-	-	-	-
Stage 1	726	-	-	-	-	-
Stage 2	645	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.9	0		0.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	499	1218	-	
HCM Lane V/C Ratio	-	-	0.087	0.018	-	
HCM Control Delay (s)	-	-	12.9	8	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	44	0	77	2	602	74	56	447	42
Future Volume (vph)	0	0	0	44	0	77	2	602	74	56	447	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt					0.858				0.850			0.987
Flt Protected				0.950	0.997		0.950			0.950		
Satd. Flow (prot)	1714	1832	0	1641	1576	0	1636	3209	1435	1653	3176	0
Flt Permitted				0.950	0.997		0.452			0.360		
Satd. Flow (perm)	1714	1832	0	1641	1576	0	779	3209	1435	626	3176	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									82			9
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	3%	0%
Adj. Flow (vph)	0	0	0	48	0	85	2	662	81	62	491	46
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	0	0	43	90	0	2	662	81	62	537	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split			Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		21.0	21.0	14.0	13.0	21.0	
Total Split (s)	33.0	33.0		36.0	36.0		37.0	37.0	36.0	14.0	51.0	
Total Split (%)	27.5%	27.5%		30.0%	30.0%		30.8%	30.8%	30.0%	11.7%	42.5%	
Maximum Green (s)	27.0	27.0		30.0	30.0		31.0	31.0	30.0	8.0	45.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/07/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0	5.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effect Green (s)				15.2	15.2		84.5	84.5	105.7	94.8	94.8	
Actuated g/C Ratio				0.13	0.13		0.70	0.70	0.88	0.79	0.79	
v/c Ratio				0.21	0.45		0.00	0.29	0.06	0.11	0.21	
Control Delay				47.8	55.0		7.0	6.8	0.6	3.7	3.6	
Queue Delay				0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay				47.8	55.0		7.0	6.8	0.6	3.7	3.6	
LOS				D	D		A	A	A	A	A	
Approach Delay					52.7			6.1			3.6	
Approach LOS					D			A			A	
Queue Length 50th (ft)				31	68		0	78	0	9	44	
Queue Length 95th (ft)				67	120		m2	107	5	22	73	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)							150			250		
Base Capacity (vph)				423	407		548	2260	1403	571	2511	
Starvation Cap Reductn				0	0		0	0	0	0	0	
Spillback Cap Reductn				0	0		0	0	0	0	0	
Storage Cap Reductn				0	0		0	0	0	0	0	
Reduced v/c Ratio				0.10	0.22		0.00	0.29	0.06	0.11	0.21	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 102 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 9.3

Intersection LOS: A

Intersection Capacity Utilization 43.2%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

Ø1	Ø2 (R)	Ø4	Ø8
14 s	37 s	36 s	33 s
Ø6 (R)			
51 s			

HCM 6th Signalized Intersection Summary

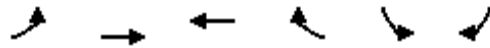
1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/07/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	44	0	77	2	602	74	56	447	42
Future Volume (veh/h)	0	0	0	44	0	77	2	602	74	56	447	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1820	1820	1875	1950	1950	1778	1750	1750	1800	1758	1800
Adj Flow Rate, veh/h	0	0	0	48	0	74	2	662	71	62	491	46
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
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	2	0	3	0
Cap, veh/h	1	2	0	132	0	122	694	2554	1249	611	2602	243
Arrive On Green	0.00	0.00	0.00	0.07	0.00	0.07	0.77	0.77	0.77	0.03	0.84	0.83
Sat Flow, veh/h	1666	1820	0	1785	0	1652	825	3324	1483	1714	3088	288
Grp Volume(v), veh/h	0	0	0	48	0	74	2	662	71	62	265	272
Grp Sat Flow(s),veh/h/ln	1666	1820	0	1785	0	1652	825	1662	1483	1714	1670	1706
Q Serve(g_s), s	0.0	0.0	0.0	3.1	0.0	5.2	0.1	6.9	1.0	0.8	3.6	3.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.1	0.0	5.2	0.1	6.9	1.0	0.8	3.6	3.6
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	1	2	0	132	0	122	694	2554	1249	611	1407	1438
V/C Ratio(X)	0.00	0.00	0.00	0.36	0.00	0.61	0.00	0.26	0.06	0.10	0.19	0.19
Avail Cap(c_a), veh/h	389	425	0	461	0	427	694	2554	1249	684	1407	1438
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	0.95	0.00	0.95	0.91	0.91	0.91	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	52.9	0.0	53.9	3.2	4.0	1.6	2.4	1.8	1.8
Incr Delay (d2), s/veh	0.0	0.0	0.0	3.4	0.0	9.4	0.0	0.2	0.1	0.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	2.7	0.0	4.4	0.0	3.4	0.6	0.3	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	56.3	0.0	63.3	3.2	4.2	1.6	2.5	2.1	2.1
LnGrp LOS	A	A	A	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h	0			122				735				599
Approach Delay, s/veh	0.0			60.5				4.0				2.1
Approach LOS				E				A				A
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.9	97.2		13.9		106.1		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	8.0	31.0		30.0		45.0		27.0				
Max Q Clear Time (g_c+I1), s	3.3	9.4		7.2		6.1		0.0				
Green Ext Time (p_c), s	0.0	2.9		0.8		1.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	8.0											
HCM 6th LOS	A											
Notes												
User approved pedestrian interval to be less than phase max green.												
User approved volume balancing among the lanes for turning movement.												

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

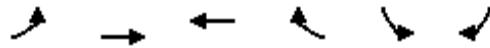


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	138	178	119	175	135	72
Future Volume (vph)	138	178	119	175	135	72
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.953	
Flt Protected	0.950				0.968	
Satd. Flow (prot)	1628	1878	1723	1450	1777	0
Flt Permitted	0.592				0.968	
Satd. Flow (perm)	1014	1878	1723	1450	1777	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				246	27	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%
Adj. Flow (vph)	194	251	168	246	190	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	194	251	168	246	291	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	13.0	67.0	54.0	54.0	23.0	
Total Split (%)	14.4%	74.4%	60.0%	60.0%	25.6%	
Maximum Green (s)	7.0	61.0	48.0	48.0	18.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	5.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	2.5	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	32.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	16.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	63.5	63.5	50.5	50.5	17.5	
Actuated g/C Ratio	0.71	0.71	0.56	0.56	0.19	
v/c Ratio	0.25	0.19	0.17	0.27	0.79	
Control Delay	5.6	5.2	10.6	2.2	47.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.6	5.2	10.6	2.2	47.7	
LOS	A	A	B	A	D	
Approach Delay		5.4	5.6		47.7	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 8 (9%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 16.2

Intersection LOS: B

Intersection Capacity Utilization 34.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	138	178	119	175	135	72
Future Volume (veh/h)	138	178	119	175	135	72
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1949	2012	1778	1764	1935	1950
Adj Flow Rate, veh/h	194	251	168	246	190	101
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	0	1	0	1	1	0
Cap, veh/h	754	1411	1008	848	229	122
Arrive On Green	0.08	0.70	0.57	0.57	0.20	0.20
Sat Flow, veh/h	1856	2012	1778	1495	1150	611
Grp Volume(v), veh/h	194	251	168	246	292	0
Grp Sat Flow(s),veh/h/ln	1856	2012	1778	1495	1767	0
Q Serve(g_s), s	3.4	3.8	4.1	7.7	14.3	0.0
Cycle Q Clear(g_c), s	3.4	3.8	4.1	7.7	14.3	0.0
Prop In Lane	1.00			1.00	0.65	0.35
Lane Grp Cap(c), veh/h	754	1411	1008	848	351	0
V/C Ratio(X)	0.26	0.18	0.17	0.29	0.83	0.00
Avail Cap(c_a), veh/h	774	1411	1008	848	373	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.82	0.82	1.00	0.00
Uniform Delay (d), s/veh	5.7	4.6	9.3	10.1	34.6	0.0
Incr Delay (d2), s/veh	0.4	0.3	0.3	0.7	14.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	2.4	2.7	4.4	11.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.0	4.9	9.6	10.8	48.6	0.0
LnGrp LOS	A	A	A	B	D	A
Approach Vol, veh/h		445	414		292	
Approach Delay, s/veh		5.4	10.3		48.6	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.1	56.0		21.9		68.1
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	7.0	48.0		18.0		61.0
Max Q Clear Time (g_c+I1), s	5.9	10.2		16.8		6.3
Green Ext Time (p_c), s	0.1	3.8		0.1		2.2

Intersection Summary

HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

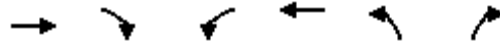
11/07/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	196	211	89	232	237	46
Future Volume (vph)	196	211	89	232	237	46
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.978	
Flt Protected				0.986	0.960	
Satd. Flow (prot)	1723	1464	0	1724	1755	0
Flt Permitted				0.872	0.960	
Satd. Flow (perm)	1723	1464	0	1525	1755	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		234				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	543	
Travel Time (s)	34.4			15.4	10.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	218	234	99	258	263	51
Shared Lane Traffic (%)						
Lane Group Flow (vph)	218	234	0	357	314	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	49.0	49.0	20.0	69.0	21.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/07/2023

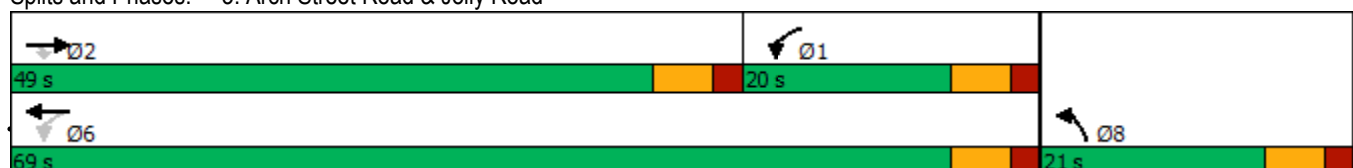


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	54.4%	54.4%	22.2%	76.7%	23.3%	
Maximum Green (s)	43.0	43.0	14.0	63.0	15.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	Max	None	None	
Act Effect Green (s)	22.0	22.0		42.0	16.0	
Actuated g/C Ratio	0.32	0.32		0.62	0.24	
v/c Ratio	0.39	0.37		0.36	0.76	
Control Delay	20.4	4.6		7.8	38.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	20.4	4.6		7.8	38.6	
LOS	C	A		A	D	
Approach Delay	12.2			7.8	38.6	
Approach LOS	B			A	D	
Queue Length 50th (ft)	69	0		63	122	
Queue Length 95th (ft)	125	43		105	#237	
Internal Link Dist (ft)	1686			709	463	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1114	1029		1479	412	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.20	0.23		0.24	0.76	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 68
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 18.2 Intersection LOS: B
Intersection Capacity Utilization 64.9% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	454	269	51	537	33	75	211	52	22	197	94
Future Volume (vph)	56	454	269	51	537	33	75	211	52	22	197	94
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.991			0.970				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1693	1800	1632	1785	1844	0	1620	1628	0	1612	1939	1648
Flt Permitted	0.268			0.352			0.624			0.584		
Satd. Flow (perm)	478	1800	1632	661	1844	0	1064	1628	0	991	1939	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					9			34				102
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2332	
Travel Time (s)		24.6			32.6			22.5			45.4	
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
Heavy Vehicles (%)	2%	1%	1%	0%	1%	0%	0%	1%	4%	0%	0%	0%
Adj. Flow (vph)	61	493	292	55	584	36	82	229	57	24	214	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	493	292	55	620	0	82	286	0	24	214	102
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0		19.0	19.0		19.0	19.0	19.0
Total Split (%)	52.5%	52.5%	52.5%	52.5%	52.5%		47.5%	47.5%		47.5%	47.5%	47.5%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0		13.0	13.0		13.0	13.0	13.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	14.9	15.9	15.9	14.9	15.9		14.0	14.0		14.0	14.0	13.0
Actuated g/C Ratio	0.37	0.40	0.40	0.37	0.40		0.35	0.35		0.35	0.35	0.33
v/c Ratio	0.34	0.69	0.45	0.22	0.84		0.22	0.48		0.07	0.32	0.17
Control Delay	15.5	16.6	11.6	11.4	24.5		11.1	12.3		9.4	11.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	15.5	16.6	11.6	11.4	24.5		11.1	12.3		9.4	11.1	3.8
LOS	B	B	B	B	C		B	B		A	B	A
Approach Delay		14.8			23.5			12.0			8.8	
Approach LOS		B			C			B			A	
Queue Length 50th (ft)	9	85	45	8	115		12	41		3	34	0
Queue Length 95th (ft)	33	#177	91	26	#272		34	90		14	70	21
Internal Link Dist (ft)		1184			1116			1077			2252	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	179	721	653	247	744		373	592		347	679	605
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.34	0.68	0.45	0.22	0.83		0.22	0.48		0.07	0.32	0.17

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 39.9

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 16.0

Intersection LOS: B

Intersection Capacity Utilization 74.5%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

			
Ø2			Ø4
19 s			21 s
			
Ø6			Ø8
19 s			21 s

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/07/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	454	269	51	537	33	75	211	52	22	197	94
Future Volume (veh/h)	56	454	269	51	537	33	75	211	52	22	197	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1846	1860	1935	1950	1935	1950	1912	1898	1855	1875	1950	1950
Adj Flow Rate, veh/h	61	493	234	55	584	35	82	229	55	24	214	64
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
Percent Heavy Veh, %	2	1	1	0	1	0	0	1	4	0	0	0
Cap, veh/h	250	744	656	291	723	43	484	517	124	446	682	537
Arrive On Green	0.38	0.40	0.40	0.38	0.40	0.38	0.35	0.35	0.32	0.35	0.35	0.32
Sat Flow, veh/h	794	1860	1640	758	1807	108	1126	1479	355	1098	1950	1652
Grp Volume(v), veh/h	61	493	234	55	0	619	82	0	284	24	214	64
Grp Sat Flow(s),veh/h/ln	794	1860	1640	758	0	1915	1126	0	1834	1098	1950	1652
Q Serve(g_s), s	3.0	8.7	4.0	2.7	0.0	11.5	2.3	0.0	4.8	0.7	3.2	1.1
Cycle Q Clear(g_c), s	14.5	8.7	4.0	11.8	0.0	11.5	5.5	0.0	4.8	5.0	3.2	1.1
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	250	744	656	291	0	766	484	0	642	446	682	537
V/C Ratio(X)	0.24	0.66	0.36	0.19	0.00	0.81	0.17	0.00	0.44	0.05	0.31	0.12
Avail Cap(c_a), veh/h	250	744	656	291	0	766	484	0	642	446	682	537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.0	9.8	8.4	15.7	0.0	10.7	11.5	0.0	10.1	11.7	9.5	9.5
Incr Delay (d2), s/veh	1.1	3.0	0.7	0.7	0.0	7.2	0.8	0.0	2.2	0.2	1.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	5.4	2.0	0.8	0.0	9.0	1.0	0.0	3.2	0.3	2.2	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.1	12.8	9.1	16.4	0.0	17.9	12.3	0.0	12.3	12.0	10.7	9.9
LnGrp LOS	B	B	A	B	A	B	B	A	B	B	B	A
Approach Vol, veh/h	788			674			366			302		
Approach Delay, s/veh	12.2			17.8			12.3			10.6		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	19.0			21.0			19.0			21.0		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	13.0			15.0			13.0			15.0		
Max Q Clear Time (g_c+I1), s	8.0			13.8			7.5			16.5		
Green Ext Time (p_c), s	1.2			0.6			1.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	13.7											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/07/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	302	11	40	257	14	13	12	33	37	16	17
Future Volume (vph)	32	302	11	40	257	14	13	12	33	37	16	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.994			0.923			0.967	
Flt Protected		0.995			0.994			0.989			0.974	
Satd. Flow (prot)	0	1848	0	0	1827	0	0	1810	0	0	1739	0
Flt Permitted		0.995			0.994			0.989			0.974	
Satd. Flow (perm)	0	1848	0	0	1827	0	0	1810	0	0	1739	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	38	355	13	47	302	16	15	14	39	44	19	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	406	0	0	365	0	0	68	0	0	83	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 39.1%

ICU Level of Service A

Analysis Period (min) 15

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/07/2023

Intersection

Intersection Delay, s/veh	12.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	302	11	40	257	14	13	12	33	37	16	17
Future Vol, veh/h	32	302	11	40	257	14	13	12	33	37	16	17
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	38	355	13	47	302	16	15	14	39	44	19	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

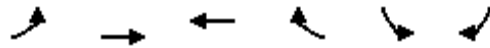
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.2	12.4	9.3	9.7
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	9%	13%	53%
Vol Thru, %	21%	88%	83%	23%
Vol Right, %	57%	3%	5%	24%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	58	345	311	70
LT Vol	13	32	40	37
Through Vol	12	302	257	16
RT Vol	33	11	14	17
Lane Flow Rate	68	406	366	82
Geometry Grp	1	1	1	1
Degree of Util (X)	0.106	0.534	0.486	0.134
Departure Headway (Hd)	5.618	4.735	4.778	5.838
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	641	751	746	618
Service Time	3.622	2.822	2.867	3.841
HCM Lane V/C Ratio	0.106	0.541	0.491	0.133
HCM Control Delay	9.3	13.2	12.4	9.7
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.4	3.2	2.7	0.5

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/07/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	4	42	2	4	0
Future Volume (vph)	0	4	42	2	4	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994				
Flt Protected					0.950	
Satd. Flow (prot)	0	1909	1889	0	1916	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1909	1889	0	1916	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1091	171		70	
Travel Time (s)		24.8	3.9		1.6	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	6	63	3	6	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	6	66	0	6	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.7

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 0 4 42 2 4 0

Future Vol, veh/h 0 4 42 2 4 0

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - -1 0 - 1 -

Peak Hour Factor 67 67 67 67 67 67

Heavy Vehicles, % 0 0 0 0 0 0

Mvmt Flow 0 6 63 3 6 0

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 66 0 - 0 71 65

Stage 1 - - - - 65 -

Stage 2 - - - - 6 -

Critical Hdwy 4.1 - - - 6.6 6.3

Critical Hdwy Stg 1 - - - - 5.6 -

Critical Hdwy Stg 2 - - - - 5.6 -

Follow-up Hdwy 2.2 - - - 3.5 3.3

Pot Cap-1 Maneuver 1549 - - - 935 1003

Stage 1 - - - - 959 -

Stage 2 - - - - 1022 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1549 - - - 935 1003

Mov Cap-2 Maneuver - - - - 935 -

Stage 1 - - - - 959 -

Stage 2 - - - - 1022 -

Approach EB WB SB

HCM Control Delay, s 0 0 8.9

HCM LOS A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1549 - - - 935

HCM Lane V/C Ratio - - - - 0.006

HCM Control Delay (s) 0 - - - 8.9

HCM Lane LOS A - - - A

HCM 95th %tile Q(veh) 0 - - - 0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/07/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		LT	TT	TT	LT
Traffic Volume (vph)	159	232	94	512	470	190
Future Volume (vph)	159	232	94	512	470	190
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.911					0.850
Flt Protected	0.980		0.950			
Satd. Flow (prot)	3053	0	1661	3257	3194	1558
Flt Permitted	0.980		0.436			
Satd. Flow (perm)	3053	0	762	3257	3194	1558
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	247					202
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	2%	3%	1%
Adj. Flow (vph)	169	247	100	545	500	202
Shared Lane Traffic (%)						
Lane Group Flow (vph)	416	0	100	545	500	202
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/07/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	6.0	6.0	3.0
Minimum Gap (s)	3.0		3.0	3.9	3.9	3.0
Time Before Reduce (s)	0.0		0.0	37.0	37.0	0.0
Time To Reduce (s)	0.0		0.0	15.0	15.0	0.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	14.4		96.6	96.6	83.9	103.3
Actuated g/C Ratio	0.12		0.80	0.80	0.70	0.86
v/c Ratio	0.71		0.15	0.21	0.22	0.15
Control Delay	26.7		3.5	3.3	6.2	0.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	26.7		3.5	3.3	6.2	0.4
LOS	C		A	A	A	A
Approach Delay	26.7			3.4	4.6	
Approach LOS	C			A	A	
Queue Length 50th (ft)	63		13	42	57	0
Queue Length 95th (ft)	111		33	76	77	0
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	1018		673	2621	2233	1543
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.41		0.15	0.21	0.22	0.13

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 101 (84%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 9.4

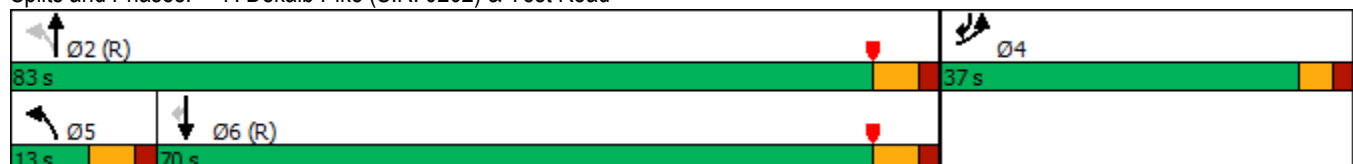
Intersection LOS: A

Intersection Capacity Utilization 43.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/07/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	↑↑	↑↑	WT
Traffic Volume (veh/h)	159	232	94	512	470	190
Future Volume (veh/h)	159	232	94	512	470	190
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1750	1805	1837	1809	1752	1852
Adj Flow Rate, veh/h	169	245	100	545	500	193
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	0	2	3	1
Cap, veh/h	319	280	567	2522	2165	1320
Arrive On Green	0.19	0.18	0.04	0.73	0.65	0.65
Sat Flow, veh/h	1666	1530	1750	3527	3417	1569
Grp Volume(v), veh/h	169	245	100	545	500	193
Grp Sat Flow(s),veh/h/ln	1666	1530	1750	1718	1665	1569
Q Serve(g_s), s	11.0	18.7	2.1	6.0	7.4	2.7
Cycle Q Clear(g_c), s	11.0	18.7	2.1	6.0	7.4	2.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	319	280	567	2522	2165	1320
V/C Ratio(X)	0.53	0.88	0.18	0.22	0.23	0.15
Avail Cap(c_a), veh/h	458	408	611	2522	2165	1320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.99	0.99
Uniform Delay (d), s/veh	43.7	47.7	5.8	5.1	8.6	1.7
Incr Delay (d2), s/veh	1.4	13.6	0.1	0.2	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.2	22.4	1.2	3.3	4.5	3.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	45.0	61.3	6.0	5.3	8.9	2.0
LnGrp LOS	D	E	A	A	A	A
Approach Vol, veh/h	414			645	693	
Approach Delay, s/veh	54.7			5.4	7.0	
Approach LOS	D			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	93.0			27.0	10.0	83.0
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	77.0			32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s	8.0			20.7	4.1	9.4
Green Ext Time (p_c), s	7.8			1.3	0.1	10.1

Intersection Summary

HCM 6th Ctrl Delay	17.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
20: Arch Street Road & Site B Access

11/07/2023

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	9	300	7	10	290
Future Volume (vph)	6	9	300	7	10	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-1%			-2%
Storage Length (ft)	0	0		0	75	
Storage Lanes	1	0		0	1	
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.921		0.997			
Flt Protected	0.980				0.950	
Satd. Flow (prot)	1681	0	1866	0	1787	1881
Flt Permitted	0.980				0.950	
Satd. Flow (perm)	1681	0	1866	0	1787	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	294		2332			543
Travel Time (s)	6.7		53.0			12.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	10	326	8	11	315
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	0	334	0	11	315
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	26.2%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
20: Arch Street Road & Site B Access

11/07/2023

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	9	300	7	10	290
Future Vol, veh/h	6	9	300	7	10	290
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-1	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	10	326	8	11	315
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	667	330	0	0	334	0
Stage 1	330	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	424	712	-	-	1225	-
Stage 1	728	-	-	-	-	-
Stage 2	723	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	420	712	-	-	1225	-
Mov Cap-2 Maneuver	420	-	-	-	-	-
Stage 1	728	-	-	-	-	-
Stage 2	716	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.7	0		0.3		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 557		1225	-	
HCM Lane V/C Ratio	-	- 0.029		0.009	-	
HCM Control Delay (s)	-	- 11.7		8	-	
HCM Lane LOS	-	- B		A	-	
HCM 95th %tile Q(veh)	-	- 0.1		0	-	

Attachment J

2030 Future with Development Capacity/Levels-of-Service Analysis Worksheets – Alternative Site ‘B’ (Phase 2)

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

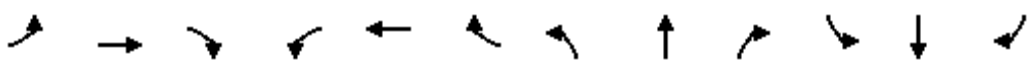
11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	11	1	137	0	96	1	463	208	221	531	8
Future Volume (vph)	7	11	1	137	0	96	1	463	208	221	531	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%			0%	
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.988			0.871				0.850		0.998	
Flt Protected	0.950			0.950	0.993		0.950			0.950		
Satd. Flow (prot)	1628	1552	0	1548	1541	0	1636	3117	1394	1605	3086	0
Flt Permitted	0.950			0.950	0.993		0.439			0.420		
Satd. Flow (perm)	1628	1552	0	1548	1541	0	756	3117	1394	710	3086	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									219		1	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	18%	0%	6%	0%	3%	0%	5%	5%	3%	7%	0%
Adj. Flow (vph)	7	12	1	144	0	101	1	487	219	233	559	8
Shared Lane Traffic (%)				11%								
Lane Group Flow (vph)	7	13	0	128	117	0	1	487	219	233	567	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		31.0	31.0	13.0	14.0	31.0	
Total Split (s)	33.0	33.0		30.0	30.0		43.0	43.0	30.0	14.0	57.0	
Total Split (%)	27.5%	27.5%		25.0%	25.0%		35.8%	35.8%	25.0%	11.7%	47.5%	
Maximum Green (s)	27.0	27.0		23.0	23.0		36.0	36.0	23.0	7.0	50.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		32.0	32.0	0.0	0.0	32.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		15.0	15.0	0.0	0.0	15.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effect Green (s)	7.7	7.7		16.5	16.5		72.0	72.0	94.5	86.0	86.0	
Actuated g/C Ratio	0.06	0.06		0.14	0.14		0.60	0.60	0.79	0.72	0.72	
v/c Ratio	0.07	0.13		0.60	0.55		0.00	0.26	0.19	0.41	0.26	
Control Delay	53.4	55.2		59.9	57.4		16.0	12.8	0.8	10.1	7.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	53.4	55.2		59.9	57.4		16.0	12.8	0.8	10.1	7.8	
LOS	D	E		E	E		B	B	A	B	A	
Approach Delay		54.6			58.7			9.1			8.4	
Approach LOS		D			E			A			A	
Queue Length 50th (ft)	5	10		100	90		0	71	0	42	56	
Queue Length 95th (ft)	21	31		158	146		m3	153	7	127	145	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	362		309	308		453	1870	1217	568	2211	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.02	0.04		0.41	0.38		0.00	0.26	0.18	0.41	0.26	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 64 (53%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 16.2

Intersection LOS: B

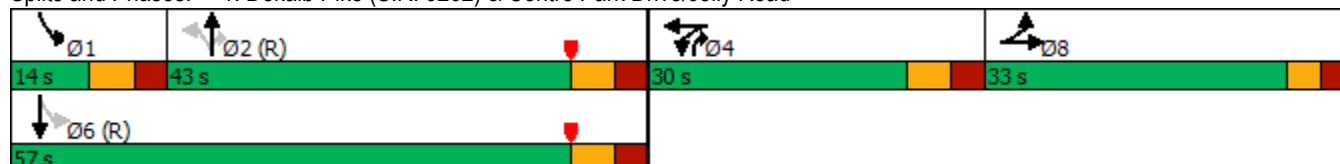
Intersection Capacity Utilization 57.0%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road



HCM 6th Signalized Intersection Summary

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	11	1	137	0	96	1	463	208	221	531	8
Future Volume (veh/h)	7	11	1	137	0	96	1	463	208	221	531	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1557	1820	1789	1950	1905	1778	1707	1707	1758	1702	1800
Adj Flow Rate, veh/h	7	12	1	101	60	58	1	487	200	233	559	8
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
Percent Heavy Veh, %	0	18	0	6	0	3	0	5	5	3	7	0
Cap, veh/h	34	29	2	159	85	82	563	2036	1043	570	2428	35
Arrive On Green	0.02	0.02	0.01	0.09	0.09	0.09	0.63	0.63	0.63	0.07	0.74	0.74
Sat Flow, veh/h	1666	1418	118	1704	911	880	802	3244	1447	1674	3263	47
Grp Volume(v), veh/h	7	0	13	101	0	118	1	487	200	233	277	290
Grp Sat Flow(s),veh/h/ln	1666	0	1536	1704	0	1791	802	1622	1447	1674	1617	1693
Q Serve(g_s), s	0.5	0.0	1.0	6.9	0.0	7.7	0.1	7.9	5.4	5.5	6.3	6.4
Cycle Q Clear(g_c), s	0.5	0.0	1.0	6.9	0.0	7.7	0.1	7.9	5.4	5.5	6.3	6.4
Prop In Lane	1.00		0.08	1.00		0.49	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	34	0	32	159	0	168	563	2036	1043	570	1203	1260
V/C Ratio(X)	0.20	0.00	0.41	0.63	0.00	0.70	0.00	0.24	0.19	0.41	0.23	0.23
Avail Cap(c_a), veh/h	389	0	358	341	0	358	563	2036	1043	570	1203	1260
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.97	0.00	0.97	0.98	0.98	0.98	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.8	0.0	58.1	52.4	0.0	52.8	8.3	9.8	5.4	6.3	4.7	4.7
Incr Delay (d2), s/veh	2.9	0.0	8.3	4.0	0.0	5.2	0.0	0.3	0.4	0.5	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.0	0.8	5.6	0.0	6.6	0.0	4.8	4.0	3.1	3.4	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.7	0.0	66.4	56.4	0.0	57.9	8.3	10.1	5.8	6.8	5.2	5.2
LnGrp LOS	E	A	E	E	A	E	A	B	A	A	A	A
Approach Vol, veh/h	20			219			688			800		
Approach Delay, s/veh	64.4			57.2			8.8			5.7		
Approach LOS	E			E			A			A		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	14.0	81.3		17.2		95.3		7.5				
Change Period (Y+Rc), s	7.0	7.0		7.0		7.0		6.0				
Max Green Setting (Gmax), s	7.0	36.0		23.0		50.0		27.0				
Max Q Clear Time (g_c+I1), s	8.0	10.4		9.7		8.8		3.0				
Green Ext Time (p_c), s	0.0	2.7		0.6		1.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay 14.1

HCM 6th LOS B

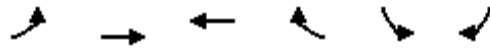
Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

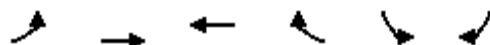


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	108	399	151	140	170	84
Future Volume (vph)	108	399	151	140	170	84
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.956	
Flt Protected	0.950				0.968	
Satd. Flow (prot)	1550	1842	1641	1435	1742	0
Flt Permitted	0.599				0.968	
Satd. Flow (perm)	978	1842	1641	1435	1742	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				147	25	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	5%	3%	5%	2%	2%	5%
Adj. Flow (vph)	114	420	159	147	179	88
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	420	159	147	267	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	13.0	67.0	54.0	54.0	23.0	
Total Split (%)	14.4%	74.4%	60.0%	60.0%	25.6%	
Maximum Green (s)	7.0	61.0	48.0	48.0	18.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	3.0	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	0.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	0.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	63.9	63.9	53.5	53.5	17.1	
Actuated g/C Ratio	0.71	0.71	0.59	0.59	0.19	
v/c Ratio	0.15	0.32	0.16	0.16	0.76	
Control Delay	5.0	6.0	10.2	2.2	45.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.0	6.0	10.2	2.2	45.7	
LOS	A	A	B	A	D	
Approach Delay		5.8	6.4		45.7	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 61 (68%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 15.6

Intersection LOS: B

Intersection Capacity Utilization 45.0%

ICU Level of Service A

Analysis Period (min) 15

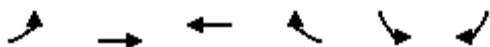
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	108	399	151	140	170	84
Future Volume (veh/h)	108	399	151	140	170	84
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1878	1983	1707	1750	1920	1876
Adj Flow Rate, veh/h	114	420	159	112	179	64
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	3	5	2	2	5
Cap, veh/h	821	1440	1048	910	226	81
Arrive On Green	0.06	0.73	0.61	0.61	0.17	0.17
Sat Flow, veh/h	1789	1983	1707	1483	1299	465
Grp Volume(v), veh/h	114	420	159	112	244	0
Grp Sat Flow(s),veh/h/ln	1789	1983	1707	1483	1771	0
Q Serve(g_s), s	1.8	6.6	3.6	2.8	11.9	0.0
Cycle Q Clear(g_c), s	1.8	6.6	3.6	2.8	11.9	0.0
Prop In Lane	1.00			1.00	0.73	0.26
Lane Grp Cap(c), veh/h	821	1440	1048	910	308	0
V/C Ratio(X)	0.14	0.29	0.15	0.12	0.79	0.00
Avail Cap(c_a), veh/h	877	1440	1048	910	374	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.88	0.88	1.00	0.00
Uniform Delay (d), s/veh	4.6	4.3	7.4	7.3	35.6	0.0
Incr Delay (d2), s/veh	0.1	0.5	0.3	0.2	9.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	3.9	2.2	1.5	9.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.7	4.8	7.7	7.5	44.9	0.0
LnGrp LOS	A	A	A	A	D	A
Approach Vol, veh/h		534	271		244	
Approach Delay, s/veh		4.7	7.6		44.9	
Approach LOS		A	A		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	10.2	60.2		19.6		70.4
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	7.0	48.0		18.0		61.0
Max Q Clear Time (g_c+I1), s	4.3	6.1		14.4		9.1
Green Ext Time (p_c), s	0.1	2.3		0.3		4.0

Intersection Summary

HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

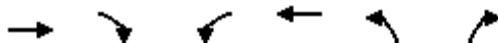
11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	280	307	56	79	211	105
Future Volume (vph)	280	307	56	79	211	105
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.955	
Flt Protected				0.980	0.968	
Satd. Flow (prot)	1689	1422	0	1630	1683	0
Flt Permitted				0.797	0.968	
Satd. Flow (perm)	1689	1422	0	1325	1683	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		316				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	3%	4%	6%	3%	2%
Adj. Flow (vph)	289	316	58	81	218	108
Shared Lane Traffic (%)						
Lane Group Flow (vph)	289	316	0	139	326	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	30.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	53.3%	53.3%	18.7%	72.0%	28.0%	
Maximum Green (s)	51.0	51.0	14.0	71.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	5.8	3.0	
Minimum Gap (s)	4.1	4.1	3.0	4.1	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	32.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	15.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	22.1	22.1		22.1	16.6	
Actuated g/C Ratio	0.45	0.45		0.45	0.34	
v/c Ratio	0.38	0.39		0.23	0.57	
Control Delay	11.5	3.2		10.5	17.3	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	11.5	3.2		10.5	17.3	
LOS	B	A		B	B	
Approach Delay	7.2			10.5	17.3	
Approach LOS	A			B	B	
Queue Length 50th (ft)	50	0		22	73	
Queue Length 95th (ft)	115	38		60	133	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1679	1415		1325	867	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.17	0.22		0.10	0.38	

Intersection Summary

Area Type: Other

Cycle Length: 107

Actuated Cycle Length: 48.7

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 10.7

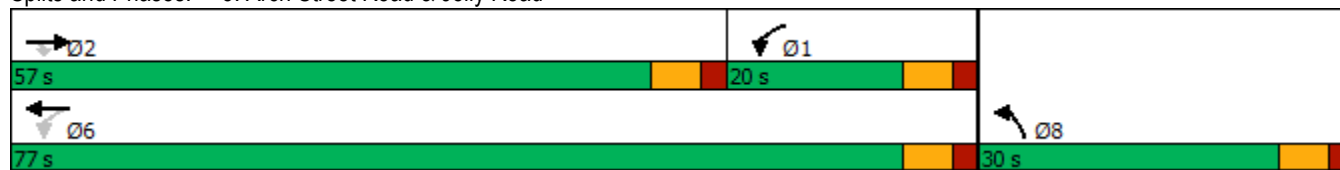
Intersection LOS: B

Intersection Capacity Utilization 66.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

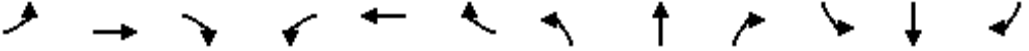
11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	538	151	94	333	24	46	194	91	20	272	45
Future Volume (vph)	98	538	151	94	333	24	46	194	91	20	272	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.990			0.952				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1645	1748	1616	1733	1799	0	1486	1557	0	1493	1883	1648
Flt Permitted	0.528			0.349			0.564			0.539		
Satd. Flow (perm)	914	1748	1616	637	1799	0	882	1557	0	847	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					12			58				82
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
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
Heavy Vehicles (%)	5%	4%	2%	3%	3%	9%	9%	3%	7%	8%	3%	0%
Adj. Flow (vph)	102	560	157	98	347	25	48	202	95	21	283	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	560	157	98	372	0	48	297	0	21	283	47
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6			4			8	
Permitted Phases	2		2	6			4			8		8
Detector Phase	2	2	2	6	6		4	4		8	8	8
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0		16.0	16.0		16.0	16.0	16.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		10.0	10.0		10.0	10.0	10.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	Max	Max	Max	Max	Max		None	None		None	None	None
Act Effect Green (s)	19.0	19.0	19.0	19.0	19.0		10.8	10.8		10.8	10.8	10.8
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.48		0.27	0.27		0.27	0.27	0.27
v/c Ratio	0.23	0.67	0.20	0.32	0.43		0.20	0.64		0.09	0.55	0.09
Control Delay	8.0	13.3	7.0	10.2	8.6		13.7	18.5		12.1	17.3	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	8.0	13.3	7.0	10.2	8.6		13.7	18.5		12.1	17.3	2.3
LOS	A	B	A	B	A		B	B		B	B	A
Approach Delay		11.4			9.0			17.8			15.0	
Approach LOS		B			A			B			B	
Queue Length 50th (ft)	12	86	18	12	47		8	45		3	53	0
Queue Length 95th (ft)	33	#170	41	37	93		27	#127		15	106	9
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	436	834	771	304	864		243	472		233	520	514
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.23	0.67	0.20	0.32	0.43		0.20	0.63		0.09	0.54	0.09

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 39.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 12.6

Intersection LOS: B

Intersection Capacity Utilization 73.7%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

 Ø2 24 s	 Ø4 16 s
 Ø6 24 s	 Ø8 16 s

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	538	151	94	333	24	46	194	91	20	272	45
Future Volume (veh/h)	98	538	151	94	333	24	46	194	91	20	272	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1803	1818	1920	1905	1905	1816	1784	1869	1812	1761	1905	1950
Adj Flow Rate, veh/h	102	560	112	98	347	25	48	202	95	21	283	30
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
Percent Heavy Veh, %	5	4	2	3	3	9	9	3	7	8	3	0
Cap, veh/h	527	876	784	368	846	61	321	318	150	313	504	437
Arrive On Green	0.48	0.48	0.48	0.48	0.48	0.46	0.26	0.26	0.24	0.26	0.26	0.26
Sat Flow, veh/h	974	1818	1627	780	1756	127	1017	1202	565	1019	1905	1652
Grp Volume(v), veh/h	102	560	112	98	0	372	48	0	297	21	283	30
Grp Sat Flow(s),veh/h/ln	974	1818	1627	780	0	1882	1017	0	1767	1019	1905	1652
Q Serve(g_s), s	3.0	9.1	1.5	4.3	0.0	5.0	1.7	0.0	5.9	0.7	5.1	0.5
Cycle Q Clear(g_c), s	8.0	9.1	1.5	13.9	0.0	5.0	6.7	0.0	5.9	6.1	5.1	0.5
Prop In Lane	1.00		1.00	1.00		0.07	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	527	876	784	368	0	907	321	0	468	313	504	437
V/C Ratio(X)	0.19	0.64	0.14	0.27	0.00	0.41	0.15	0.00	0.63	0.07	0.56	0.07
Avail Cap(c_a), veh/h	527	876	784	368	0	907	336	0	493	328	531	461
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	7.7	5.7	13.1	0.0	6.6	15.4	0.0	13.0	15.3	12.5	10.9
Incr Delay (d2), s/veh	0.8	3.6	0.4	1.8	0.0	1.4	0.5	0.0	3.7	0.2	2.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	5.3	0.7	1.5	0.0	3.1	0.6	0.0	4.1	0.3	3.5	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.0	11.2	6.1	14.8	0.0	8.0	15.9	0.0	16.7	15.5	14.8	11.0
LnGrp LOS	B	B	A	B	A	A	B	A	B	B	B	B
Approach Vol, veh/h	774			470			345			334		
Approach Delay, s/veh	10.3			9.4			16.6			14.5		
Approach LOS	B			A			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	24.0			15.4			24.0			15.4		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	18.0			10.0			18.0			10.0		
Max Q Clear Time (g_c+I1), s	11.6			9.2			15.9			8.6		
Green Ext Time (p_c), s	3.2			0.2			0.8			0.3		
Intersection Summary												
HCM 6th Ctrl Delay	11.9											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	271	13	33	142	4	16	4	59	4	4	6
Future Volume (vph)	0	271	13	33	142	4	16	4	59	4	4	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.997			0.899			0.940	
Flt Protected					0.991			0.990			0.986	
Satd. Flow (prot)	0	1769	0	0	1728	0	0	1743	0	0	1711	0
Flt Permitted					0.991			0.990			0.986	
Satd. Flow (perm)	0	1769	0	0	1728	0	0	1743	0	0	1711	0
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		19.9			29.5			12.1			26.9	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles (%)	0%	6%	0%	10%	6%	0%	6%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	366	18	45	192	5	22	5	80	5	5	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	384	0	0	242	0	0	107	0	0	18	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 40.3%

ICU Level of Service A

Analysis Period (min) 15

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh 10.9
Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	271	13	33	142	4	16	4	59	4	4	6
Future Vol, veh/h	0	271	13	33	142	4	16	4	59	4	4	6
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	0	6	0	10	6	0	6	0	0	0	0	0
Mvmt Flow	0	366	18	45	192	5	22	5	80	5	5	8
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

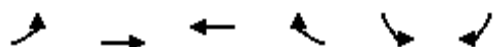
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.9	10.2	9	8.5
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	0%	18%	29%
Vol Thru, %	5%	95%	79%	29%
Vol Right, %	75%	5%	2%	43%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	79	284	179	14
LT Vol	16	0	33	4
Through Vol	4	271	142	4
RT Vol	59	13	4	6
Lane Flow Rate	107	384	242	19
Geometry Grp	1	1	1	1
Degree of Util (X)	0.15	0.488	0.325	0.028
Departure Headway (Hd)	5.046	4.573	4.836	5.301
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	706	787	740	669
Service Time	3.112	2.618	2.887	3.382
HCM Lane V/C Ratio	0.152	0.488	0.327	0.028
HCM Control Delay	9	11.9	10.2	8.5
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.5	2.7	1.4	0.1

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	5	8	0	0	1
Future Volume (vph)	0	5	8	0	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected						
Satd. Flow (prot)	0	1909	1900	0	1744	0
Flt Permitted						
Satd. Flow (perm)	0	1909	1900	0	1744	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		1091	171		70	
Travel Time (s)		29.8	4.7		1.9	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	7	11	0	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	7	11	0	1	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	8	0	0	1
Future Vol, veh/h	0	5	8	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	-1	0	-	1	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	7	11	0	0	1
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	11	0	-	0	18	11
Stage 1	-	-	-	-	11	-
Stage 2	-	-	-	-	7	-
Critical Hdwy	4.1	-	-	-	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	5.6	-
Critical Hdwy Stg 2	-	-	-	-	5.6	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1621	-	-	-	1004	1076
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1021	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1621	-	-	-	1004	1076
Mov Cap-2 Maneuver	-	-	-	-	1004	-
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1021	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		8.4		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1621	-	-	-	1076	
HCM Lane V/C Ratio	-	-	-	-	0.001	
HCM Control Delay (s)	0	-	-	-	8.4	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (vph)	67	41	27	461	421	68
Future Volume (vph)	67	41	27	461	421	68
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.943					0.850
Flt Protected	0.970		0.950			
Satd. Flow (prot)	3070	0	1661	3164	3163	1542
Flt Permitted	0.970		0.476			
Satd. Flow (perm)	3070	0	832	3164	3163	1542
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	42					69
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	4%	0%	0%	5%	4%	2%
Adj. Flow (vph)	68	42	28	470	430	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	110	0	28	470	430	69
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	9.3		101.7	101.7	94.5	110.3
Actuated g/C Ratio	0.08		0.85	0.85	0.79	0.92
v/c Ratio	0.40		0.04	0.18	0.17	0.05
Control Delay	36.8		1.8	1.9	5.1	0.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	36.8		1.8	1.9	5.1	0.2
LOS	D		A	A	A	A
Approach Delay	36.8			1.9	4.4	
Approach LOS	D			A	A	
Queue Length 50th (ft)	26		2	24	83	1
Queue Length 95th (ft)	54		7	41	50	0
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	874		760	2682	2489	1542
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.13		0.04	0.18	0.17	0.04

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 90 (75%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.40

Intersection Signal Delay: 6.5

Intersection LOS: A

Intersection Capacity Utilization 30.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary 7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (veh/h)	67	41	27	461	421	68
Future Volume (veh/h)	67	41	27	461	421	68
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1694	1820	1837	1766	1738	1837
Adj Flow Rate, veh/h	55	56	28	470	430	69
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	4	0	0	5	4	2
Cap, veh/h	103	85	777	2890	2629	1339
Arrive On Green	0.06	0.06	0.02	0.86	0.80	0.80
Sat Flow, veh/h	1613	1542	1750	3444	3390	1557
Grp Volume(v), veh/h	55	56	28	470	430	69
Grp Sat Flow(s),veh/h/ln	1613	1542	1750	1678	1651	1557
Q Serve(g_s), s	4.0	4.3	0.3	2.7	3.7	0.8
Cycle Q Clear(g_c), s	4.0	4.3	0.3	2.7	3.7	0.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	103	85	777	2890	2629	1339
V/C Ratio(X)	0.53	0.66	0.04	0.16	0.16	0.05
Avail Cap(c_a), veh/h	444	411	853	2890	2629	1339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.96	0.96
Uniform Delay (d), s/veh	54.5	55.6	1.7	1.3	2.9	1.2
Incr Delay (d2), s/veh	4.3	8.2	0.0	0.1	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	6.9	0.1	0.7	1.6	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	58.7	63.8	1.7	1.5	3.0	1.3
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	111			498	499	
Approach Delay, s/veh	61.3			1.5	2.8	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	108.4			11.6	7.8	100.5
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	77.0			32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s	5.2			6.5	2.8	6.2
Green Ext Time (p_c), s	1.9			0.4	0.0	2.0

Intersection Summary

HCM 6th Ctrl Delay	8.0
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
20: Arch Street Road & Site B Access

11/07/2023

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	29	36	259	57	69	294
Future Volume (vph)	29	36	259	57	69	294
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-1%			-2%
Storage Length (ft)	0	0		0	75	
Storage Lanes	1	0		0	1	
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926		0.976			
Flt Protected	0.978				0.950	
Satd. Flow (prot)	1687	0	1827	0	1787	1881
Flt Permitted	0.978				0.950	
Satd. Flow (perm)	1687	0	1827	0	1787	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	294		2332			543
Travel Time (s)	6.7		53.0			12.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	39	282	62	75	320
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	0	344	0	75	320
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	34.7%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
20: Arch Street Road & Site B Access

11/07/2023

Intersection

Int Delay, s/veh 2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	36	259	57	69	294
Future Vol, veh/h	29	36	259	57	69	294
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-1	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	39	282	62	75	320

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	783	313	0
Stage 1	313	-	-
Stage 2	470	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	362	727	-
Stage 1	741	-	-
Stage 2	629	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	340	727	-
Mov Cap-2 Maneuver	340	-	-
Stage 1	741	-	-
Stage 2	590	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.7	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	482	1215
HCM Lane V/C Ratio	-	-	0.147	0.062
HCM Control Delay (s)	-	-	13.7	8.2
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.5	0.2

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

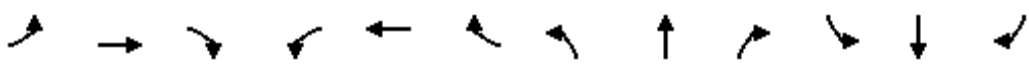
11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	20	5	301	0	148	2	454	180	92	231	50
Future Volume (vph)	12	20	5	301	0	148	2	454	180	92	231	50
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%				0%
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.971			0.898				0.850		0.973	
Flt Protected	0.950			0.950	0.984		0.950			0.950		
Satd. Flow (prot)	1628	1779	0	1624	1601	0	1636	3178	1464	1653	3165	0
Flt Permitted	0.950			0.950	0.984		0.569			0.399		
Satd. Flow (perm)	1628	1779	0	1624	1601	0	980	3178	1464	694	3165	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									191		25	
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	0%	0%	1%	0%	2%	0%	3%	0%	0%	2%	0%
Adj. Flow (vph)	13	21	5	320	0	157	2	483	191	98	246	53
Shared Lane Traffic (%)				23%								
Lane Group Flow (vph)	13	26	0	246	231	0	2	483	191	98	299	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	14.0	14.0		13.0	13.0		22.0	22.0	13.0	13.0	22.0	
Total Split (s)	33.0	33.0		33.0	33.0		40.0	40.0	33.0	14.0	54.0	
Total Split (%)	27.5%	27.5%		27.5%	27.5%		33.3%	33.3%	27.5%	11.7%	45.0%	
Maximum Green (s)	27.0	27.0		26.0	26.0		33.0	33.0	26.0	7.0	47.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0	5.0	3.0	5.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effect Green (s)	10.4	10.4		24.6	24.6		59.8	59.8	90.4	73.6	73.6	
Actuated g/C Ratio	0.09	0.09		0.20	0.20		0.50	0.50	0.75	0.61	0.61	
v/c Ratio	0.09	0.17		0.74	0.70		0.00	0.31	0.17	0.20	0.15	
Control Delay	51.1	52.7		58.5	56.3		24.5	23.3	1.5	13.2	11.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	51.1	52.7		58.5	56.3		24.5	23.3	1.5	13.2	11.0	
LOS	D	D		E	E		C	C	A	B	B	
Approach Delay		52.2			57.4			17.2			11.5	
Approach LOS		D			E			B			B	
Queue Length 50th (ft)	9	19		184	171		1	141	0	35	52	
Queue Length 95th (ft)	30	48		282	265		m5	194	28	66	81	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)	100						150			250		
Base Capacity (vph)	379	415		365	360		488	1583	1175	489	1951	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.03	0.06		0.67	0.64		0.00	0.31	0.16	0.20	0.15	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 107 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 28.7

Intersection LOS: C

Intersection Capacity Utilization 60.2%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

			
Ø1	Ø2 (R)	Ø4	Ø8
14 s	40 s	33 s	33 s
			
Ø6 (R)			
54 s			

HCM 6th Signalized Intersection Summary

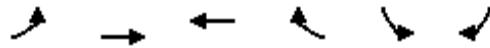
1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	20	5	301	0	148	2	454	180	92	231	50
Future Volume (veh/h)	12	20	5	301	0	148	2	454	180	92	231	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1820	1820	1860	1950	1920	1778	1736	1778	1800	1772	1800
Adj Flow Rate, veh/h	13	21	5	208	157	96	2	483	140	98	246	53
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	1	0	2	0	3	0	0	2	0
Cap, veh/h	53	45	11	311	199	121	625	1814	1093	512	1799	381
Arrive On Green	0.03	0.03	0.02	0.18	0.18	0.18	0.55	0.55	0.55	0.05	0.65	0.64
Sat Flow, veh/h	1666	1421	338	1772	1132	692	1027	3298	1507	1714	2765	585
Grp Volume(v), veh/h	13	0	26	208	0	253	2	483	140	98	148	151
Grp Sat Flow(s),veh/h/ln	1666	0	1759	1772	0	1825	1027	1649	1507	1714	1683	1667
Q Serve(g_s), s	0.9	0.0	1.7	13.2	0.0	15.9	0.1	9.3	3.4	2.8	4.0	4.2
Cycle Q Clear(g_c), s	0.9	0.0	1.7	13.2	0.0	15.9	0.1	9.3	3.4	2.8	4.0	4.2
Prop In Lane	1.00		0.19	1.00		0.38	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	53	0	56	311	0	320	625	1814	1093	512	1096	1085
V/C Ratio(X)	0.24	0.00	0.46	0.67	0.00	0.79	0.00	0.27	0.13	0.19	0.14	0.14
Avail Cap(c_a), veh/h	389	0	410	399	0	411	625	1814	1093	539	1096	1085
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.86	0.00	0.86	0.95	0.95	0.95	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.7	0.0	57.2	46.2	0.0	47.4	12.2	14.2	5.0	9.8	8.0	8.1
Incr Delay (d2), s/veh	5.0	0.0	12.1	4.7	0.0	9.7	0.0	0.3	0.2	0.2	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	0.0	1.7	9.9	0.0	12.3	0.0	6.1	3.4	1.8	2.6	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.6	0.0	69.2	51.0	0.0	57.1	12.2	14.6	5.2	9.9	8.3	8.4
LnGrp LOS	E	A	E	D	A	E	B	B	A	A	A	A
Approach Vol, veh/h	39			461			625			397		
Approach Delay, s/veh	66.7			54.3			12.5			8.7		
Approach LOS	E			D			B			A		
Timer - Assigned Phs	1	2	4			6	8					
Phs Duration (G+Y+Rc), s	12.1	72.0	27.0			84.1	8.8					
Change Period (Y+Rc), s	7.0	7.0	7.0			7.0	6.0					
Max Green Setting (Gmax), s	7.0	33.0	26.0			47.0	27.0					
Max Q Clear Time (g_c+I1), s	5.3	11.8	17.9			6.5	3.7					
Green Ext Time (p_c), s	0.0	2.4	2.1			2.4	0.2					
Intersection Summary												
HCM 6th Ctrl Delay			25.6									
HCM 6th LOS			C									
Notes												

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

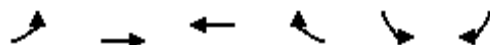


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	154	166	345	254	211	148
Future Volume (vph)	154	166	345	254	211	148
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.944	
Flt Protected	0.950				0.971	
Satd. Flow (prot)	1612	1897	1706	1435	1767	0
Flt Permitted	0.437				0.971	
Satd. Flow (perm)	741	1897	1706	1435	1767	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				262	34	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	1%	0%	1%	2%	1%	0%
Adj. Flow (vph)	159	171	356	262	218	153
Shared Lane Traffic (%)						
Lane Group Flow (vph)	159	171	356	262	371	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	26.0	71.0	45.0	45.0	29.0	
Total Split (%)	26.0%	71.0%	45.0%	45.0%	29.0%	
Maximum Green (s)	20.0	65.0	39.0	39.0	24.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	3.0	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	0.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	0.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	67.8	67.8	52.6	52.6	23.2	
Actuated g/C Ratio	0.68	0.68	0.53	0.53	0.23	
v/c Ratio	0.27	0.13	0.40	0.30	0.85	
Control Delay	7.4	6.4	16.9	2.8	52.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.4	6.4	16.9	2.8	52.4	
LOS	A	A	B	A	D	
Approach Delay		6.8	10.9		52.4	
Approach LOS		A	B		D	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 8 (8%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 21.6

Intersection LOS: C

Intersection Capacity Utilization 61.7%

ICU Level of Service B

Analysis Period (min) 15

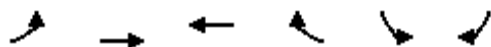
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	154	166	345	254	211	148
Future Volume (veh/h)	154	166	345	254	211	148
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1935	2027	1764	1750	1935	1950
Adj Flow Rate, veh/h	159	171	356	198	218	127
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	1	0	1	2	1	0
Cap, veh/h	601	1384	992	834	252	147
Arrive On Green	0.07	0.68	0.56	0.56	0.23	0.23
Sat Flow, veh/h	1843	2027	1764	1483	1111	647
Grp Volume(v), veh/h	159	171	356	198	346	0
Grp Sat Flow(s),veh/h/ln	1843	2027	1764	1483	1763	0
Q Serve(g_s), s	3.2	2.9	11.1	6.7	18.9	0.0
Cycle Q Clear(g_c), s	3.2	2.9	11.1	6.7	18.9	0.0
Prop In Lane	1.00			1.00	0.63	0.37
Lane Grp Cap(c), veh/h	601	1384	992	834	401	0
V/C Ratio(X)	0.26	0.12	0.36	0.24	0.86	0.00
Avail Cap(c_a), veh/h	858	1384	992	834	441	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.57	0.57	1.00	0.00
Uniform Delay (d), s/veh	7.5	5.5	12.0	11.1	37.2	0.0
Incr Delay (d2), s/veh	0.2	0.2	0.6	0.4	15.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	2.0	6.7	3.9	14.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.8	5.7	12.6	11.4	52.3	0.0
LnGrp LOS	A	A	B	B	D	A
Approach Vol, veh/h		330	554		346	
Approach Delay, s/veh		6.7	12.2		52.3	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.0	61.2		26.7		73.3
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	20.0	39.0		24.0		65.0
Max Q Clear Time (g_c+I1), s	5.7	13.6		21.4		5.4
Green Ext Time (p_c), s	0.4	4.7		0.4		1.4

Intersection Summary

HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

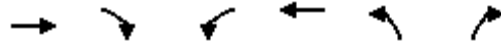
11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	123	279	143	310	277	119
Future Volume (vph)	123	279	143	310	277	119
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.959	
Flt Protected				0.984	0.966	
Satd. Flow (prot)	1723	1435	0	1688	1698	0
Flt Permitted				0.844	0.966	
Satd. Flow (perm)	1723	1435	0	1448	1698	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		317				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	0%	2%	4%	1%	2%	2%
Adj. Flow (vph)	140	317	163	352	315	135
Shared Lane Traffic (%)						
Lane Group Flow (vph)	140	317	0	515	450	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	57.0	57.0	20.0	77.0	25.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	55.9%	55.9%	19.6%	75.5%	24.5%	
Maximum Green (s)	51.0	51.0	14.0	71.0	19.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	None	None	None	
Act Effect Green (s)	27.3	27.3		27.3	20.2	
Actuated g/C Ratio	0.47	0.47		0.47	0.35	
v/c Ratio	0.17	0.37		0.75	0.76	
Control Delay	8.8	2.5		20.0	29.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	8.8	2.5		20.0	29.2	
LOS	A	A		C	C	
Approach Delay	4.4			20.0	29.2	
Approach LOS	A			C	C	
Queue Length 50th (ft)	25	0		133	124	
Queue Length 95th (ft)	48	28		221	#334	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1573	1338		1448	596	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.09	0.24		0.36	0.76	

Intersection Summary

Area Type: Other
 Cycle Length: 102
 Actuated Cycle Length: 57.6
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 17.9
 Intersection LOS: B
 Intersection Capacity Utilization 79.4%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	107	440	157	105	623	27	113	222	95	44	244	127
Future Volume (vph)	107	440	157	105	623	27	113	222	95	44	244	127
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.994			0.955				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1629	1800	1632	1767	1827	0	1573	1606	0	1612	1883	1648
Flt Permitted	0.207			0.413			0.585			0.461		
Satd. Flow (perm)	355	1800	1632	768	1827	0	968	1606	0	782	1883	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					7			48				137
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	6%	1%	1%	1%	2%	7%	3%	2%	0%	0%	3%	0%
Adj. Flow (vph)	115	473	169	113	670	29	122	239	102	47	262	137
Shared Lane Traffic (%)												
Lane Group Flow (vph)	115	473	169	113	699	0	122	341	0	47	262	137
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0		18.0	18.0		18.0	18.0	18.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	40.0%
Maximum Green (s)	21.0	21.0	21.0	21.0	21.0		12.0	12.0		12.0	12.0	12.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	19.8	20.9	20.9	19.8	20.9		13.0	13.0		13.0	13.0	12.0
Actuated g/C Ratio	0.45	0.48	0.48	0.45	0.48		0.30	0.30		0.30	0.30	0.27
v/c Ratio	0.72	0.55	0.22	0.33	0.80		0.43	0.67		0.20	0.47	0.25
Control Delay	41.3	11.1	7.5	10.8	19.2		18.7	20.8		14.9	16.5	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	41.3	11.1	7.5	10.8	19.2		18.7	20.8		14.9	16.5	4.7
LOS	D	B	A	B	B		B	C		B	B	A
Approach Delay		14.9			18.0			20.2			12.7	
Approach LOS		B			B			C			B	
Queue Length 50th (ft)	21	76	22	17	132		25	65		9	55	0
Queue Length 95th (ft)	#93	140	48	44	#304		63	#164		29	107	29
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	170	904	819	368	920		287	510		231	558	550
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.68	0.52	0.21	0.31	0.76		0.43	0.67		0.20	0.47	0.25

Intersection Summary

Area Type: Other

Cycle Length: 45

Actuated Cycle Length: 43.9

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 16.5

Intersection LOS: B

Intersection Capacity Utilization 83.5%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

					
Ø2			Ø4		
18 s			27 s		
					
Ø6			Ø8		
18 s			27 s		

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	440	157	105	623	27	113	222	95	44	244	127
Future Volume (veh/h)	107	440	157	105	623	27	113	222	95	44	244	127
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No				No				No			
Adj Sat Flow, veh/h/ln	1789	1860	1935	1935	1920	1846	1869	1883	1912	1875	1905	1950
Adj Flow Rate, veh/h	115	473	124	113	670	29	122	239	93	47	262	95
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	6	1	1	1	2	7	3	2	0	0	3	0
Cap, veh/h	282	909	802	399	893	39	340	373	145	305	550	441
Arrive On Green	0.47	0.49	0.49	0.47	0.49	0.47	0.29	0.29	0.27	0.29	0.29	0.27
Sat Flow, veh/h	714	1860	1640	849	1827	79	1024	1291	502	1050	1905	1652
Grp Volume(v), veh/h	115	473	124	113	0	699	122	0	332	47	262	95
Grp Sat Flow(s),veh/h/ln	714	1860	1640	849	0	1906	1024	0	1793	1050	1905	1652
Q Serve(g_s), s	7.2	7.8	1.9	5.0	0.0	13.3	5.0	0.0	7.3	1.8	5.1	2.0
Cycle Q Clear(g_c), s	20.5	7.8	1.9	13.3	0.0	13.3	10.1	0.0	7.3	8.6	5.1	2.0
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	282	909	802	399	0	932	340	0	518	305	550	441
V/C Ratio(X)	0.41	0.52	0.15	0.28	0.00	0.75	0.36	0.00	0.64	0.15	0.48	0.22
Avail Cap(c_a), veh/h	282	909	802	399	0	932	340	0	518	305	550	441
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.5	7.9	6.4	13.4	0.0	9.3	17.4	0.0	14.1	17.5	13.2	12.8
Incr Delay (d2), s/veh	2.0	1.0	0.2	0.8	0.0	4.1	2.9	0.0	6.0	1.1	2.9	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	4.2	0.9	1.6	0.0	8.9	2.3	0.0	5.8	0.8	4.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.5	8.9	6.5	14.2	0.0	13.4	20.3	0.0	20.1	18.6	16.1	14.0
LnGrp LOS	C	A	A	B	A	B	C	A	C	B	B	B
Approach Vol, veh/h	712				812				454			
Approach Delay, s/veh	10.4				13.5				20.1			
Approach LOS	B				B				C			
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	18.0			27.0			18.0			27.0		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	12.0			21.0			12.0			21.0		
Max Q Clear Time (g_c+I1), s	12.6			15.3			11.1			22.5		
Green Ext Time (p_c), s	0.0			3.2			0.3			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	14.2											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	139	5	46	163	17	13	10	39	11	9	4
Future Volume (vph)	19	139	5	46	163	17	13	10	39	11	9	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.990			0.915			0.977	
Flt Protected		0.994			0.990			0.990			0.977	
Satd. Flow (prot)	0	1846	0	0	1824	0	0	1796	0	0	1762	0
Flt Permitted		0.994			0.990			0.990			0.977	
Satd. Flow (perm)	0	1846	0	0	1824	0	0	1796	0	0	1762	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	174	6	58	204	21	16	13	49	14	11	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	204	0	0	283	0	0	78	0	0	30	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	30.5%											
Analysis Period (min)	15											
	ICU Level of Service A											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	139	5	46	163	17	13	10	39	11	9	4
Future Vol, veh/h	19	139	5	46	163	17	13	10	39	11	9	4
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	0	1	0	0	0	2	0	0	0	0	0	0
Mvmt Flow	24	174	6	58	204	21	16	13	49	14	11	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

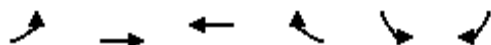
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9	9.7	8.2	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	12%	20%	46%
Vol Thru, %	16%	85%	72%	38%
Vol Right, %	63%	3%	8%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	62	163	226	24
LT Vol	13	19	46	11
Through Vol	10	139	163	9
RT Vol	39	5	17	4
Lane Flow Rate	78	204	282	30
Geometry Grp	1	1	1	1
Degree of Util (X)	0.101	0.253	0.343	0.042
Departure Headway (Hd)	4.682	4.465	4.376	5.077
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	764	805	822	704
Service Time	2.719	2.491	2.4	3.119
HCM Lane V/C Ratio	0.102	0.253	0.343	0.043
HCM Control Delay	8.2	9	9.7	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	1	1.5	0.1

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	33	50	2	2	2
Future Volume (vph)	2	33	50	2	2	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.932	
Flt Protected		0.997			0.976	
Satd. Flow (prot)	0	1904	1890	0	1834	0
Flt Permitted		0.997			0.976	
Satd. Flow (perm)	0	1904	1890	0	1834	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1091	171		70	
Travel Time (s)		24.8	3.9		1.6	
Peak Hour Factor	0.47	0.47	0.47	0.47	0.47	0.47
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	70	106	4	4	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	74	110	0	8	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.4%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.6

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 2 33 50 2 2 2

Future Vol, veh/h 2 33 50 2 2 2

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - -1 0 - 1 -

Peak Hour Factor 47 47 47 47 47 47

Heavy Vehicles, % 0 0 0 0 0 0

Mvmt Flow 4 70 106 4 4 4

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 110 0 - 0 186 108

Stage 1 - - - - 108 -

Stage 2 - - - - 78 -

Critical Hdwy 4.1 - - - 6.6 6.3

Critical Hdwy Stg 1 - - - - 5.6 -

Critical Hdwy Stg 2 - - - - 5.6 -

Follow-up Hdwy 2.2 - - - 3.5 3.3

Pot Cap-1 Maneuver 1493 - - - 799 948

Stage 1 - - - - 916 -

Stage 2 - - - - 946 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1493 - - - 797 948

Mov Cap-2 Maneuver - - - - 797 -

Stage 1 - - - - 913 -

Stage 2 - - - - 946 -

Approach EB WB SB

HCM Control Delay, s 0.4 0 9.2

HCM LOS A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1493 - - - 866

HCM Lane V/C Ratio 0.003 - - - 0.01

HCM Control Delay (s) 7.4 0 - - 9.2

HCM Lane LOS A A - - A

HCM 95th %tile Q(veh) 0 - - - 0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (vph)	134	93	58	526	358	143
Future Volume (vph)	134	93	58	526	358	143
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.939					0.850
Flt Protected	0.971		0.950			
Satd. Flow (prot)	3118	0	1661	3257	3257	1573
Flt Permitted	0.971		0.498			
Satd. Flow (perm)	3118	0	871	3257	3257	1573
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	99					152
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	0%	0%	2%	1%	0%
Adj. Flow (vph)	143	99	62	560	381	152
Shared Lane Traffic (%)						
Lane Group Flow (vph)	242	0	62	560	381	152
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	12.1		98.9	98.9	88.8	106.8
Actuated g/C Ratio	0.10		0.82	0.82	0.74	0.89
v/c Ratio	0.60		0.08	0.21	0.16	0.11
Control Delay	36.1		2.5	2.6	2.3	0.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	36.1		2.5	2.6	2.3	0.1
LOS	D		A	A	A	A
Approach Delay	36.1			2.6	1.7	
Approach LOS	D			A	A	
Queue Length 50th (ft)	54		7	37	17	0
Queue Length 95th (ft)	93		17	63	27	m0
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	929		770	2683	2410	1572
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.26		0.08	0.21	0.16	0.10

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 89 (74%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 8.1

Intersection LOS: A

Intersection Capacity Utilization 34.7%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↱		↰	↰↱	↰↱	↰
Traffic Volume (veh/h)	134	93	58	526	358	143
Future Volume (veh/h)	134	93	58	526	358	143
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1736	1820	1837	1809	1780	1866
Adj Flow Rate, veh/h	121	123	62	560	381	152
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	2	1	0
Cap, veh/h	182	156	721	2802	2515	1349
Arrive On Green	0.11	0.10	0.03	0.82	0.74	0.74
Sat Flow, veh/h	1653	1542	1750	3527	3472	1582
Grp Volume(v), veh/h	121	123	62	560	381	152
Grp Sat Flow(s),veh/h/ln	1653	1542	1750	1718	1691	1582
Q Serve(g_s), s	8.4	9.3	0.9	4.3	3.9	1.9
Cycle Q Clear(g_c), s	8.4	9.3	0.9	4.3	3.9	1.9
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	182	156	721	2802	2515	1349
V/C Ratio(X)	0.67	0.79	0.09	0.20	0.15	0.11
Avail Cap(c_a), veh/h	455	411	785	2802	2515	1349
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.91	0.91
Uniform Delay (d), s/veh	51.3	52.6	2.9	2.4	4.5	1.4
Incr Delay (d2), s/veh	4.2	8.4	0.1	0.2	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.7	12.8	0.4	1.8	2.1	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	55.5	61.0	2.9	2.6	4.6	1.6
LnGrp LOS	E	E	A	A	A	A
Approach Vol, veh/h	244			622	533	
Approach Delay, s/veh	58.3			2.6	3.7	
Approach LOS	E			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	102.8			17.2	8.6	94.2
Change Period (Y+Rc), s	6.0			5.0	6.0	6.0
Max Green Setting (Gmax), s	77.0			32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s	6.3			11.3	2.9	5.9
Green Ext Time (p_c), s	2.3			0.8	0.0	2.1
Intersection Summary						
HCM 6th Ctrl Delay			12.8			
HCM 6th LOS			B			
Notes						

Lanes, Volumes, Timings
20: Arch Street Road & Site B Access

11/07/2023

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	60	73	302	53	64	357
Future Volume (vph)	60	73	302	53	64	357
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-1%			-2%
Storage Length (ft)	0	0		0	75	
Storage Lanes	1	0		0	1	
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926		0.980			
Flt Protected	0.978				0.950	
Satd. Flow (prot)	1687	0	1835	0	1787	1881
Flt Permitted	0.978				0.950	
Satd. Flow (perm)	1687	0	1835	0	1787	1881
Link Speed (mph)	30		30			30
Link Distance (ft)	294		2332			543
Travel Time (s)	6.7		53.0			12.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	79	328	58	70	388
Shared Lane Traffic (%)						
Lane Group Flow (vph)	144	0	386	0	70	388
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	40.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
20: Arch Street Road & Site B Access

11/07/2023

Intersection						
Int Delay, s/veh	3.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	73	302	53	64	357
Future Vol, veh/h	60	73	302	53	64	357
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-1	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	79	328	58	70	388
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	885	357	0	0	386	0
Stage 1	357	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	315	687	-	-	1172	-
Stage 1	708	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	296	687	-	-	1172	-
Mov Cap-2 Maneuver	296	-	-	-	-	-
Stage 1	708	-	-	-	-	-
Stage 2	556	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	17.6	0	1.3			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	430	1172	-	
HCM Lane V/C Ratio	-	-	0.336	0.059	-	
HCM Control Delay (s)	-	-	17.6	8.3	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	1.5	0.2	-	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	49	0	89	2	608	79	69	452	42
Future Volume (vph)	0	0	0	49	0	89	2	608	79	69	452	42
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	13	13	12	14	14	11	11	11	11	11	11
Grade (%)		3%			-2%			2%				0%
Storage Length (ft)	100		0	0		300	150		0	250		0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt					0.857				0.850			0.987
Flt Protected				0.950	0.998		0.950			0.950		
Satd. Flow (prot)	1714	1832	0	1641	1576	0	1636	3209	1435	1653	3176	0
Flt Permitted				0.950	0.998		0.449			0.356		
Satd. Flow (perm)	1714	1832	0	1641	1576	0	773	3209	1435	619	3176	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									87			9
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		428			2093			1241			1157	
Travel Time (s)		8.3			40.8			21.2			19.7	
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
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	2%	0%	3%	0%
Adj. Flow (vph)	0	0	0	54	0	98	2	668	87	76	497	46
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	0	0	49	103	0	2	668	87	76	543	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template												
Leading Detector (ft)	35	35		35	35		35	35	35	35	35	
Trailing Detector (ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5		-5	-5		-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40		40	40		40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Split			Split	NA		Perm	NA	pm+ov	pm+pt	NA	
Protected Phases	8	8		4	4			2	4	1	6	
Permitted Phases							2		2	6		
Detector Phase	8	8		4	4		2	2	4	1	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		15.0	15.0	3.0	3.0	15.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		21.0	21.0	14.0	13.0	21.0	
Total Split (s)	33.0	33.0		36.0	36.0		37.0	37.0	36.0	14.0	51.0	
Total Split (%)	27.5%	27.5%		30.0%	30.0%		30.8%	30.8%	30.0%	11.7%	42.5%	
Maximum Green (s)	27.0	27.0		30.0	30.0		31.0	31.0	30.0	8.0	45.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0		5.0	5.0		3.0	3.0	5.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Max	C-Max	None	None	C-Max	
Act Effect Green (s)				16.1	16.1		83.4	83.4	105.5	93.9	93.9	
Actuated g/C Ratio				0.13	0.13		0.70	0.70	0.88	0.78	0.78	
v/c Ratio				0.22	0.49		0.00	0.30	0.07	0.14	0.22	
Control Delay				47.1	55.1		7.5	7.4	0.6	4.1	3.9	
Queue Delay				0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay				47.1	55.1		7.5	7.4	0.6	4.1	3.9	
LOS				D	E		A	A	A	A	A	
Approach Delay					52.5			6.6			3.9	
Approach LOS					D			A			A	
Queue Length 50th (ft)				35	78		0	81	0	11	47	
Queue Length 95th (ft)				72	133		m2	110	4	27	78	
Internal Link Dist (ft)		348			2013			1161			1077	
Turn Bay Length (ft)							150			250		
Base Capacity (vph)				423	407		537	2229	1393	561	2486	
Starvation Cap Reductn				0	0		0	0	0	0	0	
Spillback Cap Reductn				0	0		0	0	0	0	0	
Storage Cap Reductn				0	0		0	0	0	0	0	
Reduced v/c Ratio				0.12	0.25		0.00	0.30	0.06	0.14	0.22	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 102 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 10.1

Intersection LOS: B

Intersection Capacity Utilization 43.9%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

14 s	37 s	36 s	33 s
51 s			

HCM 6th Signalized Intersection Summary

1: Dekalb Pike (S.R. 0202) & Centre Park Drive/Jolly Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	49	0	89	2	608	79	69	452	42
Future Volume (veh/h)	0	0	0	49	0	89	2	608	79	69	452	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1750	1820	1820	1875	1950	1950	1778	1750	1750	1800	1758	1800
Adj Flow Rate, veh/h	0	0	0	54	0	87	2	668	77	76	497	46
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
Percent Heavy Veh, %	0	0	0	0	0	0	0	2	2	0	3	0
Cap, veh/h	1	2	0	148	0	137	680	2513	1244	600	2577	238
Arrive On Green	0.00	0.00	0.00	0.08	0.00	0.08	0.76	0.76	0.76	0.04	0.83	0.83
Sat Flow, veh/h	1666	1820	0	1785	0	1652	820	3324	1483	1714	3091	285
Grp Volume(v), veh/h	0	0	0	54	0	87	2	668	77	76	268	275
Grp Sat Flow(s),veh/h/ln	1666	1820	0	1785	0	1652	820	1662	1483	1714	1670	1707
Q Serve(g_s), s	0.0	0.0	0.0	3.4	0.0	6.1	0.1	7.4	1.1	1.0	3.8	3.9
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.4	0.0	6.1	0.1	7.4	1.1	1.0	3.8	3.9
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	1	2	0	148	0	137	680	2513	1244	600	1392	1422
V/C Ratio(X)	0.00	0.00	0.00	0.36	0.00	0.63	0.00	0.27	0.06	0.13	0.19	0.19
Avail Cap(c_a), veh/h	389	425	0	461	0	427	680	2513	1244	667	1392	1422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	0.93	0.00	0.93	0.90	0.90	0.90	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	52.0	0.0	53.2	3.6	4.5	1.6	2.7	2.0	2.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	3.0	0.0	9.2	0.0	0.2	0.1	0.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	3.0	0.0	5.2	0.0	3.7	0.8	0.4	1.5	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	55.0	0.0	62.5	3.6	4.7	1.7	2.8	2.3	2.3
LnGrp LOS	A	A	A	D	A	E	A	A	A	A	A	A
Approach Vol, veh/h	0				141				747			
Approach Delay, s/veh	0.0				59.6				4.4			
Approach LOS					E				A			
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	9.3	95.7		15.0		105.0		0.0				
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s	8.0	31.0		30.0		45.0		27.0				
Max Q Clear Time (g_c+I1), s	3.5	9.9		8.1		6.3		0.0				
Green Ext Time (p_c), s	0.1	2.9		0.9		1.8		0.0				

Intersection Summary

HCM 6th Ctrl Delay 8.7

HCM 6th LOS A

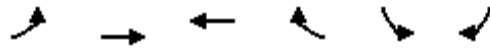
Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
2: Jolly Road & Wentz Road

11/13/2023

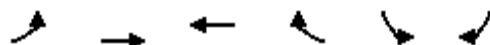


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	139	196	135	181	140	73
Future Volume (vph)	139	196	135	181	140	73
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	11	11	14	14
Grade (%)		-4%	2%		-2%	
Storage Length (ft)	200			450	0	0
Storage Lanes	1			1	1	0
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850	0.954	
Flt Protected	0.950				0.968	
Satd. Flow (prot)	1628	1878	1723	1450	1779	0
Flt Permitted	0.580				0.968	
Satd. Flow (perm)	994	1878	1723	1450	1779	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				255	27	
Link Speed (mph)		35	35		35	
Link Distance (ft)		2093	1766		855	
Travel Time (s)		40.8	34.4		16.7	
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Heavy Vehicles (%)	0%	1%	0%	1%	1%	0%
Adj. Flow (vph)	196	276	190	255	197	103
Shared Lane Traffic (%)						
Lane Group Flow (vph)	196	276	190	255	300	0
Number of Detectors	1	1	1	1	1	
Detector Template	Left					
Leading Detector (ft)	35	35	35	35	35	
Trailing Detector (ft)	-5	-5	-5	-5	-5	
Detector 1 Position(ft)	-5	-5	-5	-5	-5	
Detector 1 Size(ft)	40	40	40	40	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	
Turn Type	pm+pt	NA	NA	Perm	Prot	
Protected Phases	1	6	2		4	
Permitted Phases	6			2		
Detector Phase	1	6	2	2	4	
Switch Phase						
Minimum Initial (s)	3.0	10.0	10.0	10.0	3.0	
Minimum Split (s)	13.0	16.0	16.0	16.0	13.0	
Total Split (s)	13.0	67.0	54.0	54.0	23.0	
Total Split (%)	14.4%	74.4%	60.0%	60.0%	25.6%	
Maximum Green (s)	7.0	61.0	48.0	48.0	18.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	

Lanes, Volumes, Timings

2: Jolly Road & Wentz Road

11/13/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Total Lost Time (s)	5.0	5.0	5.0	5.0	4.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?						
Vehicle Extension (s)	5.0	5.0	5.0	5.0	3.0	
Minimum Gap (s)	2.5	2.5	2.5	2.5	3.0	
Time Before Reduce (s)	32.0	32.0	32.0	32.0	0.0	
Time To Reduce (s)	16.0	16.0	16.0	16.0	0.0	
Recall Mode	None	C-Max	C-Max	C-Max	None	
Act Effect Green (s)	63.3	63.3	50.3	50.3	17.7	
Actuated g/C Ratio	0.70	0.70	0.56	0.56	0.20	
v/c Ratio	0.26	0.21	0.20	0.28	0.81	
Control Delay	5.7	5.3	10.9	2.2	49.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.7	5.3	10.9	2.2	49.1	
LOS	A	A	B	A	D	
Approach Delay		5.5	5.9		49.1	
Approach LOS		A	A		D	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 8 (9%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 16.4

Intersection LOS: B

Intersection Capacity Utilization 41.0%

ICU Level of Service A

Analysis Period (min) 15

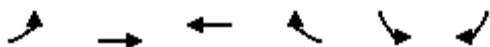
Splits and Phases: 2: Jolly Road & Wentz Road



HCM 6th Signalized Intersection Summary

2: Jolly Road & Wentz Road

11/13/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	139	196	135	181	140	73
Future Volume (veh/h)	139	196	135	181	140	73
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1949	2012	1778	1764	1935	1950
Adj Flow Rate, veh/h	196	276	190	255	197	103
Peak Hour Factor	0.71	0.71	0.71	0.71	0.71	0.71
Percent Heavy Veh, %	0	1	0	1	1	0
Cap, veh/h	729	1402	999	840	235	123
Arrive On Green	0.08	0.70	0.56	0.56	0.20	0.20
Sat Flow, veh/h	1856	2012	1778	1495	1157	605
Grp Volume(v), veh/h	196	276	190	255	301	0
Grp Sat Flow(s),veh/h/ln	1856	2012	1778	1495	1768	0
Q Serve(g_s), s	3.5	4.3	4.7	8.1	14.7	0.0
Cycle Q Clear(g_c), s	3.5	4.3	4.7	8.1	14.7	0.0
Prop In Lane	1.00			1.00	0.65	0.34
Lane Grp Cap(c), veh/h	729	1402	999	840	359	0
V/C Ratio(X)	0.27	0.20	0.19	0.30	0.84	0.00
Avail Cap(c_a), veh/h	747	1402	999	840	373	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.78	0.78	1.00	0.00
Uniform Delay (d), s/veh	5.9	4.8	9.7	10.4	34.4	0.0
Incr Delay (d2), s/veh	0.4	0.3	0.3	0.7	14.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	2.8	3.2	4.7	12.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.3	5.1	10.0	11.1	49.3	0.0
LnGrp LOS	A	A	B	B	D	A
Approach Vol, veh/h		472	445		301	
Approach Delay, s/veh		5.6	10.7		49.3	
Approach LOS		A	B		D	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.1	55.6		22.3		67.7
Change Period (Y+Rc), s	6.0	6.0		5.0		6.0
Max Green Setting (Gmax), s	7.0	48.0		18.0		61.0
Max Q Clear Time (g_c+I1), s	6.0	10.6		17.2		6.8
Green Ext Time (p_c), s	0.1	4.1		0.1		2.4

Intersection Summary

HCM 6th Ctrl Delay	18.3
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

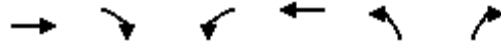
11/02/2023

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	198	233	92	234	257	49
Future Volume (vph)	198	233	92	234	257	49
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	11	11	11	13	13
Grade (%)	2%			-1%	-1%	
Storage Length (ft)		115	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			75		75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.979	
Flt Protected				0.986	0.960	
Satd. Flow (prot)	1723	1464	0	1724	1757	0
Flt Permitted				0.868	0.960	
Satd. Flow (perm)	1723	1464	0	1518	1757	0
Right Turn on Red		Yes				No
Satd. Flow (RTOR)		259				
Link Speed (mph)	35			35	35	
Link Distance (ft)	1766			789	2875	
Travel Time (s)	34.4			15.4	56.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	220	259	102	260	286	54
Shared Lane Traffic (%)						
Lane Group Flow (vph)	220	259	0	362	340	0
Number of Detectors	1	0	1	2	1	
Detector Template			Left			
Leading Detector (ft)	306	0	20	306	35	
Trailing Detector (ft)	300	0	0	90	-5	
Detector 1 Position(ft)	300	0	0	90	-5	
Detector 1 Size(ft)	6	20	20	6	40	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	4.0	0.0	
Detector 2 Position(ft)				300		
Detector 2 Size(ft)				6		
Detector 2 Type				Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)				0.0		
Turn Type	NA	Perm	pm+pt	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases		2	6			
Detector Phase	2	2	1	6	8	
Switch Phase						
Minimum Initial (s)	21.0	21.0	14.0	21.0	3.0	
Minimum Split (s)	27.0	27.0	20.0	27.0	13.0	
Total Split (s)	49.0	49.0	20.0	69.0	21.0	

Lanes, Volumes, Timings

3: Arch Street Road & Jolly Road

11/02/2023

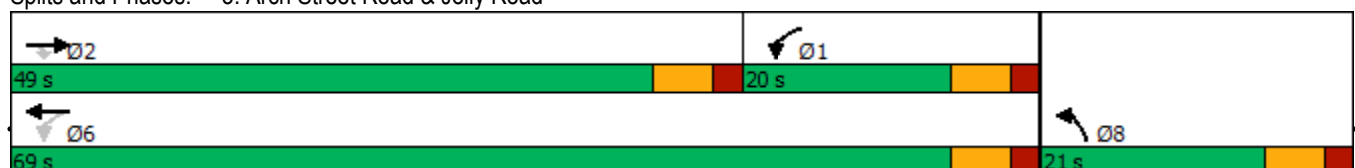


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Total Split (%)	54.4%	54.4%	22.2%	76.7%	23.3%	
Maximum Green (s)	43.0	43.0	14.0	63.0	15.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?						
Vehicle Extension (s)	5.8	5.8	3.0	3.0	3.0	
Minimum Gap (s)	4.1	4.1	3.0	3.0	3.0	
Time Before Reduce (s)	32.0	32.0	0.0	0.0	0.0	
Time To Reduce (s)	15.0	15.0	0.0	0.0	0.0	
Recall Mode	Min	Min	Max	None	None	
Act Effect Green (s)	22.0	22.0		42.0	16.0	
Actuated g/C Ratio	0.32	0.32		0.62	0.24	
v/c Ratio	0.39	0.40		0.37	0.82	
Control Delay	20.5	4.7		7.9	43.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	20.5	4.7		7.9	43.6	
LOS	C	A		A	D	
Approach Delay	11.9			7.9	43.6	
Approach LOS	B			A	D	
Queue Length 50th (ft)	70	0		64	135	
Queue Length 95th (ft)	125	46		107	#265	
Internal Link Dist (ft)	1686			709	2795	
Turn Bay Length (ft)		115				
Base Capacity (vph)	1114	1038		1474	413	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.20	0.25		0.25	0.82	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 68
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 19.8
Intersection LOS: B
Intersection Capacity Utilization 66.6%
ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Arch Street Road & Jolly Road



Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	459	272	52	543	37	76	215	53	26	201	106
Future Volume (vph)	70	459	272	52	543	37	76	215	53	26	201	106
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	14	13	13	13	10	10	10	10	14	14
Grade (%)		-2%			-2%			-3%			-2%	
Storage Length (ft)	80		175	100		0	300		0	80		175
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.990			0.970				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1693	1800	1632	1785	1843	0	1620	1628	0	1612	1939	1648
Flt Permitted	0.267			0.346			0.622			0.580		
Satd. Flow (perm)	476	1800	1632	650	1843	0	1061	1628	0	984	1939	1648
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					10			34				115
Link Speed (mph)		35			25			35			35	
Link Distance (ft)		1264			1196			1157			2875	
Travel Time (s)		24.6			32.6			22.5			56.0	
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
Heavy Vehicles (%)	2%	1%	1%	0%	1%	0%	0%	1%	4%	0%	0%	0%
Adj. Flow (vph)	76	499	296	57	590	40	83	234	58	28	218	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	76	499	296	57	630	0	83	292	0	28	218	115
Number of Detectors	1	1	1	1	1		1	1		1	1	1
Detector Template	Left			Left								Right
Leading Detector (ft)	20	35	35	20	35		35	35		35	35	20
Trailing Detector (ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Position(ft)	0	-5	-5	0	-5		-5	-5		-5	-5	0
Detector 1 Size(ft)	20	40	40	20	40		40	40		40	40	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		8			4			2			6	
Permitted Phases	8		8	4			2			6		6
Detector Phase	8	8	8	4	4		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0		13.0	13.0		13.0	13.0	13.0
Total Split (s)	21.0	21.0	21.0	21.0	21.0		19.0	19.0		19.0	19.0	19.0
Total Split (%)	52.5%	52.5%	52.5%	52.5%	52.5%		47.5%	47.5%		47.5%	47.5%	47.5%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0		13.0	13.0		13.0	13.0	13.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-1.0	-1.0	0.0	-1.0		-1.0	-1.0		-1.0	-1.0	0.0

Lanes, Volumes, Timings

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Lost Time (s)	6.0	5.0	5.0	6.0	5.0		5.0	5.0		5.0	5.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Recall Mode	None	None	None	None	None		Max	Max		Max	Max	Max
Act Effect Green (s)	15.0	16.0	16.0	15.0	16.0		14.0	14.0		14.0	14.0	13.0
Actuated g/C Ratio	0.38	0.40	0.40	0.38	0.40		0.35	0.35		0.35	0.35	0.32
v/c Ratio	0.43	0.69	0.45	0.23	0.85		0.22	0.49		0.08	0.32	0.19
Control Delay	18.7	16.9	11.6	11.7	25.6		11.2	12.5		9.5	11.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	18.7	16.9	11.6	11.7	25.6		11.2	12.5		9.5	11.2	3.7
LOS	B	B	B	B	C		B	B		A	B	A
Approach Delay		15.3			24.4			12.2			8.7	
Approach LOS		B			C			B			A	
Queue Length 50th (ft)	12	86	45	8	117		13	43		4	34	0
Queue Length 95th (ft)	#47	#202	92	28	#278		35	92		15	71	22
Internal Link Dist (ft)		1184			1116			1077			2795	
Turn Bay Length (ft)	80		175	100			300			80		175
Base Capacity (vph)	178	720	652	243	743		371	591		344	678	613
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.43	0.69	0.45	0.23	0.85		0.22	0.49		0.08	0.32	0.19

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 16.5

Intersection LOS: B

Intersection Capacity Utilization 75.4%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Arch Street Road /Arch Street Road & South Township Line Road

	
Ø2	Ø4
19 s	21 s
	
Ø6	Ø8
19 s	21 s

HCM 6th Signalized Intersection Summary

4: Arch Street Road /Arch Street Road & South Township Line Road

11/02/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	459	272	52	543	37	76	215	53	26	201	106
Future Volume (veh/h)	70	459	272	52	543	37	76	215	53	26	201	106
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1846	1860	1935	1950	1935	1950	1912	1898	1855	1875	1950	1950
Adj Flow Rate, veh/h	76	499	238	57	590	39	83	234	56	28	218	77
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
Percent Heavy Veh, %	2	1	1	0	1	0	0	1	4	0	0	0
Cap, veh/h	244	744	656	287	718	47	477	518	124	442	682	537
Arrive On Green	0.38	0.40	0.40	0.38	0.40	0.38	0.35	0.35	0.32	0.35	0.35	0.32
Sat Flow, veh/h	787	1860	1640	751	1795	119	1108	1480	354	1092	1950	1652
Grp Volume(v), veh/h	76	499	238	57	0	629	83	0	290	28	218	77
Grp Sat Flow(s),veh/h/ln	787	1860	1640	751	0	1913	1108	0	1834	1092	1950	1652
Q Serve(g_s), s	3.2	8.8	4.1	2.8	0.0	11.8	2.4	0.0	4.9	0.8	3.3	1.3
Cycle Q Clear(g_c), s	15.0	8.8	4.1	12.1	0.0	11.8	5.6	0.0	4.9	5.2	3.3	1.3
Prop In Lane	1.00		1.00	1.00		0.06	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	244	744	656	287	0	765	477	0	642	442	682	537
V/C Ratio(X)	0.31	0.67	0.36	0.20	0.00	0.82	0.17	0.00	0.45	0.06	0.32	0.14
Avail Cap(c_a), veh/h	244	744	656	287	0	765	477	0	642	442	682	537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	9.8	8.4	15.9	0.0	10.8	11.6	0.0	10.1	11.9	9.5	9.6
Incr Delay (d2), s/veh	1.5	3.1	0.7	0.7	0.0	8.0	0.8	0.0	2.3	0.3	1.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	5.5	2.0	0.9	0.0	9.3	1.0	0.0	3.3	0.3	2.2	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	13.0	9.1	16.6	0.0	18.7	12.4	0.0	12.4	12.1	10.7	10.1
LnGrp LOS	C	B	A	B	A	B	B	A	B	B	B	B
Approach Vol, veh/h	813			686			373			323		
Approach Delay, s/veh	12.5			18.6			12.4			10.7		
Approach LOS	B			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	19.0			21.0			19.0			21.0		
Change Period (Y+Rc), s	6.0			6.0			6.0			6.0		
Max Green Setting (Gmax), s	13.0			15.0			13.0			15.0		
Max Q Clear Time (g_c+I1), s	8.1			14.1			7.7			17.0		
Green Ext Time (p_c), s	1.2			0.5			1.0			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	14.1											
HCM 6th LOS	B											

Lanes, Volumes, Timings

5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	307	11	43	262	15	13	12	35	38	16	17
Future Volume (vph)	32	307	11	43	262	15	13	12	35	38	16	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	13	13	13	11	11	11
Grade (%)		2%			-3%			-2%			-1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.994			0.921			0.968	
Flt Protected		0.995			0.993			0.989			0.974	
Satd. Flow (prot)	0	1848	0	0	1825	0	0	1806	0	0	1740	0
Flt Permitted		0.995			0.993			0.989			0.974	
Satd. Flow (perm)	0	1848	0	0	1825	0	0	1806	0	0	1740	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		730			1080			445			988	
Travel Time (s)		16.6			24.5			10.1			22.5	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	38	361	13	51	308	18	15	14	41	45	19	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	412	0	0	377	0	0	70	0	0	84	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	40.7%						ICU Level of Service A					
Analysis Period (min)	15											

HCM 6th AWSC
5: Lafayette Way/Centre Park Drive & Yost Road

11/02/2023

Intersection

Intersection Delay, s/veh 12.5
Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	32	307	11	43	262	15	13	12	35	38	16	17
Future Vol, veh/h	32	307	11	43	262	15	13	12	35	38	16	17
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	38	361	13	51	308	18	15	14	41	45	19	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

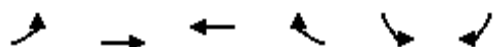
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.5	12.7	9.4	9.8
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	9%	13%	54%
Vol Thru, %	20%	88%	82%	23%
Vol Right, %	58%	3%	5%	24%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	60	350	320	71
LT Vol	13	32	43	38
Through Vol	12	307	262	16
RT Vol	35	11	15	17
Lane Flow Rate	71	412	376	84
Geometry Grp	1	1	1	1
Degree of Util (X)	0.111	0.544	0.502	0.137
Departure Headway (Hd)	5.657	4.76	4.798	5.892
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	637	749	742	611
Service Time	3.661	2.855	2.894	3.897
HCM Lane V/C Ratio	0.111	0.55	0.507	0.137
HCM Control Delay	9.4	13.5	12.7	9.8
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.4	3.3	2.8	0.5

Lanes, Volumes, Timings

6: Centre Park Drive & Dog Park Access (ins and outs)

11/02/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	0	42	2	4	0
Future Volume (vph)	2	0	42	2	4	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	14	14
Grade (%)		-1%	0%		1%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994			
Flt Protected		0.950			0.950	
Satd. Flow (prot)	0	1814	1889	0	1916	0
Flt Permitted		0.950			0.950	
Satd. Flow (perm)	0	1814	1889	0	1916	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		1091	171		70	
Travel Time (s)		24.8	3.9		1.6	
Peak Hour Factor	0.67	0.67	0.67	0.67	0.67	0.67
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	3	0	63	3	6	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	3	66	0	6	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 2 0 42 2 4 0

Future Vol, veh/h 2 0 42 2 4 0

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - -1 0 - 1 -

Peak Hour Factor 67 67 67 67 67 67

Heavy Vehicles, % 0 0 0 0 0 0

Mvmt Flow 3 0 63 3 6 0

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 66 0 - 0 71 65

Stage 1 - - - - 65 -

Stage 2 - - - - 6 -

Critical Hdwy 4.1 - - - 6.6 6.3

Critical Hdwy Stg 1 - - - - 5.6 -

Critical Hdwy Stg 2 - - - - 5.6 -

Follow-up Hdwy 2.2 - - - 3.5 3.3

Pot Cap-1 Maneuver 1549 - - - 935 1003

Stage 1 - - - - 959 -

Stage 2 - - - - 1022 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1549 - - - 933 1003

Mov Cap-2 Maneuver - - - - 933 -

Stage 1 - - - - 957 -

Stage 2 - - - - 1022 -

Approach EB WB SB

HCM Control Delay, s 7.3 0 8.9

HCM LOS A

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1549 - - - 933

HCM Lane V/C Ratio 0.002 - - - 0.006

HCM Control Delay (s) 7.3 0 - - 8.9

HCM Lane LOS A A - - A

HCM 95th %tile Q(veh) 0 - - - 0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	WT		WT	TT	TT	WT
Traffic Volume (vph)	164	234	95	518	493	196
Future Volume (vph)	164	234	95	518	493	196
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	14	11	11	11	13
Grade (%)	3%			-1%	1%	
Storage Length (ft)	450	0	250			420
Storage Lanes	0	0	1			1
Taper Length (ft)	75		75			
Lane Util. Factor	0.97	0.95	1.00	0.95	0.95	1.00
Frt	0.912					0.850
Flt Protected	0.980		0.950			
Satd. Flow (prot)	3056	0	1661	3257	3194	1558
Flt Permitted	0.980		0.424			
Satd. Flow (perm)	3056	0	741	3257	3194	1558
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	249					209
Link Speed (mph)	25			40	40	
Link Distance (ft)	1080			835	1241	
Travel Time (s)	29.5			14.2	21.2	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	0%	1%	0%	2%	3%	1%
Adj. Flow (vph)	174	249	101	551	524	209
Shared Lane Traffic (%)						
Lane Group Flow (vph)	423	0	101	551	524	209
Number of Detectors	1		1	1	1	1
Detector Template						
Leading Detector (ft)	35		35	35	35	35
Trailing Detector (ft)	-5		-5	-5	-5	-5
Detector 1 Position(ft)	-5		-5	-5	-5	-5
Detector 1 Size(ft)	40		40	40	40	40
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Turn Type	Prot		pm+pt	NA	NA	pm+ov
Protected Phases	4		5	2	6	4
Permitted Phases			2			6
Detector Phase	4		5	2	6	4
Switch Phase						
Minimum Initial (s)	3.0		3.0	15.0	15.0	3.0
Minimum Split (s)	13.0		13.0	21.0	21.0	13.0
Total Split (s)	37.0		13.0	83.0	70.0	37.0
Total Split (%)	30.8%		10.8%	69.2%	58.3%	30.8%
Maximum Green (s)	32.0		7.0	77.0	64.0	32.0
Yellow Time (s)	3.0		4.0	4.0	4.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0

Lanes, Volumes, Timings
7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Total Lost Time (s)	4.0		5.0	5.0	5.0	4.0
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	6.0	6.0	3.0
Minimum Gap (s)	3.0		3.0	3.9	3.9	3.0
Time Before Reduce (s)	0.0		0.0	37.0	37.0	0.0
Time To Reduce (s)	0.0		0.0	15.0	15.0	0.0
Recall Mode	None		None	C-Max	C-Max	None
Act Effect Green (s)	14.6		96.4	96.4	83.7	103.3
Actuated g/C Ratio	0.12		0.80	0.80	0.70	0.86
v/c Ratio	0.72		0.15	0.21	0.24	0.15
Control Delay	27.0		3.6	3.4	6.4	0.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	27.0		3.6	3.4	6.4	0.5
LOS	C		A	A	A	A
Approach Delay	27.0			3.4	4.7	
Approach LOS	C			A	A	
Queue Length 50th (ft)	65		13	43	61	0
Queue Length 95th (ft)	113		33	78	83	0
Internal Link Dist (ft)	1000			755	1161	
Turn Bay Length (ft)	450		250			420
Base Capacity (vph)	1020		656	2616	2227	1542
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.41		0.15	0.21	0.24	0.14

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 101 (84%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 9.5

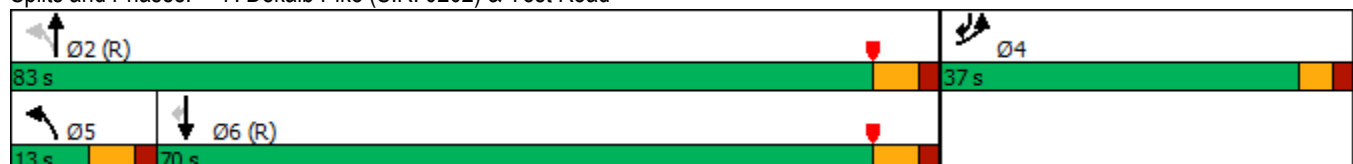
Intersection LOS: A

Intersection Capacity Utilization 44.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Dekalb Pike (S.R. 0202) & Yost Road



HCM 6th Signalized Intersection Summary

7: Dekalb Pike (S.R. 0202) & Yost Road

11/02/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	🚗🚗🚗		🚗	🚗🚗	🚗🚗	🚗
Traffic Volume (veh/h)	164	234	95	518	493	196
Future Volume (veh/h)	164	234	95	518	493	196
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1750	1805	1837	1809	1752	1852
Adj Flow Rate, veh/h	174	247	101	551	524	200
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	1	0	2	3	1
Cap, veh/h	321	282	552	2517	2159	1320
Arrive On Green	0.19	0.18	0.04	0.73	0.65	0.65
Sat Flow, veh/h	1666	1530	1750	3527	3417	1569
Grp Volume(v), veh/h	174	247	101	551	524	200
Grp Sat Flow(s),veh/h/ln	1666	1530	1750	1718	1665	1569
Q Serve(g_s), s	11.3	18.8	2.2	6.1	7.9	2.8
Cycle Q Clear(g_c), s	11.3	18.8	2.2	6.1	7.9	2.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	321	282	552	2517	2159	1320
V/C Ratio(X)	0.54	0.88	0.18	0.22	0.24	0.15
Avail Cap(c_a), veh/h	458	408	594	2517	2159	1320
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.98	0.98
Uniform Delay (d), s/veh	43.7	47.6	5.9	5.1	8.8	1.7
Incr Delay (d2), s/veh	1.4	13.8	0.2	0.2	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.4	22.6	1.3	3.4	4.8	3.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	45.1	61.4	6.1	5.3	9.1	2.0
LnGrp LOS	D	E	A	A	A	A
Approach Vol, veh/h						
Approach Delay, s/veh	54.7			5.4	7.1	
Approach LOS	D			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		92.9		27.1	10.1	82.8
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0
Max Green Setting (Gmax), s		77.0		32.0	7.0	64.0
Max Q Clear Time (g_c+I1), s		8.1		20.8	4.2	9.9
Green Ext Time (p_c), s		7.9		1.3	0.1	10.7
Intersection Summary						
HCM 6th Ctrl Delay			17.6			
HCM 6th LOS			B			

Notes

User approved volume balancing among the lanes for turning movement.

Lanes, Volumes, Timings
20: Arch Street Road & Site B Access

11/07/2023

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	29	296	26	31	293
Future Volume (vph)	21	29	296	26	31	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-1%			-2%
Storage Length (ft)	0	0		0	75	
Storage Lanes	1	0		0	1	
Taper Length (ft)	75				75	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.921		0.989			
Flt Protected	0.980				0.950	
Satd. Flow (prot)	1681	0	1851	0	1787	1881
Flt Permitted	0.980				0.950	
Satd. Flow (perm)	1681	0	1851	0	1787	1881
Link Speed (mph)	30		35			35
Link Distance (ft)	294		2332			543
Travel Time (s)	6.7		45.4			10.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	32	322	28	34	318
Shared Lane Traffic (%)						
Lane Group Flow (vph)	55	0	350	0	34	318
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.8%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 6th TWSC
20: Arch Street Road & Site B Access

11/07/2023

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	29	296	26	31	293
Future Vol, veh/h	21	29	296	26	31	293
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-1	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	32	322	28	34	318
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	722	336	0	0	350	0
Stage 1	336	-	-	-	-	-
Stage 2	386	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	394	706	-	-	1209	-
Stage 1	724	-	-	-	-	-
Stage 2	687	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	383	706	-	-	1209	-
Mov Cap-2 Maneuver	383	-	-	-	-	-
Stage 1	724	-	-	-	-	-
Stage 2	668	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	12.7	0	0.8			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	521	1209	-	
HCM Lane V/C Ratio	-	-	0.104	0.028	-	
HCM Control Delay (s)	-	-	12.7	8.1	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-	

Attachment K

Levels-of-Service and 95th Percentile Queue Matrices

Table 1 - Level of Service Matrices

1. Dekalb Pike (S.R. 0202) and Centre Park Drive/ Jolly Road

Time Period		Weekday Morning Peak Hour							Weekday Afternoon Peak Hour							Saturday Midday Peak Hour							
Year		2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year			
Development Condition		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		
				Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B	
Centre Park Drive/ Jolly Road	EB	Left	D	E 60.7	E 60.2	E 60.7	E 60.7	E 58.7	E 60.7	D	E 61.6	E 60.9	E 61.6	E 61.6	E 58.7	E 61.6	A	E 0.0	E 64.2	A 0.0	A 0.0	E 64.2	A 0.0
			Thru	E	E	E	E	E	E	E	E	E	E	E	E	E	E	A	E	A	A	E	A
		Right	47.0	66.4	64.9	66.4	66.4	62.4	66.4	36.1	69.2	66.0	69.2	69.2	63.2	69.2	0.0	66.9	0.0	0.0	66.4	0.0	
	WB	Left	F	E 84.2	E 56.7	E 57.0	E 56.5	E 56.6	E 57.0	F	D 84.7	D 52.4	D 52.3	D 52.1	D 52.3	D 52.0	D	E 42.2	E 56.8	E 56.1	E 56.3	D 56.8	D 54.4
		Left/Thru	D	E	E	E	E	E	E	E	A	A	A	A	E	E	D	E	E	E	E	E	
		Right	53.4	58.3	58.2	58.2	58.3	57.1	57.9	39.6	0.0	0.0	0.0	0.0	56.6	57.1	45.8	63.6	63.3	63.3	63.5	62.5	62.5
Dekalb Pike (S.R. 0202)	NB	Left	B	A 7.9	A 8.4	A 8.1	A 7.9	A 9.6	A 8.3	C	A 9.8	B 10.6	B 10.2	A 9.9	B 13.4	B 12.2	B	A 3.1	A 5.0	A 3.2	A 3.1	A 5.9	A 3.6
		2 Thrus	A	A	B	A	A	B	B	B	B	B	B	B	B	B		A	A	A	A	A	A
		Right	13.9	9.5	10.1	9.7	9.6	11.5	10.1	25.4	11.7	12.7	12.1	11.8	15.9	14.6	12.1	4.1	6.5	4.2	4.1	7.7	4.7
	SB	Left	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A
		2 Thrus	5.9	6.1	6.5	6.3	6.1	7.6	6.8	7.5	8.0	8.8	8.3	8.1	11.2	9.9	2.7	2.3	4.0	2.5	2.4	4.9	2.8
		Right	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Overall		B	B	B	B	B	B	B	C	C	C	C	C	C	C	B	A	B	A	A	B	A	
		18.1	13.4	14.4	13.7	13.4	16.4	14.1	34.9	22.0	23.3	22.3	22.0	28.2	25.6	11.4	7.6	10.0	8.0	7.7	12.2	8.7	

2. Jolly Road and Wentz Road

(1) Synchro Results were utilized at this intersection for existing conditions. HCM 6th Edition used for all future conditions.

Table 1 - Level of Service Matrices

3. Jolly Road and Arch Street Road

Time Period		Weekday Morning Peak Hour							Weekday Afternoon Peak Hour							Saturday Midday Peak Hour						
Year		2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year		
Development Condition		Existing	w/o Dev	w/ Dev Base		w/o Dev	w/ Dev Base		Existing	w/o Dev	w/ Dev Base		w/o Dev	w/ Dev Base		Existing	w/o Dev	w/ Dev Base		w/o Dev	w/ Dev Base	
				Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B
Jolly Road	Thru	B 10.1	B 10.1	B 10.3	B 10.5	B 10.3	B 11.0	B 11.5	A 8.9	A 8.9	A 8.9	A 8.9	A 8.9	A 8.9	A 8.8	C 20.4	C 20.4	C 20.4	C 20.4	C 20.5	C 20.6	C 20.5
	EB Right	A 2.8	A 2.8	A 2.8	A 2.9	A 2.8	A 2.9	A 3.2	A 2.4	A 2.4	A 2.4	A 2.4	A 2.3	A 2.4	A 2.5	A 4.6	A 4.6	A 4.6	A 4.6	A 4.6	A 4.6	A 4.7
	Left	A	A	A	A	A	A	B	B	B	B	B	B	B	C	A	A	A	A	A	A	A
	WB Thru	9.1	9.1	9.3	9.6	9.3	10.0	10.5	19.4	19.5	19.6	19.6	19.7	19.9	20.0	7.8	7.8	7.8	7.8	7.8	7.9	7.9
Arch Street Road	Left	B	B	B	B	B	B	B	C	C	C	C	C	C	C	D	D	D	D	D	D	D
	NB Right	17.7	17.7	17.7	17.6	17.7	17.5	17.3	22.1	22.4	22.8	23.9	22.9	24.4	29.2	36.8	37.0	37.4	38.6	37.6	39.3	43.6
Overall		B 10.3	B 10.3	B 10.5	B 10.4	B 10.4	B 10.7	B 10.7	B 15.6	B 15.8	B 15.9	B 16.2	B 16.0	B 16.4	B 17.9	B 17.6	B 17.7	B 17.8	B 18.2	B 17.9	B 18.5	B 19.8

(1) Synchro Results were utilized at this intersection.

Table 1 - Level of Service Matrices

4. South Township Line Road and Arch Street Road

Time Period		Weekday Morning Peak Hour							Weekday Afternoon Peak Hour							Saturday Midday Peak Hour							
Year		2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year			
Development Condition		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		
				Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B				
South Township Line Road	EB	Left	A	A	A	A	A	A	B	B	B	B	B	B	C	B	B	B	B	B	B	C	
		Thru	8.8	8.9	8.9	9.2	9.0	9.2	10.0	18.0	18.1	18.2	18.5	18.3	18.7	20.5	18.7	18.8	18.9	19.1	19.1	19.3	20.2
		Right	B	B	B	B	B	B	B	A	A	A	A	A	A	A	B	B	B	B	B	B	B
	WB	Left	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
		Thru	6.0	6.0	6.0	6.0	6.0	6.1	6.1	6.7	6.7	6.7	6.6	6.7	6.6	6.5	9.1	9.1	9.1	9.1	9.1	9.1	9.1
		Right	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Arch Street Road	NB	Left	14.4	14.4	14.5	14.5	14.7	14.8	14.8	14.4	14.4	14.4	14.3	14.5	14.4	14.2	16.3	16.4	16.4	16.4	16.6	16.6	16.6
		Thru	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	F	B	
		Right	7.7	7.7	7.8	7.8	7.8	8.0	8.0	13.1	13.2	13.3	13.1	13.3	13.7	13.4	17.6	17.7	17.8	17.9	18.2	118.7	18.7
	SB	Left	B	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	B
		Thru	15.8	15.8	15.8	15.8	15.8	15.9	15.9	18.6	18.7	18.8	19.2	19.0	19.5	20.3	12.2	12.2	12.3	12.3	12.3	12.3	12.4
		Right	B	B	B	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	B	B	B
Overall		Left	16.4	16.4	16.5	16.5	16.5	16.7	16.7	18.4	18.5	18.7	19.1	18.9	19.5	20.1	12.2	12.3	12.3	12.3	12.3	12.4	12.4
		Right	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B

Table 1 - Level of Service Matrices

5. Yost Road and Centre Park Drive/ Lafayette Way

Time Period		Weekday Morning Peak Hour							Weekday Afternoon Peak Hour							Saturday Midday Peak Hour									
Year		2023	2025 Build-Out Year				2030 Design Year			2023	2025 Build-Out Year				2030 Design Year			2023	2025 Build-Out Year				2030 Design Year		
Development Condition		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2				
				Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B						
Yost Road	Left EB Thru Right	B	B	B	B	B	B	B	A	A	A	A	A	A	A	B	B	B	B	B	B	B			
		11.5	11.5	11.4	11.6	11.6	12.1	11.9	8.9	8.8	9.0	8.9	8.9	9.4	9.0	13.4	13.2	13.3	13.2	13.3	14.3	13.5			
	Left WB Thru Right	A	A	B	A	A	B	B	A	A	A	A	A	B	A	B	B	B	B	B	B				
		10.0	10.0	10.1	10.0	10.0	10.8	10.2	9.9	9.4	9.6	9.4	9.4	10.2	9.7	13.3	12.3	12.5	12.4	12.5	13.5	12.7			
Centre Park Drive/ Lafayette Way	Left NB Thru Right	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A			
		8.9	8.8	8.9	8.9	8.9	9.3	9.0	8.3	8.1	8.3	8.2	8.1	8.5	8.2	9.4	9.3	9.3	9.3	9.3	9.6	9.4			
	Left SB Thru Right	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	B	A	A			
		8.5	8.4	8.6	8.5	8.5	9.1	8.5	8.4	8.3	8.5	8.3	8.3	9.0	8.3	9.9	9.7	9.8	9.7	9.8	10.3	9.8			
Overall		B 10.6	B 10.6	B 10.5	B 10.6	B 10.6	B 11.1	B 10.9	A 9.3	A 9.0	A 9.2	A 9.0	A 9.0	A 9.6	A 9.2	B 12.8	B 12.2	B 12.4	B 12.3	B 12.4	B 13.2	B 12.5			

(1) Movement operates at free-flow conditions.

Table 1 - Level of Service Matrices

6. Centre Park Drive and Dog Park Access (ins and outs)

Time Period		Weekday Morning Peak Hour							Weekday Afternoon Peak Hour							Saturday Midday Peak Hour						
Year		2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year		
Development Condition		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2	
				Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B			
Centre Park Drive	EB Thru	(1)	A	A	A	A	A	A	(1)	A	A	A	A	A	A	(1)	A	A	A	A	A	A
			0.0	5.3	0.0	0.0	6.8	0.0		0.4	2.3	0.4	0.4	4.5	0.4		7.3	7.4	0.0	7.3	7.5	7.3
	WB Thru Right	(2)	(1)	(1)	(1)	(1)	(1)	(1)	(2)	(1)	(1)	(1)	(1)	(1)	(1)	(2)	(1)	(1)	(1)	(1)	(1)	
Dog Park Access	Left SB Right	A	A	A	A	A	A	A	A	A	B	A	A	C	A	A	A	A	A	A	A	
		0.0	8.4	8.8	8.4	8.4	9.8	8.4	0.0	9.2	10.3	9.2	9.2	16.3	9.2	0.0	8.9	9.0	8.9	8.9	9.6	8.9
Overall		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
		0.0	0.6	3.8	0.6	0.6	4.8	0.6	0.0	0.6	3.4	0.6	0.6	7.6	0.6	0.0	1.0	2.8	0.7	1.0	4.4	1.0

(1) Movement operates at free-flow conditions.

(2) Movement doesn't exist during this condition

Table 1 - Level of Service Matrices

7. Dekalb Pike (S.R. 0202) and Yost Road

Time Period		Weekday Morning Peak Hour							Weekday Afternoon Peak Hour							Saturday Midday Peak Hour						
Year		2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year		
Development Condition		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2	
				Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B
Yost Road	Left	E	E 59.0	E 59.0	E 59.0	E 59.0	E 58.5	E 58.7	F	E 56.0	E 55.7	E 55.9	E 55.8	D 54.7	E 55.5	F	D 45.0	D 44.6	D 45.0	D 44.8	D 43.7	D 45.1
	EB Left		E	E	E	E	E	E		E	E	E	E	E	E		E	E	E	E	E	E
	Right	60.1	63.8	63.7	63.7	64.2	64.7	63.8	117.6	61.4	61.2	61.3	61.4	60.5	61.0	310.3	61.3	61.7	61.3	61.5	62.7	61.4
Dekalb Pike (S.R. 0202)	Left	A 2.6	A 1.6	A 1.7	A 1.7	A 1.6	A 1.8	A 1.7	A 4.3	A 2.8	A 2.9	A 2.8	A 2.8	A 3.3	A 2.9	A 6.2	A 6.0	A 6.1	A 6.0	A 6.0	A 6.5	A 6.1
	NB 2 Thrus	A 2.7	A 1.4	A 1.4	A 1.4	A 1.4	A 1.5	A 1.5	A 4.8	A 2.5	A 2.5	A 2.5	A 2.5	A 2.8	A 2.6	A 5.7	A 5.3	A 5.4	A 5.3	A 5.3	A 5.7	A 5.3
	2 Thrus	A 4.7	A 2.8	A 3.0	A 2.9	A 2.8	A 3.2	A 3.0	A 6.8	A 4.4	A 4.5	A 4.4	A 4.4	A 5.1	A 4.6	B 10.0	A 8.9	A 9.1	A 8.9	A 9.0	A 9.7	A 9.1
	SB Right	A 3.4	A 1.3	A 1.3	A 1.3	A 1.3	A 1.4	A 1.3	A 6.0	A 1.6	A 1.6	A 1.6	A 1.6	A 1.7	A 1.6	A 7.5	A 1.9	A 2.0	A 2.0	A 2.0	A 2.0	A 2.0
	Overall	A 8.6	A 7.3	A 7.5	A 7.5	A 7.3	A 8.2	A 8.0	C 23.7	B 12.4	B 12.7	B 12.5	B 12.4	B 13.3	B 12.8	E 77.3	B 17.6	B 17.8	B 17.6	B 17.7	B 18.3	B 17.6

Table 2 - 95th Percentile Queue Matrices

1. Dekalb Pike (S.R. 0202) and Centre Park Drive/ Jolly Road

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour							Weekday Afternoon Peak Hour							Saturday Midday Peak Hour																				
Year				2023				2025 Build-Out Year			2030 Design Year			2023				2025 Build-Out Year			2030 Design Year			2023				2025 Build-Out Year			2030 Design Year							
Development Condition				Existing		w/o Dev		w/ Dev Base		w/o Dev		w/ Dev Base		Existing		w/o Dev		w/ Dev Base		w/o Dev		w/ Dev Base		Existing		w/o Dev		w/ Dev Base		w/o Dev		w/ Dev Base						
						Site A		Site B				Site A		Site B				Site A		Site B				Site A		Site B				Site A		Site B						
Centre Park Drive/ Jolly Road	Left	EB	Thru	150'		75'		150'		38		25	25	25		25	40	25		53		25	40	25		25	78	25		0	0	25	0	0	25	0		
												25	30	25		25	55	25				43	65	43		43	115	43				0	25	0	0	33	0	
	Right	WB	Thru	550'	300'	300'		211		118	128	123		120	148	140		409		220	223	225		223	243	248		57		65	65	68		65	65	75		
										109	148	155	155		150	165				165	126	0	0	0		0				295	308	86	105	110	110		105	133
Dekalb Pike (S.R. 0202)	Left	NB	Thru	1100'		150'		1,100'		425		0	25	0		0	25	0		455		0	25	0		0	25	0		368		0	0	0		0	25	0
												115	120	118		118	133	120				130	138	135		133	160	153				83	120	85		83	138	93
												88	93	93		90	100	100				65	70	70		68	80	85				25	25	25		25	25	25
	Right	SB	Thru	100'		250'		48		60	63	65		60	70	78		122		25	25	28		25	30	45		109		25	25	25		25	25	25		
										80	88	80		80	108	85				55	63	58		58	83	65				30	60	33		33	75	38		
										83	90	85		85	110	90				58	63	58		58	85	65				33	63	33		33	78	38		

Table 2 - 95th Percentile Queue Matrices

2. Jolly Road and Wentz Road

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour							Weekday Afternoon Peak Hour							Saturday Midday Peak Hour						
Year				2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year		
Development Condition				Existing	w/o Dev	w/ Dev Base		w/o Dev	w/ Dev Base		Existing	w/o Dev	w/ Dev Base		w/o Dev	w/ Dev Base		Existing	w/o Dev	w/ Dev Base		w/o Dev	w/ Dev Base	
				Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B		
Jolly Road	Left	380'	200'																					
	EB																							
	Thru																							
	WB	1,650'	450'																					
Right	1,650'																							
Wentz Road	Left	900'	900'																					
	SB Right																							

(1) Distance to adjacent intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

(3) Synchro Results were utilized at this intersection for existing conditions. HCM 6th Edition used for all future conditions.

Table 2 - 95th Percentile Queue Matrices

3. Jolly Road and Arch Street Road

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour							Weekday Afternoon Peak Hour							Saturday Midday Peak Hour									
Year				2023		2025 Build-Out Year			2030 Design Year			2023		2025 Build-Out Year			2030 Design Year			2023		2025 Build-Out Year			2030 Design Year		
Development Condition				Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2				
		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			
Jolly Road	Thru	1,650'	1,650'	103	104	105	107	106	113	115	48	48	49	48	48	51	48	69	125	125	125	125	127	125			
	EB Right	115'	115'	31	31	32	33	32	34	38	25	25	26	26	25	26	28	0	43	43	43	43	43	46			
	WB Thru	1,600'	1,600'	51	52	53	54	53	58	60	212	213	214	214	216	220	221	62	105	105	105	106	107	107			
Arch Street Road	Left NB Right	1,150'	1,150'	116	117	119	122	118	126	133	220	237	243	262	244	267	334	226	227	230	237	231	242	265			

(1) Distance to adjacent intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

(3) Synchro Results were utilized at this intersection

Table 2 - 95th Percentile Queue Matrices

4. South Township Line Road and Arch Street Road

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour							Weekday Afternoon Peak Hour							Saturday Midday Peak Hour									
Year				2023		2025 Build-Out Year			2030 Design Year			2023		2025 Build-Out Year			2030 Design Year			2023		2025 Build-Out Year			2030 Design Year		
Development Condition				Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2				
		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			
South Township Line Road	EB Thru	Left	80'	80'	25	25	25	25	25	25	25	30	30	30	35	30	33	53	25	25	25	25	25	33			
		335'	335'	128	128	128	128	130	133	133	103	105	103	103	105	105	105	133	135	135	135	138	138	138			
		Right	175'	175'	25	25	25	25	25	25	25	25	25	25	25	25	25	25	50	50	50	50	50	50	50		
	WB Thru	Left	100'	100'	35	35	35	35	38	38	38	40	40	40	40	40	40	40	25	25	25	25	25	25	25		
		575'	575'	73	73	75	75	75	78	78	213	213	215	213	218	223	223	220	223	223	225	228	233	233			
		Right																									
Arch Street Road	NB Thru	Left	300'	300'	25	25	25	25	25	25	25	53	53	53	53	55	55	58	25	25	25	25	25	25	25		
		1,300'	1,300'	98	98	98	98	100	103	103	130	133	135	135	135	143	145	80	80	80	80	80	83	83			
		Right																									
	SB Thru	Left	80'	80'	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25		
		500'	500'	85	85	85	85	88	88	88	90	90	93	93	93	98	100	55	55	55	55	55	55	55	55		
		Right	175'	175'	25	25	25	25	25	25	25	25	25	25	25	25	33	25	25	25	25	25	25	25	25		

(1) Distance to adjacent intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

Table 2 - 95th Percentile Queue Matrices

5. Yost Road and Centre Park Drive/ Lafayette Way

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour							Weekday Afternoon Peak Hour							Saturday Midday Peak Hour									
Year				2023	2025 Build-Out Year				2030 Design Year			2023	2025 Build-Out Year				2030 Design Year			2023	2025 Build-Out Year				2030 Design Year		
Development Condition				Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2				
				Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B					
Yost Road	Left																										
	EB Thru	1,300'	1,300'	63	63	63	63	65	70	68	25	25	25	25	25	28	25	80	80	80	80	80	90	83			
	Right																										
	Left																										
	WB Thru	525'	525'	35	33	35	33	33	43	35	45	35	38	35	35	45	38	83	65	68	68	68	80	70			
	Right																										
Centre Park Drive/ Lafayette Way	Left																										
	NB Thru	440'	440'	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25			
	Right																										
	Left																										
	SB Thru	900'	900'	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25			
	Right																										

(1) Distance to adjacent intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

Table 2 - 95th Percentile Queue Matrices

6. Centre Park Drive and Dog Park Access (ins and outs)

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour							Weekday Afternoon Peak Hour							Saturday Midday Peak Hour						
Year				2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year			2023	2025 Build-Out Year			2030 Design Year		
Development Condition				Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2	
				Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B		
Centre Park Drive	Left EB Thru	1,000'	1,000'	(4)	0	0	0	0	25	0	(4)	0	25	0	0	25	0	(4)	0	0	0	25	0	
	Thru WB Right	550'	550'	(3)	(4)	(4)	(4)	(4)	(4)	(4)	(3)	(4)	(4)	(4)	(4)	(4)	(4)	(3)	(4)	(4)	(4)	(4)	(4)	
Dog Park Access (ins and outs)	Left SB Right	N/A	N/A	0	0	25	0	0	25	0	0	0	25	0	0	65	0	0	0	25	0	0	25	0

(1) Distance to adjacent intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

(3) This movement does not exist in this condition

(4) Movement operates at free-flow conditions.

Table 2 - 95th Percentile Queue Matrices

7. Dekalb Pike (S.R. 0202) and Yost Road

Time Period		Current Storage ⁽¹⁾	Future Storage ⁽²⁾	Weekday Morning Peak Hour							Weekday Afternoon Peak Hour							Saturday Midday Peak Hour						
Year				2023		2025 Build-Out Year			2030 Design Year		2023		2025 Build-Out Year			2030 Design Year		2023		2025 Build-Out Year			2030 Design Year	
Development Condition				Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2		Existing	w/o Dev	w/ Dev Base Phase 1		w/o Dev	w/ Dev Base Phase 2	
		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B			Site A	Site B		Site A	Site B
Yost Road	Left		450	140	70	73	73	70	78	78	410	160	165	163	160	180	168	1030	205	203	205	205	203	210
	EB Left	380'	380'		148	155	155	153	183	173		305	315	308	308	343	320		560	570	560	565	593	565
	Right																							
Dekalb Pike (S.R. 0202)	Left	75'	250	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	30	33	30	33	38	33
	NB Thru	1,000'	1,000'	70	25	25	25	25	25	25	153	43	45	43	43	50	45	150	83	85	83	85	90	85
	Thru	1,100'	1,100'	118	38	40	38	38	45	40	143	50	53	50	50	58	53	210	113	115	113	115	123	120
	SB Right	175'	390'	25	25	25	25	25	25	25	65	35	38	38	38	40	43	88	85	88	85	88	90	90

(1) Distance to adjacent intersections shown in italics.

(2) Future storage/distance to adjacent intersections shown if different/improved from existing conditions.

Attachment L

Turn Lane Warrant Analysis

Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Whitpain Township County: Montgomery County PennDOT Engineering District: 6	Analysis Date: 11/7/2023 Conducted By: MAG Checked By: Agency/Company Name: McMahon, A Bowman Company
Intersection & Approach Description: Centre Park Drive and Proposed Site Access A - Eastbound Approach	
Analysis Period: 2030 With Development Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 25 Type of Terrain: Rolling	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	44	0.0%	44
	Through	-	5	0.0%	5
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	8	0.0%	8
	Right	Yes	82	0.0%	82
Advancing Volume: 49 Opposing Volume: 90 Left Turn Volume: 44 % Left Turns in Advancing Volume: 89.80%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A
Advancing Volume: N/A Right Turn Volume: N/A					

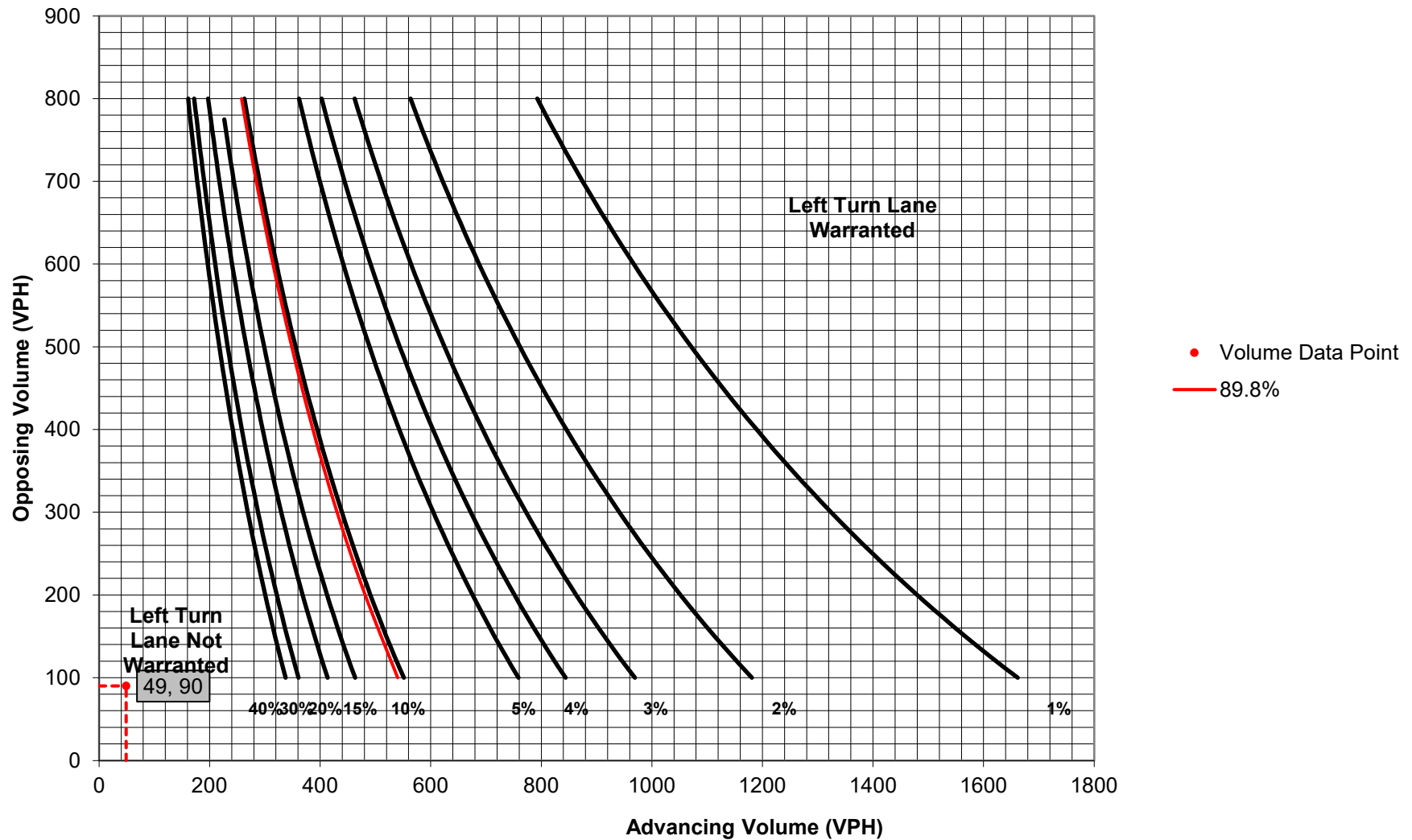
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 1 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 44 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																							
PennDOT Publication 46, Exhibit 11-6																																								
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="4">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume						High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																							
	25-35		40-45		50-60																																			
	Turn Demand Volume																																							
	High	Low	High	Low	High	Low																																		
Signalized	A	A	B or C	B or C	B or C	B or C																																		
Unsignalized	A	A	C	B	B or C	B																																		
Left Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Left Turn Lane Storage Length: N/A Feet																																								
Additional Findings: N/A																																								
Additional Comments / Justifications:																																								

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Whitpain Township County: Montgomery County PennDOT Engineering District: 6	Analysis Date: 11/7/2023 Conducted By: MAG Checked By: Agency/Company Name: McMahon, A Bowman Company
Intersection & Approach Description: Centre Park Drive and Proposed Site Access A - Eastbound Approach	
Analysis Period: 2030 With Development Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 25 Type of Terrain: Rolling	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	43	0.0%	43
	Through	-	33	2.0%	34
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	50	0.0%	50
	Right	Yes	78	0.0%	78
Advancing Volume: 77 Opposing Volume: 128 Left Turn Volume: 43 % Left Turns in Advancing Volume: 55.84%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A
Advancing Volume: N/A Right Turn Volume: N/A					

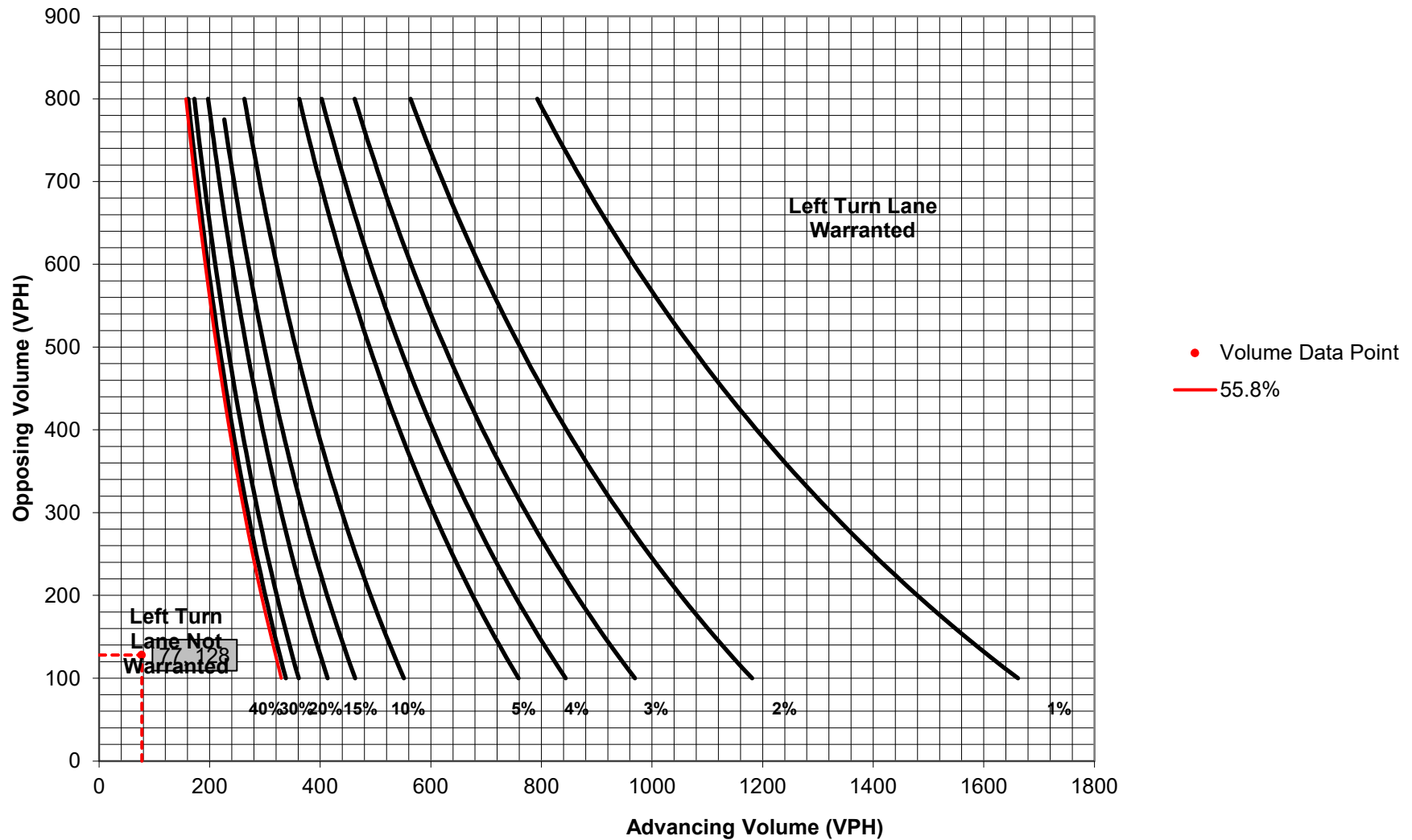
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 1 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 43 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																							
PennDOT Publication 46, Exhibit 11-6																																								
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="4">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume						High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
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Signalized	A	A	B or C	B or C	B or C	B or C																																		
Unsignalized	A	A	C	B	B or C	B																																		
Left Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Left Turn Lane Storage Length: N/A Feet																																								
Additional Findings: N/A																																								
Additional Comments / Justifications:																																								

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Whitpain Township County: Montgomery County PennDOT Engineering District: 6	Analysis Date: 11/7/2023 Conducted By: MAG Checked By: Agency/Company Name: McMahon, A Bowman Company
Intersection & Approach Description: Centre Park Drive and Proposed Site Access A - Eastbound Approach	
Analysis Period: 2030 With Development Design Hour: SAT Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 25 Type of Terrain: Rolling	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	22	0.0%	22
	Through	-	0	0.0%	0
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	42	0.0%	42
	Right	Yes	39	0.0%	39
Advancing Volume: 22 Opposing Volume: 81 Left Turn Volume: 22 % Left Turns in Advancing Volume: 100.00%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A
Advancing Volume: N/A Right Turn Volume: N/A					

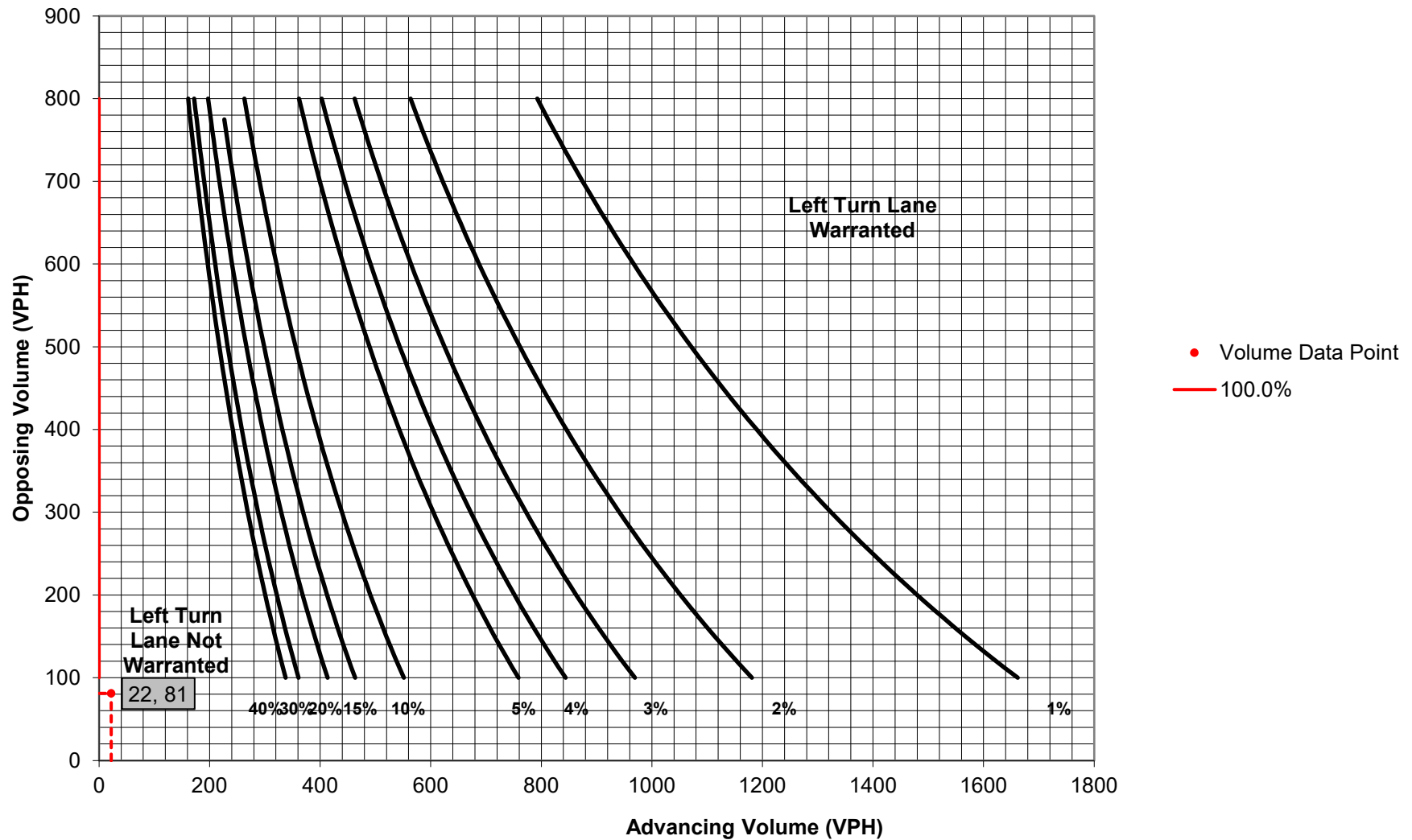
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 1 Warrant Met?: #DIV/0!	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 22 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: #DIV/0!																																								
PennDOT Publication 46, Exhibit 11-6																																									
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Type of Traffic Control	Speed (MPH)																																								
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	Turn Demand Volume																																								
	High	Low	High	Low	High	Low																																			
Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Left Turn Lane Storage Length, Condition A: #DIV/0! Feet Condition B: #DIV/0! Feet Condition C: #DIV/0! Feet Required Left Turn Lane Storage Length: #DIV/0! Feet																																									
Additional Findings: #DIV/0!																																									
Additional Comments / Justifications: 																																									

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Whitpain Township County: Montgomery County PennDOT Engineering District: 6	Analysis Date: 11/7/2023 Conducted By: MAG Checked By: Agency/Company Name: McMahon, A Bowman Company
Intersection & Approach Description: Centre Park Drive and Proposed Site Access A - Westbound Approach	
Analysis Period: 2030 With Development Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 25 Type of Terrain: Rolling	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-			N/A
	Right	No			N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	8	0.0%	8
	Right	-	82	0.0%	82
Advancing Volume: 90 Right Turn Volume: 82					

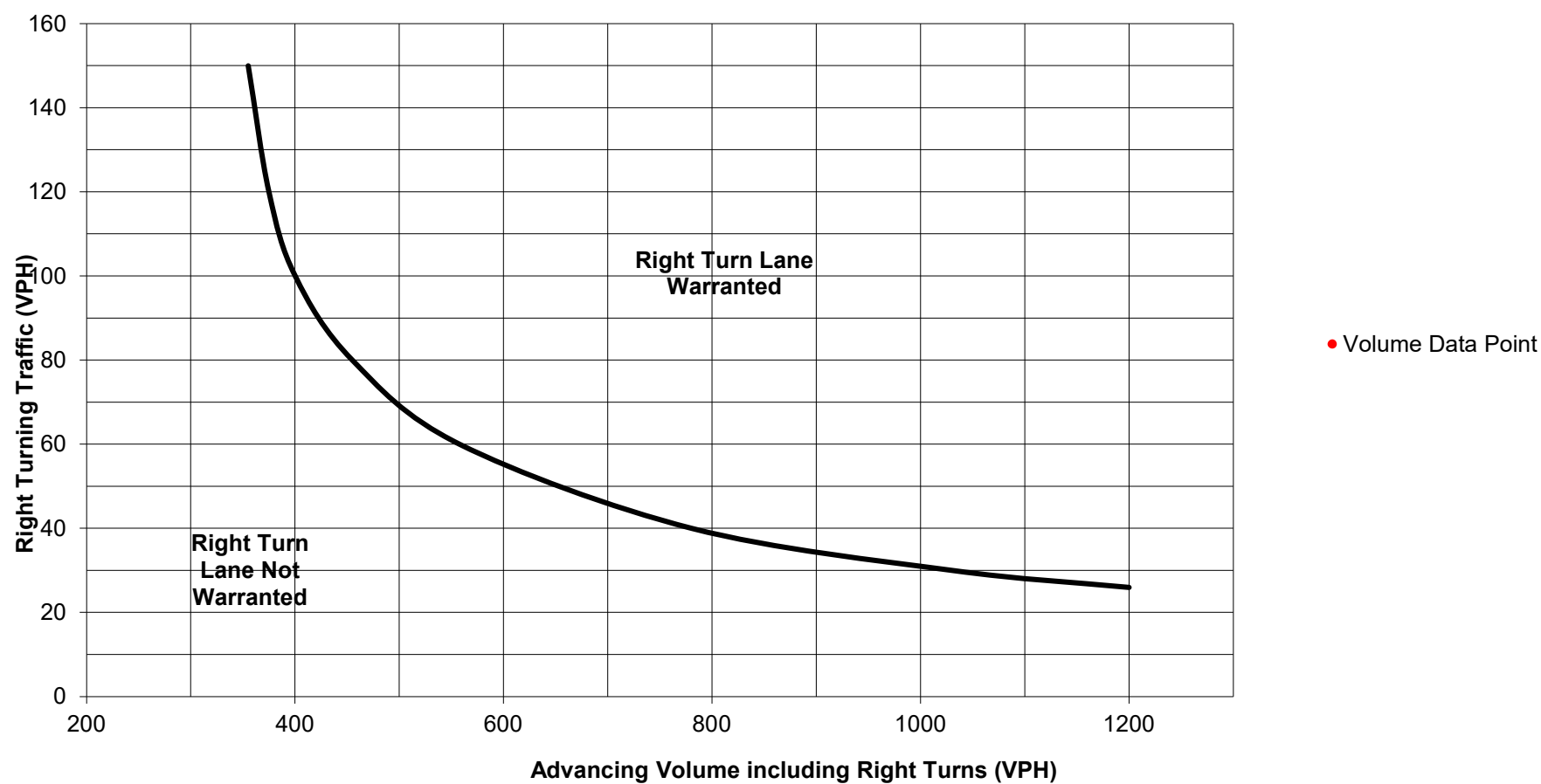
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 82 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
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Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Right Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Right Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									
Additional Comments / Justifications: 																																									

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Whitpain Township County: Montgomery County PennDOT Engineering District: 6	Analysis Date: 11/7/2023 Conducted By: MAG Checked By: Agency/Company Name: McMahon, A Bowman Company
Intersection & Approach Description: Centre Park Drive and Proposed Site Access A - Westbound Approach	
Analysis Period: 2030 With Development Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 25 Type of Terrain: Rolling	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-			N/A
	Right	No			N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	50	0.0%	50
	Right	-	78	0.0%	78
Advancing Volume: 128 Right Turn Volume: 78					

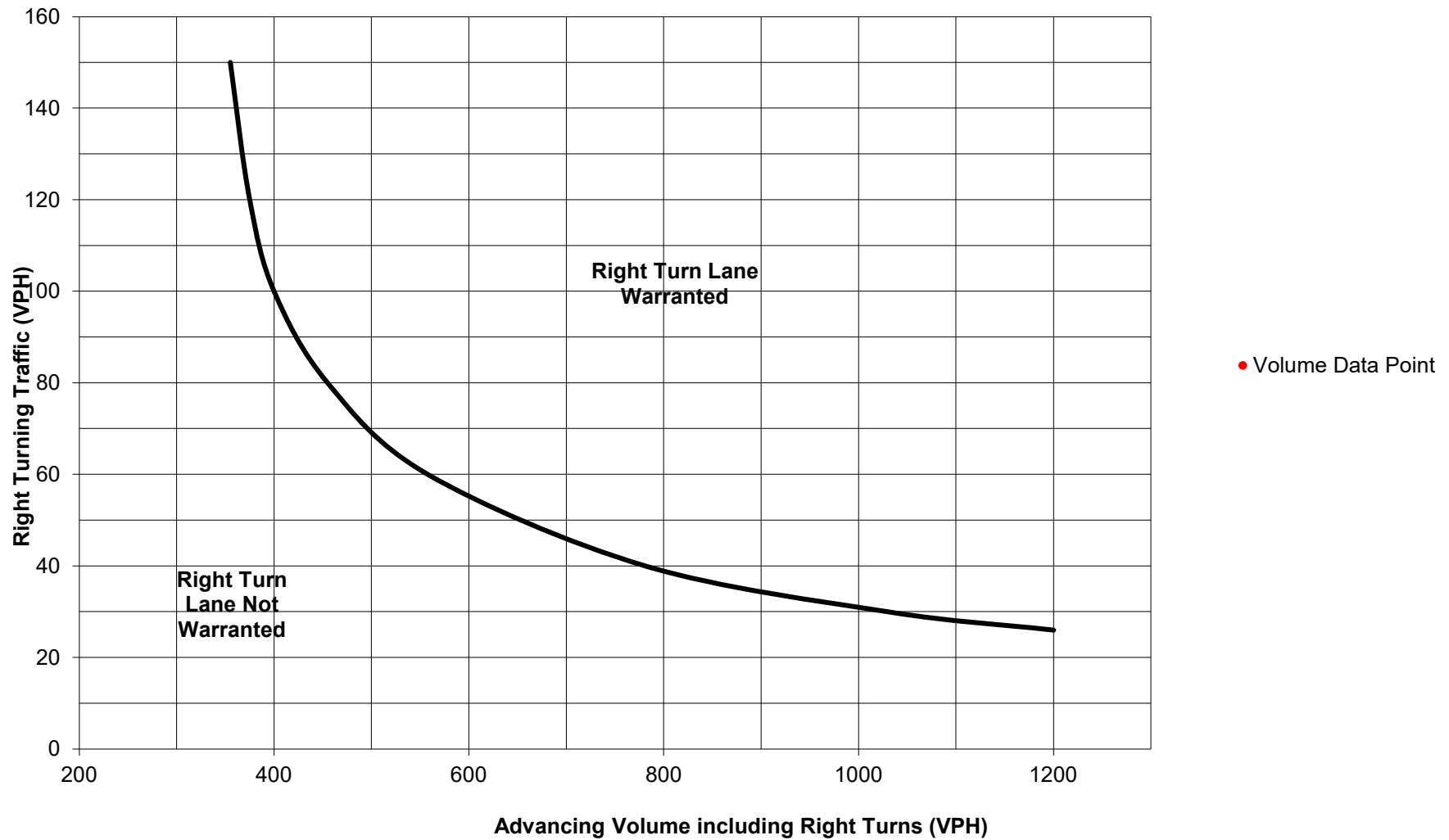
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 78 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																							
PennDOT Publication 46, Exhibit 11-6																																								
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="4">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume						High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																							
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	Turn Demand Volume																																							
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Signalized	A	A	B or C	B or C	B or C	B or C																																		
Unsignalized	A	A	C	B	B or C	B																																		
Right Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Right Turn Lane Storage Length: N/A Feet																																								
Additional Findings: N/A																																								
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**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Whitpain Township County: Montgomery County PennDOT Engineering District: 6	Analysis Date: 11/7/2023 Conducted By: MAG Checked By: Agency/Company Name: McMahon, A Bowman Company
Intersection & Approach Description: Centre Park Drive and Proposed Site Access A - Westbound Approach	
Analysis Period: 2030 With Development Design Hour: SAT Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 25 Type of Terrain: Rolling	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-			N/A
	Right	No			N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	42	0.0%	42
	Right	-	39	0.0%	39
Advancing Volume: 81 Right Turn Volume: 39					

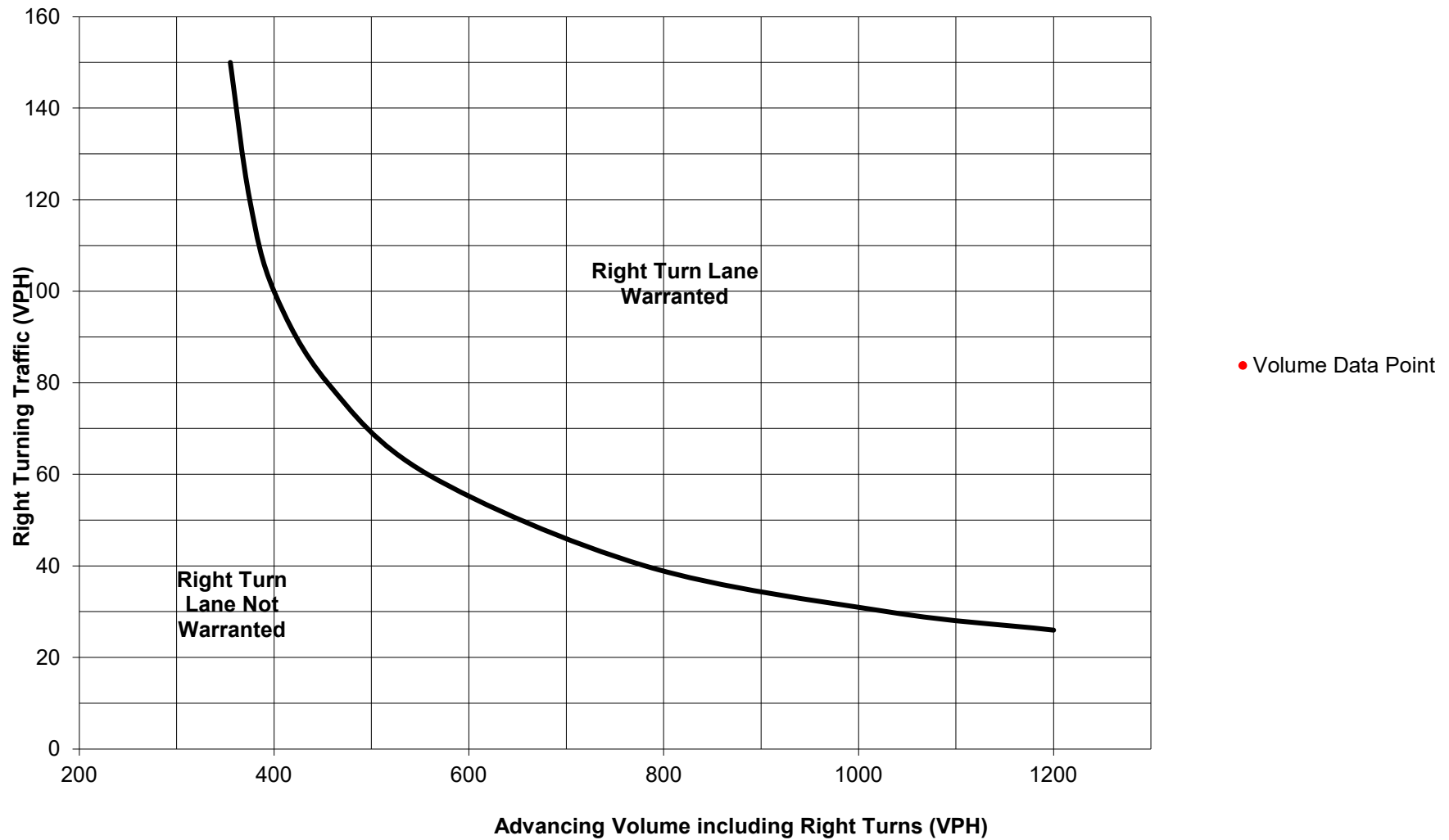
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 39 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																							
PennDOT Publication 46, Exhibit 11-6																																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="4" style="width: 20%;">Type of Traffic Control</th> <th colspan="6" style="background-color: #f5deb3;">Speed (MPH)</th> </tr> <tr> <th colspan="2" style="background-color: #f5deb3;">25-35</th> <th colspan="2" style="background-color: #f5deb3;">40-45</th> <th colspan="2" style="background-color: #f5deb3;">50-60</th> </tr> <tr> <th colspan="6" style="background-color: #f5deb3;">Turn Demand Volume</th> </tr> <tr> <th style="background-color: #f5deb3;">High</th> <th style="background-color: #f5deb3;">Low</th> <th style="background-color: #f5deb3;">High</th> <th style="background-color: #f5deb3;">Low</th> <th style="background-color: #f5deb3;">High</th> <th style="background-color: #f5deb3;">Low</th> </tr> <tr> <td style="text-align: center;">Signalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B or C</td> </tr> <tr> <td style="text-align: center;">Unsignalized</td> <td style="text-align: center;">A</td> <td style="text-align: center;">A</td> <td style="text-align: center;">C</td> <td style="text-align: center;">B</td> <td style="text-align: center;">B or C</td> <td style="text-align: center;">B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume						High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																							
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Unsignalized	A	A	C	B	B or C	B																																		
Right Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Right Turn Lane Storage Length: N/A Feet																																								
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**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Whitpain Township County: Montgomery County PennDOT Engineering District: 6	Analysis Date: 11/7/2023 Conducted By: MAG Checked By: Agency/Company Name: McMahon, A Bowman Company
Intersection & Approach Description: Arch Street Road and Proposed Site Access B - Northbound Approach	
Analysis Period: 2030 With Development Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 35 Type of Terrain: Rolling	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-			N/A
	Right	No			N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	259	3.5%	273
	Right	-	57	0.0%	57
Advancing Volume: 330 Right Turn Volume: 57					

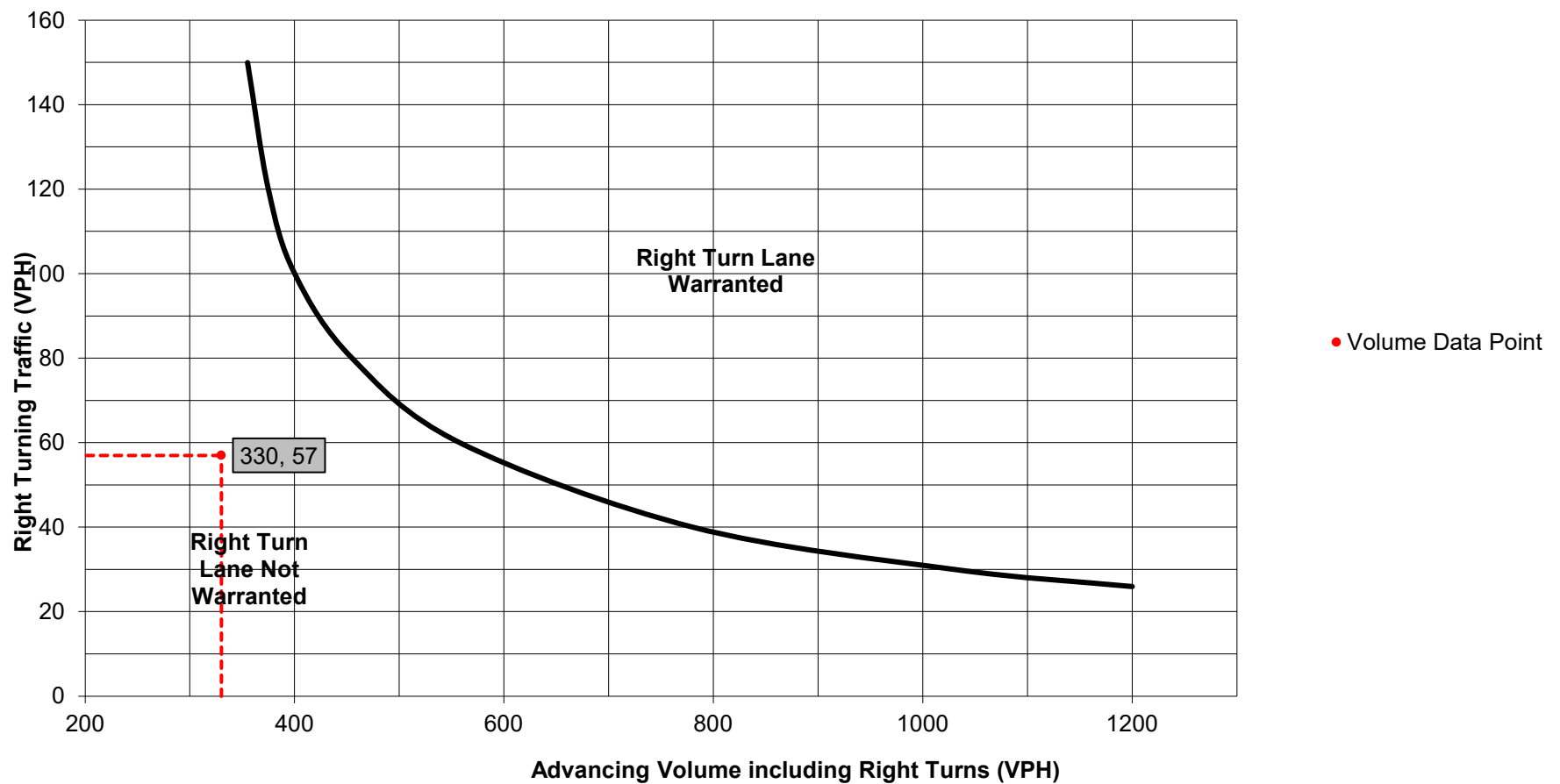
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 57 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2">40-45</th> <th colspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> </thead> <tbody> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </tbody> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
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**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



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Intersection & Approach Description: Arch Street Road and Proposed Site Access B - Northbound Approach	
Analysis Period: 2030 With Development Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 35 Type of Terrain: Rolling	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-			N/A
	Right	No			N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	302	3.0%	316
	Right	-	53	0.0%	53
Advancing Volume: 369 Right Turn Volume: 53					

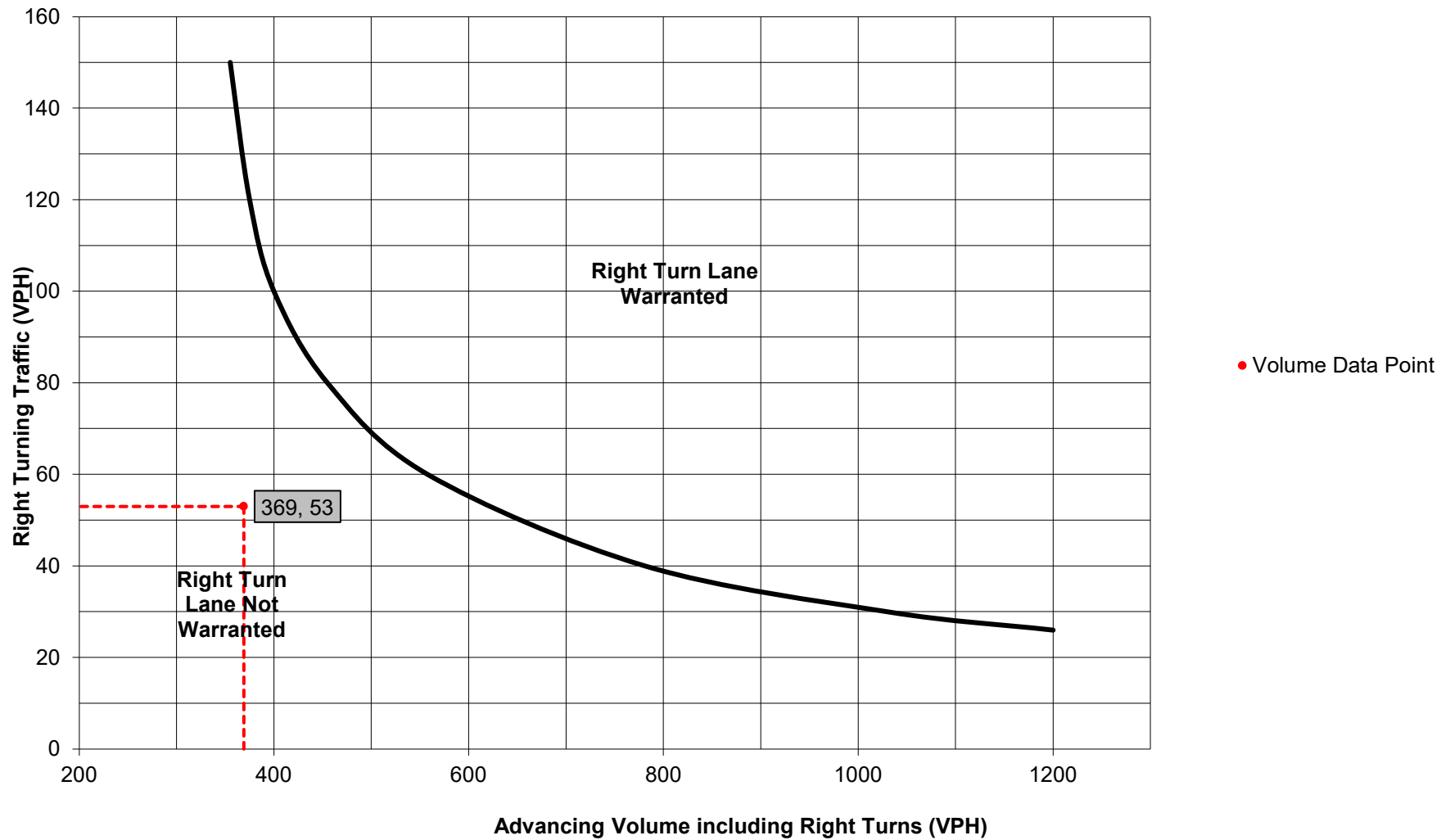
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 53 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
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**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Whitpain Township County: Montgomery County PennDOT Engineering District: 6	Analysis Date: 11/7/2023 Conducted By: MAG Checked By: Agency/Company Name: McMahon, A Bowman Company
Intersection & Approach Description: Arch Street Road and Proposed Site Access B - Northbound Approach	
Analysis Period: 2030 With Development Design Hour: SAT Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 35 Type of Terrain: Rolling	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	No			N/A
Opposing	Left	No			N/A
	Through	-			N/A
	Right	No			N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	296	1.0%	301
	Right	-	26	0.0%	26
Advancing Volume: 327 Right Turn Volume: 26					

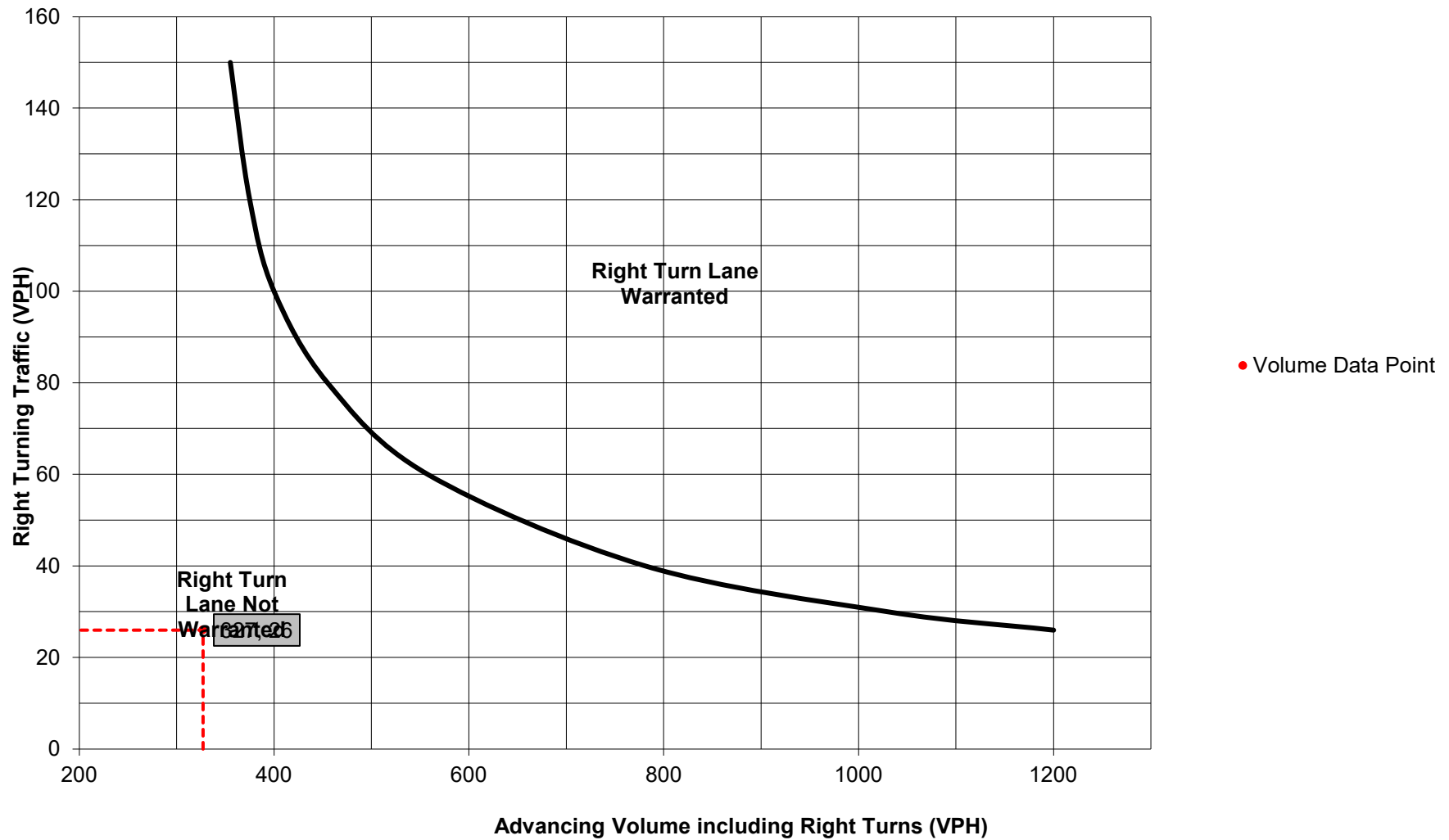
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 26 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																							
PennDOT Publication 46, Exhibit 11-6																																								
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Signalized	A	A	B or C	B or C	B or C	B or C																																		
Unsignalized	A	A	C	B	B or C	B																																		
Right Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Right Turn Lane Storage Length: N/A Feet																																								
Additional Findings: N/A																																								
Additional Comments / Justifications:																																								

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Whitpain Township County: Montgomery County PennDOT Engineering District: 6	Analysis Date: 11/7/2023 Conducted By: MAG Checked By: Agency/Company Name: McMahon, A Bowman Company
Intersection & Approach Description: Arch Street Road and Proposed Site Access B - Southbound Approach	
Analysis Period: 2030 With Development Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 35 Type of Terrain: Rolling	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	69	0.0%	69
	Through	-	294	3.0%	308
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	259	3.5%	273
	Right	Yes	57	0.0%	57
Advancing Volume: 377 Opposing Volume: 330 Left Turn Volume: 69 % Left Turns in Advancing Volume: 18.30%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A
Advancing Volume: N/A Right Turn Volume: N/A					

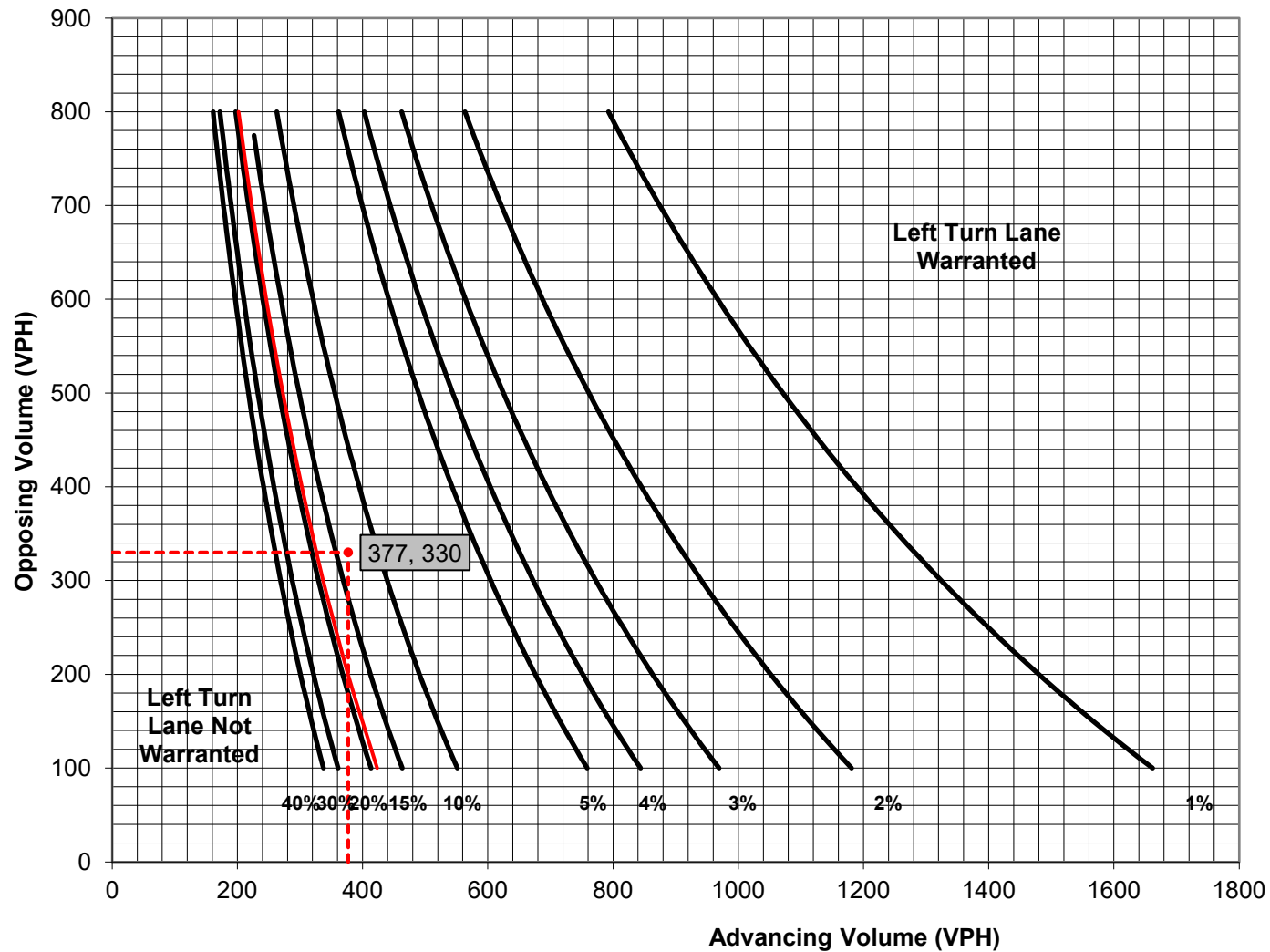
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 1 Warrant Met?: Yes	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 69 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: 1.0																																							
PennDOT Publication 46, Exhibit 11-6																																								
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	Turn Demand Volume																																							
	High	Low	High	Low	High	Low																																		
Signalized	A	A	B or C	B or C	B or C	B or C																																		
Unsignalized	A	A	C	B	B or C	B																																		
Left Turn Lane Storage Length, Condition A: 75 Feet Condition B: N/A Feet Condition C: N/A Feet Required Left Turn Lane Storage Length: 75 Feet																																								
Additional Findings: N/A																																								
Additional Comments / Justifications:																																								

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Whitpain Township	Analysis Date:	11/7/2023
County:	Montgomery County	Conducted By:	MAG
PennDOT Engineering District:	6	Checked By:	
		Agency/Company Name:	McMahon, A Bowman Company
Intersection & Approach Description: Arch Street Road and Proposed Site Access B - Southbound Approach			
Analysis Period:	2030 With Development	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	35		
Type of Terrain:	Rolling	Type of Analysis:	Left Turn Lane
		Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	64	0.0%	64
	Through	-	357	2.0%	368
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	302	0.0%	302
	Right	Yes	53	0.0%	53

Advancing Volume: 432
 Opposing Volume: 355
 Left Turn Volume: 64

% Left Turns in Advancing Volume: 14.81%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A

Advancing Volume: N/A
 Right Turn Volume: N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 1	Applicable Warrant Figure: N/A
Warrant Met?: Yes	Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	
Design Hour Volume of Turning Lane:	64	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: 1.0

PennDOT Publication 46, Exhibit 11-6

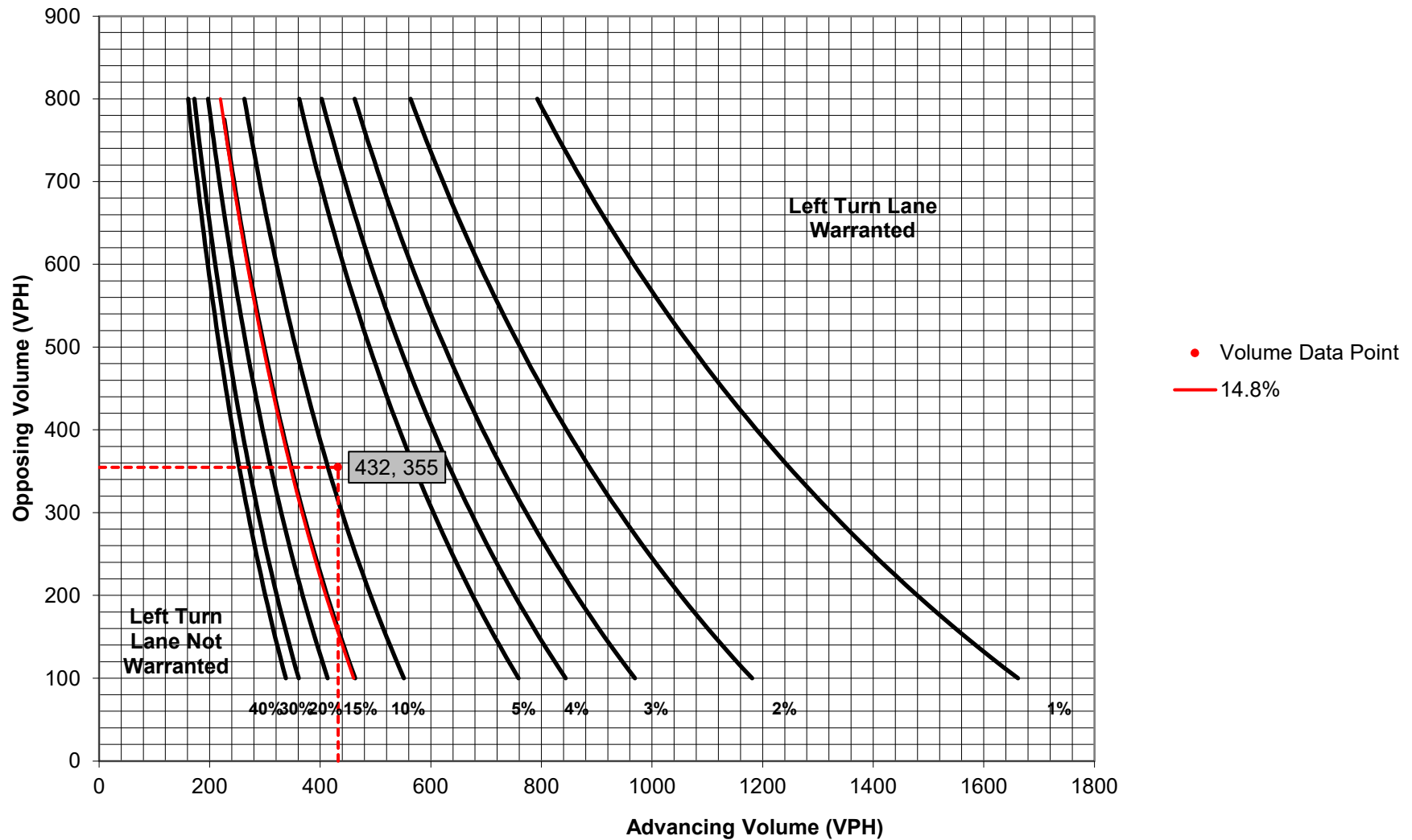
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A: **75** Feet
 Condition B: **N/A** Feet
 Condition C: **N/A** Feet
 Required Left Turn Lane Storage Length: **75** Feet

Additional Findings: **N/A**

Additional Comments / Justifications:

Figure 1. Warrant for left turn lanes on two-lane roadways
(speeds to 35 mph, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Whitpain Township County: Montgomery County PennDOT Engineering District: 6	Analysis Date: 11/7/2023 Conducted By: MAG Checked By: Agency/Company Name: McMahon, A Bowman Company
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Analysis Period: 2030 With Development Design Hour: SAT Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 35 Type of Terrain: Rolling	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	31	0.0%	31
	Through	-	293	0.0%	293
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	296	0.0%	296
	Right	Yes	26	0.0%	26
Advancing Volume: 324 Opposing Volume: 322 Left Turn Volume: 31 % Left Turns in Advancing Volume: 9.57%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No			N/A
	Through	-			N/A
	Right	-			N/A
Advancing Volume: N/A Right Turn Volume: N/A					

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 1 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 31 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
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 (L = % Left Turns in Advancing Volume)

