

## Left Turn Lane Warrants

### Input Fields

Left Turn Volume (vph)	47	Speed Limit (mph)	35
Advancing Volume (vph)	987	No. of through lanes	1
Opposing Volume (vph)	703	Percent Heavy Vehicles (decimal percent)	0.01



Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

# HCM 6th Signalized Intersection Summary

## 407: Dixie Hwy & Lower Hunters Trace

11/02/2021



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	273	244	202	1372	1753	351
Future Volume (veh/h)	273	244	202	1372	1753	351
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	297	265	220	1491	1905	382
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	357	318	432	3804	2061	405
Arrive On Green	0.20	0.20	0.24	0.75	0.96	0.94
Sat Flow, veh/h	1781	1585	1781	5274	4450	841
Grp Volume(v), veh/h	297	265	220	1491	1506	781
Grp Sat Flow(s), veh/h/ln	1781	1585	1781	1702	1702	1719
Q Serve(g_s), s	25.6	25.7	17.1	16.8	23.1	34.6
Cycle Q Clear(g_c), s	25.6	25.7	17.1	16.8	23.1	34.6
Prop In Lane	1.00	1.00	1.00			0.49
Lane Grp Cap(c), veh/h	357	318	432	3804	1638	827
V/C Ratio(X)	0.83	0.83	0.51	0.39	0.92	0.94
Avail Cap(c_a), veh/h	423	376	432	3804	1638	827
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.68	0.68
Uniform Delay (d), s/veh	61.4	61.4	52.4	7.3	2.0	2.9
Incr Delay (d2), s/veh	12.5	14.1	1.4	0.3	7.1	15.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.9	11.6	7.8	5.7	2.7	5.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	73.9	75.5	53.7	7.6	9.1	18.3
LnGrp LOS	E	E	D	A	A	B
Approach Vol, veh/h	562			1711	2287	
Approach Delay, s/veh	74.6			13.6	12.2	
Approach LOS	E			B	B	
Timer - Assigned Phs		2			5	6
Phs Duration (G+Y+Rc), s		123.9			42.9	81.0
Change Period (Y+Rc), s		* 6.5			* 6.5	5.8
Max Green Setting (Gmax), s		* 1.1E2			* 31	75.2
Max Q Clear Time (g_c+I1), s		0.0			19.1	0.0
Green Ext Time (p_c), s		0.0			0.8	0.0
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			20.4			
HCM 6th LOS			C			

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Project Name: 21-ZONE-0134

Date: 11/2/21



184 Apartments

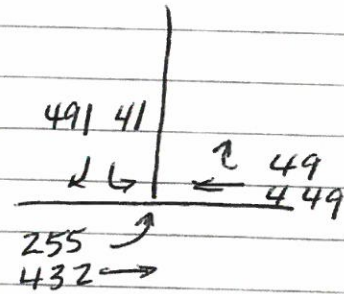
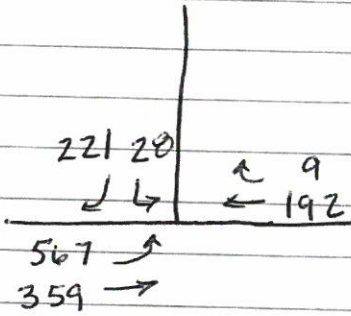
Use ITE 220

AM 80 19 in 61 out PM 100 63 in 37 out

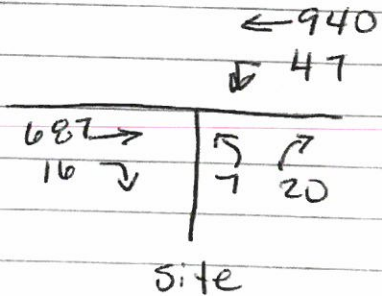
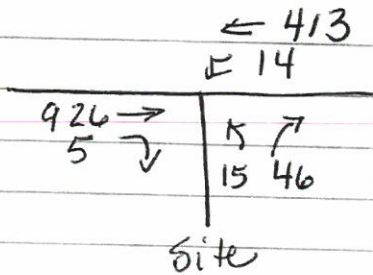
TMC from Traffic Engineering  
7-8am .88

1/10/2017

4:30-5:30 .96



Trip Dist 75% toward Dixie



# Louisville-Jefferson County KY Metro Government

Department of Public Works & Transportation  
Traffic Engineering & Operations Division

File Name : Lower Hunters Trace & Upper Hunters Trace  
Site Code :  
Start Date : 1/10/2017  
Page No : 1

Groups Printed- cars - trucks - pedal bikes

Start Time	Upper Hunters Trace From North					Lower Hunters Trace From East					Upper Hunters Trace From South					Lower Hunters Trace From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
07:00 AM	42	0	5	0	47	2	42	0	0	44	0	0	0	0	0	0	75	132	0	207	298
07:15 AM	71	0	5	0	76	1	65	0	0	66	0	0	0	0	0	0	89	161	0	250	392
07:30 AM	45	0	10	0	55	3	42	0	0	45	0	0	0	0	0	0	105	181	0	286	386
07:45 AM	63	0	8	0	71	3	43	0	0	46	0	0	0	0	0	0	90	93	0	183	300
<b>Total</b>	<b>221</b>	<b>0</b>	<b>28</b>	<b>0</b>	<b>249</b>	<b>9</b>	<b>192</b>	<b>0</b>	<b>0</b>	<b>201</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>359</b>	<b>567</b>	<b>0</b>	<b>926</b>	<b>1376</b>
08:00 AM	30	0	6	0	36	2	47	0	0	49	0	0	0	0	0	0	69	74	0	143	228
08:15 AM	33	0	7	0	40	2	39	0	0	41	0	0	0	0	0	0	70	86	0	156	237
08:30 AM	61	0	6	0	67	6	65	0	0	71	0	0	0	0	0	0	88	92	0	180	318
08:45 AM	46	0	12	0	58	1	58	0	0	59	0	0	0	0	0	0	68	99	0	167	284
<b>Total</b>	<b>170</b>	<b>0</b>	<b>31</b>	<b>0</b>	<b>201</b>	<b>11</b>	<b>209</b>	<b>0</b>	<b>0</b>	<b>220</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>295</b>	<b>351</b>	<b>0</b>	<b>646</b>	<b>1067</b>
09:00 AM	28	0	4	0	32	4	39	0	0	43	0	0	0	0	0	0	82	68	0	150	225
09:15 AM	37	0	9	0	46	5	51	0	0	56	0	0	0	0	0	0	59	43	0	102	204
09:30 AM	33	0	8	0	41	4	42	0	0	46	0	0	0	0	0	0	63	57	0	120	207
09:45 AM	37	0	5	0	42	5	36	0	0	41	0	0	0	0	0	0	58	52	0	110	193
<b>Total</b>	<b>135</b>	<b>0</b>	<b>26</b>	<b>0</b>	<b>161</b>	<b>18</b>	<b>168</b>	<b>0</b>	<b>0</b>	<b>186</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>262</b>	<b>220</b>	<b>0</b>	<b>482</b>	<b>829</b>
10:00 AM	26	0	5	0	31	5	48	0	0	53	0	0	0	0	0	0	56	51	0	107	191
10:15 AM	31	0	5	0	36	5	39	0	0	44	0	0	0	0	0	0	53	47	0	100	180
10:30 AM	49	0	6	0	55	3	38	0	0	41	0	0	0	0	0	0	60	44	0	104	200
10:45 AM	28	0	8	0	36	3	42	0	0	45	0	0	0	0	0	0	72	35	0	107	188
<b>Total</b>	<b>134</b>	<b>0</b>	<b>24</b>	<b>0</b>	<b>158</b>	<b>16</b>	<b>167</b>	<b>0</b>	<b>0</b>	<b>183</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>241</b>	<b>177</b>	<b>0</b>	<b>418</b>	<b>759</b>
11:00 AM	35	0	7	0	42	4	48	0	0	52	0	0	0	0	0	0	61	37	0	98	192
11:15 AM	41	0	8	0	49	6	50	0	0	56	0	0	0	0	0	0	64	37	0	101	206
11:30 AM	56	0	4	0	60	8	58	0	0	66	0	0	0	0	0	0	72	46	0	118	244
11:45 AM	52	0	7	0	59	8	51	0	0	59	0	0	0	0	0	0	55	44	0	99	217
<b>Total</b>	<b>184</b>	<b>0</b>	<b>26</b>	<b>0</b>	<b>210</b>	<b>26</b>	<b>207</b>	<b>0</b>	<b>0</b>	<b>233</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>252</b>	<b>164</b>	<b>0</b>	<b>416</b>	<b>859</b>
12:00 PM	41	0	7	0	48	9	67	0	0	76	0	0	0	0	0	0	69	43	0	112	236
12:15 PM	53	0	5	0	58	5	68	0	0	73	0	0	0	0	0	0	63	52	0	115	246
12:30 PM	56	0	4	0	60	6	74	0	0	80	0	0	0	0	0	0	70	59	0	129	269
12:45 PM	59	0	9	0	68	10	60	0	0	70	0	0	0	0	0	0	59	50	0	109	247
<b>Total</b>	<b>209</b>	<b>0</b>	<b>25</b>	<b>0</b>	<b>234</b>	<b>30</b>	<b>269</b>	<b>0</b>	<b>0</b>	<b>299</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>261</b>	<b>204</b>	<b>0</b>	<b>465</b>	<b>998</b>
01:00 PM	60	0	11	0	71	4	62	0	0	66	0	0	0	0	0	0	74	70	0	144	281
01:15 PM	48	0	6	0	54	6	76	0	0	82	0	0	0	0	0	0	65	48	0	113	249
01:30 PM	54	0	8	0	62	10	76	0	0	86	0	0	0	0	0	0	69	50	0	119	267

# Louisville-Jefferson County KY Metro Government

Department of Public Works & Transportation  
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Page No : 2

Groups Printed- cars - trucks - pedal bikes

Start Time	Upper Hunters Trace From North					Lower Hunters Trace From East					Upper Hunters Trace From South					Lower Hunters Trace From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
01:45 PM	59	0	8	0	67	6	68	0	0	74	0	0	0	0	0	0	68	54	0	122	263
<b>Total</b>	221	0	33	0	254	26	282	0	0	308	0	0	0	0	0	0	276	222	0	498	1060
02:00 PM	58	0	5	0	63	6	79	0	0	85	0	0	0	0	0	0	72	52	0	124	272
02:15 PM	70	0	7	0	77	14	70	0	0	84	0	0	0	0	0	0	75	65	0	140	301
02:30 PM	84	0	16	0	100	6	81	0	0	87	0	0	0	0	0	0	115	86	0	201	388
02:45 PM	88	0	14	0	102	14	76	0	0	90	0	0	0	0	0	0	91	69	0	160	352
<b>Total</b>	300	0	42	0	342	40	306	0	0	346	0	0	0	0	0	0	353	272	0	625	1313
03:00 PM	121	0	10	0	131	15	105	0	0	120	0	0	0	0	0	0	101	63	0	164	415
03:15 PM	82	0	12	0	94	13	96	0	0	109	0	0	0	0	0	0	78	75	0	153	356
03:30 PM	95	0	14	0	109	8	122	0	0	130	0	0	0	0	0	0	89	67	0	156	395
03:45 PM	82	0	9	0	91	9	106	0	0	115	0	0	0	0	0	0	102	78	0	180	386
<b>Total</b>	380	0	45	0	425	45	429	0	0	474	0	0	0	0	0	0	370	283	0	653	1552
04:00 PM	96	0	10	0	106	11	129	0	0	140	0	0	0	0	0	0	85	81	0	166	412
04:15 PM	86	0	12	0	98	15	104	0	0	119	0	0	0	0	0	0	100	68	0	168	385
04:30 PM	143	0	12	0	155	15	111	0	0	126	0	0	0	0	0	0	112	54	0	166	447
04:45 PM	94	0	9	0	103	9	109	0	0	118	0	0	0	0	0	0	125	70	0	195	416
<b>Total</b>	419	0	43	0	462	50	453	0	0	503	0	0	0	0	0	0	422	273	0	695	1660
05:00 PM	136	0	9	0	145	10	125	0	0	135	0	0	0	0	0	0	107	62	0	169	449
05:15 PM	118	0	11	0	129	15	104	0	0	119	0	0	0	0	0	0	88	69	0	157	405
05:30 PM	129	0	15	0	144	12	113	0	0	125	0	0	0	0	0	0	87	86	0	173	442
05:45 PM	103	0	10	0	113	10	117	0	0	127	0	0	0	0	0	0	117	53	0	170	410
<b>Total</b>	486	0	45	0	531	47	459	0	0	506	0	0	0	0	0	0	399	270	0	669	1706
06:00 PM	97	0	8	0	105	11	107	0	0	118	0	0	0	0	0	0	78	50	0	128	351
06:15 PM	86	0	14	0	100	7	106	0	0	113	0	0	0	0	0	0	86	56	0	142	355
06:30 PM	65	0	7	0	72	7	112	0	0	119	0	0	0	0	0	0	72	51	0	123	314
06:45 PM	72	0	16	0	88	8	88	0	0	96	0	0	0	0	0	0	89	58	0	147	331
<b>Total</b>	320	0	45	0	365	33	413	0	0	446	0	0	0	0	0	0	325	215	0	540	1351
<b>Grand Total</b>	3179	0	413	0	3592	351	3554	0	0	3905	0	0	0	0	0	0	3815	3218	0	7033	14530
Apprch %	88.5	0	11.5	0		9	91	0	0		0	0	0	0		0	54.2	45.8	0		
<b>Total %</b>	21.9	0	2.8	0	24.7	2.4	24.5	0	0	26.9	0	0	0	0	0	0	26.3	22.1	0	48.4	
cars	3112	0	401	0	3513	343	3483	0	0	3826	0	0	0	0	0	0	3746	3171	0	6917	14256
% cars	97.9	0	97.1	0	97.8	97.7	98	0	0	98	0	0	0	0	0	0	98.2	98.5	0	98.4	98.1
trucks	66	0	12	0	78	8	71	0	0	79	0	0	0	0	0	0	69	47	0	116	273
% trucks	2.1	0	2.9	0	2.2	2.3	2	0	0	2	0	0	0	0	0	0	1.8	1.5	0	1.6	1.9
pedal bikes	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% pedal bikes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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Department of Public Works & Transportation

Traffic Engineering & Operations Division

File Name : Lower Hunters Trace & Upper Hunters Trace

Site Code :

Start Date : 1/10/2017

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Start Time	Upper Hunters Trace From North					Lower Hunters Trace From East					Upper Hunters Trace From South					Lower Hunters Trace From West					Int. Total
	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	42	0	5	0	47	2	42	0	0	44	0	0	0	0	0	0	75	132	0	207	298
07:15 AM	71	0	5	0	76	1	65	0	0	66	0	0	0	0	0	0	89	161	0	250	392
07:30 AM	45	0	10	0	55	3	42	0	0	45	0	0	0	0	0	0	105	181	0	286	386
07:45 AM	63	0	8	0	71	3	43	0	0	46	0	0	0	0	0	0	90	93	0	183	300
Total Volume	221	0	28	0	249	9	192	0	0	201	0	0	0	0	0	0	359	567	0	926	1376
% App. Total	88.8	0	11.2	0		4.5	95.5	0	0		0	0	0	0		0	38.8	61.2	0		
PHF	.778	.000	.700	.000	.819	.750	.738	.000	.000	.761	.000	.000	.000	.000	.000	.000	.855	.783	.000	.809	.878

Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
01:00 PM	60	0	11	0	71	4	62	0	0	66	0	0	0	0	0	0	74	70	0	144	281
01:15 PM	48	0	6	0	54	6	76	0	0	82	0	0	0	0	0	0	65	48	0	113	249
01:30 PM	54	0	8	0	62	10	76	0	0	86	0	0	0	0	0	0	69	50	0	119	267
01:45 PM	59	0	8	0	67	6	68	0	0	74	0	0	0	0	0	0	68	54	0	122	263
Total Volume	221	0	33	0	254	26	282	0	0	308	0	0	0	0	0	0	276	222	0	498	1060
% App. Total	87	0	13	0		8.4	91.6	0	0		0	0	0	0		0	55.4	44.6	0		
PHF	.921	.000	.750	.000	.894	.650	.928	.000	.000	.895	.000	.000	.000	.000	.000	.000	.932	.793	.000	.865	.943

Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	143	0	12	0	155	15	111	0	0	126	0	0	0	0	0	0	112	54	0	166	447
04:45 PM	94	0	9	0	103	9	109	0	0	118	0	0	0	0	0	0	125	70	0	195	416
05:00 PM	136	0	9	0	145	10	125	0	0	135	0	0	0	0	0	0	107	62	0	169	449
05:15 PM	118	0	11	0	129	15	104	0	0	119	0	0	0	0	0	0	88	69	0	157	405
Total Volume	491	0	41	0	532	49	449	0	0	498	0	0	0	0	0	0	432	255	0	687	1717
% App. Total	92.3	0	7.7	0		9.8	90.2	0	0		0	0	0	0		0	62.9	37.1	0		
PHF	.858	.000	.854	.000	.858	.817	.898	.000	.000	.922	.000	.000	.000	.000	.000	.000	.864	.911	.000	.881	.956