

final report

July 31, 2020

Trip Generation and Distribution

Office Buildings
5220 Chamberlain Lane
Louisville, KY

Prepared for

Metro Public Works and Transportation Planning



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INTRODUCTION

The development plan for a site on Chamberlain Lane in Louisville, KY shows three buildings with 269,200 square feet. **Figure 1** displays a map of the site. Access to the development will be from an entrance on Chamberlain Lane and an emergency access driveway on Wolf Pen Branch Road. The purpose of this study is to demonstrate the trip generation and distribution of this site.



Figure 1. Site Map

EXISTING CONDITIONS

Chamberlain Lane is maintained by Louisville Metro with an estimated 2020 ADT of 10,500 vehicles per day between Glasgow Boulevard and Wolf Pen Branch Road as estimated by Metro Louisville from a 2018 count. The pavement is approximately 20 feet wide at the site. There are sidewalks between KY 22 and Glasgow Boulevard. There is a striped bike lane from KY 22 to Norton Commons Boulevard. The speed limit is 35 mph.

A.m. and p.m. peak hour turning movement counts for the intersection of Chamberlain Lane at Wolf Pen Branch Road were collected on Wednesday, May 16, 2018. The a.m. peak hour occurred between 7:30 and 8:30 and the p.m. peak hour occurred between 5:00 and 6:00 p.m. **Figure 2** illustrates the 2018 peak hour traffic volumes.

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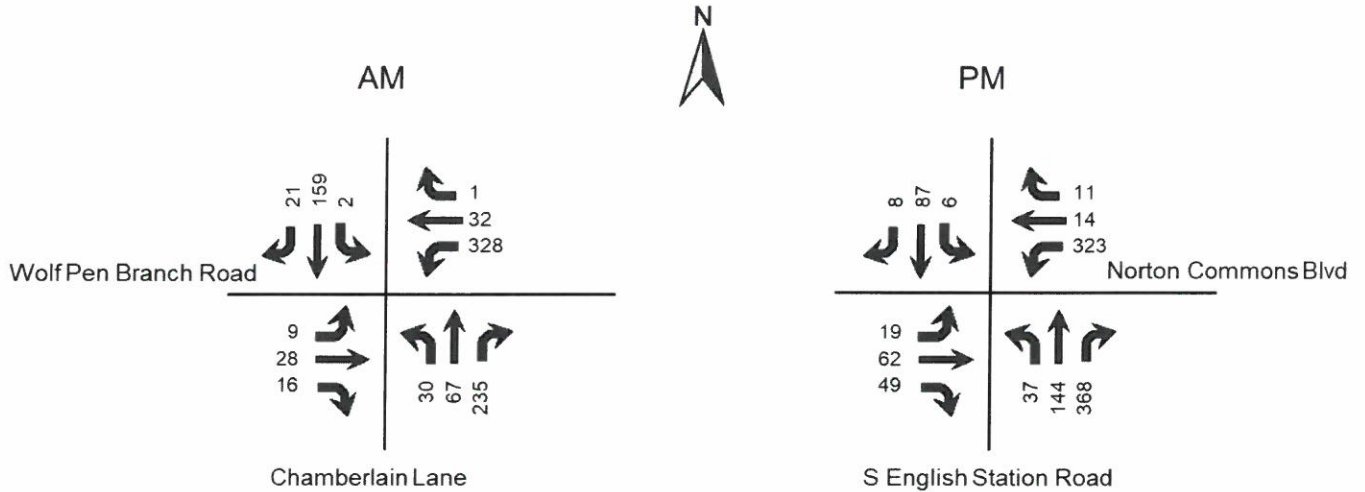


Figure 2. Existing Peak Hour Volumes

FUTURE CONDITIONS

The projected completion year for this project is 2022, so the analysis year is 2022. The volumes along Chamberlain Lane are projected to increase by 4 percent per year, based upon the historical growth from a 2013 count at the same intersection.

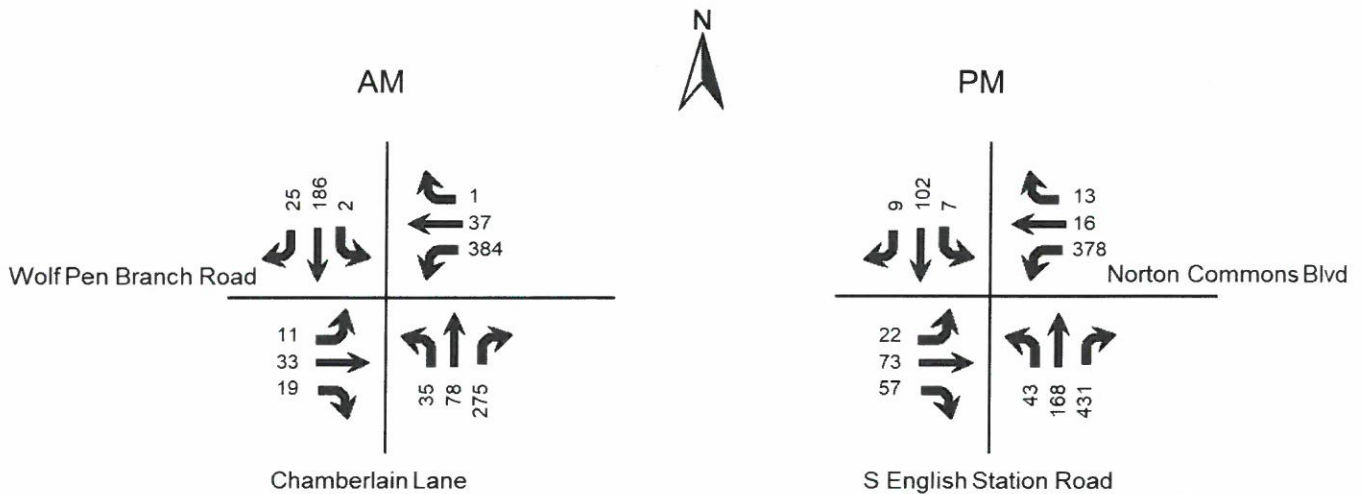


Figure 3. 2022 No Build Peak Hour Volumes

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TRIP GENERATION

The Institute of Transportation Engineers Trip Generation Manual, 10th Edition contains trip generation rates for a wide range of land uses. The land use of "General Office Building (710)" was reviewed and determined to be the best match. The trip generation results are listed in **Table 1**. The trips were assigned to the highway network with 85

percent to the south to KY 22, 10 percent to the north and 5 percent west on Wolf Pen Branch Road. **Figure 4** shows the trips generated by this development and distributed throughout the road network during the peak hours. **Figure 5** displays the individual turning movements for the year 2022 for the peak hours when the development is completed.

Table 1. Peak Hour Trips Generated by Site

Land Use	A.M. Peak Hour			P.M. Peak Hour		
	Trips	In	Out	Trips	In	Out
Office Space (269,200 sf)	280	241	39	292	47	245

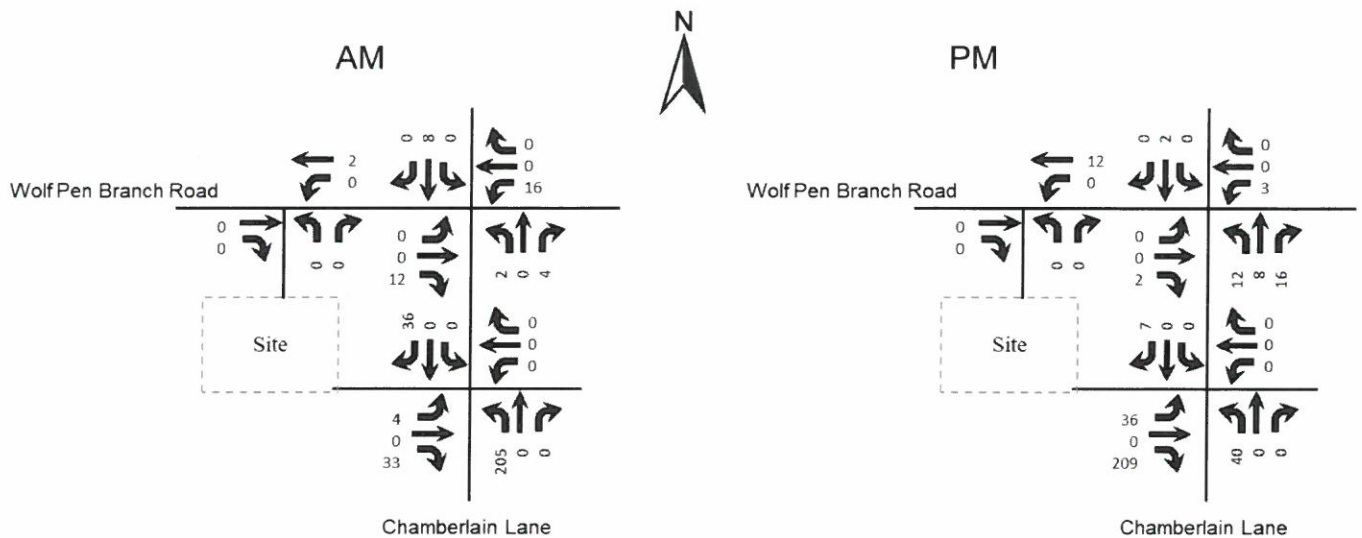


Figure 4. Peak Hour Trips Generated by Site

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APPENDIX

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Traffic Count
Metro Louisville
Traffic Engineering

File Name : Chamberlain Ln & Wolf Pen Branch Rd
 Site Code :
 Start Date : 5/16/2018
 Page No : 1

Groups Printed- Lights - Other Vehicles - Bicycles on Road - Pedestrians

Start Time	Chamberlain Ln From North				Norton Commons Blvd From East				Chamberlain Ln From South				Wolf Pen Branch Rd From West				Int. Total
	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	
07:00 AM	4	45	1	0	76	3	0	0	0	6	18	0	2	3	3	0	161
07:15 AM	0	37	2	0	75	10	0	0	4	12	36	0	2	6	6	0	190
07:30 AM	0	52	6	0	87	11	0	0	11	15	50	0	4	13	1	0	250
07:45 AM	1	44	8	0	86	9	1	0	3	15	72	0	3	4	7	0	253
Total	5	178	17	0	324	33	1	0	18	48	176	0	11	26	17	0	854
08:00 AM	1	32	2	0	75	4	0	0	10	20	54	0	1	6	8	0	213
08:15 AM	0	31	5	0	80	8	0	0	6	17	59	0	1	5	0	0	212
08:30 AM	0	36	3	0	81	4	1	0	4	7	55	0	0	4	4	0	199
08:45 AM	1	31	0	0	58	5	0	0	5	19	53	0	1	9	0	0	182
Total	2	130	10	0	294	21	1	0	25	63	221	0	3	24	12	0	806
09:00 AM	2	22	1	0	49	3	0	0	2	20	51	0	1	11	4	0	166
09:15 AM	2	15	2	0	54	1	0	2	4	19	54	0	0	10	5	0	168
09:30 AM	4	27	0	0	41	2	0	1	5	11	40	0	0	4	2	1	138
09:45 AM	1	32	1	0	52	2	1	0	7	16	54	0	0	1	4	0	171
Total	9	96	4	0	196	8	1	3	18	66	199	0	1	26	15	1	643
10:00 AM	1	13	3	0	53	2	0	0	5	16	44	0	1	2	5	0	145
10:15 AM	2	23	0	0	46	6	0	0	5	10	58	0	0	3	11	0	164
10:30 AM	2	23	0	0	52	2	1	0	10	9	34	0	0	3	8	0	144
10:45 AM	0	21	0	0	57	0	3	0	7	15	40	0	3	4	7	0	157
Total	5	80	3	0	208	10	4	0	27	50	176	0	4	12	31	0	610
11:00 AM	0	24	0	0	56	0	1	0	7	19	50	0	1	3	6	0	167
11:15 AM	1	30	2	0	49	2	1	0	4	16	39	0	0	2	5	0	151
11:30 AM	0	24	0	0	58	5	0	0	7	14	48	0	1	6	7	0	170
11:45 AM	0	19	0	0	62	5	2	0	4	19	54	0	0	7	5	0	177
Total	1	97	2	0	225	12	4	0	22	68	191	0	2	18	23	0	665
12:00 PM	1	24	1	0	57	0	3	0	17	15	47	0	2	6	11	0	184
12:15 PM	1	20	2	0	44	3	0	0	5	30	61	0	2	0	9	0	177
12:30 PM	0	24	1	0	40	3	2	0	7	28	70	0	1	4	7	0	187
12:45 PM	3	27	1	0	41	3	1	0	3	26	59	0	6	2	6	0	178
Total	5	95	5	0	182	9	6	0	32	99	237	0	11	12	33	0	726
01:00 PM	0	19	1	0	41	2	2	0	9	25	58	0	1	3	7	0	168
01:15 PM	2	18	0	0	37	2	0	0	0	15	71	0	0	0	9	0	154
01:30 PM	2	22	1	0	52	5	0	0	7	17	81	0	2	5	7	0	201
01:45 PM	4	13	0	0	42	3	0	0	10	15	60	0	3	3	11	0	164
Total	8	72	2	0	172	12	2	0	26	72	270	0	6	11	34	0	687
02:00 PM	1	17	1	0	57	2	2	0	10	25	59	0	2	3	6	0	185
02:15 PM	0	18	1	0	45	6	2	0	7	24	52	0	2	8	5	0	170
02:30 PM	0	21	2	0	43	3	0	0	9	27	69	0	1	2	12	0	189
02:45 PM	1	27	4	0	58	7	3	0	3	27	60	0	1	3	6	0	200
Total	2	83	8	0	203	18	7	0	29	103	240	0	6	16	29	0	744
03:00 PM	1	26	4	0	65	5	3	0	10	32	48	0	1	2	8	0	205
03:15 PM	1	30	4	0	46	0	0	0	6	27	73	0	0	4	8	0	199
03:30 PM	7	19	1	0	52	1	4	0	8	30	73	0	5	3	4	0	207
03:45 PM	8	16	1	0	54	5	1	0	14	23	73	0	4	5	6	0	210
Total	17	91	10	0	217	11	8	0	38	112	267	0	10	14	26	0	821
04:00 PM	0	24	2	0	50	2	1	0	9	32	90	0	4	9	6	0	229
04:15 PM	2	17	2	0	50	5	3	0	10	24	80	0	3	7	9	1	213

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File Name : Chamberlain Ln & Wolf Pen Branch Rd
 Site Code :
 Start Date : 5/16/2018
 Page No : 2

Groups Printed- Lights - Other Vehicles - Bicycles on Road - Pedestrians

Start Time	Chamberlain Ln From North				Norton Commons Blvd From East				Chamberlain Ln From South				Wolf Pen Branch Rd From West				Int	Total
	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn		
04:30 PM	0	16	0	0	63	3	3	0	11	37	81	0	8	6	10	0	238	
04:45 PM	4	21	3	0	62	4	2	0	10	39	86	0	7	12	9	0	259	
Total	6	78	7	0	225	14	9	0	40	132	337	0	22	34	34	1	939	
05:00 PM	4	23	7	0	105	4	2	0	12	24	83	0	6	11	13	0	294	
05:15 PM	1	16	0	0	74	4	1	0	6	40	102	0	3	16	10	0	273	
05:30 PM	0	30	0	0	77	4	5	0	9	40	95	0	5	18	12	0	295	
05:45 PM	1	18	1	0	67	2	3	0	10	40	88	0	5	17	14	0	266	
Total	6	87	8	0	323	14	11	0	37	144	368	0	19	62	49	0	1128	
06:00 PM	7	32	0	0	58	5	5	0	7	41	69	0	11	1	6	0	242	
06:15 PM	5	28	0	0	56	0	0	0	8	38	73	0	5	5	9	0	227	
06:30 PM	8	14	2	0	48	1	0	0	7	26	60	0	4	6	8	0	184	
06:45 PM	5	25	1	0	38	4	1	0	6	23	57	0	3	2	3	0	168	
Total	25	99	3	0	200	10	6	0	28	128	259	0	23	14	26	0	821	
Grand Total	91	1186	79	0	2769	172	60	3	340	1085	2941	0	118	269	329	2	9444	
Apprch %	6.7	87.5	5.8	0	92.2	5.7	2	0.1	7.8	24.9	67.4	0	16.4	37.5	45.8	0.3		
Total %	1	12.6	0.8	0	29.3	1.8	0.6	0	3.6	11.5	31.1	0	1.2	2.8	3.5	0		
Lights	86	1157	70	0	2750	170	55	0	336	1053	2900	0	113	261	319	0	9270	
% Lights	94.5	97.6	88.6	0	99.3	98.8	91.7	0	98.8	97.1	98.6	0	95.8	97	97	0	98.2	
Other Vehicles	3	28	7	0	16	2	4	0	4	32	41	0	4	5	10	0	156	
% Other Vehicles	3.3	2.4	8.9	0	0.6	1.2	6.7	0	1.2	2.9	1.4	0	3.4	1.9	3	0	1.7	
Bicycles on Road	2	1	2	0	3	0	1	0	0	0	0	0	1	3	0	0	13	
% Bicycles on Road	2.2	0.1	2.5	0	0.1	0	1.7	0	0	0	0	0	0.8	1.1	0	0	0.1	
Pedestrians	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	2	5	
% Pedestrians	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	100	0.1	

Start Time	Chamberlain Ln From North					Norton Commons Blvd From East					Chamberlain Ln From South					Wolf Pen Branch Rd From West					Int	Total
	Left	Thru	Right	UTurn	App Total	Left	Thru	Right	UTurn	App Total	Left	Thru	Right	UTurn	App Total	Left	Thru	Right	UTurn	App Total		
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																						
Peak Hour for Entire Intersection Begins at 07:30 AM																						
07:30 AM	0	52	6	0	58	87	11	0	0	98	11	15	50	0	76	4	13	1	0	18	250	
07:45 AM	1	44	8	0	53	86	9	1	0	96	3	15	72	0	90	3	4	7	0	14	253	
08:00 AM	1	32	2	0	35	75	4	0	0	79	10	20	54	0	84	1	6	8	0	15	213	
08:15 AM	0	31	5	0	36	80	8	0	0	88	6	17	59	0	82	1	5	0	0	6	212	
Total Volume	2	159	21	0	182	328	32	1	0	361	30	67	235	0	332	9	28	16	0	53	928	
% App. Total	1.1	87.4	11.5	0	90.9	8.9	0.3	0	9	20.2	70.8	0	17	52.8	30.2	0						
PHF	.500	.764	.656	.000	.784	.943	.727	.250	.000	.921	.682	.838	.816	.000	.922	.563	.538	.500	.000	.736	.917	

Peak Hour Analysis From 12:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

05:00 PM	4	23	7	0	34	105	4	2	0	111	12	24	83	0	119	6	11	13	0	30	294
05:15 PM	1	16	0	0	17	74	4	1	0	79	6	40	102	0	148	3	16	10	0	29	273
05:30 PM	0	30	0	0	30	77	4	5	0	86	9	40	95	0	144	5	18	12	0	35	295
05:45 PM	1	18	1	0	20	67	2	3	0	72	10	40	88	0	138	5	17	14	0	36	266
Total Volume	6	87	8	0	101	323	14	11	0	348	37	144	368	0	549	19	62	49	0	130	1128
% App. Total	5.9	86.1	7.9	0	92.8	4	3.2	0	6.7	26.2	67	0	14.6	47.7	37.7	0					
PHF	.375	.725	.286	.000	.743	.769	.875	.550	.000	.784	.771	.900	.902	.000	.927	.792	.861	.875	.000	.903	.956

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