

# Traffic Impact Study Report

## XEBEC Tucker Station

Louisville, Jefferson Co., KY

### Prepared For:

Sabak, Wilson & Lingo, Inc.

### Prepared By:



adam kirk engineering

Adam Kirk Engineering  
137 McClelland Springs Drive  
Georgetown, KY 40324  
859.421.2567  
[adam@adamkirkpe.com](mailto:adam@adamkirkpe.com)

June 13, 2022

## TABLE OF CONTENTS

INTRODUCTION .....	1
Existing Conditions .....	1
Traffic Forecasting .....	3
Trip Generation .....	3
Trip Distribution Methodology .....	3
Capacity Analysis.....	15
Turn lane warrant analysis.....	15
Recommendations .....	15

## LIST OF FIGURES

Figure 1: Study Area .....	1
Figure 2: AM Peak Hour Turning Movement Counts .....	1
Figure 3: PM Peak Hour Turning Movement Counts .....	2
Figure 4: AM Peak 2023 No Build Traffic Volumes.....	4
Figure 5: PM Peak 2023 No Build Traffic Volumes.....	5
Figure 6: AM Peak 2033 No Build Traffic Volumes.....	6
Figure 7: PM Peak 2033 No Build Traffic Volumes.....	7
Figure 8: Area-wide Origin-Destination Trip Distribution.....	8
Figure 9: Entering Trip Distribution .....	9
Figure 10: Exiting Trip Distribution.....	10
Figure 11: AM Peak Hour 2023 Build .....	11
Figure 12: PM Peak Hour 2023 Build .....	12
Figure 13: AM Peak Hour 2033 Build .....	13
Figure 14: PM Peak Hour 2033 Build .....	14

## APPENDICES

Appendix A: Development Plan
Appendix B: Traffic Data
Appendix C: Trip Generation Data
Appendix D: KYTC Traffic Forecasting Report
Appendix E: Capacity Analysis Output
Appendix F: Auxilliary Turn Lane Warrants

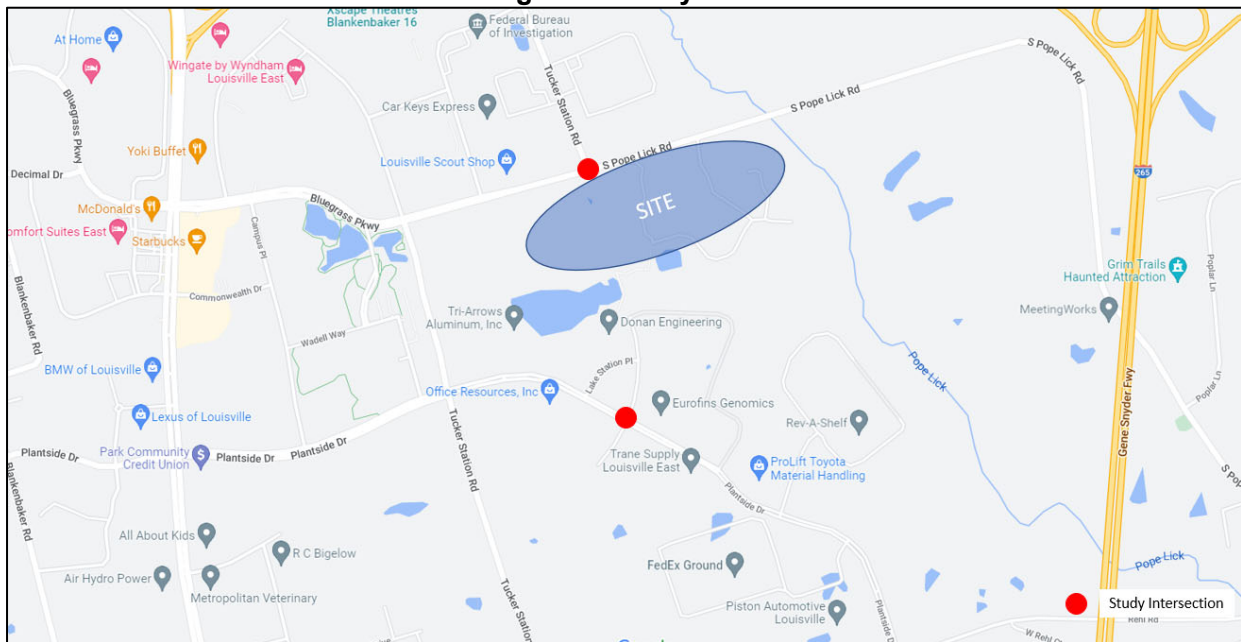
## INTRODUCTION

The purpose of this document is to summarize the scope and terms for a Traffic Impact Study of a proposed industrial development in Jefferson County, KY. The development is to be located on the south side of S. Pope Lick Road and Tucker Station Road and is to consist of 5 warehousing buildings totaling 1,010,800 s.f of gross floor area. Five access points along Tucker Station Road and S. Pope Lick Road is proposed with a connection to the south to Plantside Drive via Schutte Station Place. This study will evaluate the proposed access points, as well as the intersections listed below. **Figure 1** shows the proposed site and study intersections. **Appendix A** contains a site plan of the proposed development.

- Schutte Station at Plantside Drive
- Tucker Station at S. Pope Lick Road

The scope of this study is based on a review of existing travel patterns in the area and discussions with Louisville Metro Planning and Design Services.

**Figure 1: Study Area**



## EXISTING CONDITIONS

S. Pope Lick Road is a two-lane roadway with a posted speed of 35 mph. The intersections of S. Pope Lick Road at Tucker Station Road is a T' intersection with all-way stop control. No Auxiliary turn lanes are present at the intersection.

AM and PM turning movement counts were collected on Thursday May 19, 2022 between 7-9 a.m. and 4-6 p.m. at the study intersections. Full turn movement count data is provided in **Appendix B**. AM and PM peak hour traffic volumes are summarized in **Figures 2 and 3**.

Figure 2: AM Peak Hour Turning Movement Counts

AM PEAK HOUR

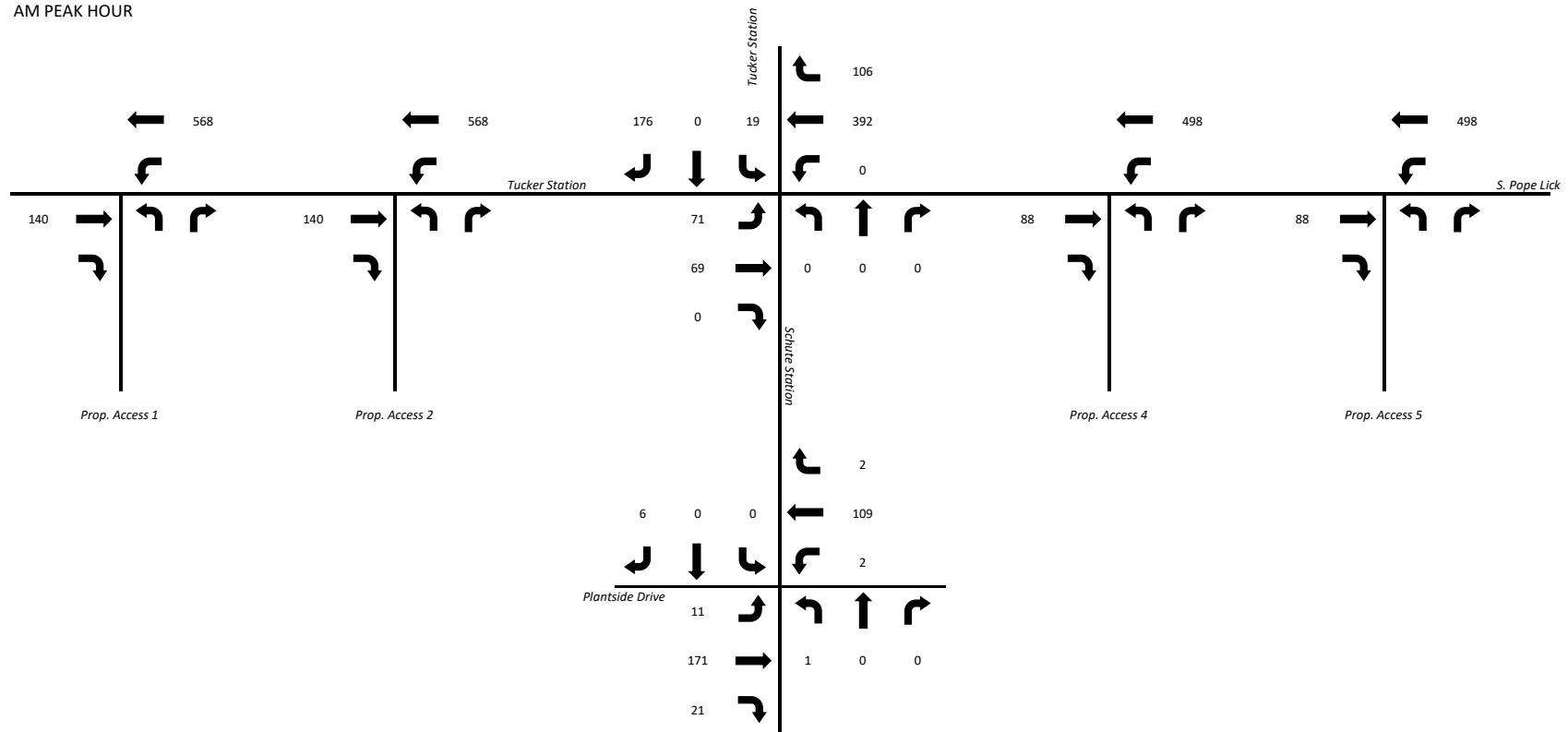
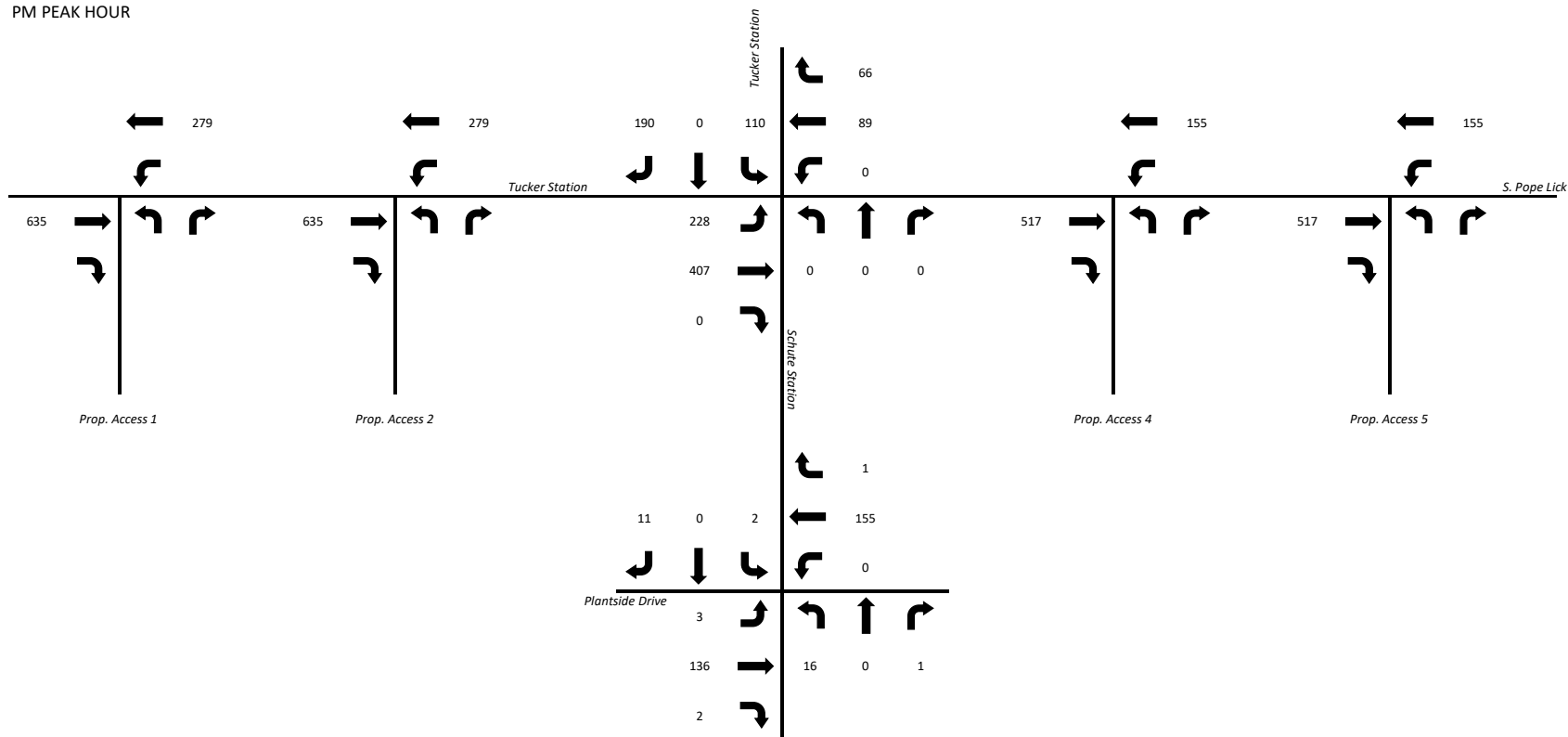


Figure 3: PM Peak Hour Turning Movement Counts

PM PEAK HOUR



## TRAFFIC FORECASTING

Historic traffic counts were not available for S. Pope Lick Road or Tucker Station Road; however, counts were available for Bluegrass Parkway at station 056L91, which is immediately west of the study area. Based on this data, historic traffic patterns indicate a growth rate of 0.43 percent per year. An average growth rate of 0.5% was used for projecting traffic volumes to the year of opening, 2023 and the design year of 2033. **Appendix D** contains the historic traffic data and output from the KYTC Traffic forecasting spreadsheet. AM and PM peak hour volumes for 2023 No Build and 2033 No Build traffic volumes are summarized in **Figures 4, 5, 6 and 7**.

## TRIP GENERATION

Trip Generation was conducted in accordance with the ITE Trip Generation Web Based App, 11<sup>th</sup> edition. Trip Generation utilized **ITE Land Use Code 130 Industrial Park**. This land use provides a higher trip generation than strictly warehousing or distribution land uses in the event some manufacturing or other industrial use was housed in the development. Based on this land use and the 1M s.f. gross floor area, the development is expected to generate 414 and 405 trips per hour during the AM and PM peak hours of the development. **Table 1** summarizes the trip generation for each proposed tract and **Appendix C** contains output from the ITE Trip Generation Manual.

**Table 1: Trip Generation**

Land Use	ITE Code	Ind. Var.	Units	AM Peak			Saturday		
				Total	Entering	Exiting	Total	Entering	Exiting
Total				414	359	55	405	85	320
Tract 1	130	196.5	units	81	70	11	79	17	62
Tract 2	130	210	units	86	75	11	84	18	66
Tract 3	130	146.9	units	60	52	8	59	12	47
Tract 4	130	146.9	units	60	52	8	59	12	47
Tract 5	130	310.5	units	127	110	17	124	26	98

## TRIP DISTRIBUTION METHODOLOGY

Generated trips were distributed onto the roadway network based on recorded travel patterns on Commerce Parkway and the proposed configuration of the development roadway layout. Total roadway volumes at the approaches to the study area were determined and trips distributed consistently with these total volumes. **Figure 8** shows the area wide trip distributions. The final entering and exiting trip distribution is shown in **Figures 9 and 10**. **Figures 11, 12, 13 and 14** show the final build traffic volumes for AM and PM peak hour turning movement for 2023 and 2033.

Figure 4: AM Peak 2023 No Build Traffic Volumes

AM PEAK HOUR

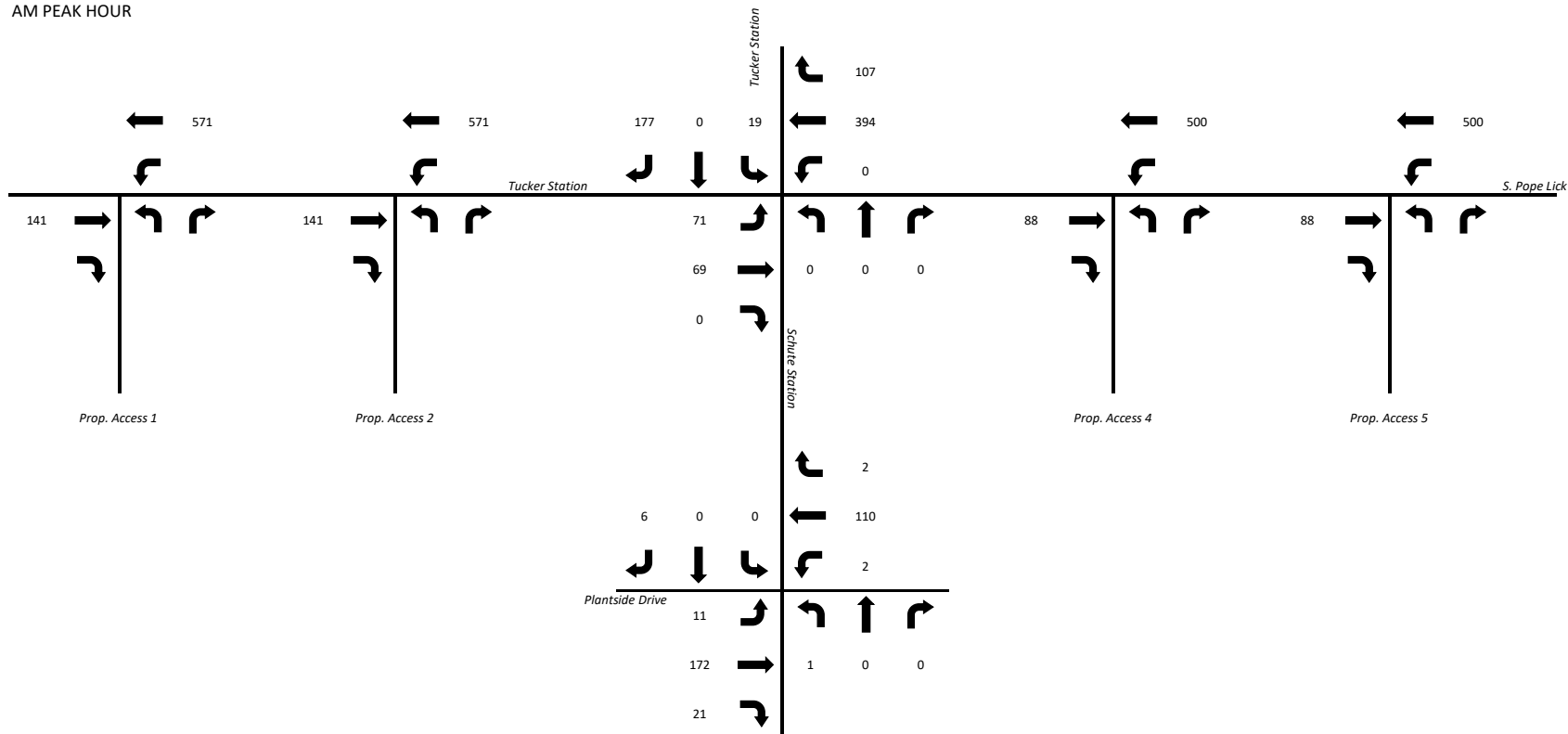


Figure 5: PM Peak 2023 No Build Traffic Volumes

PM PEAK HOUR

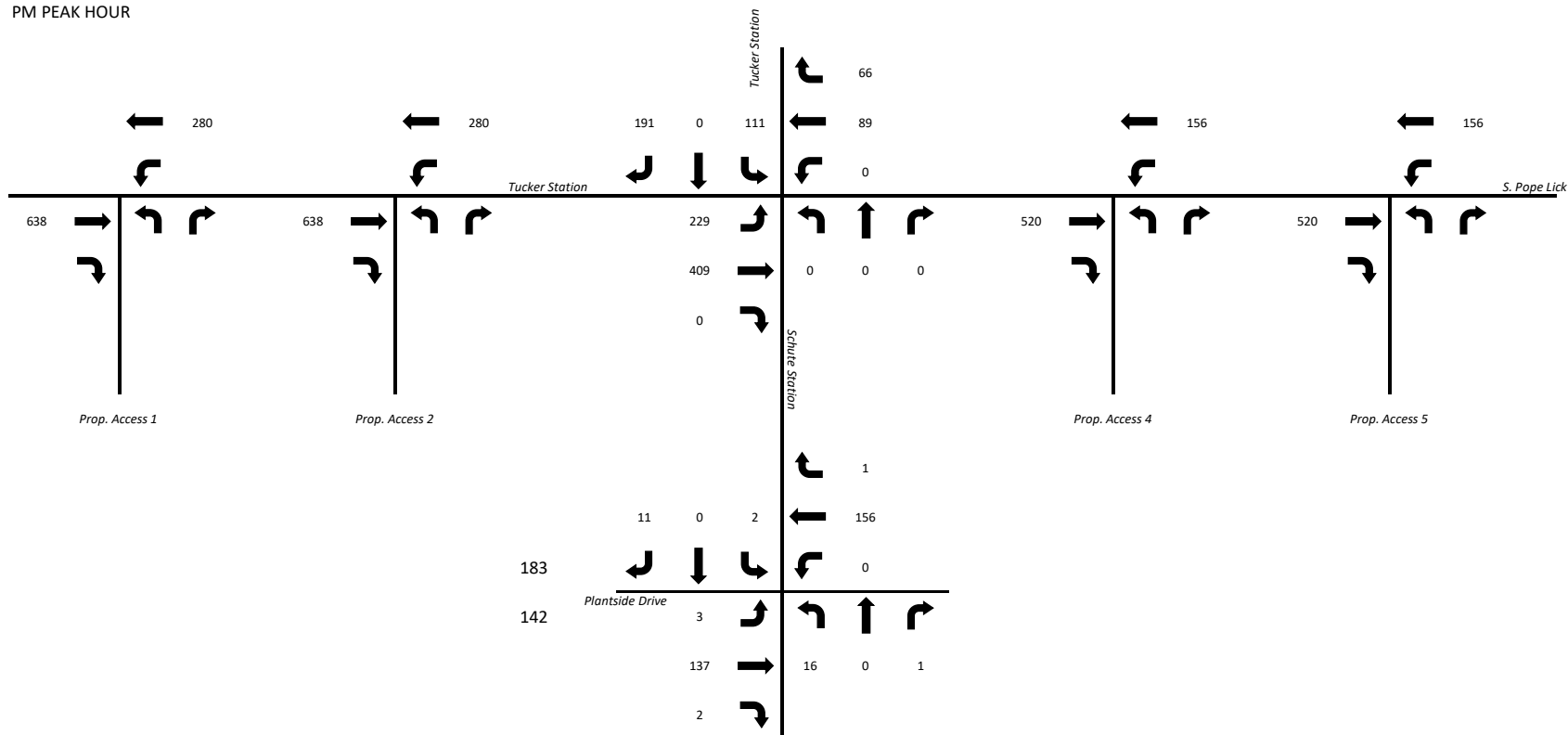




Figure 6: AM Peak 2033 No Build Traffic Volumes

AM PEAK HOUR

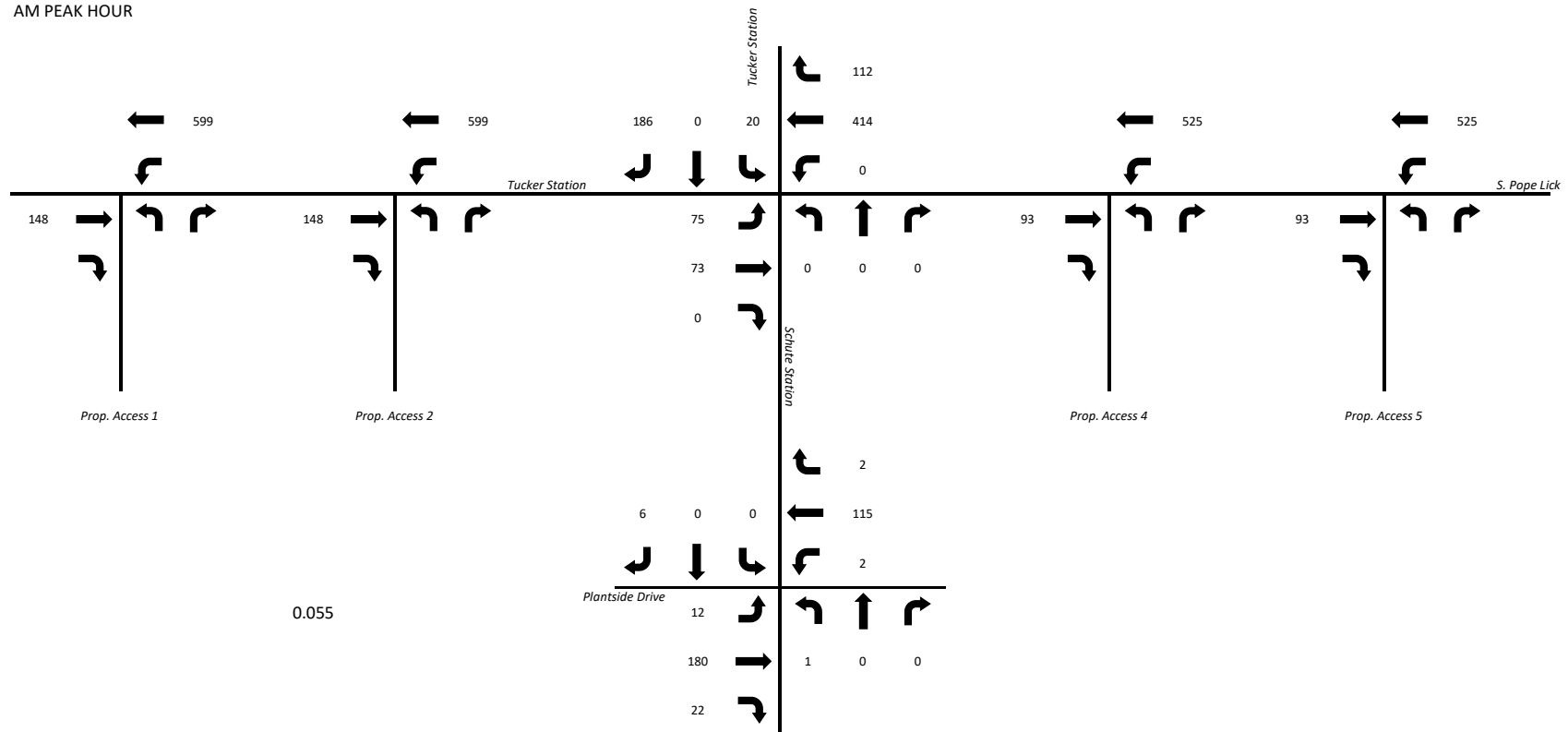
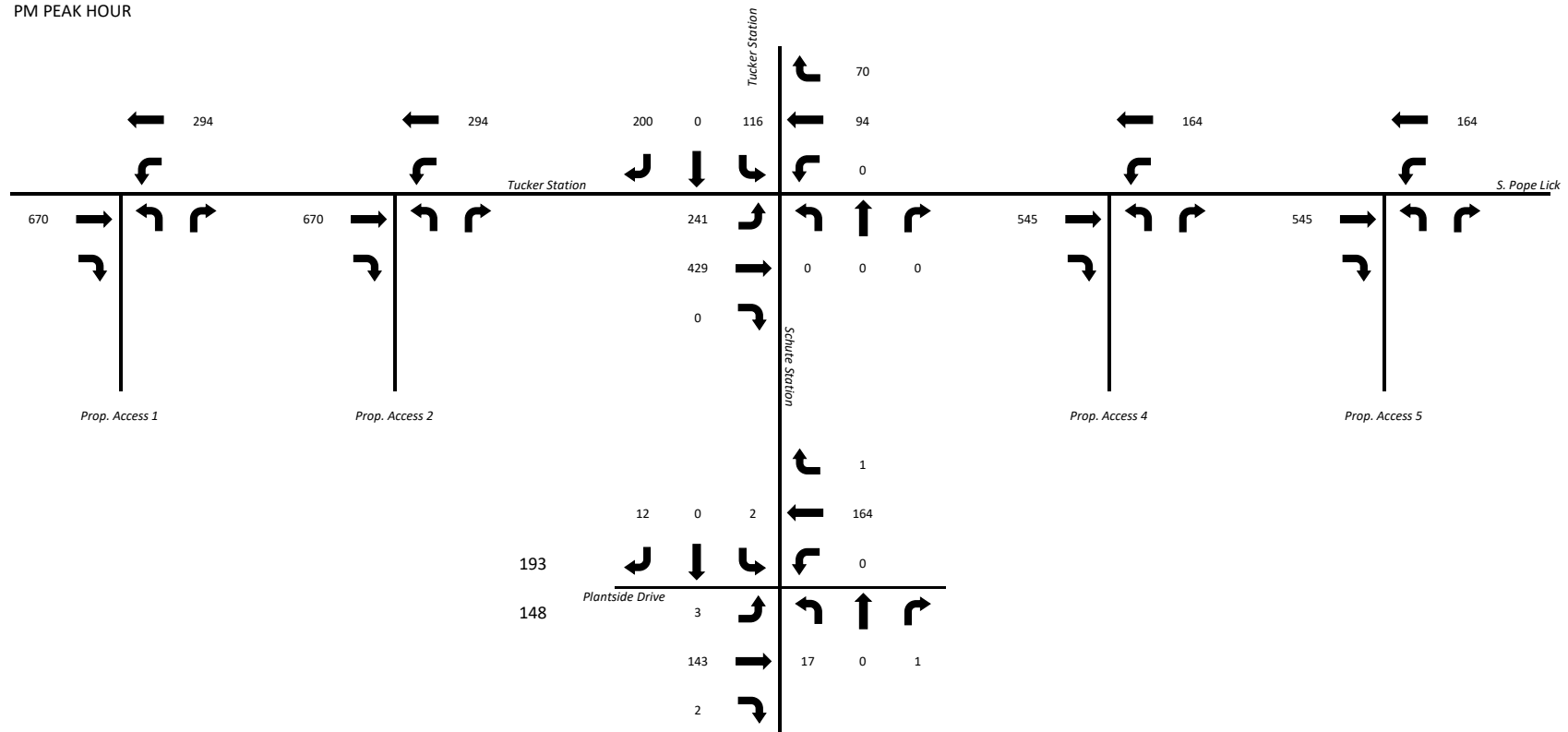


Figure 7: PM Peak 2033 No Build Traffic Volumes

PM PEAK HOUR



**Figure 8: Area-wide Origin-Destination Trip Distribution**



Figure 9: Entering Trip Distribution

Entering

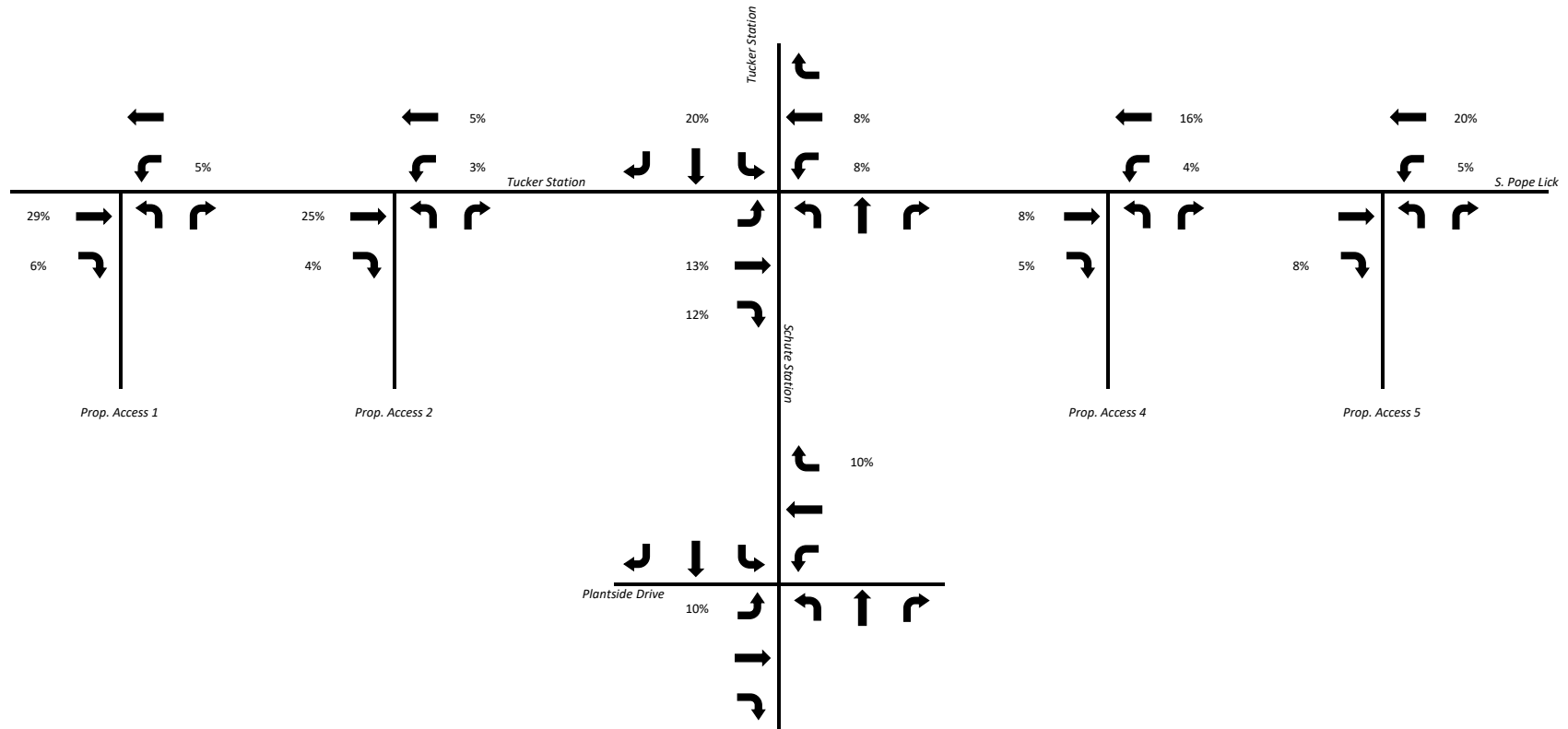


Figure 10: Exiting Trip Distribution

Exiting

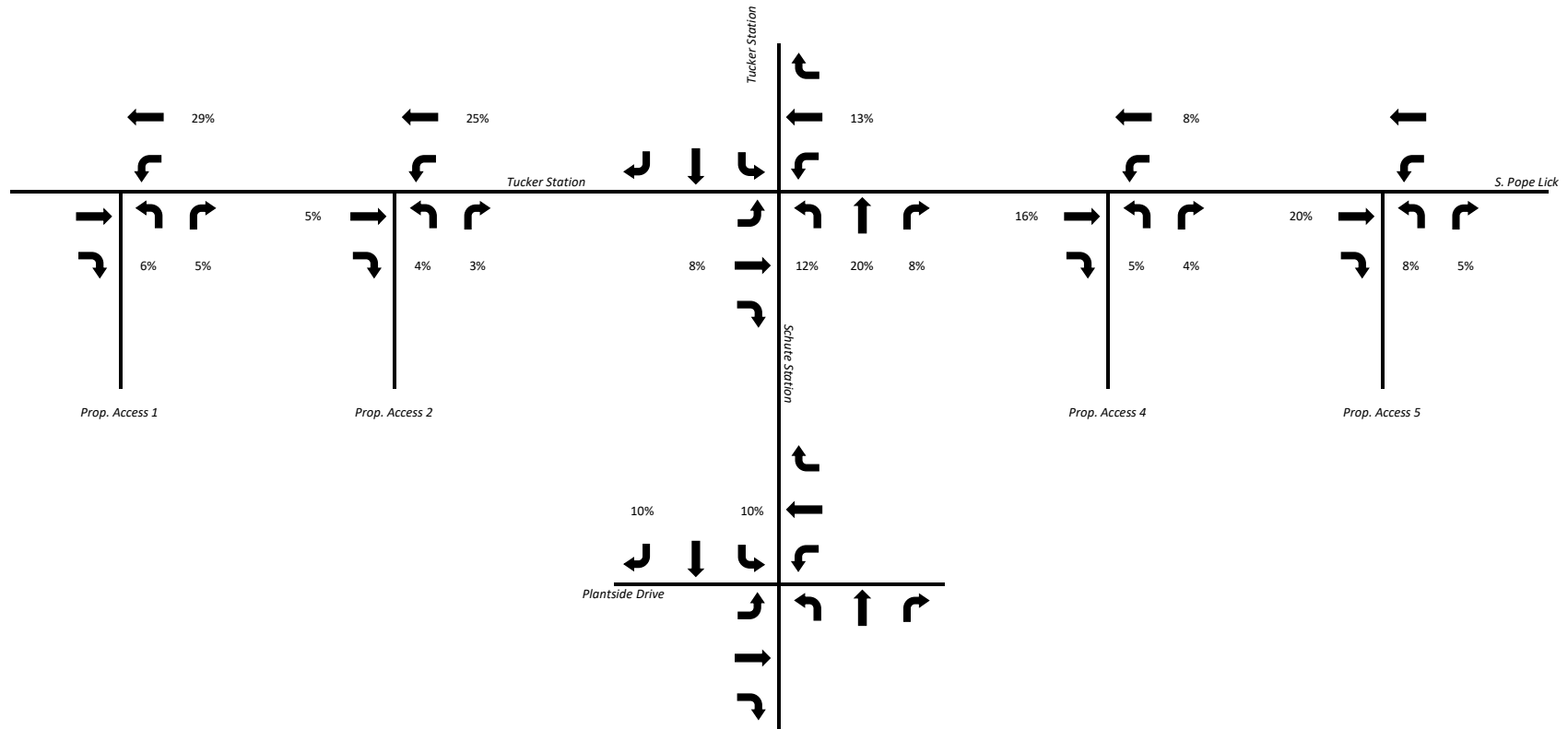


Figure 11: AM Peak Hour 2023 Build

2023 Build AM PEAK HOUR

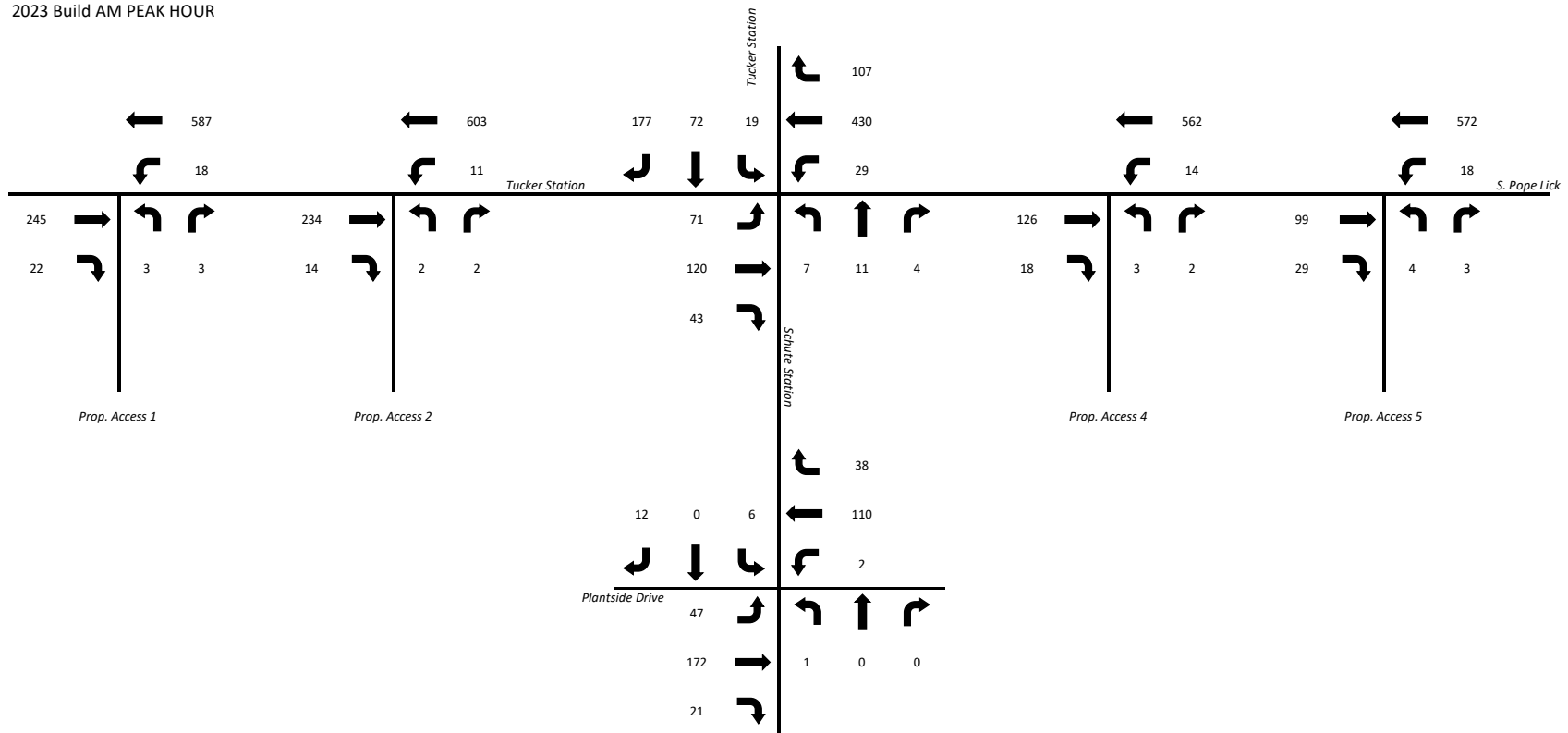


Figure 12: PM Peak Hour 2023 Build

2023 Build PM PEAK HOUR

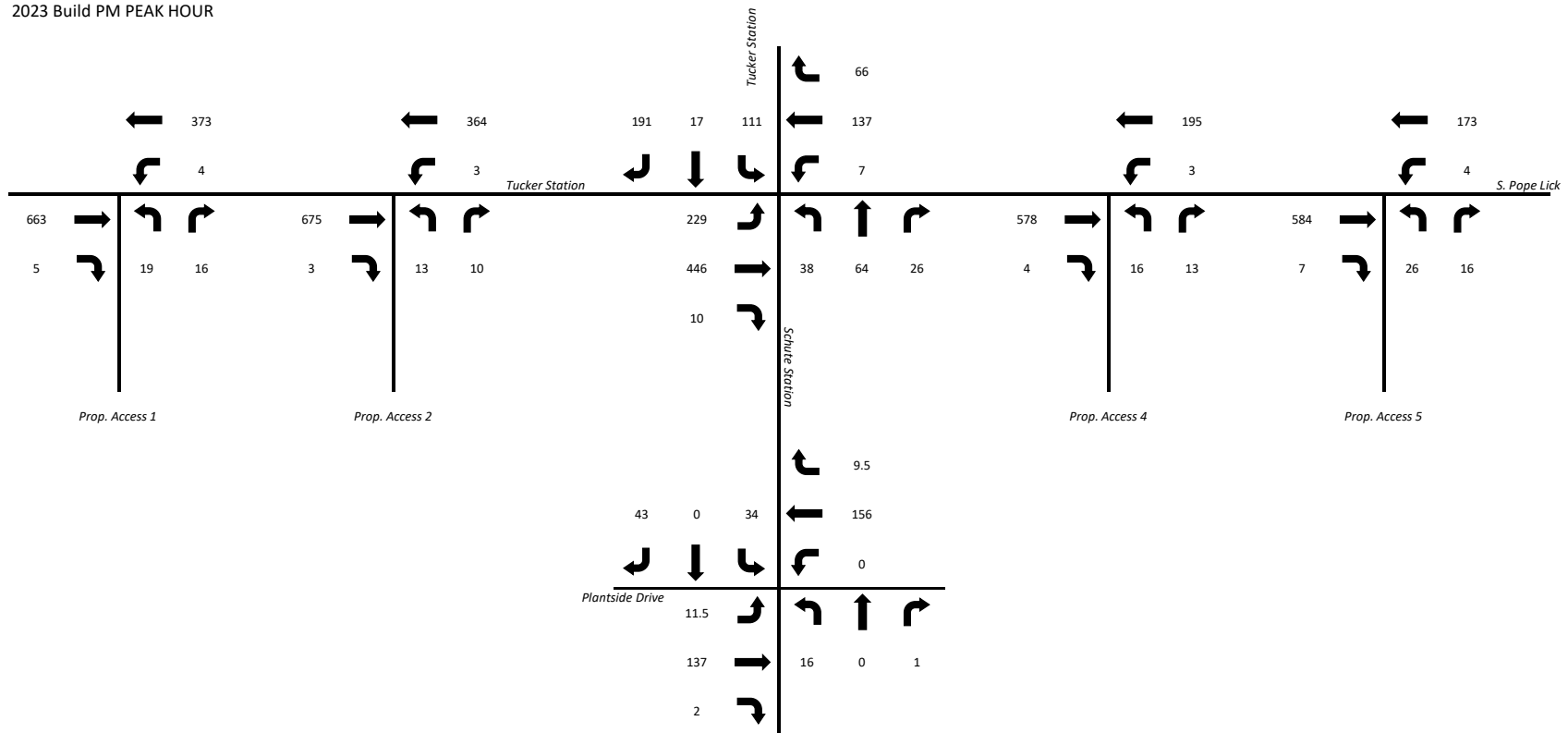


Figure 13: AM Peak Hour 2033 Build

2033 Build AM PEAK HOUR

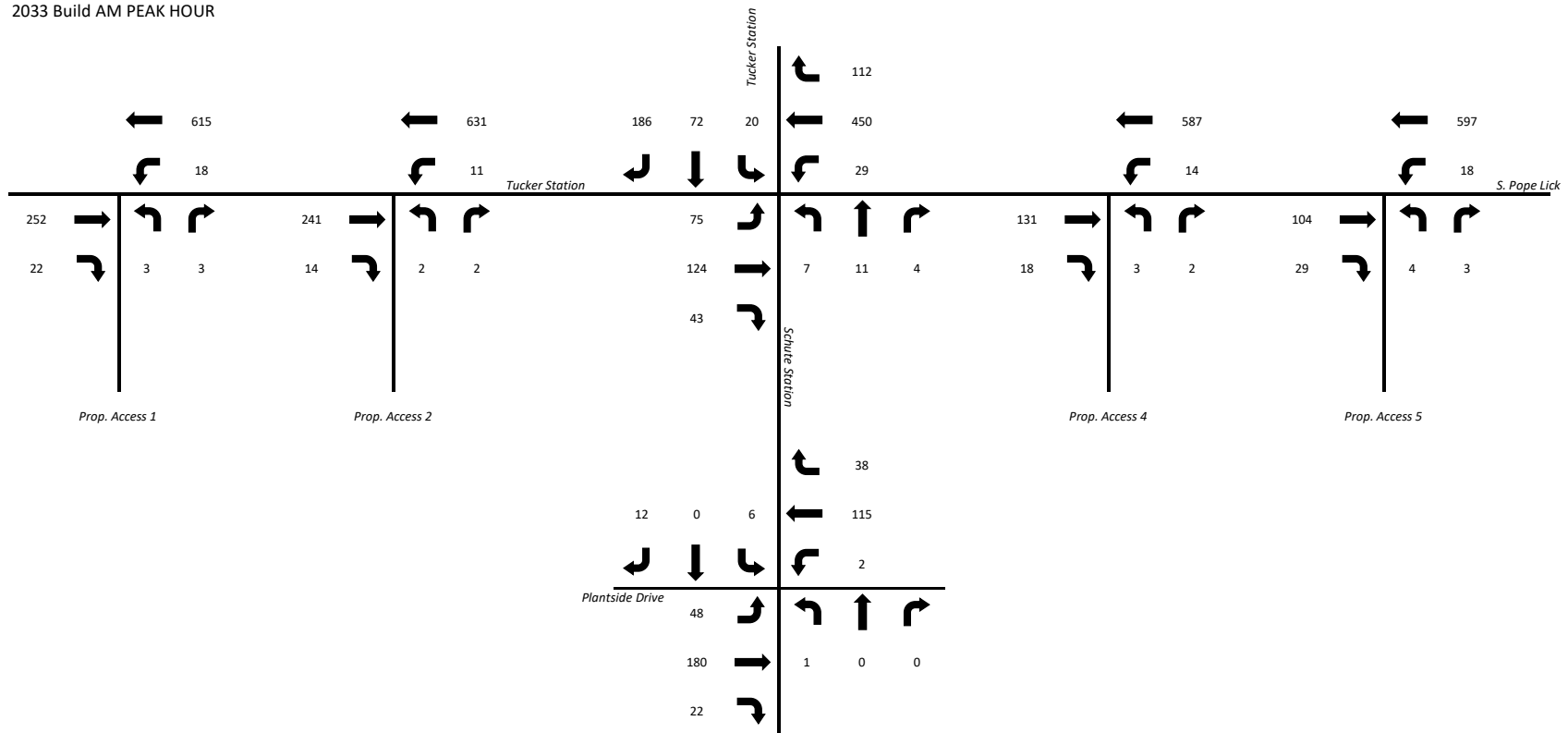
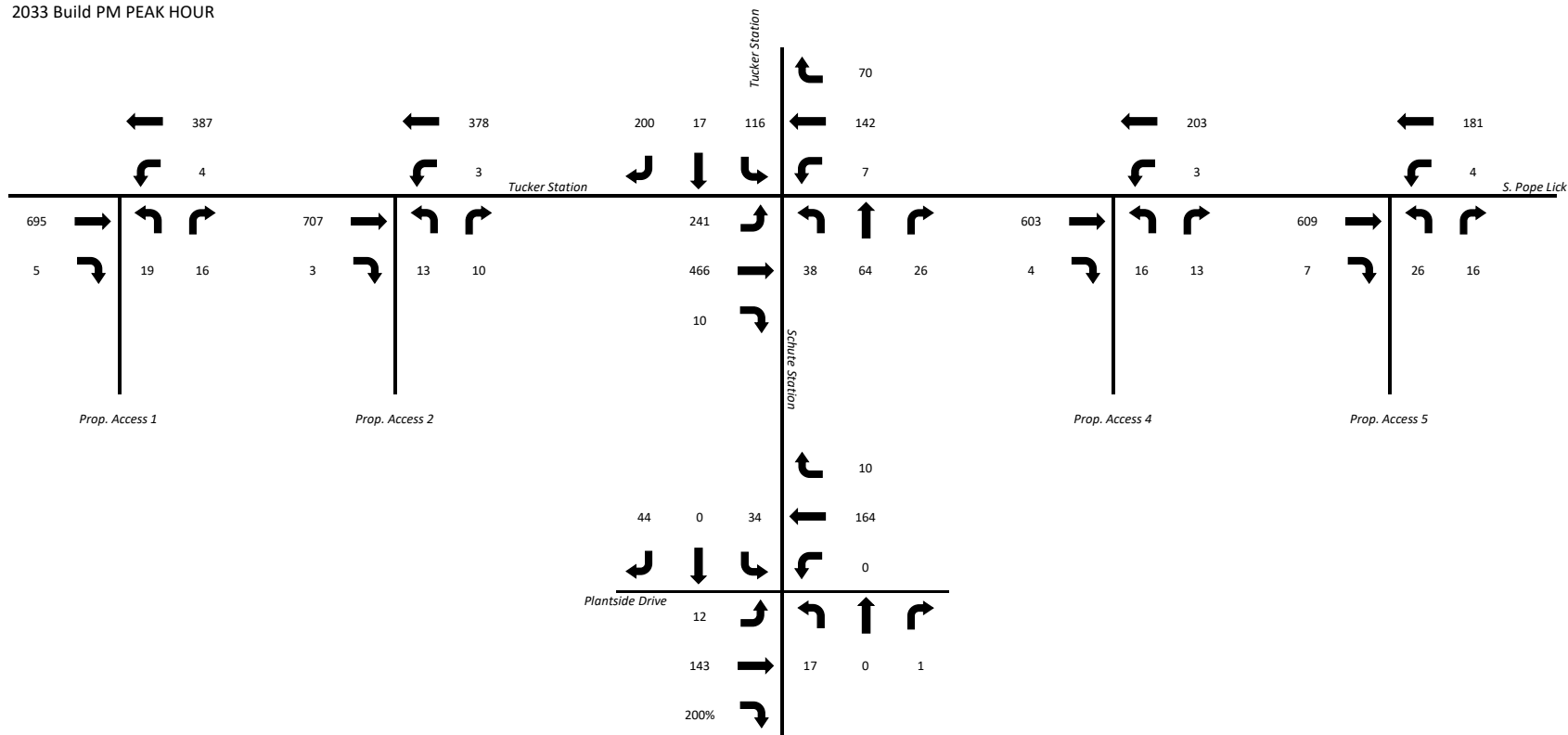




Figure 14: PM Peak Hour 2033 Build

2033 Build PM PEAK HOUR



## CAPACITY ANALYSIS

Capacity analysis for the no build and build scenarios was completed for the study intersections during the AM and PM peak hours using HCM methodologies as applied Synchro Capacity Software version 10. **Table 2** summarizes the LOS, and delay for the No Build and Build scenarios. Full capacity analysis output is provided in **Appendix E**.

As can be seen from the capacity analysis, all access points and the intersection of Schute Station Road and PLantside Drive are shown to operate at acceptable levels of service during all scenarios evaluated. Eastbound Tucker Station Road at S. Pope Lick Road is anticipated to operate at or near capacity under the 2023 demand, as well as all no build and build scenario during the PM peak period. The additional traffic through the intersection will push this intersection over capacity, with the eastbound approach operating at LOS F under the Build Condition. Providing dedicated left turn lanes for all approaches at this intersection, improves the LOS to 'D' with minimal delay of 24.6 seconds during the 2033 Build scenario. The eastbound approach is shown to operate at LOS E with 38.6 seconds of delay which is improved over the no build PM peak period.

## TURN LANE WARRANT ANALYSIS

Auxiliary turn lane warrant analysis was conducted for all proposed access points in accordance with KYTC Auxiliary Turn Lane policy, as applied by the Warrant Calcs Interactive excel spreadsheet provided on the KYTC Division of Design website. Based on this analysis, neither a left nor right turn lane is warranted at any access point, during the 2033 AM and PM peak periods. Output from the warrant analysis is provided in **Appendix F**.

## RECOMMENDATIONS

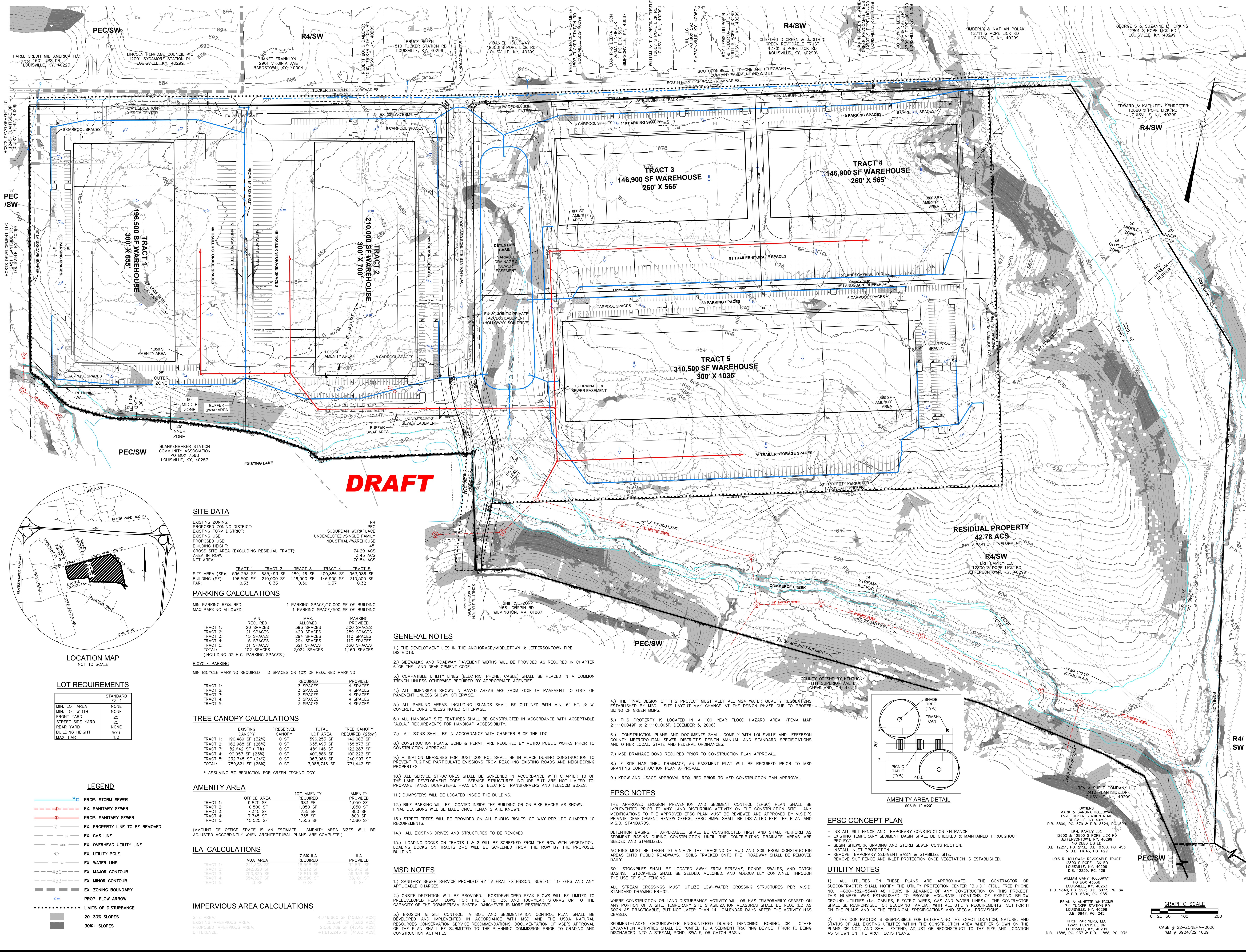
Dedicated left-turn lanes are recommended to improve operations at the intersection of Tucker Station Road and S. Pope Lick Road.

**Table 2: Capacity Analysis Summary**

AM PEAK HOUR		2023 No Build		2023 Build		2033 No Build		2033 Build	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
S. Pope Lick Road at Tucker Station Road	Intersection	B	14.5	D	25.9	C	16.0	D	31.9
	eastbound (Tucker Station)	A	9.8	B	12.9	B	10.1	B	13.6
	westbound (S. Pope Lick)	C	17.4	E	37.4	C	19.8	E	48.0
	northbound (Shute Station)	A	0.0	B	10.4	A	0.0	B	10.6
	southbound (Tuckjer Station)	B	10.2	B	14.2	B	10.6	C	15.1
Schute Station at Plantside Drive	Intersection	-	-	-	-	-	-	-	-
	eastbound LT (Plantside)	A	7.5	A	7.6	A	7.5	A	7.7
	westbound LT (Plantside)	A	7.7	A	7.7	A	7.7	A	7.6
	northbound	B	10.8	B	11.9	B	10.9	B	11.7
	southbound	A	8.7	A	9.7	A	8.7	A	9.8
S. Pope Lick Rd at Access Point 1	Intersection	-	-	-	-	-	-	-	-
	westbound (left turn)	-	-	A	0.4	-	-	A	0.4
	northbound (Access 1)	-	-	B	13.9	-	-	B	14.3
S. Pope Lick Rd at Access Point 2	Intersection	-	-	-	-	-	-	-	-
	westbound (left turn)	-	-	A	0.3	-	-	A	0.3
	northbound (Access 1)	-	-	B	13.6	-	-	B	14.0
S. Pope Lick Rd at Access Point 4	Intersection	-	-	-	-	-	-	-	-
	westbound (left turn)	-	-	A	0.3	-	-	A	0.3
	northbound (Access 1)	-	-	B	12.7	-	-	B	13.0
S. Pope Lick Rd at Access Point 5	Intersection	-	-	-	-	-	-	-	-
	westbound (left turn)	-	-	A	0.4	-	-	A	0.4
	northbound (Access 1)	-	-	B	12.6	-	-	B	12.8
PM PEAK HOUR		2023 No Build		2023 Build		2033 No Build		2033 Build	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
S. Pope Lick Road at Tucker Station Road	Intersection	E	44.0	F	91.3	F	55.6	F	109.8
	eastbound (Tucker Station)	F	65.6	F	162.7	F	85.1	F	196.8
	westbound (S. Pope Lick)	B	10.8	B	14.6	B	11.0	C	15.1
	northbound (Shute Station)	A	0.0	B	13.3	A	0.0	B	13.5
	southbound (Tuckjer Station)	C	15.3	C	20.0	C	16.0	C	21.4
Schute Station at Plantside Drive	Intersection	-	-	-	-	-	-	-	-
	eastbound LT (Plantside)	A	7.6	A	7.6	A	7.6	A	7.6
	westbound LT (Plantside)	A	0.0	A	0.0	A	0.0	A	0.0
	northbound	B	10.4	B	11.2	B	10.5	B	11.3
	southbound	A	9.0	B	10.1	A	9.1	B	10.2
S. Pope Lick Rd at Access Point 1	Intersection	-	-	-	-	-	-	-	-
	westbound (left turn)	-	-	A	0.1	-	-	A	0.1
	northbound (Access 1)	-	-	C	19.7	-	-	C	20.8
S. Pope Lick Rd at Access Point 2	Intersection	-	-	-	-	-	-	-	-
	westbound (left turn)	-	-	A	0.1	-	-	A	0.1
	northbound (Access 1)	-	-	C	19.1	-	-	C	20.1
S. Pope Lick Rd at Access Point 4	Intersection	-	-	-	-	-	-	-	-
	westbound (left turn)	-	-	A	0.2	-	-	A	0.2
	northbound (Access 1)	-	-	C	15.2	-	-	C	15.7
S. Pope Lick Rd at Access Point 5	Intersection	-	-	-	-	-	-	-	-
	westbound (left turn)	-	-	A	0.2	-	-	A	0.2
	northbound (Access 1)	-	-	C	15.8	-	-	C	16.4

## **APPENDIX A: DEVELOPMENT PLAN**







## APPENDIX B: TRAFFIC DATA

# Cummins Consulting Services, LLC

swcummins@ccsdata.com 859-361-2589

"2022 ... Data Collection simplified"

Partly Sunny  
Schools in Session

File Name : Plantside\_Drive\_at\_Schutte\_Station\_Place\_05-19-2022

Site Code : Site 2 - Thursday

Start Date : 5/19/2022

Page No : 1

## Groups Printed- Cars - Buses - Trucks

	Schutte Station Place From North					Plantside Drive From East					Schutte Station Place From South					Plantside Drive From West					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	0	0	1	0	1	0	23	0	0	23	0	0	0	0	0	5	29	0	0	34	58
07:15 AM	0	0	0	0	0	1	14	0	0	15	1	0	0	0	1	3	28	7	0	38	54
07:30 AM	0	0	4	0	4	0	25	0	0	25	0	0	0	0	0	3	44	4	0	51	80
07:45 AM	0	0	1	0	1	1	27	0	0	28	0	0	0	0	0	0	43	6	0	49	78
Total	0	0	6	0	6	2	89	0	0	91	1	0	0	0	1	11	144	17	0	172	270
08:00 AM	0	0	1	0	1	1	25	2	0	28	0	0	0	0	0	5	38	9	0	52	81
08:15 AM	0	0	0	0	0	0	32	0	0	32	1	0	0	0	1	3	46	2	0	51	84
08:30 AM	0	0	1	0	1	0	17	0	0	17	0	0	0	0	0	1	43	0	0	44	62
08:45 AM	0	0	0	0	0	0	29	1	0	30	0	0	0	0	0	3	37	1	0	41	71
Total	0	0	2	0	2	1	103	3	0	107	1	0	0	0	1	12	164	12	0	188	298
04:00 PM	0	0	0	0	0	0	45	1	0	46	4	0	1	0	5	0	35	1	0	36	87
04:15 PM	2	0	3	0	5	0	35	0	0	35	1	0	0	0	1	1	42	0	0	43	84
04:30 PM	0	0	3	0	3	0	46	0	0	46	5	0	0	0	5	2	31	1	0	34	88
04:45 PM	0	0	5	0	5	0	29	0	0	29	6	0	0	0	6	0	28	0	0	28	68
Total	2	0	11	0	13	0	155	1	0	156	16	0	1	0	17	3	136	2	0	141	327
05:00 PM	0	0	1	0	1	0	53	0	0	53	1	0	1	0	2	0	31	0	0	31	87
05:15 PM	0	0	1	0	1	0	21	0	0	21	1	0	0	0	1	1	39	0	0	40	63
05:30 PM	0	0	3	0	3	0	39	0	0	39	3	0	0	0	3	0	50	0	0	50	95
05:45 PM	0	0	3	0	3	0	30	0	0	30	1	0	0	0	1	1	45	0	0	46	80
Total	0	0	8	0	8	0	143	0	0	143	6	0	1	0	7	2	165	0	0	167	325
Grand Total	2	0	27	0	29	3	490	4	0	497	24	0	2	0	26	28	609	31	0	668	1220
Apprch %	6.9	0	93.1	0		0.6	98.6	0.8	0		92.3	0	7.7	0		4.2	91.2	4.6	0		
Total %	0.2	0	2.2	0	2.4	0.2	40.2	0.3	0	40.7	2	0	0.2	0	2.1	2.3	49.9	2.5	0	54.8	
Cars	2	0	22	0	24	3	426	2	0	431	22	0	2	0	24	22	491	30	0	543	1022
% Cars	100	0	81.5	0	82.8	100	86.9	50	0	86.7	91.7	0	100	0	92.3	78.6	80.6	96.8	0	81.3	83.8
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
% Buses	0	0	0	0	0	0	0.2	0	0	0.2	0	0	0	0	0	0	0.2	0	0	0.1	0.2
Trucks	0	0	5	0	5	0	63	2	0	65	2	0	0	0	2	6	117	1	0	124	196
% Trucks	0	0	18.5	0	17.2	0	12.9	50	0	13.1	8.3	0	0	0	7.7	21.4	19.2	3.2	0	18.6	16.1

# Cummins Consulting Services, LLC

swcummins@ccsdata.com 859-361-2589

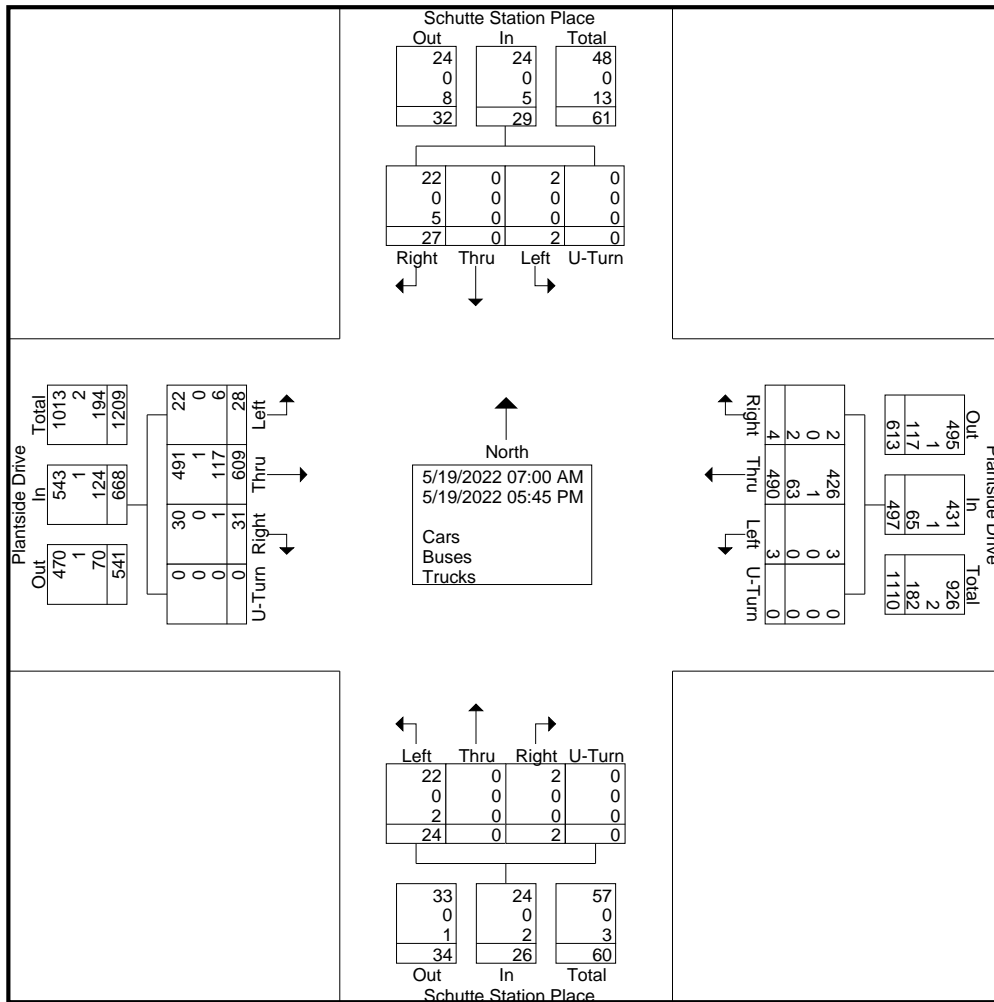
"2022 ... Data Collection simplified"

File Name : Plantside\_Drive\_at\_Schutte\_Station\_Place\_05-19-2022

Site Code : Site 2 - Thursday

Start Date : 5/19/2022

Page No : 2

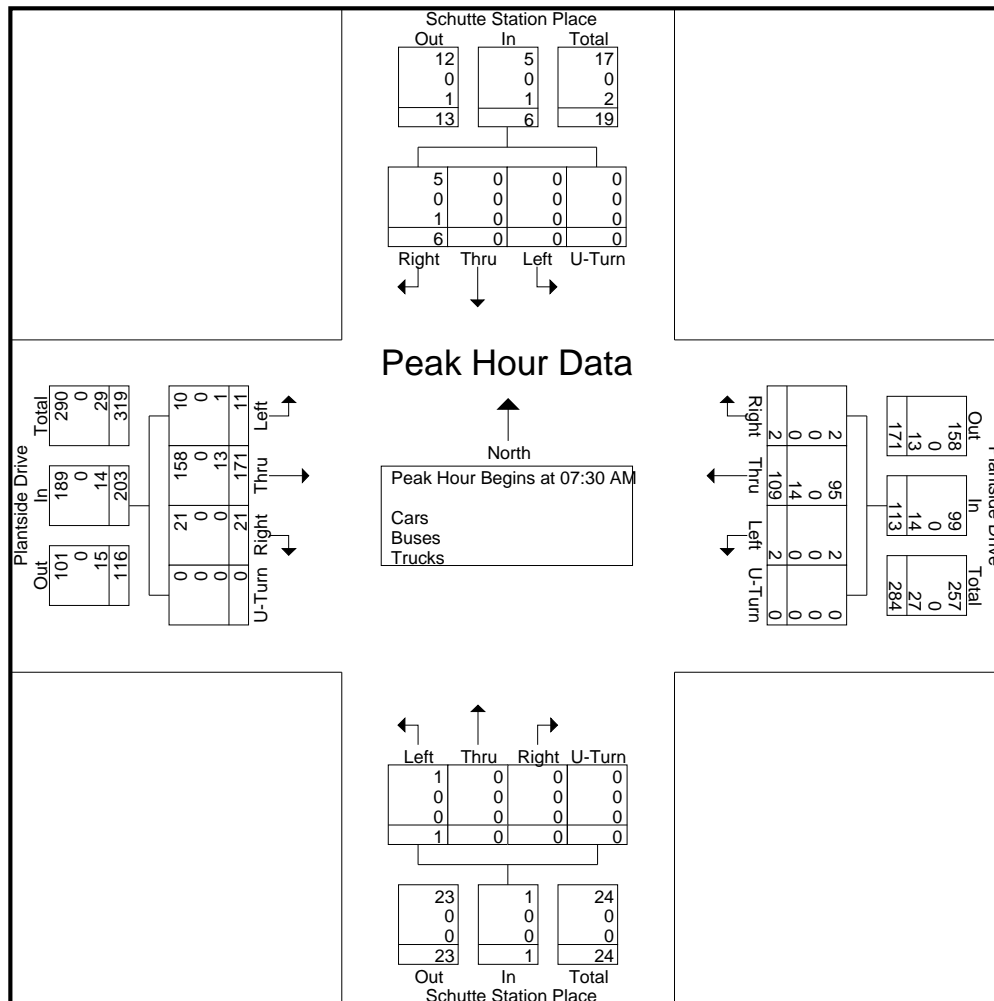




"2022 ... Data Collection simplified"

Page No : 3

	Schutte Station Place From North					Plantside Drive From East					Schutte Station Place From South					Plantside Drive From West					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. 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	0	4	0	4	0	25	0	0	25	0	0	0	0	0	3	44	4	0	51	80
07:45 AM	0	0	1	0	1	1	27	0	0	28	0	0	0	0	0	0	43	6	0	49	78
08:00 AM	0	0	1	0	1	1	25	2	0	28	0	0	0	0	0	5	38	9	0	52	81
08:15 AM	0	0	0	0	0	0	32	0	0	32	1	0	0	0	1	3	46	2	0	51	84
Total Volume	0	0	6	0	6	2	109	2	0	113	1	0	0	0	1	11	171	21	0	203	323
% App. Total	0	0	100	0		1.8	96.5	1.8	0		100	0	0	0		5.4	84.2	10.3	0		
PHF	.000	.000	.375	.000	.375	.500	.852	.250	.000	.883	.250	.000	.000	.000	.250	.550	.929	.583	.000	.976	.961
Cars	0	0	5	0	5	2	95	2	0	99	1	0	0	0	1	10	158	21	0	189	294
% Cars	0	0	83.3	0	83.3	100	87.2	100	0	87.6	100	0	0	0	100	90.9	92.4	100	0	93.1	91.0
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks	0	0	1	0	1	0	14	0	0	14	0	0	0	0	0	1	13	0	0	14	29
% Trucks	0	0	16.7	0	16.7	0	12.8	0	0	12.4	0	0	0	0	0	9.1	7.6	0	0	6.9	9.0



# Cummins Consulting Services, LLC

swcummins@ccsdata.com 859-361-2589

"2022 ... Data Collection simplified"

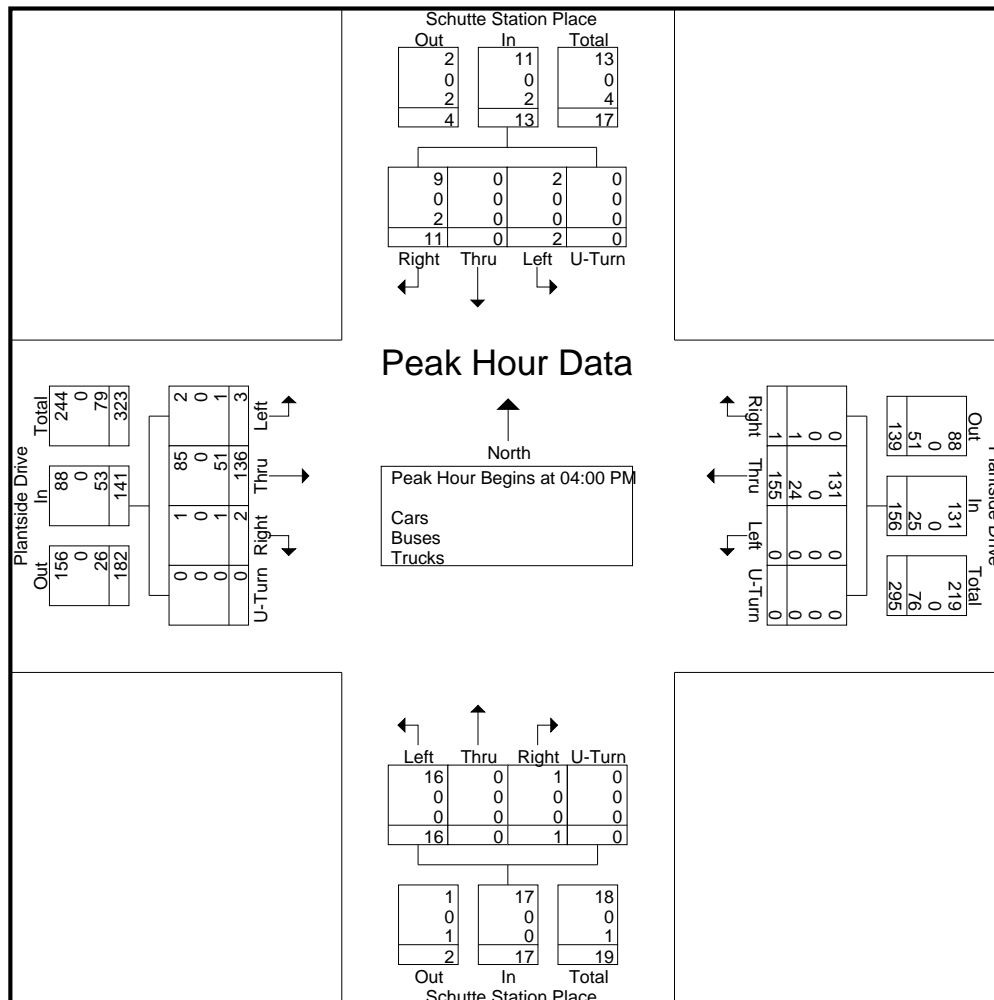
File Name : Plantside\_Drive\_at\_Schutte\_Station\_Place\_05-19-2022

Site Code : Site 2 - Thursday

Start Date : 5/19/2022

Page No : 4

	Schutte Station Place From North					Plantside Drive From East					Schutte Station Place From South					Plantside Drive From West					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	45	1	0	46	4	0	1	0	5	0	35	1	0	36	87
04:15 PM	2	0	3	0	5	0	35	0	0	35	1	0	0	0	1	1	42	0	0	43	84
04:30 PM	0	0	3	0	3	0	46	0	0	46	5	0	0	0	5	2	31	1	0	34	88
04:45 PM	0	0	5	0	5	0	29	0	0	29	6	0	0	0	6	0	28	0	0	28	68
Total Volume	2	0	11	0	13	0	155	1	0	156	16	0	1	0	17	3	136	2	0	141	327
% App. Total	15.4	0	84.6	0		0	99.4	0.6	0		94.1	0	5.9	0		2.1	96.5	1.4	0		
PHF	.250	.000	.550	.000	.650	.000	.842	.250	.000	.848	.667	.000	.250	.000	.708	.375	.810	.500	.000	.820	.929
Cars	2	0	9	0	11	0	131	0	0	131	16	0	1	0	17	2	85	1	0	88	247
% Cars	100	0	81.8	0	84.6	0	84.5	0	0	84.0	100	0	100	0	100	66.7	62.5	50.0	0	62.4	75.5
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks	0	0	2	0	2	0	24	1	0	25	0	0	0	0	0	1	51	1	0	53	80
% Trucks	0	0	18.2	0	15.4	0	15.5	100	0	16.0	0	0	0	0	0	33.3	37.5	50.0	0	37.6	24.5



# Cummins Consulting Services, LLC

swcummins@ccsdata.com 859-361-2589

"2022 ... Data Collection simplified"

Partly Sunny  
Schools in Session

File Name : Tucker\_Station\_Road\_at\_Pope\_Lick\_Road\_05-19-2022

Site Code : Site 3 - Thursday

Start Date : 5/19/2022

Page No : 1

## Groups Printed- Cars - Buses - Trucks

	Tucker Station Road From North				Pope Lick Road From East				Pope Lick Road From West				
Start Time	Left	Right	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Int. Total
07:00 AM	6	17	0	23	38	20	0	58	15	8	0	23	104
07:15 AM	6	40	0	46	86	19	0	105	13	13	0	26	177
07:30 AM	7	38	0	45	84	24	0	108	22	17	0	39	192
07:45 AM	3	53	0	56	122	31	0	153	20	21	0	41	250
Total	22	148	0	170	330	94	0	424	70	59	0	129	723
08:00 AM	3	45	0	48	100	32	0	132	16	18	0	34	214
08:15 AM	3	38	0	41	68	18	0	86	15	16	0	31	158
08:30 AM	7	31	0	38	48	18	0	66	23	15	0	38	142
08:45 AM	6	20	0	26	46	11	0	57	14	5	0	19	102
Total	19	134	0	153	262	79	0	341	68	54	0	122	616
04:00 PM	22	42	0	64	20	14	0	34	45	86	0	131	229
04:15 PM	30	36	0	66	16	12	0	28	42	67	0	109	203
04:30 PM	22	36	0	58	17	9	0	26	37	111	1	149	233
04:45 PM	30	47	0	77	14	19	0	33	54	104	0	158	268
Total	104	161	0	265	67	54	0	121	178	368	1	547	933
05:00 PM	31	47	0	78	20	16	0	36	64	121	0	185	299
05:15 PM	20	45	0	65	21	21	0	42	62	93	0	155	262
05:30 PM	29	51	0	80	34	10	0	44	48	89	1	138	262
05:45 PM	21	42	0	63	18	11	0	29	38	65	0	103	195
Total	101	185	0	286	93	58	0	151	212	368	1	581	1018
Grand Total	246	628	0	874	752	285	0	1037	528	849	2	1379	3290
Apprch %	28.1	71.9	0		72.5	27.5	0		38.3	61.6	0.1		
Total %	7.5	19.1	0	26.6	22.9	8.7	0	31.5	16	25.8	0.1	41.9	
Cars	243	618	0	861	738	279	0	1017	518	839	2	1359	3237
% Cars	98.8	98.4	0	98.5	98.1	97.9	0	98.1	98.1	98.8	100	98.5	98.4
Buses	2	1	0	3	0	3	0	3	2	2	0	4	10
% Buses	0.8	0.2	0	0.3	0	1.1	0	0.3	0.4	0.2	0	0.3	0.3
Trucks	1	9	0	10	14	3	0	17	8	8	0	16	43
% Trucks	0.4	1.4	0	1.1	1.9	1.1	0	1.6	1.5	0.9	0	1.2	1.3

# Cummins Consulting Services, LLC

swcummins@ccsdata.com 859-361-2589

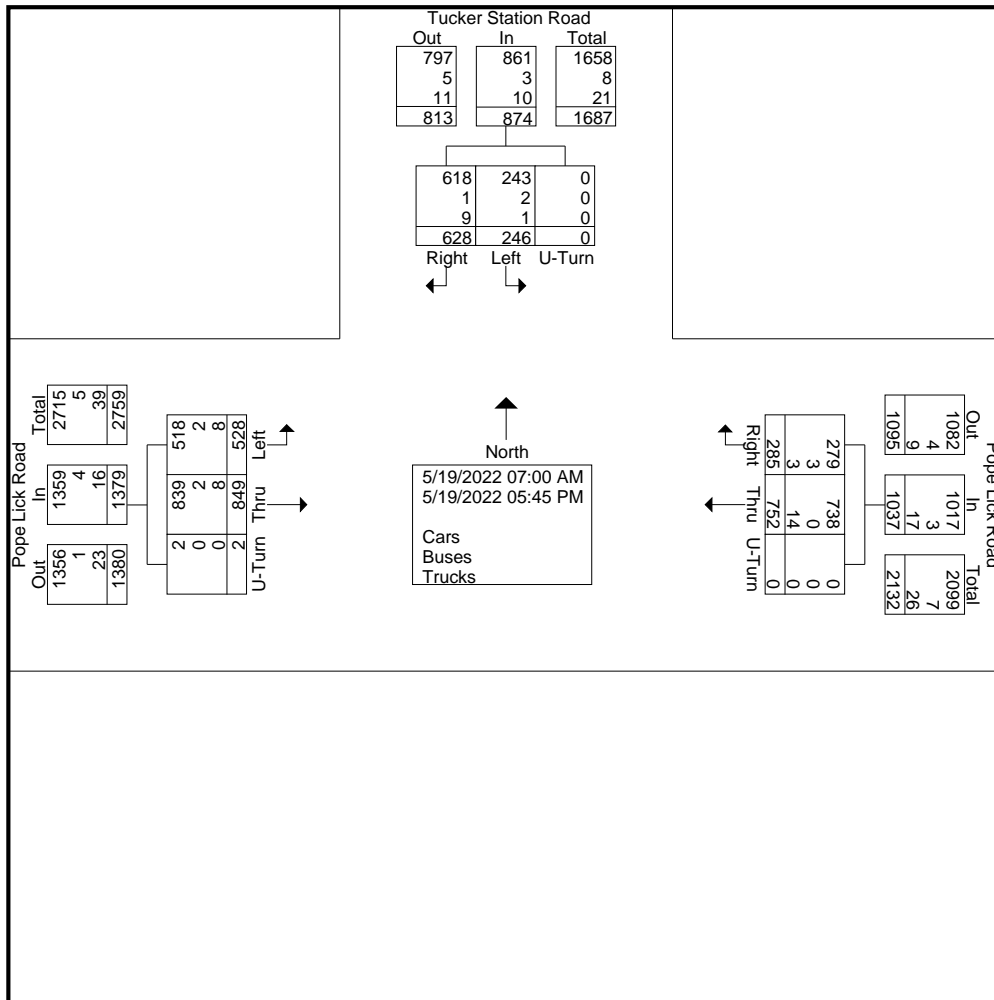
"2022 ... Data Collection simplified"

File Name : Tucker\_Station\_Road\_at\_Pope\_Lick\_Road\_05-19-2022

Site Code : Site 3 - Thursday

Start Date : 5/19/2022

Page No : 2



# Cummins Consulting Services, LLC

swcummins@ccsdata.com 859-361-2589

"2022 ... Data Collection simplified"

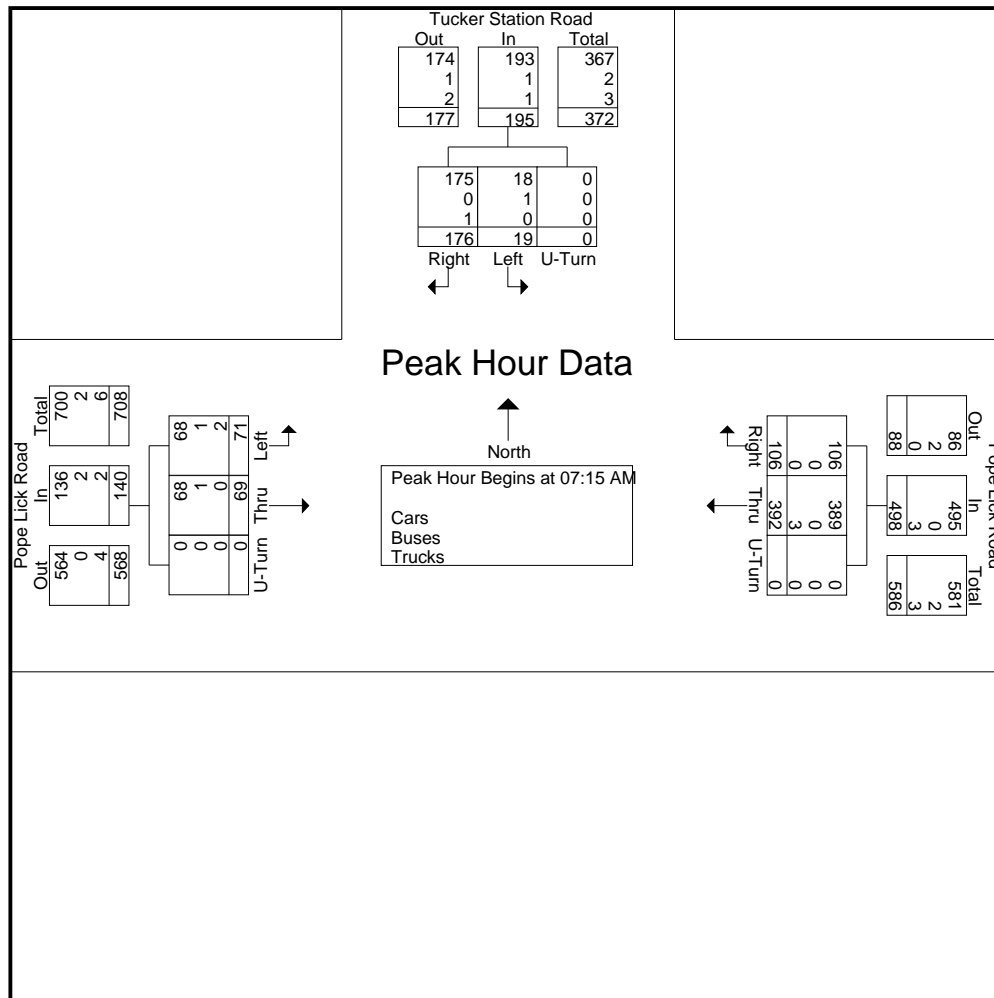
File Name : Tucker\_Station\_Road\_at\_Pope\_Lick\_Road\_05-19-2022

Site Code : Site 3 - Thursday

Start Date : 5/19/2022

Page No : 3

	Tucker Station Road From North				Pope Lick Road From East				Pope Lick Road From West				
Start Time	Left	Right	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	6	40	0	46	86	19	0	105	13	13	0	26	177
07:30 AM	7	38	0	45	84	24	0	108	22	17	0	39	192
07:45 AM	3	53	0	56	122	31	0	153	20	21	0	41	250
08:00 AM	3	45	0	48	100	32	0	132	16	18	0	34	214
Total Volume	19	176	0	195	392	106	0	498	71	69	0	140	833
% App. Total	9.7	90.3	0		78.7	21.3	0		50.7	49.3	0		
PHF	.679	.830	.000	.871	.803	.828	.000	.814	.807	.821	.000	.854	.833
Cars	18	175	0	193	389	106	0	495	68	68	0	136	824
% Cars	94.7	99.4	0	99.0	99.2	100	0	99.4	95.8	98.6	0	97.1	98.9
Buses	1	0	0	1	0	0	0	0	1	1	0	2	3
% Buses	5.3	0	0	0.5	0	0	0	0	1.4	1.4	0	1.4	0.4
Trucks	0	1	0	1	3	0	0	3	2	0	0	2	6
% Trucks	0	0.6	0	0.5	0.8	0	0	0.6	2.8	0	0	1.4	0.7



# Cummins Consulting Services, LLC

swcummins@ccsdata.com 859-361-2589

"2022 ... Data Collection simplified"

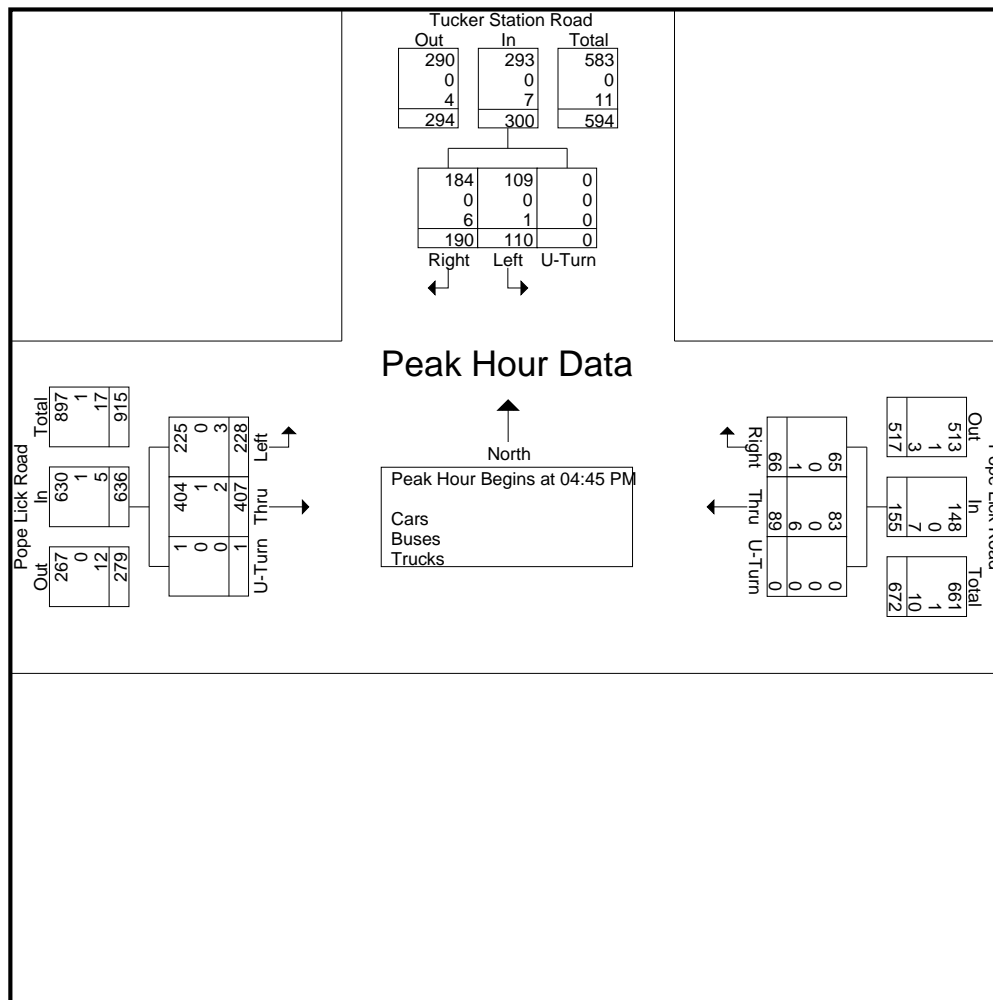
File Name : Tucker\_Station\_Road\_at\_Pope\_Lick\_Road\_05-19-2022

Site Code : Site 3 - Thursday

Start Date : 5/19/2022

Page No : 4

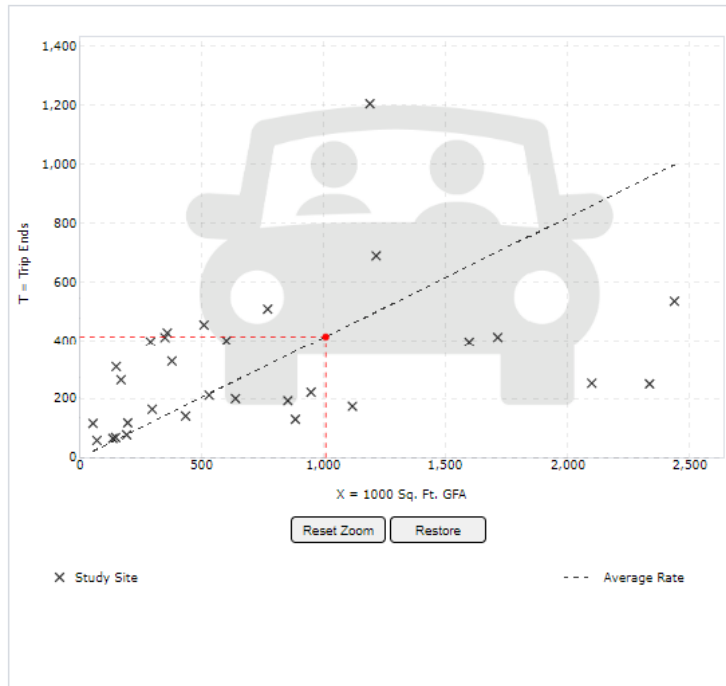
	Tucker Station Road From North				Pope Lick Road From East				Pope Lick Road From West				
Start Time	Left	Right	U-Turn	App. Total	Thru	Right	U-Turn	App. Total	Left	Thru	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	30	47	0	77	14	19	0	33	54	104	0	158	268
05:00 PM	31	47	0	78	20	16	0	36	64	121	0	185	299
05:15 PM	20	45	0	65	21	21	0	42	62	93	0	155	262
05:30 PM	29	51	0	80	34	10	0	44	48	89	1	138	262
Total Volume	110	190	0	300	89	66	0	155	228	407	1	636	1091
% App. Total	36.7	63.3	0		57.4	42.6	0		35.8	64	0.2		
PHF	.887	.931	.000	.938	.654	.786	.000	.881	.891	.841	.250	.859	.912
Cars	109	184	0	293	83	65	0	148	225	404	1	630	1071
% Cars	99.1	96.8	0	97.7	93.3	98.5	0	95.5	98.7	99.3	100	99.1	98.2
Buses	0	0	0	0	0	0	0	0	0	1	0	1	1
% Buses	0	0	0	0	0	0	0	0	0	0.2	0	0.2	0.1
Trucks	1	6	0	7	6	1	0	7	3	2	0	5	19
% Trucks	0.9	3.2	0	2.3	6.7	1.5	0	4.5	1.3	0.5	0	0.8	1.7



## APPENDIX C: TRIP GENERATION DATA

## ITE Land Use Code 210 Single Family Residential (AM Peak)

Data Plot and Equation

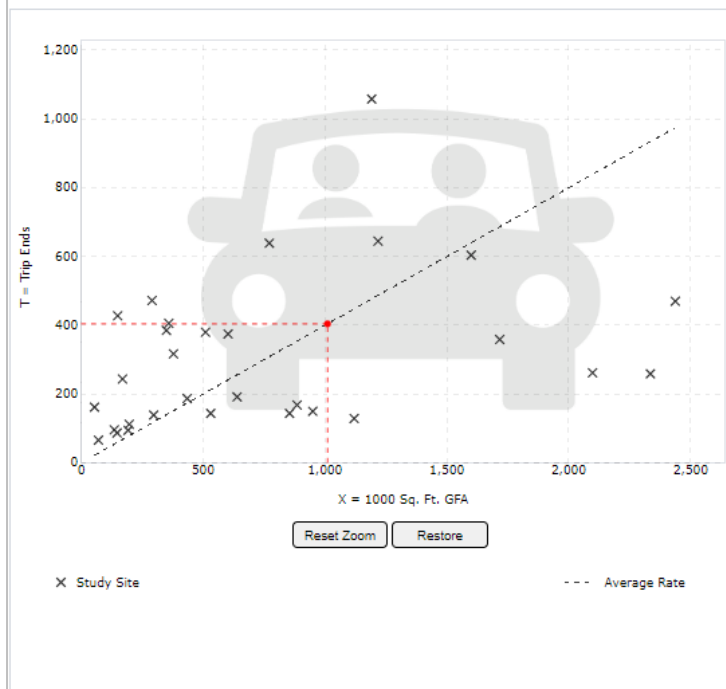


### DATA STATISTICS

Land Use:	Industrial Park (130) <a href="#">Click for Description and Data Plots</a>
Independent Variable:	1000 Sq. Ft. GFA
Time Period:	Weekday AM Peak Hour of Generator
Setting/Location:	General Urban/Suburban
Trip Type:	Vehicle
Number of Studies:	30
Avg. 1000 Sq. Ft. GFA:	757
Average Rate:	0.41
Range of Rates:	0.11 - 2.13
Standard Deviation:	0.37
Fitted Curve Equation:	Not Given
R <sup>2</sup> :	****
Directional Distribution:	87% entering, 13% exiting
Calculated Trip Ends:	Average Rate: 414 (Total), 380 (Entry), 54 (Exit)

## ITE Land Use Code 210 Single Family Residential (PM Peak)

Data Plot and Equation



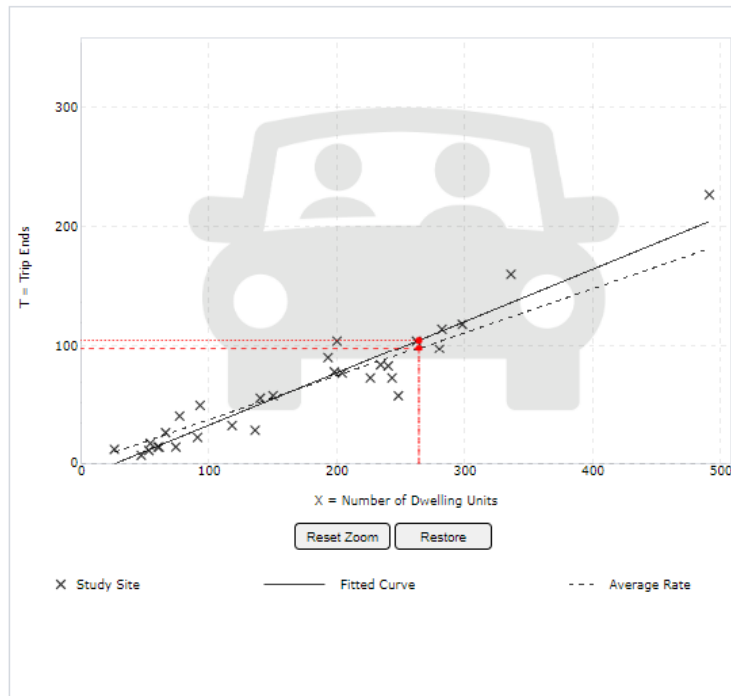
### DATA STATISTICS

Land Use:	Industrial Park (130) <a href="#">Click for Description and Data Plots</a>
Independent Variable:	1000 Sq. Ft. GFA
Time Period:	Weekday PM Peak Hour of Generator
Setting/Location:	General Urban/Suburban
Trip Type:	Vehicle
Number of Studies:	30
Avg. 1000 Sq. Ft. GFA:	757
Average Rate:	0.40
Range of Rates:	0.11 - 2.95
Standard Deviation:	0.41
Fitted Curve Equation:	Not Given
R <sup>2</sup> :	****
Directional Distribution:	21% entering, 79% exiting
Calculated Trip Ends:	Average Rate: 404 (Total), 85 (Entry), 319 (Exit)



## ITE Land Use Code 221 Multi Family Housing (AM Peak)

Data Plot and Equation

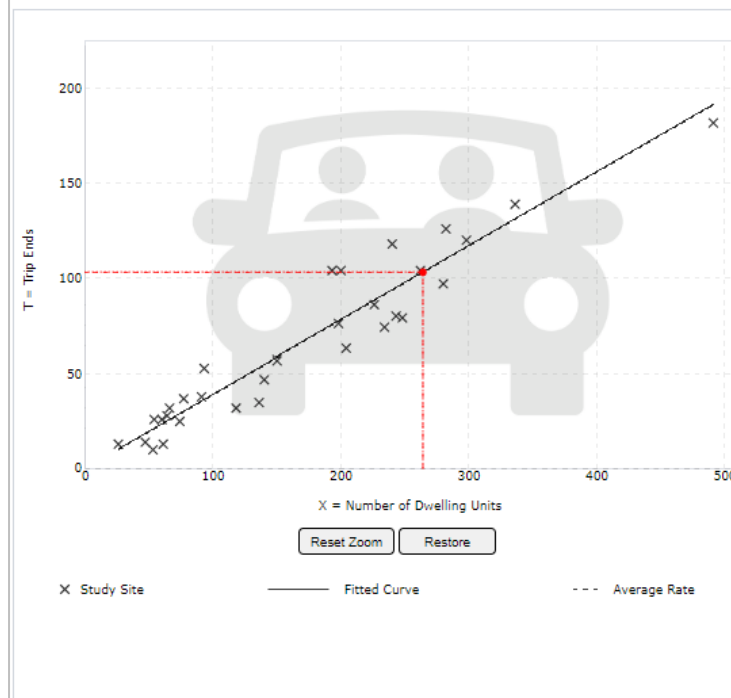


### DATA STATISTICS

Land Use:	Multifamily Housing (Mid-Rise) - Not Close to Rail Transit (221) <a href="#">Click for Description and Data Plots</a>
Independent Variable:	Dwelling Units
Time Period:	Weekday Peak Hour of Adjacent Street Traffic One Hour Between 7 and 9 a.m.
Setting/Location:	General Urban/Suburban
Trip Type:	Vehicle
Number of Studies:	30
Avg. Num. of Dwelling Units:	173
Average Rate:	0.37
Range of Rates:	0.15 - 0.53
Standard Deviation:	0.09
Fitted Curve Equation:	$T = 0.44(X) - 11.61$
R <sup>2</sup> :	0.91
Directional Distribution:	23% entering, 77% exiting
Calculated Trip Ends:	Average Rate: 98 (Total), 22 (Entry), 76 (Exit) Fitted Curve: 105 (Total), 24 (Entry), 81 (Exit)

## ITE Land Use Code 221 Multi Family Housing (PM Peak)

Data Plot and Equation



### DATA STATISTICS

Land Use:	Multifamily Housing (Mid-Rise) - Not Close to Rail Transit (221) <a href="#">Click for Description and Data Plots</a>
Independent Variable:	Dwelling Units
Time Period:	Weekday Peak Hour of Adjacent Street Traffic One Hour Between 4 and 6 p.m.
Setting/Location:	General Urban/Suburban
Trip Type:	Vehicle
Number of Studies:	31
Avg. Num. of Dwelling Units:	189
Average Rate:	0.39
Range of Rates:	0.19 - 0.57
Standard Deviation:	0.08
Fitted Curve Equation:	$T = 0.39(X) + 0.34$
R <sup>2</sup> :	0.91
Directional Distribution:	61% entering, 39% exiting
Calculated Trip Ends:	Average Rate: 103 (Total), 63 (Entry), 40 (Exit) Fitted Curve: 103 (Total), 63 (Entry), 40 (Exit)

## **APPENDIX D: TRAFFIC FORECASTING REPORT (EXCERPT)**

### Historical Traffic Volume Summary

#### Station Details:

Begin MP:	2.4740
Begin Desc:	KY 913 (BLANKENBAKER PKWY)
End Mp:	2.9270
End Desc:	TUCKER STATION ROAD
Impact Year:	
Year Added:	2012

Newest Count:	
AADT:	7155
Year:	2018
% Single:	
% Combo:	
K Factor:	13
D Factor:	66

Sta. ID - Three digit county number + station number

Impact Year – year of significant change to traffic pattern within station segment

AADT – Annual Average Daily Traffic – the annualized average 24-hour volume of vehicles on a segment of roadway

% Single – single unit truck volume as a percentage of the AADT

% Combo – combination truck volume as a percentage of the AADT

K Factor – peak hour volume as a percentage of the AADT

D Factor – percentage of peak hour volume flowing in the peak direction

A bar chart titled 'Deaths from COVID-19 in the United States' showing the number of deaths per year from 1991 to 2021. The y-axis represents the number of deaths, ranging from 0 to 8,000 in increments of 2,000. The x-axis represents the year, with labels every five years from 1991 to 2021. The chart shows zero deaths from 1991 to 2019. In 2020, there were approximately 6,800 deaths, and in 2021, there were approximately 7,200 deaths.

















Year	Deaths
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	0
1999	0
2000	0
2001	0
2002	0
2003	0
2004	0
2005	0
2006	0
2007	0
2008	0
2009	0
2010	0
2011	0
2012	0
2013	0
2014	0
2015	0
2016	0
2017	0
2018	0
2019	0
2020	6800
2021	7200

## APPENDIX E: CAPACITY ANALYSIS OUTPUT

# HCM Unsignalized Intersection Capacity Analysis

## 3: Schute Station Rd & Tucker Station Rd & S. Pope Lick



















09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	71	69	0	0	394	107	0	0	0	19	0	177
Future Volume (vph)	71	69	0	0	394	107	0	0	0	19	0	177
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
Hourly flow rate (vph)	77	75	0	0	428	116	0	0	0	21	0	192
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	152	544	0	213								
Volume Left (vph)	77	0	0	21								
Volume Right (vph)	0	116	0	192								
Hadj (s)	0.14	-0.09	0.00	-0.49								
Departure Headway (s)	5.3	4.6	6.0	5.1								
Degree Utilization, x	0.22	0.70	0.00	0.30								
Capacity (veh/h)	634	762	526	641								
Control Delay (s)	9.8	17.4	9.0	10.2								
Approach Delay (s)	9.8	17.4	0.0	10.2								
Approach LOS	A	C	A	B								
Intersection Summary												
Delay			14.5									
Level of Service			B									
Intersection Capacity Utilization			56.8%	ICU Level of Service					B			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 6: Plantside Drive & Schute Station Rd

















09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	172	21	2	110	2	1	0	0	0	0	6
Future Volume (Veh/h)	11	172	21	2	110	2	1	0	0	0	0	6
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			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
Hourly flow rate (vph)	12	187	23	2	120	2	1	0	0	0	0	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	122			210			294	348	105	242	359	61
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	122			210			294	348	105	242	359	61
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	100	100	99
cM capacity (veh/h)	1463			1358			627	568	929	686	561	991
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	12	125	85	2	80	42	1	7				
Volume Left	12	0	0	2	0	0	1	0				
Volume Right	0	0	23	0	0	2	0	7				
cSH	1463	1700	1700	1358	1700	1700	627	991				
Volume to Capacity	0.01	0.07	0.05	0.00	0.05	0.02	0.00	0.01				
Queue Length 95th (ft)	1	0	0	0	0	0	0	1				
Control Delay (s)	7.5	0.0	0.0	7.7	0.0	0.0	10.8	8.7				
Lane LOS	A			A			B	A				
Approach Delay (s)	0.4			0.1			10.8	8.7				
Approach LOS							B	A				
Intersection Summary												
Average Delay	0.5											
Intersection Capacity Utilization	17.3%			ICU Level of Service					A			
Analysis Period (min)	15											

# HCM Unsignalized Intersection Capacity Analysis

## 3: Schute Station Rd & Tucker Station Rd & S. Pope Lick



















09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	229	409	0	0	89	66	0	0	0	111	0	191
Future Volume (vph)	229	409	0	0	89	66	0	0	0	111	0	191
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
Hourly flow rate (vph)	249	445	0	0	97	72	0	0	0	121	0	208
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	694	169	0	329								
Volume Left (vph)	249	0	0	121								
Volume Right (vph)	0	72	0	208								
Hadj (s)	0.11	-0.22	0.00	-0.27								
Departure Headway (s)	5.3	5.7	6.9	5.8								
Degree Utilization, x	1.03	0.27	0.00	0.53								
Capacity (veh/h)	670	607	486	601								
Control Delay (s)	65.6	10.8	9.9	15.3								
Approach Delay (s)	65.6	10.8	0.0	15.3								
Approach LOS	F	B	A	C								
Intersection Summary												
Delay			44.0									
Level of Service			E									
Intersection Capacity Utilization			70.8%	ICU Level of Service		C						
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 6: Plantside Drive & Schute Station Rd

09/06/2022

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	137	2	0	156	1	16	0	1	2	0	11
Future Volume (Veh/h)	3	137	2	0	156	1	16	0	1	2	0	11
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			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
Hourly flow rate (vph)	3	149	2	0	170	1	17	0	1	2	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	171			151			253	327	76	252	328	86
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	171			151			253	327	76	252	328	86
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	100	100	100	100	99
cM capacity (veh/h)	1404			1428			670	589	970	679	589	956
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	3	99	52	0	113	58	18	14				
Volume Left	3	0	0	0	0	0	17	2				
Volume Right	0	0	2	0	0	1	1	12				
cSH	1404	1700	1700	1700	1700	1700	682	904				
Volume to Capacity	0.00	0.06	0.03	0.00	0.07	0.03	0.03	0.02				
Queue Length 95th (ft)	0	0	0	0	0	0	2	1				
Control Delay (s)	7.6	0.0	0.0	0.0	0.0	0.0	10.4	9.0				
Lane LOS	A						B	A				
Approach Delay (s)	0.1			0.0			10.4	9.0				
Approach LOS							B	A				
Intersection Summary												
Average Delay			0.9									
Intersection Capacity Utilization			15.1%		ICU Level of Service				A			
Analysis Period (min)			15									



# HCM Unsignalized Intersection Capacity Analysis

## 3: Schute Station Rd & Tucker Station Rd & S. Pope Lick



















09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	75	73	0	0	414	112	0	0	0	20	0	186
Future Volume (vph)	75	73	0	0	414	112	0	0	0	20	0	186
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
Hourly flow rate (vph)	82	79	0	0	450	122	0	0	0	22	0	202
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	161	572	0	224								
Volume Left (vph)	82	0	0	22								
Volume Right (vph)	0	122	0	202								
Hadj (s)	0.14	-0.09	0.00	-0.49								
Departure Headway (s)	5.4	4.7	6.1	5.2								
Degree Utilization, x	0.24	0.74	0.00	0.32								
Capacity (veh/h)	623	754	519	628								
Control Delay (s)	10.1	19.8	9.1	10.6								
Approach Delay (s)	10.1	19.8	0.0	10.6								
Approach LOS	B	C	A	B								
Intersection Summary												
Delay			16.0									
Level of Service			C									
Intersection Capacity Utilization			59.2%	ICU Level of Service					B			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 6: Plantside Drive & Schute Station Rd

















09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	180	22	2	115	2	1	0	0	0	0	6
Future Volume (Veh/h)	12	180	22	2	115	2	1	0	0	0	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	13	196	24	2	125	2	1	0	0	0	0	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	127			220			308	365	110	254	376	64
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	127			220			308	365	110	254	376	64
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	100	100	99
cM capacity (veh/h)	1457			1346			613	556	922	673	548	988
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	13	131	89	2	83	44	1	7				
Volume Left	13	0	0	2	0	0	1	0				
Volume Right	0	0	24	0	0	2	0	7				
cSH	1457	1700	1700	1346	1700	1700	613	988				
Volume to Capacity	0.01	0.08	0.05	0.00	0.05	0.03	0.00	0.01				
Queue Length 95th (ft)	1	0	0	0	0	0	0	1				
Control Delay (s)	7.5	0.0	0.0	7.7	0.0	0.0	10.9	8.7				
Lane LOS	A			A			B	A				
Approach Delay (s)	0.4			0.1			10.9	8.7				
Approach LOS							B	A				
Intersection Summary												
Average Delay			0.5									
Intersection Capacity Utilization			17.3%			ICU Level of Service			A			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 3: Schute Station Rd & Tucker Station Rd & S. Pope Lick



















09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	241	429	0	0	94	70	0	0	0	116	0	200
Future Volume (vph)	241	429	0	0	94	70	0	0	0	116	0	200
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
Hourly flow rate (vph)	262	466	0	0	102	76	0	0	0	126	0	217
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	728	178	0	343								
Volume Left (vph)	262	0	0	126								
Volume Right (vph)	0	76	0	217								
Hadj (s)	0.11	-0.22	0.00	-0.27								
Departure Headway (s)	5.4	5.8	7.0	5.8								
Degree Utilization, x	1.09	0.28	0.00	0.56								
Capacity (veh/h)	655	600	479	600								
Control Delay (s)	85.1	11.0	10.0	16.0								
Approach Delay (s)	85.1	11.0	0.0	16.0								
Approach LOS	F	B	A	C								
Intersection Summary												
Delay				55.6								
Level of Service				F								
Intersection Capacity Utilization				73.9%	ICU Level of Service	D						
Analysis Period (min)				15								

# HCM Unsignalized Intersection Capacity Analysis

## 6: Plantside Drive & Schute Station Rd

















09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	142	2	0	164	1	17	0	1	2	0	12
Future Volume (Veh/h)	3	142	2	0	164	1	17	0	1	2	0	12
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			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
Hourly flow rate (vph)	3	154	2	0	178	1	18	0	1	2	0	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	179			156			263	340	78	262	340	90
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	179			156			263	340	78	262	340	90
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	100	100	100	100	99
cM capacity (veh/h)	1394			1422			658	579	967	667	579	951
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	3	103	53	0	119	60	19	15				
Volume Left	3	0	0	0	0	0	18	2				
Volume Right	0	0	2	0	0	1	1	13				
cSH	1394	1700	1700	1700	1700	1700	670	900				
Volume to Capacity	0.00	0.06	0.03	0.00	0.07	0.04	0.03	0.02				
Queue Length 95th (ft)	0	0	0	0	0	0	2	1				
Control Delay (s)	7.6	0.0	0.0	0.0	0.0	0.0	10.5	9.1				
Lane LOS	A						B	A				
Approach Delay (s)	0.1			0.0			10.5	9.1				
Approach LOS							B	A				
Intersection Summary												
Average Delay	1.0											
Intersection Capacity Utilization	15.8%			ICU Level of Service					A			
Analysis Period (min)	15											

# HCM Unsignalized Intersection Capacity Analysis

## 3: Schute Station Rd & Tucker Station Rd & S. Pope Lick



















09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	71	120	43	29	430	107	7	11	4	19	72	177
Future Volume (vph)	71	120	43	29	430	107	7	11	4	19	72	177
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
Hourly flow rate (vph)	77	130	47	32	467	116	8	12	4	21	78	192
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	254	615	24	291								
Volume Left (vph)	77	32	8	21								
Volume Right (vph)	47	116	4	192								
Hadj (s)	-0.02	-0.07	0.00	-0.35								
Departure Headway (s)	5.9	5.3	7.0	5.9								
Degree Utilization, x	0.41	0.90	0.05	0.48								
Capacity (veh/h)	585	674	446	577								
Control Delay (s)	12.9	37.4	10.4	14.2								
Approach Delay (s)	12.9	37.4	10.4	14.2								
Approach LOS	B	E	B	B								
Intersection Summary												
Delay				25.9								
Level of Service				D								
Intersection Capacity Utilization				61.4%	ICU Level of Service	B						
Analysis Period (min)				15								

# HCM Unsignalized Intersection Capacity Analysis

## 6: Plantside Drive & Schute Station Rd

09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	172	21	2	110	28	1	0	0	6	0	12
Future Volume (Veh/h)	47	172	21	2	110	28	1	0	0	6	0	12
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			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
Hourly flow rate (vph)	51	187	23	2	120	30	1	0	0	7	0	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	150			210			378	454	105	334	451	75
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	150			210			378	454	105	334	451	75
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			100	100	100	99	100	99
cM capacity (veh/h)	1429			1358			532	482	929	578	484	971
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	51	125	85	2	80	70	1	20				
Volume Left	51	0	0	2	0	0	1	7				
Volume Right	0	0	23	0	0	30	0	13				
cSH	1429	1700	1700	1358	1700	1700	532	785				
Volume to Capacity	0.04	0.07	0.05	0.00	0.05	0.04	0.00	0.03				
Queue Length 95th (ft)	3	0	0	0	0	0	0	2				
Control Delay (s)	7.6	0.0	0.0	7.7	0.0	0.0	11.8	9.7				
Lane LOS	A			A			B	A				
Approach Delay (s)	1.5			0.1			11.8	9.7				
Approach LOS							B	A				
Intersection Summary												
Average Delay				1.4								
Intersection Capacity Utilization				22.1%	ICU Level of Service			A				
Analysis Period (min)				15								

# HCM Unsignalized Intersection Capacity Analysis

## 9: Access 1 & Tucker Station Rd










09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	245	22	18	587	3	3
Future Volume (Veh/h)	245	22	18	587	3	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	266	24	20	638	3	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)				500		
pX, platoon unblocked						
vC, conflicting volume			290		956	278
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			290		956	278
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	100
cM capacity (veh/h)			1272		282	761
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	290	658	6			
Volume Left	0	20	3			
Volume Right	24	0	3			
cSH	1700	1272	411			
Volume to Capacity	0.17	0.02	0.01			
Queue Length 95th (ft)	0	1	1			
Control Delay (s)	0.0	0.4	13.9			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.4	13.9			
Approach LOS			B			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			55.4%	ICU Level of Service		B
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 11: Access 2 & Tucker Station Rd

09/06/2022

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	234	14	11	603	2	2
Future Volume (Veh/h)	234	14	11	603	2	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	254	15	12	655	2	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	721					
pX, platoon unblocked						
vC, conflicting volume			269	940		262
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			269	940		262
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			99	99		100
cM capacity (veh/h)			1295	290		777
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	269	667	4			
Volume Left	0	12	2			
Volume Right	15	0	2			
cSH	1700	1295	422			
Volume to Capacity	0.16	0.01	0.01			
Queue Length 95th (ft)	0	1	1			
Control Delay (s)	0.0	0.3	13.6			
Lane LOS			A B			
Approach Delay (s)	0.0	0.3	13.6			
Approach LOS			B			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			50.5%	ICU Level of Service		A
Analysis Period (min)			15			



# HCM Unsignalized Intersection Capacity Analysis

## 13: Access 4 & S. Pope Lick

09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	126	18	14	562	3	2
Future Volume (Veh/h)	126	18	14	562	3	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	137	20	15	611	3	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)				570		
pX, platoon unblocked						
vC, conflicting volume			157		788	147
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			157		788	147
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	100
cM capacity (veh/h)			1423		356	900
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	157	626	5			
Volume Left	0	15	3			
Volume Right	20	0	2			
cSH	1700	1423	470			
Volume to Capacity	0.09	0.01	0.01			
Queue Length 95th (ft)	0	1	1			
Control Delay (s)	0.0	0.3	12.7			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.3	12.7			
Approach LOS			B			
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			50.8%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 15: Access 5 & S. Pope Lick

















09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	99	29	18	572	4	3
Future Volume (Veh/h)	99	29	18	572	4	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	108	32	20	622	4	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			140		786	124
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			140		786	124
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	100
cM capacity (veh/h)			1443		356	927
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	140	642	7			
Volume Left	0	20	4			
Volume Right	32	0	3			
cSH	1700	1443	484			
Volume to Capacity	0.08	0.01	0.01			
Queue Length 95th (ft)	0	1	1			
Control Delay (s)	0.0	0.4	12.6			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.4	12.6			
Approach LOS			B			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			51.4%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Schute Station Rd & Tucker Station Rd & S. Pope Lick



















09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	229	446	10	7	137	66	38	64	26	111	17	191
Future Volume (vph)	229	446	10	7	137	66	38	64	26	111	17	191
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
Hourly flow rate (vph)	249	485	11	8	149	72	41	70	28	121	18	208
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	745	229	139	347								
Volume Left (vph)	249	8	41	121								
Volume Right (vph)	11	72	28	208								
Hadj (s)	0.09	-0.15	-0.03	-0.26								
Departure Headway (s)	6.2	6.7	7.4	6.5								
Degree Utilization, x	1.29	0.43	0.28	0.63								
Capacity (veh/h)	564	499	443	533								
Control Delay (s)	162.7	14.6	13.3	20.0								
Approach Delay (s)	162.7	14.6	13.3	20.0								
Approach LOS	F	B	B	C								
Intersection Summary												
Delay				91.3								
Level of Service				F								
Intersection Capacity Utilization				83.8%	ICU Level of Service	E						
Analysis Period (min)				15								

# HCM Unsignalized Intersection Capacity Analysis

## 6: Plantside Drive & Schute Station Rd

09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	137	2	0	156	10	16	0	1	34	0	43
Future Volume (Veh/h)	12	137	2	0	156	10	16	0	1	34	0	43
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			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
Hourly flow rate (vph)	13	149	2	0	170	11	17	0	1	37	0	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	181			151			308	357	76	277	352	90
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	181			151			308	357	76	277	352	90
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			97	100	100	94	100	95
cM capacity (veh/h)	1392			1428			586	562	970	648	566	949
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	13	99	52	0	113	68	18	84				
Volume Left	13	0	0	0	0	0	17	37				
Volume Right	0	0	2	0	0	11	1	47				
cSH	1392	1700	1700	1700	1700	1700	600	788				
Volume to Capacity	0.01	0.06	0.03	0.00	0.07	0.04	0.03	0.11				
Queue Length 95th (ft)	1	0	0	0	0	0	2	9				
Control Delay (s)	7.6	0.0	0.0	0.0	0.0	0.0	11.2	10.1				
Lane LOS	A						B	B				
Approach Delay (s)	0.6			0.0			11.2	10.1				
Approach LOS							B	B				
Intersection Summary												
Average Delay	2.6											
Intersection Capacity Utilization	20.8%			ICU Level of Service					A			
Analysis Period (min)	15											

# HCM Unsignalized Intersection Capacity Analysis

## 9: Access 1 & Tucker Station Rd

09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	663	5	4	373	19	16
Future Volume (Veh/h)	663	5	4	373	19	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	721	5	4	405	21	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)				500		
pX, platoon unblocked						
vC, conflicting volume			726		1136	724
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			726		1136	724
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		91	96
cM capacity (veh/h)			877		222	426
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	726	409	38			
Volume Left	0	4	21			
Volume Right	5	0	17			
cSH	1700	877	283			
Volume to Capacity	0.43	0.00	0.13			
Queue Length 95th (ft)	0	0	11			
Control Delay (s)	0.0	0.1	19.7			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.1	19.7			
Approach LOS			C			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			45.2%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 11: Access 2 & Tucker Station Rd

09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↘↗	
Traffic Volume (veh/h)	675	3	3	364	13	10
Future Volume (Veh/h)	675	3	3	364	13	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	734	3	3	396	14	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)				721		
pX, platoon unblocked						
vC, conflicting volume			737		1138	736
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			737		1138	736
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		94	97
cM capacity (veh/h)			869		222	419
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	737	399	25			
Volume Left	0	3	14			
Volume Right	3	0	11			
cSH	1700	869	280			
Volume to Capacity	0.43	0.00	0.09			
Queue Length 95th (ft)	0	0	7			
Control Delay (s)	0.0	0.1	19.1			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.1	19.1			
Approach LOS			C			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			45.7%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 13: Access 4 & S. Pope Lick

09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↘↗	
Traffic Volume (veh/h)	578	4	3	195	16	13
Future Volume (Veh/h)	578	4	3	195	16	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	628	4	3	212	17	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (ft)	570					
pX, platoon unblocked						
vC, conflicting volume			632		848	630
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			632		848	630
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	97
cM capacity (veh/h)			951		331	482
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	632	215	31			
Volume Left	0	3	17			
Volume Right	4	0	14			
cSH	1700	951	385			
Volume to Capacity	0.37	0.00	0.08			
Queue Length 95th (ft)	0	0	7			
Control Delay (s)	0.0	0.2	15.2			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.2	15.2			
Approach LOS			C			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			40.7%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 15: Access 5 & S. Pope Lick

09/06/2022

















	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↰	↰	↱
Traffic Volume (veh/h)	584	7	4	173	26	16
Future Volume (Veh/h)	584	7	4	173	26	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	635	8	4	188	28	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			643		835	639
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			643		835	639
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		92	96
cM capacity (veh/h)			942		336	476
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	643	192	45			
Volume Left	0	4	28			
Volume Right	8	0	17			
cSH	1700	942	378			
Volume to Capacity	0.38	0.00	0.12			
Queue Length 95th (ft)	0	0	10			
Control Delay (s)	0.0	0.2	15.8			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.2	15.8			
Approach LOS			C			
Intersection Summary						
Average Delay		0.9				
Intersection Capacity Utilization		41.2%	ICU Level of Service	A		
Analysis Period (min)		15				



# HCM Unsignalized Intersection Capacity Analysis

## 3: Schute Station Rd & Tucker Station Rd & S. Pope Lick



















09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	75	124	43	29	450	112	7	11	4	20	72	186
Future Volume (vph)	75	124	43	29	450	112	7	11	4	20	72	186
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
Hourly flow rate (vph)	82	135	47	32	489	122	8	12	4	22	78	202
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	264	643	24	302								
Volume Left (vph)	82	32	8	22								
Volume Right (vph)	47	122	4	202								
Hadj (s)	-0.01	-0.07	0.00	-0.35								
Departure Headway (s)	6.0	5.4	7.3	6.1								
Degree Utilization, x	0.44	0.96	0.05	0.51								
Capacity (veh/h)	581	656	439	576								
Control Delay (s)	13.6	48.0	10.6	15.1								
Approach Delay (s)	13.6	48.0	10.6	15.1								
Approach LOS	B	E	B	C								
Intersection Summary												
Delay			31.9									
Level of Service			D									
Intersection Capacity Utilization			64.8%	ICU Level of Service					C			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 6: Plantside Drive & Schute Station Rd

09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	160	22	2	115	38	1	0	0	6	0	12
Future Volume (Veh/h)	48	160	22	2	115	38	1	0	0	6	0	12
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			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
Hourly flow rate (vph)	52	174	24	2	125	41	1	0	0	7	0	13
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	166			198			370	460	99	340	452	83
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	166			198			370	460	99	340	452	83
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			100	100	100	99	100	99
cM capacity (veh/h)	1410			1372			538	477	937	572	483	960
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	52	116	82	2	83	83	1	20				
Volume Left	52	0	0	2	0	0	1	7				
Volume Right	0	0	24	0	0	41	0	13				
cSH	1410	1700	1700	1372	1700	1700	538	776				
Volume to Capacity	0.04	0.07	0.05	0.00	0.05	0.05	0.00	0.03				
Queue Length 95th (ft)	3	0	0	0	0	0	0	2				
Control Delay (s)	7.7	0.0	0.0	7.6	0.0	0.0	11.7	9.8				
Lane LOS	A			A			B	A				
Approach Delay (s)	1.6			0.1			11.7	9.8				
Approach LOS							B	A				
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			21.8%		ICU Level of Service				A			
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 9: Access 1 & Tucker Station Rd










09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	252	22	18	615	3	3
Future Volume (Veh/h)	252	22	18	615	3	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	274	24	20	668	3	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)				500		
pX, platoon unblocked						
vC, conflicting volume			298		994	286
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			298		994	286
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	100
cM capacity (veh/h)			1263		267	753
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	298	688	6			
Volume Left	0	20	3			
Volume Right	24	0	3			
cSH	1700	1263	395			
Volume to Capacity	0.18	0.02	0.02			
Queue Length 95th (ft)	0	1	1			
Control Delay (s)	0.0	0.4	14.3			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.4	14.3			
Approach LOS			B			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			56.9%	ICU Level of Service		B
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 11: Access 2 & Tucker Station Rd

09/06/2022

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	241	14	11	631	2	2
Future Volume (Veh/h)	241	14	11	631	2	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	262	15	12	686	2	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	721					
pX, platoon unblocked						
vC, conflicting volume			277	980		270
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			277	980		270
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			99	99		100
cM capacity (veh/h)			1286	275		769
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	277	698	4			
Volume Left	0	12	2			
Volume Right	15	0	2			
cSH	1700	1286	405			
Volume to Capacity	0.16	0.01	0.01			
Queue Length 95th (ft)	0	1	1			
Control Delay (s)	0.0	0.3	14.0			
Lane LOS			A B			
Approach Delay (s)	0.0	0.3	14.0			
Approach LOS			B			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			52.0%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 13: Access 4 & S. Pope Lick

09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	131	18	14	587	3	2
Future Volume (Veh/h)	131	18	14	587	3	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	142	20	15	638	3	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)				570		
pX, platoon unblocked						
vC, conflicting volume			162		820	152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			162		820	152
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	100
cM capacity (veh/h)			1417		341	894
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	162	653	5			
Volume Left	0	15	3			
Volume Right	20	0	2			
cSH	1700	1417	453			
Volume to Capacity	0.10	0.01	0.01			
Queue Length 95th (ft)	0	1	1			
Control Delay (s)	0.0	0.3	13.0			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.3	13.0			
Approach LOS			B			
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			52.1%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 15: Access 5 & S. Pope Lick

















09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↘↙	
Traffic Volume (veh/h)	104	29	18	597	4	3
Future Volume (Veh/h)	104	29	18	597	4	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	113	32	20	649	4	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			145	818		129
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			145	818		129
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			99	99		100
cM capacity (veh/h)			1437	341		921
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	145	669	7			
Volume Left	0	20	4			
Volume Right	32	0	3			
cSH	1700	1437	467			
Volume to Capacity	0.09	0.01	0.01			
Queue Length 95th (ft)	0	1	1			
Control Delay (s)	0.0	0.4	12.8			
Lane LOS			A	B		
Approach Delay (s)	0.0	0.4	12.8			
Approach LOS			B			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			53.0%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 3: Schute Station Rd & Tucker Station Rd & S. Pope Lick



















09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	241	466	10	7	142	70	38	64	26	116	17	200
Future Volume (vph)	241	466	10	7	142	70	38	64	26	116	17	200
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
Hourly flow rate (vph)	262	507	11	8	154	76	41	70	28	126	18	217
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	780	238	139	361								
Volume Left (vph)	262	8	41	126								
Volume Right (vph)	11	76	28	217								
Hadj (s)	0.09	-0.15	-0.03	-0.26								
Departure Headway (s)	6.3	6.8	7.5	6.6								
Degree Utilization, x	1.37	0.45	0.29	0.66								
Capacity (veh/h)	571	496	436	530								
Control Delay (s)	196.8	15.1	13.5	21.4								
Approach Delay (s)	196.8	15.1	13.5	21.4								
Approach LOS	F	C	B	C								
Intersection Summary												
Delay				109.8								
Level of Service				F								
Intersection Capacity Utilization				86.9%	ICU Level of Service							E
Analysis Period (min)				15								

# HCM Unsignalized Intersection Capacity Analysis

## 6: Plantside Drive & Schute Station Rd

09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	143	2	0	164	10	17	0	1	34	0	44
Future Volume (Veh/h)	12	143	2	0	164	10	17	0	1	34	0	44
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			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
Hourly flow rate (vph)	13	155	2	0	178	11	18	0	1	37	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	189			157			319	371	78	288	366	94
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	189			157			319	371	78	288	366	94
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			97	100	100	94	100	95
cM capacity (veh/h)	1382			1420			575	552	966	637	555	944
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	13	103	54	0	119	70	19	85				
Volume Left	13	0	0	0	0	0	18	37				
Volume Right	0	0	2	0	0	11	1	48				
cSH	1382	1700	1700	1700	1700	1700	588	780				
Volume to Capacity	0.01	0.06	0.03	0.00	0.07	0.04	0.03	0.11				
Queue Length 95th (ft)	1	0	0	0	0	0	3	9				
Control Delay (s)	7.6	0.0	0.0	0.0	0.0	0.0	11.3	10.2				
Lane LOS	A						B	B				
Approach Delay (s)	0.6			0.0			11.3	10.2				
Approach LOS							B	B				
Intersection Summary												
Average Delay	2.5											
Intersection Capacity Utilization	20.8%			ICU Level of Service					A			
Analysis Period (min)	15											



# HCM Unsignalized Intersection Capacity Analysis

## 9: Access 1 & Tucker Station Rd

09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	695	5	4	387	19	16
Future Volume (Veh/h)	695	5	4	387	19	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	755	5	4	421	21	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)				500		
pX, platoon unblocked						
vC, conflicting volume			760		1186	758
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			760		1186	758
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		90	96
cM capacity (veh/h)			852		207	407
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	760	425	38			
Volume Left	0	4	21			
Volume Right	5	0	17			
cSH	1700	852	266			
Volume to Capacity	0.45	0.00	0.14			
Queue Length 95th (ft)	0	0	12			
Control Delay (s)	0.0	0.1	20.8			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.1	20.8			
Approach LOS			C			
Intersection Summary						
Average Delay		0.7				
Intersection Capacity Utilization		46.9%	ICU Level of Service	A		
Analysis Period (min)		15				

# HCM Unsignalized Intersection Capacity Analysis

## 11: Access 2 & Tucker Station Rd

09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	707	3	3	378	13	10
Future Volume (Veh/h)	707	3	3	378	13	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	768	3	3	411	14	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh						
Upstream signal (ft)	721					
pX, platoon unblocked						
vC, conflicting volume			771		1186	770
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			771		1186	770
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		93	97
cM capacity (veh/h)			844		208	401
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	771	414	25			
Volume Left	0	3	14			
Volume Right	3	0	11			
cSH	1700	844	263			
Volume to Capacity	0.45	0.00	0.09			
Queue Length 95th (ft)	0	0	8			
Control Delay (s)	0.0	0.1	20.1			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.1	20.1			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			47.4%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 13: Access 4 & S. Pope Lick

09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	603	4	3	203	16	13
Future Volume (Veh/h)	603	4	3	203	16	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	655	4	3	221	17	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)				570		
pX, platoon unblocked						
vC, conflicting volume			659		884	657
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			659		884	657
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	97
cM capacity (veh/h)			929		315	465
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	659	224	31			
Volume Left	0	3	17			
Volume Right	4	0	14			
cSH	1700	929	369			
Volume to Capacity	0.39	0.00	0.08			
Queue Length 95th (ft)	0	0	7			
Control Delay (s)	0.0	0.2	15.7			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.2	15.7			
Approach LOS			C			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			42.0%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 15: Access 5 & S. Pope Lick






















09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↘↗	
Traffic Volume (veh/h)	609	7	4	181	26	16
Future Volume (Veh/h)	609	7	4	181	26	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	662	8	4	197	28	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			670		871	666
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			670		871	666
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		91	96
cM capacity (veh/h)			920		320	459
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	670	201	45			
Volume Left	0	4	28			
Volume Right	8	0	17			
cSH	1700	920	362			
Volume to Capacity	0.39	0.00	0.12			
Queue Length 95th (ft)	0	0	11			
Control Delay (s)	0.0	0.2	16.4			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.2	16.4			
Approach LOS			C			
Intersection Summary						
Average Delay		0.9				
Intersection Capacity Utilization		42.5%	ICU Level of Service	A		
Analysis Period (min)		15				

# HCM Unsignalized Intersection Capacity Analysis

## 3: Schute Station Rd & Tucker Station Rd & S. Pope Lick



















09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	241	466	10	7	142	70	38	64	26	116	17	200
Future Volume (vph)	241	466	10	7	142	70	38	64	26	116	17	200
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
Hourly flow rate (vph)	262	507	11	8	154	76	41	70	28	126	18	217
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2				
Volume Total (vph)	262	518	8	230	41	98	126	235				
Volume Left (vph)	262	0	8	0	41	0	126	0				
Volume Right (vph)	0	11	0	76	0	28	0	217				
Hadj (s)	0.53	0.02	0.53	-0.20	0.53	-0.17	0.53	-0.61				
Departure Headway (s)	7.1	6.6	7.8	7.1	8.4	7.7	7.9	6.8				
Degree Utilization, x	0.51	0.94	0.02	0.45	0.10	0.21	0.28	0.44				
Capacity (veh/h)	498	536	439	489	413	450	439	514				
Control Delay (s)	16.1	50.0	9.8	14.7	11.1	11.5	12.8	13.9				
Approach Delay (s)	38.6		14.5		11.4		13.5					
Approach LOS	E		B		B		B					
Intersection Summary												
Delay			26.4									
Level of Service			D									
Intersection Capacity Utilization			58.4%		ICU Level of Service		B					
Analysis Period (min)			15									

# HCM Unsignalized Intersection Capacity Analysis

## 6: Plantside Drive & Schute Station Rd

09/06/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	143	2	0	164	10	17	0	1	34	0	44
Future Volume (Veh/h)	12	143	2	0	164	10	17	0	1	34	0	44
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			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
Hourly flow rate (vph)	13	155	2	0	178	11	18	0	1	37	0	48
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	189			157			319	371	78	288	366	94
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	189			157			319	371	78	288	366	94
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			97	100	100	94	100	95
cM capacity (veh/h)	1382			1420			575	552	966	637	555	944
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1				
Volume Total	13	103	54	0	119	70	19	85				
Volume Left	13	0	0	0	0	0	18	37				
Volume Right	0	0	2	0	0	11	1	48				
cSH	1382	1700	1700	1700	1700	1700	588	780				
Volume to Capacity	0.01	0.06	0.03	0.00	0.07	0.04	0.03	0.11				
Queue Length 95th (ft)	1	0	0	0	0	0	3	9				
Control Delay (s)	7.6	0.0	0.0	0.0	0.0	0.0	11.3	10.2				
Lane LOS	A						B	B				
Approach Delay (s)	0.6			0.0			11.3	10.2				
Approach LOS							B	B				
Intersection Summary												
Average Delay	2.5											
Intersection Capacity Utilization	20.8%			ICU Level of Service					A			
Analysis Period (min)	15											

# HCM Unsignalized Intersection Capacity Analysis

## 9: Access 1 & Tucker Station Rd

09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↘↗	
Traffic Volume (veh/h)	695	5	4	387	19	16
Future Volume (Veh/h)	695	5	4	387	19	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	755	5	4	421	21	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)				500		
pX, platoon unblocked						
vC, conflicting volume			760		1186	758
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			760		1186	758
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		90	96
cM capacity (veh/h)			852		207	407
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	760	425	38			
Volume Left	0	4	21			
Volume Right	5	0	17			
cSH	1700	852	266			
Volume to Capacity	0.45	0.00	0.14			
Queue Length 95th (ft)	0	0	12			
Control Delay (s)	0.0	0.1	20.8			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.1	20.8			
Approach LOS			C			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			46.9%	ICU Level of Service	A	
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 11: Access 2 & Tucker Station Rd

09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↘↗	
Traffic Volume (veh/h)	707	3	3	378	13	10
Future Volume (Veh/h)	707	3	3	378	13	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	768	3	3	411	14	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)				721		
pX, platoon unblocked						
vC, conflicting volume			771		1186	770
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			771		1186	770
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		93	97
cM capacity (veh/h)			844		208	401
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	771	414	25			
Volume Left	0	3	14			
Volume Right	3	0	11			
cSH	1700	844	263			
Volume to Capacity	0.45	0.00	0.09			
Queue Length 95th (ft)	0	0	8			
Control Delay (s)	0.0	0.1	20.1			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.1	20.1			
Approach LOS			C			
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			47.4%	ICU Level of Service		A
Analysis Period (min)			15			



# HCM Unsignalized Intersection Capacity Analysis

## 13: Access 4 & S. Pope Lick

09/06/2022

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↷	↶	↷
Traffic Volume (veh/h)	603	4	3	203	16	13
Future Volume (Veh/h)	603	4	3	203	16	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	655	4	3	221	17	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)				570		
pX, platoon unblocked						
vC, conflicting volume			659		884	657
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			659		884	657
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	97
cM capacity (veh/h)			929		315	465
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	659	224	31			
Volume Left	0	3	17			
Volume Right	4	0	14			
cSH	1700	929	369			
Volume to Capacity	0.39	0.00	0.08			
Queue Length 95th (ft)	0	0	7			
Control Delay (s)	0.0	0.2	15.7			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.2	15.7			
Approach LOS			C			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			42.0%	ICU Level of Service		A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 15: Access 5 & S. Pope Lick

09/06/2022

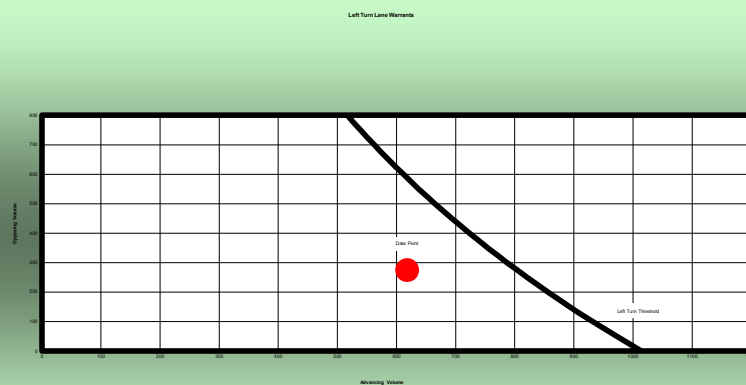
	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↘↗	
Traffic Volume (veh/h)	609	7	4	181	26	16
Future Volume (Veh/h)	609	7	4	181	26	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	662	8	4	197	28	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None		None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			670		871	666
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			670		871	666
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		91	96
cM capacity (veh/h)			920		320	459
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	670	201	45			
Volume Left	0	4	28			
Volume Right	8	0	17			
cSH	1700	920	362			
Volume to Capacity	0.39	0.00	0.12			
Queue Length 95th (ft)	0	0	11			
Control Delay (s)	0.0	0.2	16.4			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.2	16.4			
Approach LOS			C			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			42.5%	ICU Level of Service		A
Analysis Period (min)			15			

## **APPENDIX F: AUXILLIARY TURN LANE WARRANTS**

## Access Point 1 (AM Peak) Westbound Left Turn Lane Warrants

### Input Fields

Left Turn Volume (vph)	18	Speed Limit (mph)	35
Advancing Volume (vph)	615	No. of through lanes	2
Opposing Volume (vph)	274	Percent Heavy Vehicles (decimal percent)	0.05



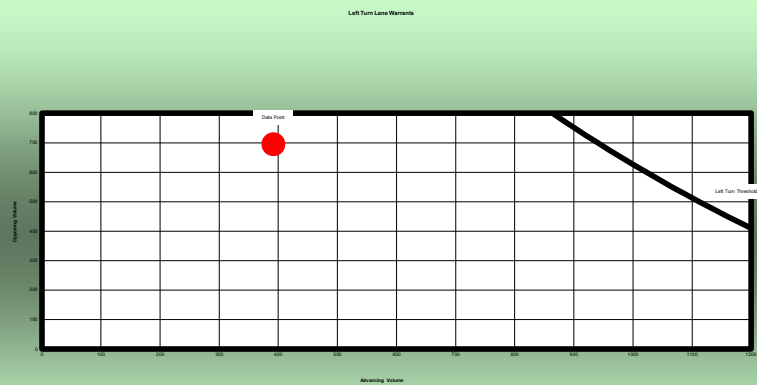
## Left Turn Lane NOT Warranted

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.

## Access Point 1 (PM Peak) Westbound Left Turn Lane Warrants

### Input Fields

Left Turn Volume (vph)	4	Speed Limit (mph)	35
Advancing Volume (vph)	387	No. of through lanes	2
Opposing Volume (vph)	695	Percent Heavy Vehicles (decimal percent)	0.05



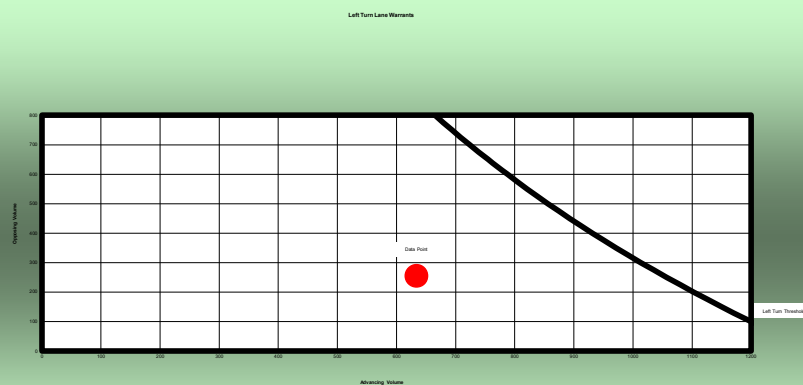
**Left Turn Lane NOT Warranted**

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.

## Access Point 2 (AM Peak) Westbound Left Turn Lane Warrants

### Input Fields

Left Turn Volume (vph)	11	Speed Limit (mph)	35
Advancing Volume (vph)	631	No. of through lanes	2
Opposing Volume (vph)	255	Percent Heavy Vehicles (decimal percent)	0.05



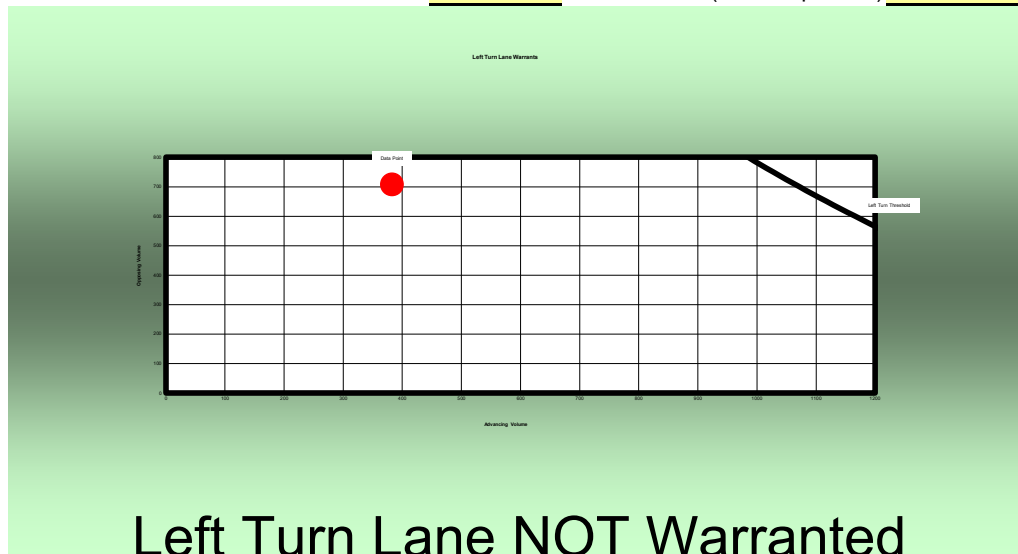
Left Turn Lane NOT Warranted

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.

## Access Point 2 (PM Peak) Westbound Left Turn Lane Warrants

### Input Fields

Left Turn Volume (vph)	3	Speed Limit (mph)	35
Advancing Volume (vph)	378	No. of through lanes	2
Opposing Volume (vph)	707	Percent Heavy Vehicles (decimal percent)	0.05

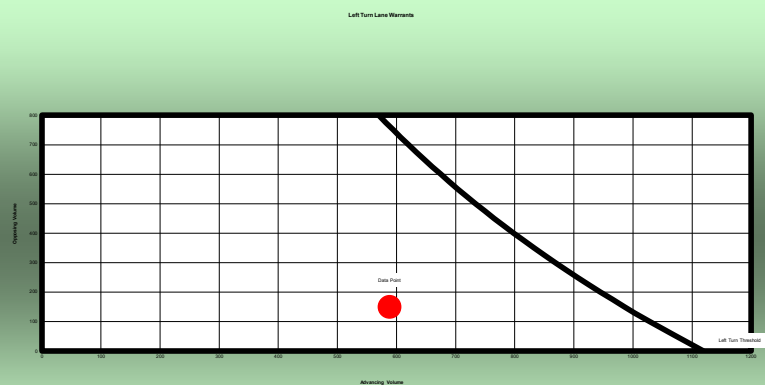


Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

## Access Point 4 (AM Peak) Westbound Left Turn Lane Warrants

### Input Fields

Left Turn Volume (vph)	14	Speed Limit (mph)	35
Advancing Volume (vph)	587	No. of through lanes	2
Opposing Volume (vph)	149	Percent Heavy Vehicles (decimal percent)	0.05



Left Turn Lane NOT Warranted

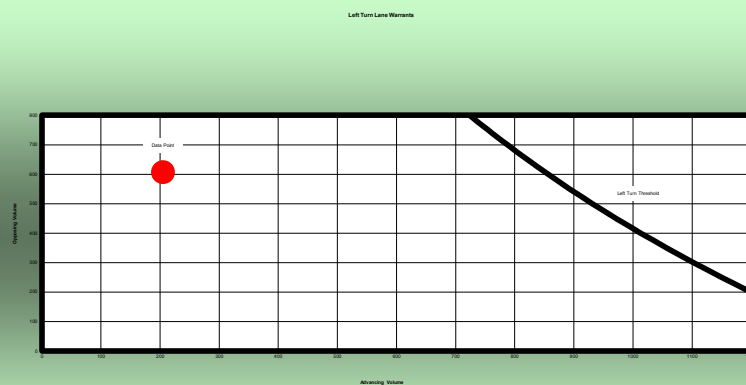
Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.



## Access Point 4 (PM Peak) Westbound Left Turn Lane Warrants

### Input Fields

Left Turn Volume (vph)	3	Speed Limit (mph)	35
Advancing Volume (vph)	203	No. of through lanes	2
Opposing Volume (vph)	607	Percent Heavy Vehicles (decimal percent)	0.05



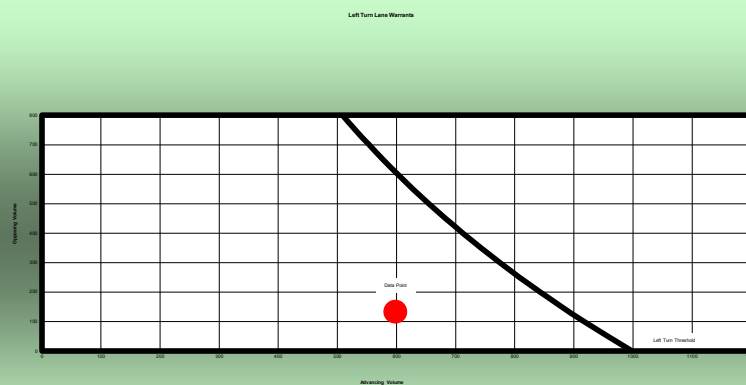
Left Turn Lane NOT Warranted

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.

## Access Point 5 (AM Peak) Westbound Left Turn Lane Warrants

### Input Fields

Left Turn Volume (vph)	18	Speed Limit (mph)	35
Advancing Volume (vph)	597	No. of through lanes	2
Opposing Volume (vph)	133	Percent Heavy Vehicles (decimal percent)	0.05



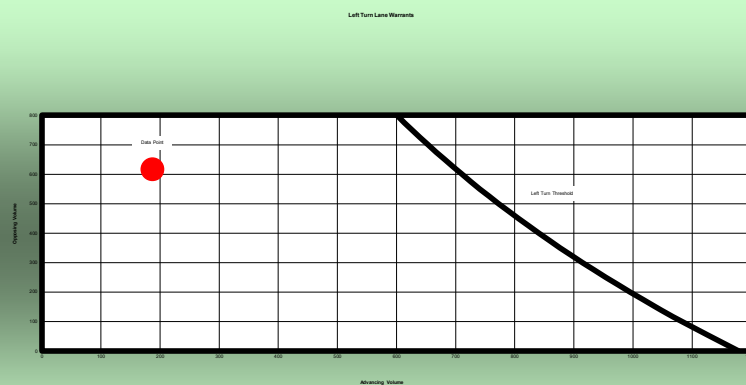
Left Turn Lane NOT Warranted

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.

## Access Point 5 (PM Peak) Westbound Left Turn Lane Warrants

### Input Fields

Left Turn Volume (vph)	4	Speed Limit (mph)	35
Advancing Volume (vph)	185	No. of through lanes	2
Opposing Volume (vph)	616	Percent Heavy Vehicles (decimal percent)	0.05



## Left Turn Lane NOT Warranted

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.

## Access Point 1 (AM Peak) Eastbound Right Turn Lane Warrants

### Input Fields

Right Turn Volume (vph)

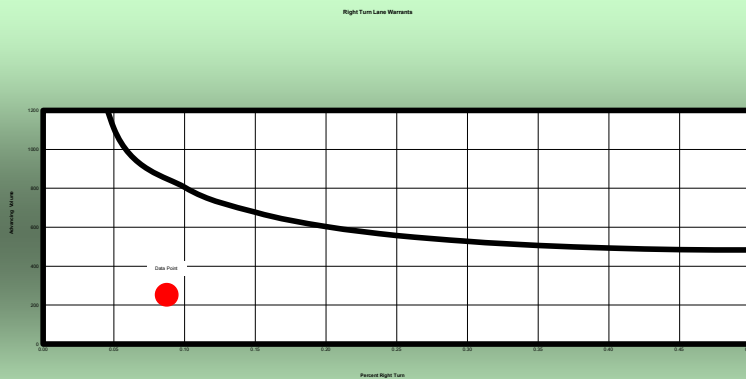
22

Speed Limit (mph)

35

Advancing Volume (vph)

252



## Right Turn Lane NOT Warranted

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.

## Access Point 1 (PM Peak) Eastbound Right Turn Lane Warrants

### Input Fields

Right Turn Volume (vph)

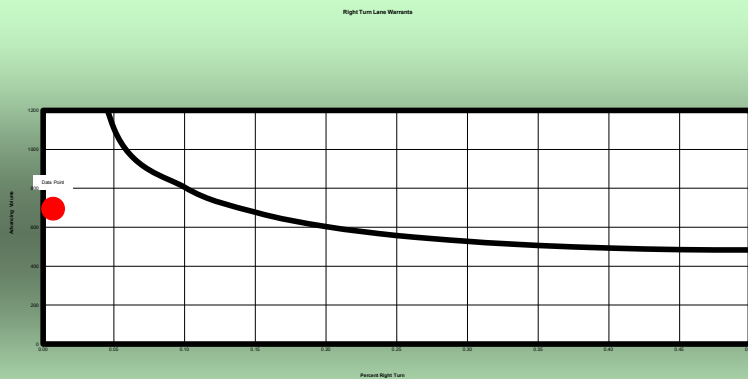
5

Speed Limit (mph)

35

Advancing Volume (vph)

695



## Right Turn Lane NOT Warranted

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.

## Access Point 2 (AM Peak) Eastbound Right Turn Lane Warrants

### Input Fields

Right Turn Volume (vph)

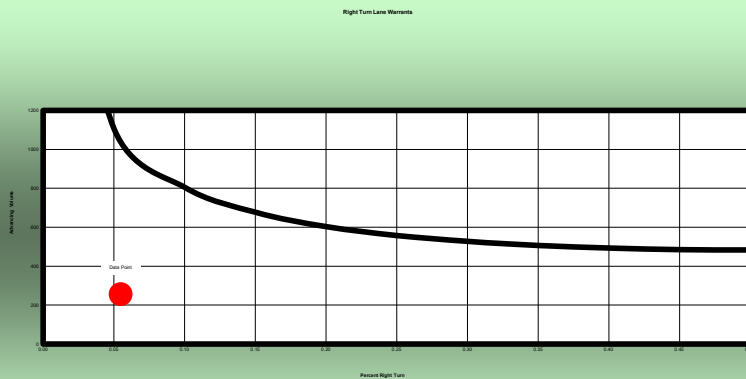
14

Speed Limit (mph)

35

Advancing Volume (vph)

255



## Right Turn Lane NOT Warranted

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.

## Access Point 2 (PM Peak) Eastbound Right Turn Lane Warrants

### Input Fields

Right Turn Volume (vph)

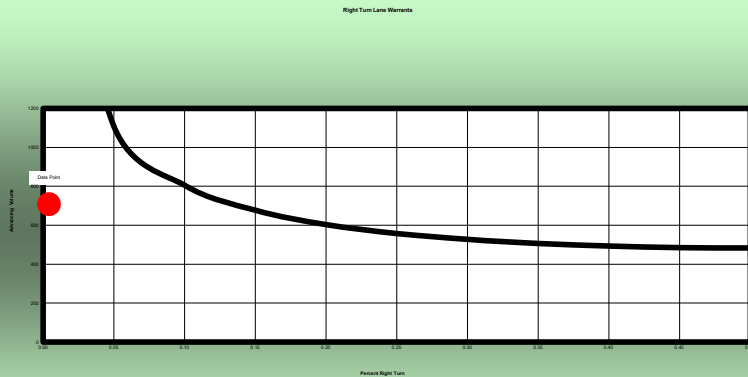
3

Speed Limit (mph)

35

Advancing Volume (vph)

707



## Right Turn Lane NOT Warranted

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.

## Access Point 4 (AM Peak) Eastbound Right Turn Lane Warrants

### Input Fields

Right Turn Volume (vph)

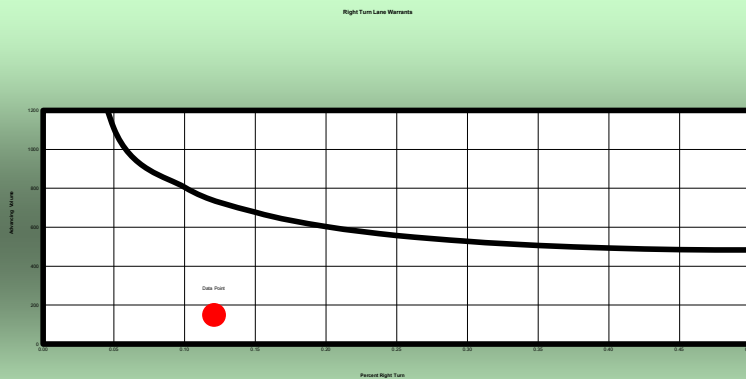
18

Speed Limit (mph)

35

Advancing Volume (vph)

149



## Right Turn Lane NOT Warranted

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.



## Access Point 4 (PM Peak) Eastbound Right Turn Lane Warrants

### Input Fields

Right Turn Volume (vph)

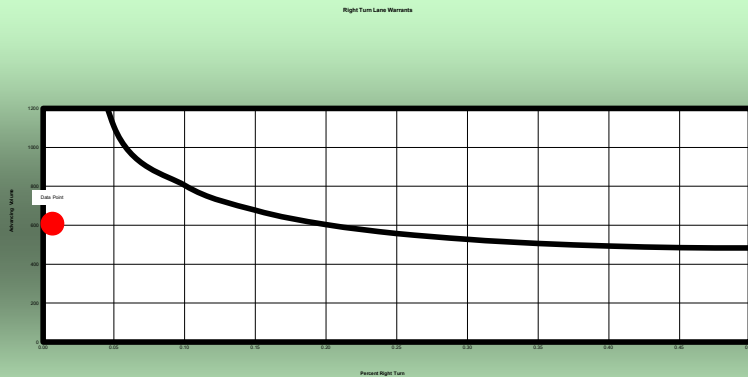
4

Speed Limit (mph)

35

Advancing Volume (vph)

607



## Right Turn Lane NOT Warranted

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.

## Access Point 5 (AM Peak) Eastbound Right Turn Lane Warrants

### Input Fields

Right Turn Volume (vph)

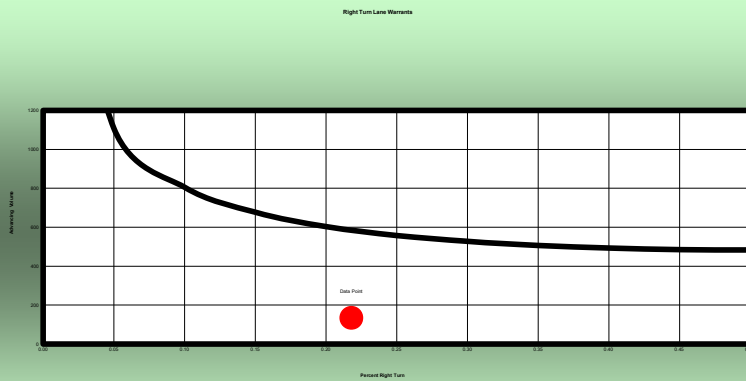
29

Speed Limit (mph)

35

Advancing Volume (vph)

133



## Right Turn Lane NOT Warranted

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.

## Access Point 5 (PM Peak) Eastbound Right Turn Lane Warrants

### Input Fields

Right Turn Volume (vph)

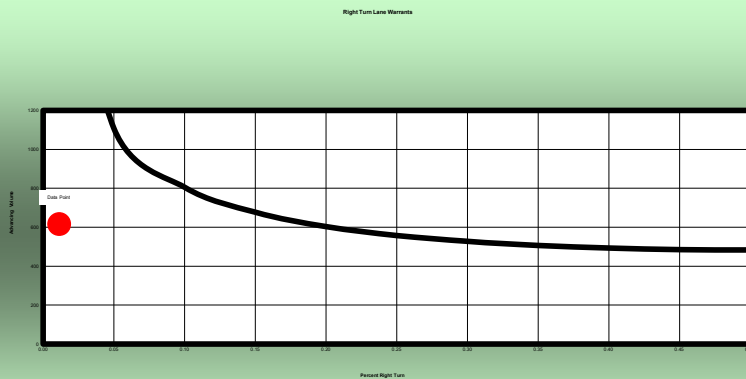
7

Speed Limit (mph)

35

Advancing Volume (vph)

616



## Right Turn Lane NOT Warranted

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.