

December 21, 2023

Mr. Josh Sanderson  
Smithbilt Homes  
4907 Ball Road  
Knoxville, Tennessee 37931

RE: Traffic Impact Letter – Roberts Road Residential (Mari Ben Subdivision)  
Parcel ID #022 00514  
Knox County, Tennessee

Dear Mr. Sanderson:

Cannon & Cannon, Inc is pleased to provide a preliminary impact assessment for the proposed rezoning of a parcel adjacent to the existing Mari Ben Subdivision located in the Corryton community of Knox County, Tennessee. Discussions with Knoxville-Knox County Planning determined a Traffic Impact Letter (TIL) is required due to rezoning within the "Rural Area" portion of Knox County according to the Growth Policy Plan. The intent of this TIL is to determine the adequacy of the adjacent roadway network and evaluate anticipated traffic conditions for this development.

Please do not hesitate to contact us with any questions you may have or if you require additional information.

Sincerely,  
Cannon & Cannon, Inc.

*Wesley Stokes*

Wesley Stokes, P.E.  
Project Manager

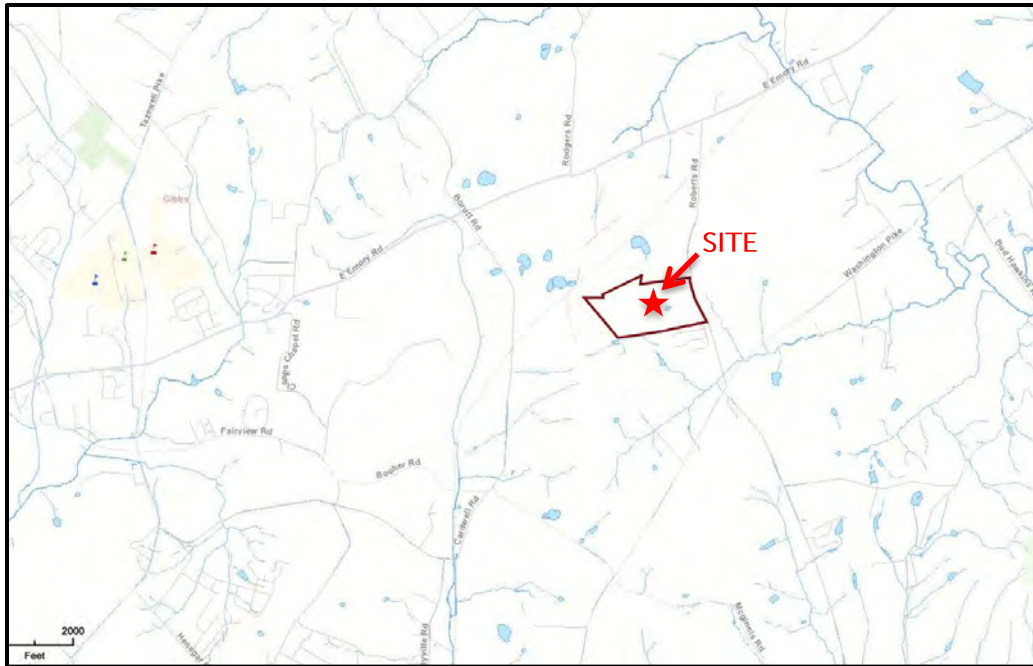


2-J-24-RZ / 2-E-24-SP  
TIL Version 1  
12/27/2023

## Project Description and Site Location

The parcel under consideration for rezoning is currently zoned as Agricultural land use and is proposed to be rezoned to Rural Residential. The parcel has a recorded deeded acreage of 74.73 acres. Under existing Agricultural zoning, 1 unit per acre is allowed to be developed. A proposed rezoning to Rural Residential would allow up to 3 dwelling units per acre.

Although a site plan is not yet available for this proposed project, developer representatives have indicated that access to the project will occur via tying into an existing stub-out within the Mari Ben Subdivision and an additional full movement access onto Roberts Road north of Mari Ben Lane. FIGURE 1 is a Site Location Map that shows the proposed project site in relation to major roadways in the area.



**FIGURE 1 – SITE LOCATION MAP**

## Existing Roadway Conditions

Roberts Road is a two-lane marked roadway that extends from Emory Road (TN-331) to Rutledge Pike (US-11W). Within the vicinity of the proposed development, Roberts Road is classified as a Major Collector according to the Knox County Major Road Plan. The roadway width varies between 20 and 21 feet in the study vicinity with a posted speed limit of 40 mph and no curb and gutter.

Emory Road (SR 331) and Washington Pike are two-lane marked roadways within the vicinity of the proposed development. Emory Road (SR 331) Road is classified as a Major Arterial and Washington Pike is classified as a Minor Arterial according to the Knox County Major Road Plan. The roadway widths vary between 20 and 22 feet in the study vicinity and have posted speed limits of 45 mph and no curb and gutter.

## Existing Traffic Data

Two types of existing traffic data were gathered for this study - annual average daily traffic (AADT) and turning movement counts. The Tennessee Department of Transportation (TDOT) collects annual average daily traffic (AADT) data on roadways in the study area. Three count stations were found near the project site that were felt to have relevance for this study. The most currently available data from this station is contained in Table 1.

**TABLE 1: ANNUAL AVERAGE DAILY TRAFFIC COUNT SUMMARY**

COUNT YEAR	TDOT COUNT STATION 47000566 ROBERTS ROAD NORTH OF SITE	TDOT COUNT STATION 47000011 SR331 – EMORY ROAD NORTH OF SITE	TDOT COUNT STATION 47000018 WASHINGTON PIKE SOUTH OF SITE
2018	2,575	2,773	3,731
2019	2,397	2,520	3,812
2020	2,129	2,724	3,637
2021	2,391	1,972	3,456
2022	2,573	2,239	3,484

In addition to the available AADT data, intersection turning movement traffic counts were collected at the intersections of Roberts Road at Emory Road (SR 331), Mari Ben Lane at Roberts Road, and Roberts Road at Washington Pike on November 29, 2023. The count summary sheets are contained in the attached Supplemental Information.

## Existing Average Daily Traffic Capacity Analysis

Average Daily Traffic level analysis was performed utilizing Florida Department of Transportation's (FDOT) Multimodal Quality/Level of Service Handbook. The information provided in this handbook provides a generalized level of service analysis for roadways based on AADT volumes. For the purposes of this TIL, the 2022 AADT data was utilized for the analysis. TABLE 2 provides a summary of the existing LOS for the project area roadways based on FDOT's "Table 4-1: Generalized Annual Average Daily Volumes."

**TABLE 2: ANNUAL AVERAGE DAILY TRAFFIC – EXISTING ANALYSIS**

ROADWAY NAME	ROADWAY CLASS	AVERAGE DAILY TRAFFIC	NEXT HIGHEST FDOT CAPACITY	LEVEL OF SERVICE
Roberts Road	Major Collector	2,573	7,280	Better than LOS C
Emory Road	Major Arterial	2,239	3,360	LOS B
Washington Pike	Minor Arterial	3,484	7,280	Better than LOS C

## Trip Generation Summary

In order to estimate the expected traffic volumes to be generated by the proposed development, the procedures of *Trip Generation, 11<sup>th</sup> Edition* (Institute of Transportation Engineers-ITE) were utilized. The generated traffic volumes were determined based on the AM and PM peak hours of adjacent street traffic. A comparison was made between the existing Agricultural land use of 1 dwelling unit / acre and the proposed Rural Residential land use of 3 dwelling units / acre. The difference between the two land uses is shown in TABLE 3.

**TABLE 3: TRIP GENERATION SUMMARY**

ITE LAND USE CODE	LAND USE SCENARIO	SIZE	DAILY	AM PEAK HOUR			PM PEAK HOUR		
				Enter	Exit	Total	Enter	Exit	Total
210	Proposed Zoning	224 DU	2,112	39	118	157	133	78	211
	Existing Zoning	74 DU	698	13	39	52	44	26	70
DIFFERENCE		<b>150 DU</b>	<b>1,414</b>	<b>26</b>	<b>79</b>	<b>105</b>	<b>89</b>	<b>52</b>	<b>141</b>

## Build-out Average Daily Traffic Capacity Analysis

In order to evaluate the build-out average daily traffic capacity analysis, the trip generation scenario for the proposed zoning was added to the existing AADT volumes for the surrounding roadway network. Since the proposed development is single-family residential, the anticipated trip distribution from the proposed residential development is believed to have a directional split like that of the existing Mari Ben Subdivision. Based on a review of the turning movement counts performed at the intersection of Mari Ben Lane at Roberts Road, roughly 30% of the proposed daily traffic will travel north to the intersection of Roberts Road at Emory Road and roughly 70% of the proposed daily traffic will travel south to the intersection of Roberts Road at Washington Pike. TABLE 4 provides a summary of the build-out LOS for the project area roadways based on FDOT's "Table 4-1: Generalized Annual Average Daily Volumes." (Provided in the Supplemental Information) As can be seen, the increase in traffic associated with the proposed rezoning remains within the same level of service for each of the roadways in the project study area.

**TABLE 4: ANNUAL AVERAGE DAILY TRAFFIC – BUILD-OUT ANALYSIS**

ROADWAY NAME	ROADWAY CLASS	AVERAGE DAILY TRAFFIC	NEXT HIGHEST FDOT CAPACITY	LEVEL OF SERVICE
Roberts Road	Major Collector	2,573 + 2,112 = <b>4,685</b>	7,280	Better than LOS C
Emory Road	Major Arterial	2,239 + 634 = <b>2,873</b>	3,360	LOS B
Washington Pike	Minor Arterial	3,484 + 1,478 = <b>4,962</b>	7,280	Better than LOS C

## Preliminary Turn Lane Assessments

The intersections of Roberts Road at Emory Road and Roberts Road at Washington Pike were preliminarily evaluated for turn lane needs. The intersection turning movement count data was utilized for baseline traffic volumes and the existing directional distribution splits at each intersection were mimicked for proposed traffic volumes utilized in the warrant determination. The resulting turn lane warrant analysis indicates that under existing conditions, neither a left turn lane nor right turn lane are warranted at either studied intersection.

Under build-out conditions, preliminary analysis indicates that right turn lanes will not be warranted during the AM and PM peak hours at either studied intersection. Preliminary analysis indicates that a left turn lane could potentially be warranted at the intersection of Roberts Road at Washington Pike during the PM peak hour. The resulting volumes do not meet the warrant thresholds for the AM peak hour. At the intersection of Roberts Road at Emory Road, the resulting volumes do not meet the left turn lane warrant thresholds for either peak hour.

The turn lane warrant sheets are provided in the Supplemental Information for Existing and Build-out conditions.

## Sight Distance Assessment

As previously mentioned, developer representatives have indicated that an additional full movement access point will be provided onto Roberts Road north of the intersection of Mari Ben Lane at Roberts Road. The exact location of the proposed access is undetermined at the time of preparing this TIL. With a posted speed limit of 40 mph, typical Knox County sight distance requirements indicate 400 feet of sight distance (10x the posted speed limit) will be required for newly created intersections. A desktop review of the property frontage along Roberts Road reveals that 400 feet of sight distance is likely achievable with the existing horizontal and vertical geometry present along Roberts Road. When the site plan for this project is developed, it is recommended to locate the proposed site driveway where sight distance requirements will be able to be met.

## Conclusions and Recommendations

It is concluded from this traffic impact letter that the proposed residential development will not result in any significant traffic operational concerns at the study intersections if the parcel were to be rezoned to Rural Residential at 3 dwelling units / acre. The AADT level of service analysis indicates similar roadway capacity operation between existing and build-out conditions. Additionally, the preliminary turn lane warrant assessment indicates a left turn lane at the intersection of Roberts Road at Washington Pike is potentially warranted during the PM peak hour under build-out conditions.

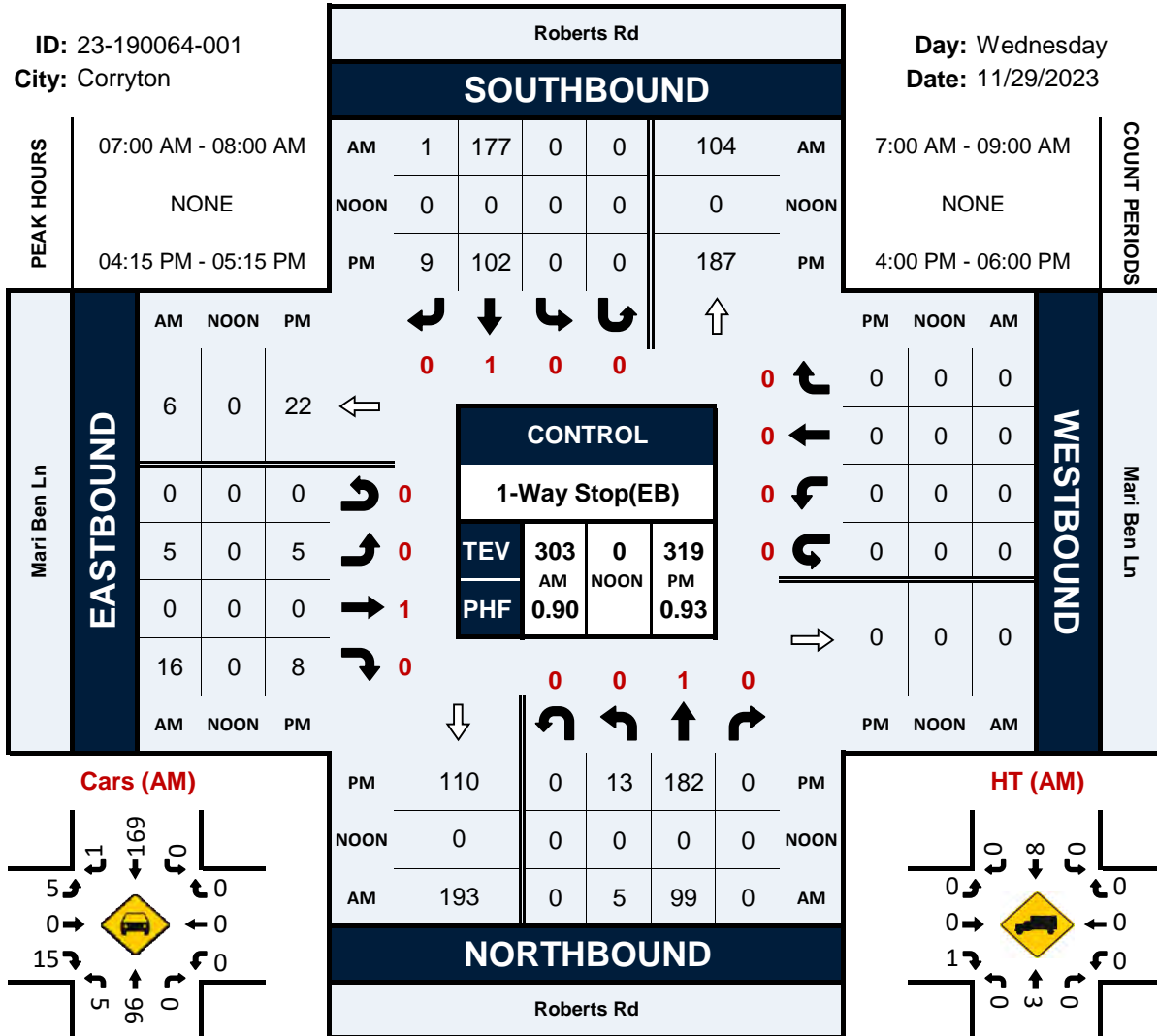
SUPPLEMENTAL INFORMATION

# Roberts Rd & Mari Ben Ln

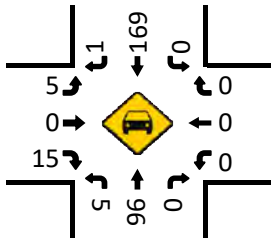
## Peak Hour Turning Movement Count

ID: 23-190064-001  
City: Corryton

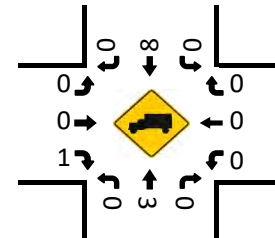
Day: Wednesday  
Date: 11/29/2023



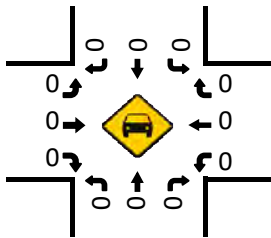
Cars (AM)



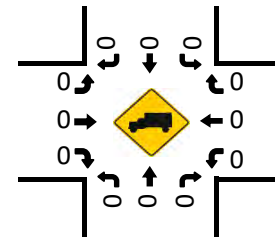
HT (AM)



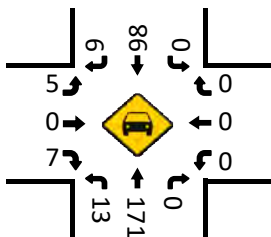
Cars (NOON)



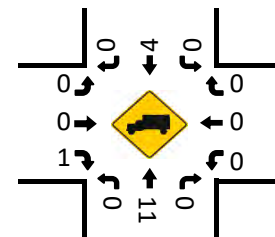
HT (NOON)



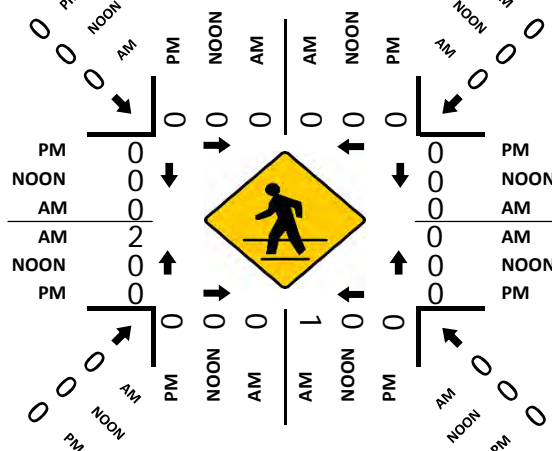
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)







Project ID: 23-190064-001  
 Location: Roberts Rd & Mari Ben Ln  
 City: Corryton

### PEAK HOURS

Day: Wednesday  
 Date: 11/29/2023

**AM**

Start Time	Roberts Rd Northbound					Roberts Rd Southbound					Mari Ben Ln Eastbound					Mari Ben Ln Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
7:00 AM	0	21	0	0	21	0	40	1	0	41	2	0	1	0	3	0	0	0	0	0	65
7:15 AM	0	18	0	0	18	0	43	0	0	43	2	0	9	0	11	0	0	0	0	0	72
7:30 AM	2	26	0	0	28	0	51	0	0	51	1	0	4	0	5	0	0	0	0	0	84
7:45 AM	3	34	0	0	37	0	43	0	0	43	0	0	2	0	2	0	0	0	0	0	82
Total Volume	5	99	0	0	104	0	177	1	0	178	5	0	16	0	21	0	0	0	0	0	303
% App. Total	4.8	95.2	0.0	0.0	100	0.0	99.4	0.6	0.0	100	23.8	0.0	76.2	0.0	100	0.0	0.0	0.0	0.0	0	
PHF	0.703					0.873					0.477					0.902					
Cars, PU, Vans	5	96	0	0	101	0	169	1	0	170	5	0	15	0	20	0	0	0	0	0	291
% Cars, PU, Vans	100.0	97.0	0.0	0.0	97.1	0.0	95.5	100.0	0.0	95.5	100.0	0.0	93.8	0.0	95.2	0.0	0.0	0.0	0.0	0.0	96.0
Heavy trucks	0	3	0	0	3	0	8	0	0	8	0	0	1	0	1	0	0	0	0	0	12
%Heavy trucks	0.0	3.0	0.0	0.0	2.9	0.0	4.5	0.0	0.0	4.5	0.0	0.0	6.3	0.0	4.8	0.0	0.0	0.0	0.0	0.0	4.0

**PM**

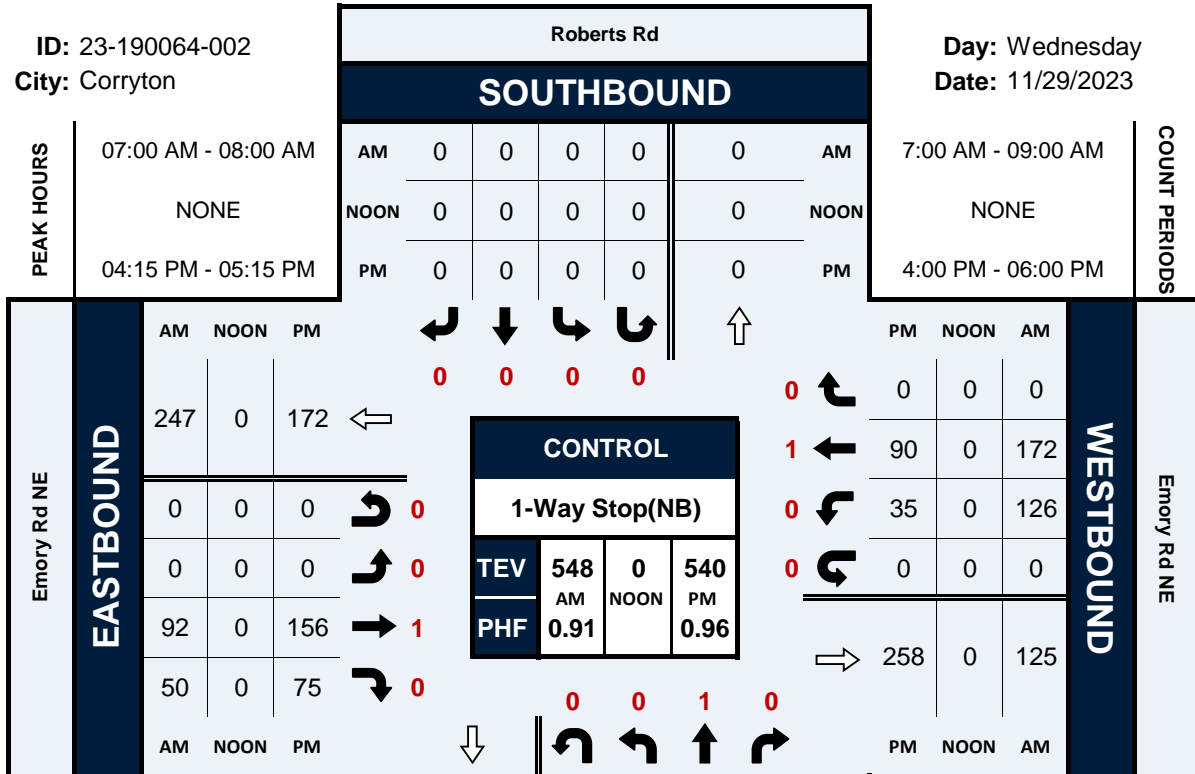
Start Time	Roberts Rd Northbound					Roberts Rd Southbound					Mari Ben Ln Eastbound					Mari Ben Ln Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
4:15 PM	1	50	0	0	51	0	23	1	0	24	1	0	3	0	4	0	0	0	0	0	79
4:30 PM	6	45	0	0	51	0	29	2	0	31	1	0	3	0	4	0	0	0	0	0	86
4:45 PM	3	39	0	0	42	0	26	3	0	29	1	0	1	0	2	0	0	0	0	0	73
5:00 PM	3	48	0	0	51	0	24	3	0	27	2	0	1	0	3	0	0	0	0	0	81
Total Volume	13	182	0	0	195	0	102	9	0	111	5	0	8	0	13	0	0	0	0	0	319
% App. Total	6.7	93.3	0.0	0.0	100	0.0	91.9	8.1	0.0	100	38.5	0.0	61.5	0.0	100	0.0	0.0	0.0	0.0	0	
PHF	0.956					0.895					0.813					0.927					
Cars, PU, Vans	13	171	0	0	184	0	98	9	0	107	5	0	7	0	12	0	0	0	0	0	303
% Cars, PU, Vans	100.0	94.0	0.0	0.0	94.4	0.0	96.1	100.0	0.0	96.4	100.0	0.0	87.5	0.0	92.3	0.0	0.0	0.0	0.0	0.0	95.0
Heavy trucks	0	11	0	0	11	0	4	0	0	4	0	0	1	0	1	0	0	0	0	0	16
%Heavy trucks	0.0	6.0	0.0	0.0	5.6	0.0	3.9	0.0	0.0	3.6	0.0	0.0	12.5	0.0	7.7	0.0	0.0	0.0	0.0	0.0	5.0

# Roberts Rd & Emory Rd NE

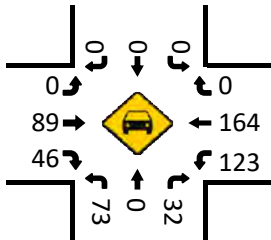
## Peak Hour Turning Movement Count

ID: 23-190064-002  
City: Corryton

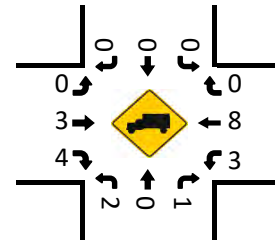
Day: Wednesday  
Date: 11/29/2023



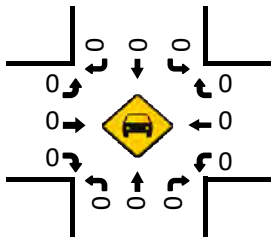
Cars (AM)



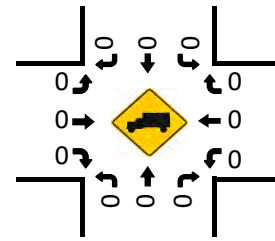
HT (AM)



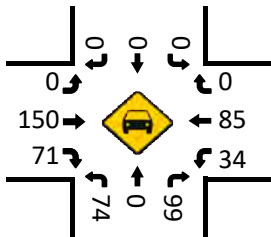
Cars (NOON)



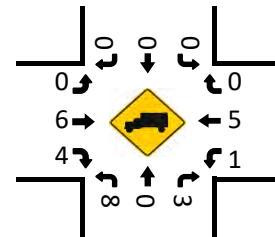
HT (NOON)



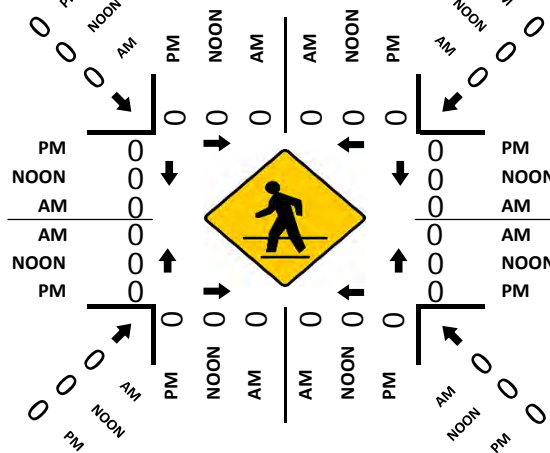
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Project ID: 23-190064-002  
 Location: Roberts Rd & Emory Rd NE  
 City: Corryton

Day: Wednesday  
 Date: 11/29/2023

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	Roberts Rd Northbound						Roberts Rd Southbound						Emory Rd NE Eastbound						Emory Rd NE Westbound						Int. Total
	Left	Thru	Rgt	Uturm	Peds	App. Total	Left	Thru	Rgt	Uturm	Peds	App. Total	Left	Thru	Rgt	Uturm	Peds	App. Total	Left	Thru	Rgt	Uturm	Peds	App. Total	
7:00 AM	15	0	7	0	0	22	0	0	0	0	0	0	0	15	5	0	0	20	35	41	0	0	0	76	118
7:15 AM	16	0	7	0	0	23	0	0	0	0	0	0	0	22	14	0	0	36	32	43	0	0	0	75	134
7:30 AM	17	0	7	0	0	24	0	0	0	0	0	0	0	28	20	0	0	48	31	43	0	0	0	74	146
7:45 AM	27	0	12	0	0	39	0	0	0	0	0	0	0	27	11	0	0	38	28	45	0	0	0	73	150
Total	75	0	33	0	0	108	0	0	0	0	0	0	0	92	50	0	0	142	126	172	0	0	0	298	548
8:00 AM	16	0	3	0	0	19	0	0	0	0	0	0	0	14	16	0	0	30	18	25	0	0	0	43	92
8:15 AM	13	0	8	0	0	21	0	0	0	0	0	0	0	17	13	0	0	30	15	24	0	0	0	39	90
8:30 AM	10	0	1	0	0	11	0	0	0	0	0	0	0	19	12	0	0	31	10	22	0	0	0	32	74
8:45 AM	13	0	16	0	0	29	0	0	0	0	0	0	0	14	6	0	0	20	9	18	0	0	0	27	76
Total	52	0	28	0	0	80	0	0	0	0	0	0	0	64	47	0	0	111	52	89	0	0	0	141	332
***BREAK***																									
4:00 PM	13	0	29	0	0	42	0	0	0	0	0	0	0	38	17	0	0	55	15	19	0	0	0	34	131
4:15 PM	23	0	28	0	0	51	0	0	0	0	0	0	0	37	20	0	0	57	6	20	0	0	0	26	134
4:30 PM	20	0	22	0	0	42	0	0	0	0	0	0	0	37	17	0	0	54	15	30	0	0	0	45	141
4:45 PM	19	0	22	0	0	41	0	0	0	0	0	0	0	40	21	0	0	61	6	22	0	0	0	28	130
Total	75	0	101	0	0	176	0	0	0	0	0	0	0	152	75	0	0	227	42	91	0	0	0	133	536
5:00 PM	20	0	30	0	0	50	0	0	0	0	0	0	0	42	17	0	0	59	8	18	0	0	0	26	135
5:15 PM	15	0	22	0	0	37	0	0	0	0	0	0	0	30	17	0	0	47	10	29	0	0	0	39	123
5:30 PM	21	0	29	0	0	50	0	0	0	0	0	0	0	34	21	0	0	55	10	27	0	0	0	37	142
5:45 PM	15	0	36	0	0	51	0	0	0	0	0	0	0	27	12	0	0	39	10	24	0	0	0	34	124
Total	71	0	117	0	0	188	0	0	0	0	0	0	0	133	67	0	0	200	38	98	0	0	0	136	524
Grand Total	273	0	279	0	0	552	0	0	0	0	0	0	0	441	239	0	0	680	258	450	0	0	0	708	1940
Apprch %	49.5	0.0	50.5	0.0	0.0		0.0	0.0	0.0	0.0	0.0			0.0	64.9	35.1	0.0	0.0	36.4	63.6	0.0	0.0	0.0		
Total %	14.1	0.0	14.4	0.0	0.0	28.5	0.0	0.0	0.0	0.0	0.0			0.0	22.7	12.3	0.0	0.0	13.3	23.2	0.0	0.0	0.0	36.5	
Cars, PU, Vans	258	0	272	0	0	530	0	0	0	0	0	0	0	422	227	0	0	649	252	425	0	0	0	677	1856
% Cars, PU, Vans	94.5	0.0	97.5	0.0	0.0	96.0	0.0	0.0	0.0	0.0	0.0			0.0	95.7	95.0	0.0	95.4	97.7	94.4	0.0	0.0	0.0	95.6	95.7
Heavy trucks	15	0	7	0	0	22	0	0	0	0	0	0	0	19	12	0	0	31	6	25	0	0	0	31	84
%Heavy trucks	5.5	0.0	2.5	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0			0.0	4.3	5.0	0.0	4.6	2.3	5.6	0.0	0.0	0.0	4.4	4.3

Project ID: 23-190064-002  
 Location: Roberts Rd & Emory Rd NE  
 City: Corryton

### PEAK HOURS

Day: Wednesday  
 Date: 11/29/2023

**AM**

Start Time	Roberts Rd Northbound					Roberts Rd Southbound					Emory Rd NE Eastbound					Emory Rd NE Westbound					Int. Total
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7:30 AM	17	0	7	0	24	0	0	0	0	0	0	28	20	0	48	31	43	0	0	74	146
7:45 AM	27	0	12	0	39	0	0	0	0	0	0	27	11	0	38	28	45	0	0	73	150
Total Volume	75	0	33	0	108	0	0	0	0	0	0	92	50	0	142	126	172	0	0	298	548
% App. Total	69.4	0.0	30.6	0.0	100	0.0	0.0	0.0	0.0	0	0.0	64.8	35.2	0.0	100	42.3	57.7	0.0	0.0	100	
PHF	0.692										0.740					0.980					0.913
Cars, PU, Vans	73	0	32	0	105	0	0	0	0	0	0	89	46	0	135	123	164	0	0	287	527
% Cars, PU, Vans	97.3	0.0	97.0	0.0	97.2	0.0	0.0	0.0	0.0	0.0	0.0	96.7	92.0	0.0	95.1	97.6	95.3	0.0	0.0	96.3	96.2
Heavy trucks	2	0	1	0	3	0	0	0	0	0	0	3	4	0	7	3	8	0	0	11	21
%Heavy trucks	2.7	0.0	3.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0	3.3	8.0	0.0	4.9	2.4	4.7	0.0	0.0	3.7	3.8

**PM**

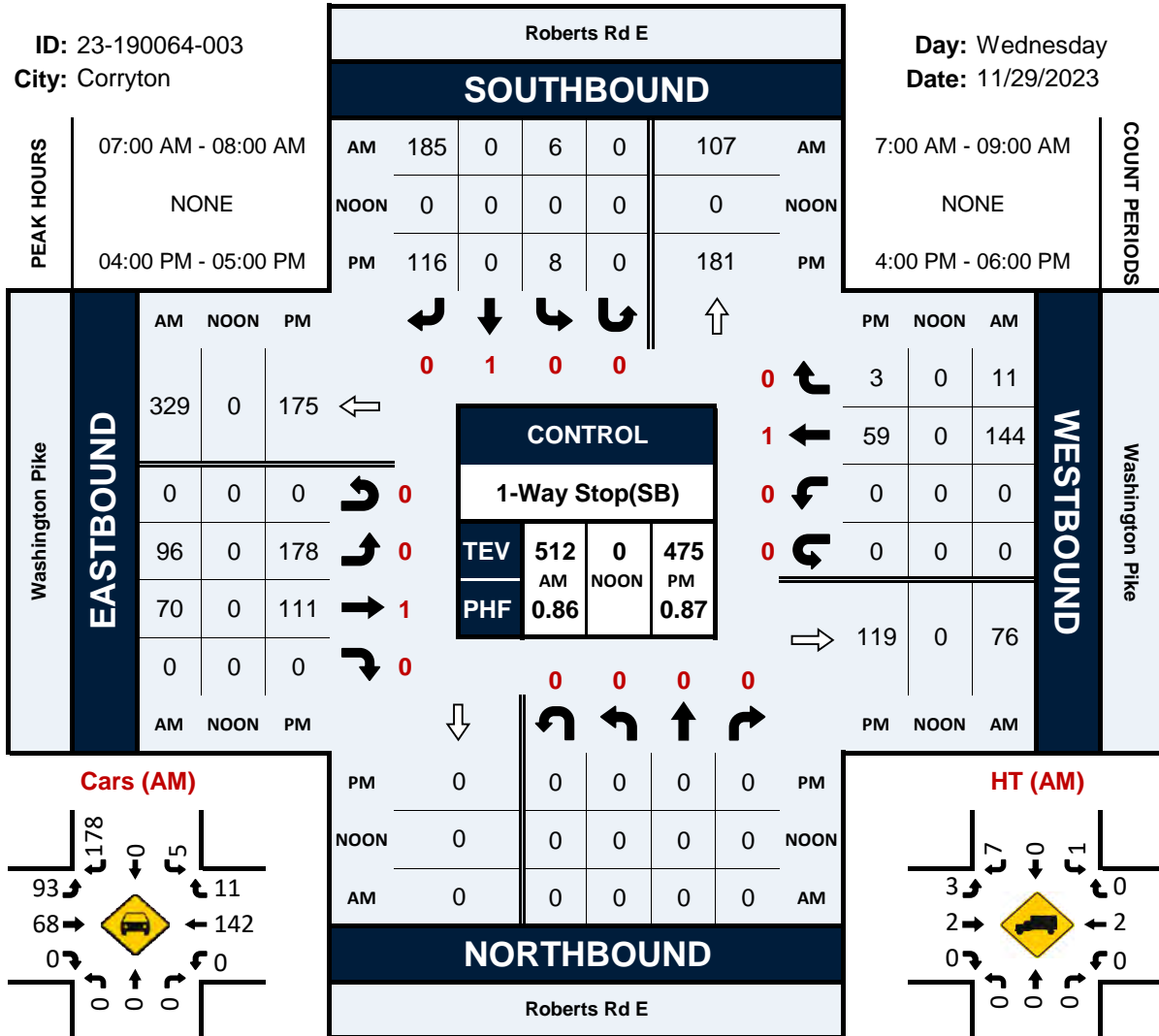
Start Time	Roberts Rd Northbound					Roberts Rd Southbound					Emory Rd NE Eastbound					Emory Rd NE Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
4:15 PM	23	0	28	0	51	0	0	0	0	0	0	37	20	0	57	6	20	0	0	26	134
4:30 PM	20	0	22	0	42	0	0	0	0	0	0	37	17	0	54	15	30	0	0	45	141
4:45 PM	19	0	22	0	41	0	0	0	0	0	0	40	21	0	61	6	22	0	0	28	130
5:00 PM	20	0	30	0	50	0	0	0	0	0	0	42	17	0	59	8	18	0	0	26	135
Total Volume	82	0	102	0	184	0	0	0	0	0	0	156	75	0	231	35	90	0	0	125	540
% App. Total	44.6	0.0	55.4	0.0	100	0.0	0.0	0.0	0.0	0	0.0	67.5	32.5	0.0	100	28.0	72.0	0.0	0.0	100	
PHF	0.902										0.947					0.694					0.957
Cars, PU, Vans	74	0	99	0	173	0	0	0	0	0	0	150	71	0	221	34	85	0	0	119	513
% Cars, PU, Vans	90.2	0.0	97.1	0.0	94.0	0.0	0.0	0.0	0.0	0.0	0.0	96.2	94.7	0.0	95.7	97.1	94.4	0.0	0.0	95.2	95.0
Heavy trucks	8	0	3	0	11	0	0	0	0	0	0	6	4	0	10	1	5	0	0	6	27
%Heavy trucks	9.8	0.0	2.9	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	5.3	0.0	4.3	2.9	5.6	0.0	0.0	4.8	5.0

# Roberts Rd E & Washington Pike

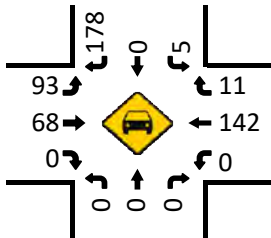
## Peak Hour Turning Movement Count

ID: 23-190064-003  
City: Corryton

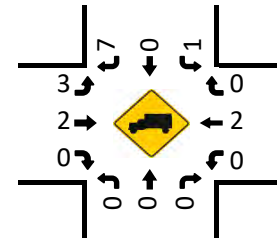
Day: Wednesday  
Date: 11/29/2023



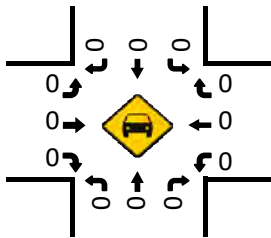
Cars (AM)



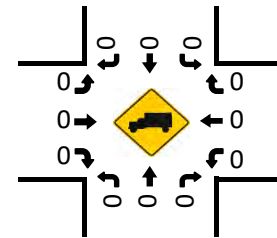
HT (AM)



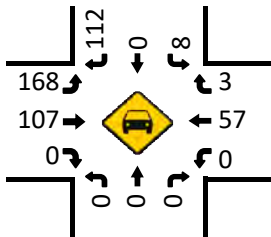
Cars (NOON)



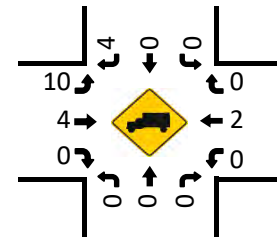
HT (NOON)



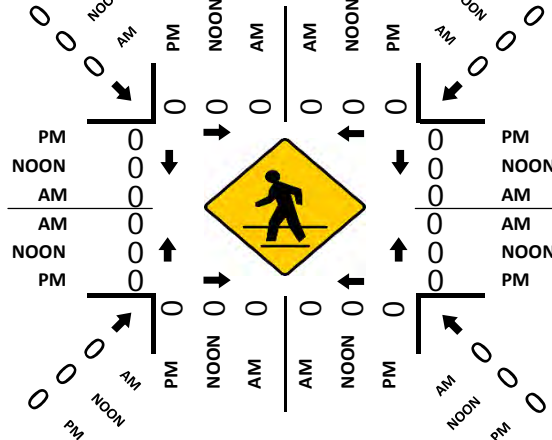
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Project ID: 23-190064-003  
 Location: Roberts Rd E & Washington Pike  
 City: Corryton

Day: Wednesday  
 Date: 11/29/2023

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	Roberts Rd E Northbound							Roberts Rd E Southbound							Washington Pike Eastbound							Washington Pike Westbound							Int. Total
	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total					
7:00 AM	0	0	0	0	0	0	0	0	40	0	0	40	21	14	0	0	0	35	0	28	0	0	0	28	103				
7:15 AM	0	0	0	0	0	0	2	0	50	0	0	52	19	22	0	0	0	41	0	43	2	0	0	45	138				
7:30 AM	0	0	0	0	0	0	2	0	50	0	0	52	26	22	0	0	0	48	0	45	3	0	0	48	148				
7:45 AM	0	0	0	0	0	0	2	0	45	0	0	47	30	12	0	0	0	42	0	28	6	0	0	34	123				
Total	0	0	0	0	0	0	6	0	185	0	0	191	96	70	0	0	0	166	0	144	11	0	0	155	512				
8:00 AM	0	0	0	0	0	0	2	0	34	0	0	36	17	5	0	0	0	22	0	26	1	0	0	27	85				
8:15 AM	0	0	0	0	0	0	1	0	27	0	0	28	22	11	0	0	0	33	0	22	0	0	0	22	83				
8:30 AM	0	0	0	0	0	0	1	0	22	0	0	23	17	9	0	0	0	26	0	11	1	0	0	12	61				
8:45 AM	0	0	0	0	0	0	0	0	20	0	0	20	22	4	0	0	0	26	0	13	2	0	0	15	61				
Total	0	0	0	0	0	0	4	0	103	0	0	107	78	29	0	0	0	107	0	72	4	0	0	76	290				
***BREAK***																													
4:00 PM	0	0	0	0	0	0	1	0	37	0	0	38	38	24	0	0	0	62	0	18	0	0	0	18	118				
4:15 PM	0	0	0	0	0	0	4	0	23	0	0	27	50	21	0	0	0	71	0	13	0	0	0	13	111				
4:30 PM	0	0	0	0	0	0	0	0	32	0	0	32	50	37	0	0	0	87	0	16	2	0	0	18	137				
4:45 PM	0	0	0	0	0	0	3	0	24	0	0	27	40	29	0	0	0	69	0	12	1	0	0	13	109				
Total	0	0	0	0	0	0	8	0	116	0	0	124	178	111	0	0	0	289	0	59	3	0	0	62	475				
5:00 PM	0	0	0	0	0	0	1	0	23	0	0	24	53	28	0	0	0	81	0	9	0	0	0	9	114				
5:15 PM	0	0	0	0	0	0	1	0	28	0	0	29	37	28	0	0	0	65	0	14	0	0	0	14	108				
5:30 PM	0	0	0	0	0	0	1	0	32	0	0	33	50	25	0	0	0	75	0	15	5	0	0	20	128				
5:45 PM	0	0	0	0	0	0	0	0	19	0	0	19	51	31	0	0	0	82	0	9	0	0	0	9	110				
Total	0	0	0	0	0	0	3	0	102	0	0	105	191	112	0	0	0	303	0	47	5	0	0	52	460				
Grand Total	0	0	0	0	0	0	21	0	506	0	0	527	543	322	0	0	0	865	0	322	23	0	0	345	1737				
Apprch %	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	96.0	0.0	0.0	62.8	37.2	0.0	0.0	0.0	0.0	93.3	6.7	0.0	0.0								
Total %	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	29.1	0.0	0.0	30.3	31.3	18.5	0.0	0.0	0.0	49.8	0.0	18.5	1.3	0.0	0.0	19.9					
Cars, PU, Vans	0	0	0	0	0	0	20	0	489	0	0	509	525	309	0	0	0	834	0	314	21	0	0	335	1678				
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	0.0	95.2	0.0	96.6	0.0	0.0	96.6	96.7	96.0	0.0	0.0	0.0	96.4	0.0	97.5	91.3	0.0	0.0	97.1	96.6				
Heavy trucks	0	0	0	0	0	0	1	0	17	0	0	18	18	13	0	0	0	31	0	8	2	0	0	10	59				
%Heavy trucks	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	3.4	0.0	0.0	3.4	3.3	4.0	0.0	0.0	0.0	3.6	0.0	2.5	8.7	0.0	0.0	2.9	3.4				

Project ID: 23-190064-003  
 Location: Roberts Rd E & Washington Pike  
 City: Corryton

### PEAK HOURS

Day: Wednesday  
 Date: 11/29/2023

**AM**

Start Time	Roberts Rd E Northbound					Roberts Rd E Southbound					Washington Pike Eastbound					Washington Pike Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
7:00 AM	0	0	0	0	0	0	0	40	0	40	21	14	0	0	35	0	28	0	0	28	103
7:15 AM	0	0	0	0	0	2	0	50	0	52	19	22	0	0	41	0	43	2	0	45	138
7:30 AM	0	0	0	0	0	2	0	50	0	52	26	22	0	0	48	0	45	3	0	48	148
7:45 AM	0	0	0	0	0	2	0	45	0	47	30	12	0	0	42	0	28	6	0	34	123
Total Volume	0	0	0	0	0	6	0	185	0	191	96	70	0	0	166	0	144	11	0	155	512
% App. Total	0.0	0.0	0.0	0.0	0	3.1	0.0	96.9	0.0	100	57.8	42.2	0.0	0.0	100	0.0	92.9	7.1	0.0	100	
PHF						0.918					0.865					0.807					0.865
Cars, PU, Vans	0	0	0	0	0	5	0	178	0	183	93	68	0	0	161	0	142	11	0	153	497
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	83.3	0.0	96.2	0.0	95.8	96.9	97.1	0.0	0.0	97.0	0.0	98.6	100.0	0.0	98.7	97.1
Heavy trucks	0	0	0	0	0	1	0	7	0	8	3	2	0	0	5	0	2	0	0	2	15
%Heavy trucks	0.0	0.0	0.0	0.0	0.0	16.7	0.0	3.8	0.0	4.2	3.1	2.9	0.0	0.0	3.0	0.0	1.4	0.0	0.0	1.3	2.9

**PM**

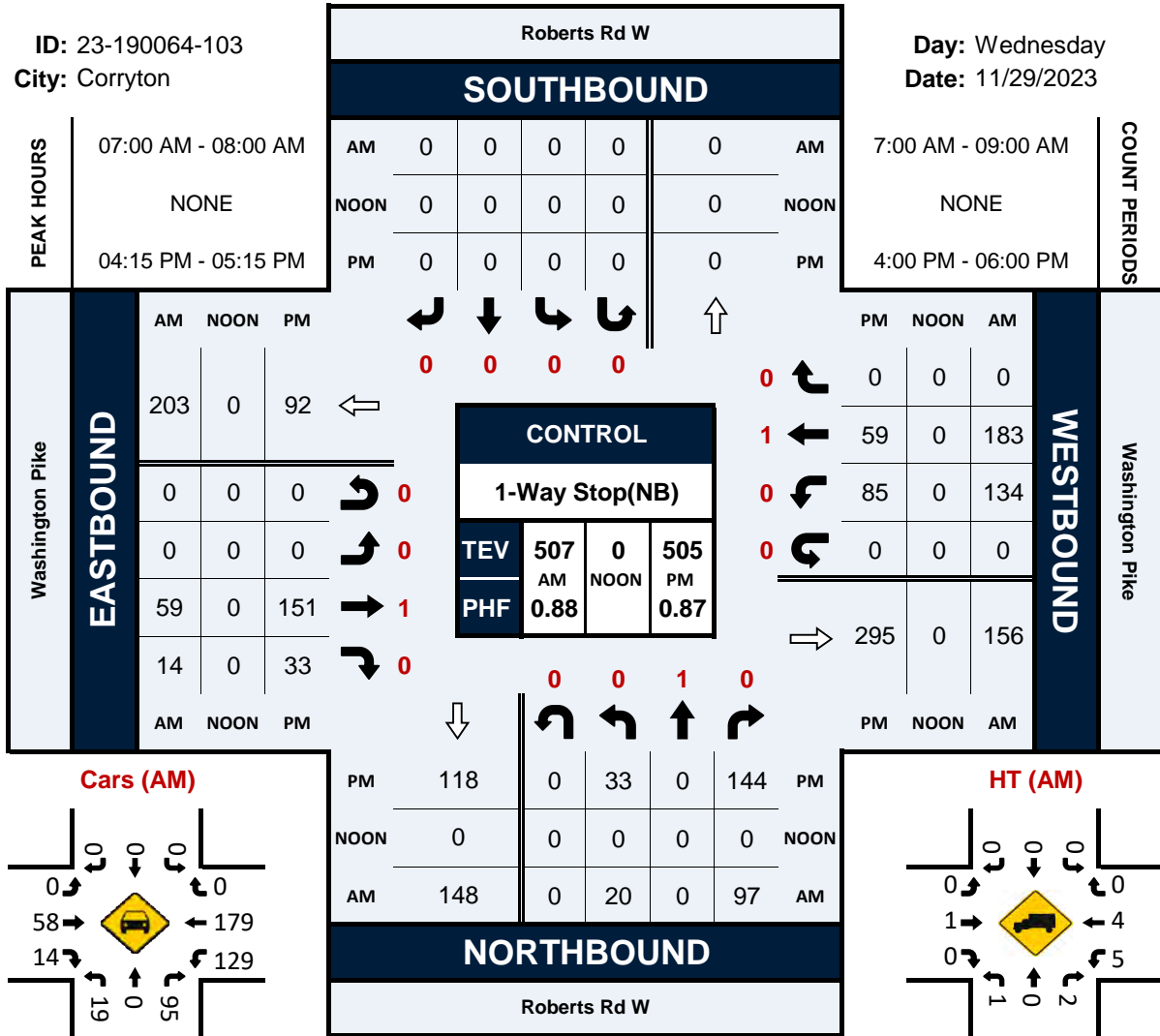
Start Time	Roberts Rd E Northbound					Roberts Rd E Southbound					Washington Pike Eastbound					Washington Pike Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
4:00 PM	0	0	0	0	0	1	0	37	0	38	38	24	0	0	62	0	18	0	0	18	118
4:15 PM	0	0	0	0	0	4	0	23	0	27	50	21	0	0	71	0	13	0	0	13	111
4:30 PM	0	0	0	0	0	0	0	32	0	32	50	37	0	0	87	0	16	2	0	18	137
4:45 PM	0	0	0	0	0	3	0	24	0	27	40	29	0	0	69	0	12	1	0	13	109
Total Volume	0	0	0	0	0	8	0	116	0	124	178	111	0	0	289	0	59	3	0	62	475
% App. Total	0.0	0.0	0.0	0.0	0	6.5	0.0	93.5	0.0	100	61.6	38.4	0.0	0.0	100	0.0	95.2	4.8	0.0	100	
PHF						0.816					0.830					0.861					0.867
Cars, PU, Vans	0	0	0	0	0	8	0	112	0	120	168	107	0	0	275	0	57	3	0	60	455
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	100.0	0.0	96.6	0.0	96.8	94.4	96.4	0.0	0.0	95.2	0.0	96.6	100.0	0.0	96.8	95.8
Heavy trucks	0	0	0	0	0	0	0	4	0	4	10	4	0	0	14	0	2	0	0	2	20
%Heavy trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0	3.2	5.6	3.6	0.0	0.0	4.8	0.0	3.4	0.0	0.0	3.2	4.2

# Roberts Rd W & Washington Pike

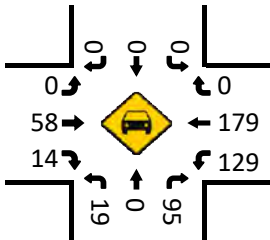
## Peak Hour Turning Movement Count

ID: 23-190064-103  
City: Corryton

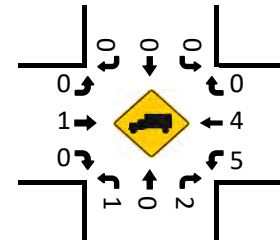
Day: Wednesday  
Date: 11/29/2023



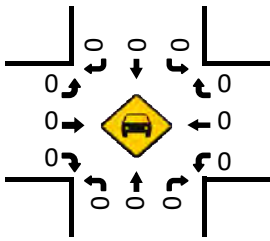
Cars (AM)



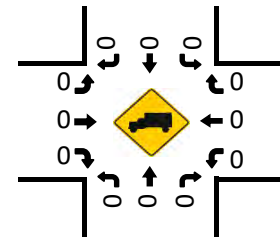
HT (AM)



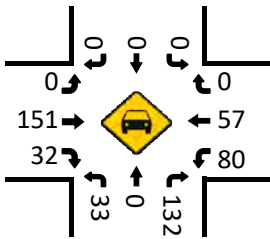
Cars (NOON)



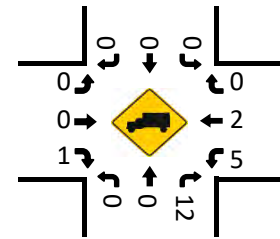
HT (NOON)



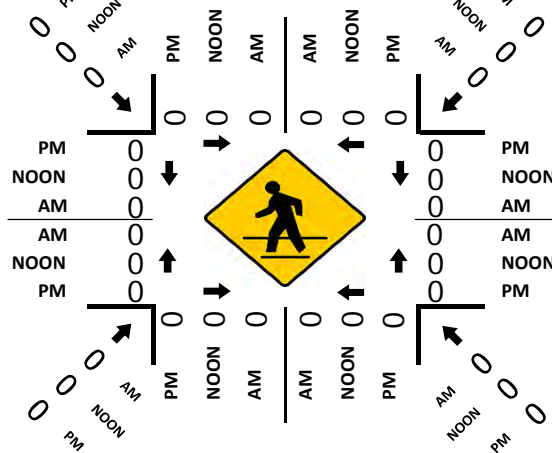
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)





Project ID: 23-190064-103  
 Location: Roberts Rd W & Washington Pike  
 City: Corryton

Day: Wednesday  
 Date: 11/29/2023

Groups Printed - Cars, PU, Vans - Heavy Trucks

Start Time	Roberts Rd W Northbound						Roberts Rd W Southbound						Washington Pike Eastbound						Washington Pike Westbound						Int. Total
	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	
7:00 AM	4	0	20	0	0	24	0	0	0	0	0	0	0	10	4	0	0	14	21	47	0	0	0	68	106
7:15 AM	7	0	22	0	0	29	0	0	0	0	0	0	0	15	5	0	0	20	37	49	0	0	0	86	135
7:30 AM	6	0	31	0	0	37	0	0	0	0	0	0	0	17	2	0	0	19	45	49	0	0	0	94	150
7:45 AM	3	0	24	0	0	27	0	0	0	0	0	0	0	17	3	0	0	20	31	38	0	0	0	69	116
Total	20	0	97	0	0	117	0	0	0	0	0	0	0	59	14	0	0	73	134	183	0	0	0	317	507
8:00 AM	10	0	8	0	0	18	0	0	0	0	0	0	0	11	2	0	0	13	23	32	0	0	0	55	86
8:15 AM	8	0	17	0	0	25	0	0	0	0	0	0	0	15	3	0	0	18	18	30	0	0	0	48	91
8:30 AM	8	0	11	0	0	19	0	0	0	0	0	0	0	13	7	0	0	20	16	16	0	0	0	32	71
8:45 AM	4	0	15	0	0	19	0	0	0	0	0	0	0	9	7	0	0	16	9	22	0	0	0	31	66
Total	30	0	51	0	0	81	0	0	0	0	0	0	0	48	19	0	0	67	66	100	0	0	0	166	314
***BREAK***																									
4:00 PM	3	0	30	0	0	33	0	0	0	0	0	0	0	30	5	0	0	35	26	26	0	0	0	52	120
4:15 PM	11	0	37	0	0	48	0	0	0	0	0	0	0	30	7	0	0	37	21	12	0	0	0	33	118
4:30 PM	9	0	35	0	0	44	0	0	0	0	0	0	0	47	7	0	0	54	22	21	0	0	0	43	141
4:45 PM	7	0	31	0	0	38	0	0	0	0	0	0	0	36	11	0	0	47	23	13	0	0	0	36	121
Total	30	0	133	0	0	163	0	0	0	0	0	0	0	143	30	0	0	173	92	72	0	0	0	164	500
5:00 PM	6	0	41	0	0	47	0	0	0	0	0	0	0	38	8	0	0	46	19	13	0	0	0	32	125
5:15 PM	4	0	33	0	0	37	0	0	0	0	0	0	0	32	4	0	0	36	18	22	0	0	0	40	113
5:30 PM	5	0	30	0	0	35	0	0	0	0	0	0	0	38	4	0	0	42	23	20	0	0	0	43	120
5:45 PM	4	0	29	0	0	33	0	0	0	0	0	0	0	50	2	0	0	52	14	13	0	0	0	27	112
Total	19	0	133	0	0	152	0	0	0	0	0	0	0	158	18	0	0	176	74	68	0	0	0	142	470
Grand Total	99	0	414	0	0	513	0	0	0	0	0	0	0	408	81	0	0	489	366	423	0	0	0	789	1791
Apprch %	19.3	0.0	80.7	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	83.4	16.6	0.0	0.0		46.4	53.6	0.0	0.0	0.0		
Total %	5.5	0.0	23.1	0.0	0.0	28.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.8	4.5	0.0	0.0	27.3	20.4	23.6	0.0	0.0	0.0	44.1	
Cars, PU, Vans	98	0	395	0	0	493	0	0	0	0	0	0	0	401	80	0	0	481	351	413	0	0	0	764	1738
% Cars, PU, Vans	99.0	0.0	95.4	0.0	0.0	96.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	98.3	98.8	0.0	0.0	98.4	95.9	97.6	0.0	0.0	0.0	96.8	97.0
Heavy trucks	1	0	19	0	0	20	0	0	0	0	0	0	0	7	1	0	0	8	15	10	0	0	0	25	53
%Heavy trucks	1.0	0.0	4.6	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	1.2	0.0	1.6	4.1	2.4	0.0	0.0	0.0	3.2	3.0	

Project ID: 23-190064-103  
 Location: Roberts Rd W & Washington Pike  
 City: Corryton

### PEAK HOURS

Day: Wednesday  
 Date: 11/29/2023

**AM**

Start Time	Roberts Rd W Northbound					Roberts Rd W Southbound					Washington Pike Eastbound					Washington Pike Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
7:00 AM	4	0	20	0	24	0	0	0	0	0	0	10	4	0	14	21	47	0	0	68	106
7:15 AM	7	0	22	0	29	0	0	0	0	0	0	15	5	0	20	37	49	0	0	86	135
7:30 AM	6	0	31	0	37	0	0	0	0	0	0	17	2	0	19	45	49	0	0	94	150
7:45 AM	3	0	24	0	27	0	0	0	0	0	0	17	3	0	20	31	38	0	0	69	116
Total Volume	20	0	97	0	117	0	0	0	0	0	0	59	14	0	73	134	183	0	0	317	507
% App. Total	17.1	0.0	82.9	0.0	100	0.0	0.0	0.0	0.0	0	0.0	80.8	19.2	0.0	100	42.3	57.7	0.0	0.0	100	
PHF	0.797										0.864					0.853					0.875
Cars, PU, Vans	19	0	95	0	114	0	0	0	0	0	0	58	14	0	72	129	179	0	0	308	494
% Cars, PU, Vans	95.0	0.0	97.9	0.0	97.4	0.0	0.0	0.0	0.0	0.0	0.0	98.3	100.0	0.0	98.6	96.3	97.8	0.0	0.0	97.2	97.4
Heavy trucks	1	0	2	0	3	0	0	0	0	0	0	1	0	0	1	5	4	0	0	9	13
%Heavy trucks	5.0	0.0	2.1	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	1.4	3.7	2.2	0.0	0.0	2.8	2.6

**PM**

Start Time	Roberts Rd W Northbound					Roberts Rd W Southbound					Washington Pike Eastbound					Washington Pike Westbound					Int. Total
	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	
Peak Hour Analysis from 04:00 PM - 06:00 PM																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
4:15 PM	11	0	37	0	48	0	0	0	0	0	0	30	7	0	37	21	12	0	0	33	118
4:30 PM	9	0	35	0	44	0	0	0	0	0	0	47	7	0	54	22	21	0	0	43	141
4:45 PM	7	0	31	0	38	0	0	0	0	0	0	36	11	0	47	23	13	0	0	36	121
5:00 PM	6	0	41	0	47	0	0	0	0	0	0	38	8	0	46	19	13	0	0	32	125
Total Volume	33	0	144	0	177	0	0	0	0	0	0	151	33	0	184	85	59	0	0	144	505
% App. Total	18.6	0.0	81.4	0.0	100	0.0	0.0	0.0	0.0	0	0.0	82.1	17.9	0.0	100	59.0	41.0	0.0	0.0	100	
PHF	0.922										0.829					0.809					0.868
Cars, PU, Vans	33	0	132	0	165	0	0	0	0	0	0	151	32	0	183	80	57	0	0	137	485
% Cars, PU, Vans	100.0	0.0	91.7	0.0	93.2	0.0	0.0	0.0	0.0	0.0	0.0	100.0	97.0	0.0	99.5	94.1	96.6	0.0	0.0	95.1	96.0
Heavy trucks	0	0	12	0	12	0	0	0	0	0	0	0	1	0	1	5	2	0	0	7	20
%Heavy trucks	0.0	0.0	8.3	0.0	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.5	5.9	3.4	0.0	0.0	4.9	4.0

**TABLE 4 - 1  
GENERALIZED ANNUAL AVERAGE DAILY VOLUMES FOR FLORIDA'S  
URBANIZED AREAS\***

UNINTERRUPTED FLOW HIGHWAYS							FREEWAYS																																																																																			
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<p align="center"><b>NON-STATE ROADWAYS</b></p> <p align="center">Major City/County Roadways</p> <table border="1"> <thead> <tr> <th>Lanes Divided</th> <th colspan="5">Level of Service</th> </tr> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> </tr> </thead> <tbody> <tr> <td>2 Undivided</td> <td>**</td> <td>**</td> <td>9,100</td> <td>14,600</td> <td>15,600</td> </tr> <tr> <td>4 Divided</td> <td>**</td> <td>**</td> <td>21,400</td> <td>31,100</td> <td>32,900</td> </tr> <tr> <td>6 Divided</td> <td>**</td> <td>**</td> <td>33,400</td> <td>46,800</td> <td>49,300</td> </tr> </tbody> </table>							Lanes Divided	Level of Service						A	B	C	D	E	2 Undivided	**	**	9,100	14,600	15,600	4 Divided	**	**	21,400	31,100	32,900	6 Divided	**	**	33,400	46,800	49,300	<p align="center"><b>ARTERIAL/NON-STATE ROADWAY ADJUSTMENTS</b></p> <p align="center">DIVIDED/UNDIVIDED</p> <p align="center">(alter corresponding volume by the indicated percent)</p> <table border="1"> <thead> <tr> <th>Lanes</th> <th>Median</th> <th>Left Turns Lanes</th> <th>Adjustment Factors</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>Divided</td> <td>Yes</td> <td>+5%</td> </tr> <tr> <td>2</td> <td>Undivided</td> <td>No</td> <td>-20%</td> </tr> <tr> <td>Multi</td> <td>Undivided</td> <td>Yes</td> <td>-5%</td> </tr> <tr> <td>Multi</td> <td>Undivided</td> <td>No</td> <td>-25%</td> </tr> </tbody> </table>						Lanes	Median	Left Turns Lanes	Adjustment Factors	2	Divided	Yes	+5%	2	Undivided	No	-20%	Multi	Undivided	Yes	-5%	Multi	Undivided	No	-25%																												
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<p>Source: Florida Department of Transportation Systems Planning Office 605 Suwannee Street, MS 19 Tallahassee, FL 32399-0450 <a href="http://www11.myflorida.com/planning/systems/sm/los/default.htm">http://www11.myflorida.com/planning/systems/sm/los/default.htm</a> 02/22/02</p>																																																																																										

\*This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Values shown are two-way annual average daily volumes (based on K<sub>100</sub> factors) for levels of service and are for the automobile/truck modes unless specifically stated. Level of service letter grade thresholds are probably not comparable across modes and, therefore, cross modal comparisons should be made with caution. Furthermore, combining levels of service of different modes into one overall roadway level of service is not recommended. The table's input value defaults and level of service criteria appear on the following page. Calculations are based on planning applications of the Highway Capacity Manual, Bicycle LOS Model, Pedestrian LOS Model and Transit Capacity and Quality of Service Manual, respectively for the automobile/truck, bicycle, pedestrian and bus modes.

\*\*Cannot be achieved using table input value defaults.

\*\*\*Not applicable for that level of service letter grade. For automobile/truck modes, volumes greater than level of service D become F because intersection capacities have been reached. For bicycle and pedestrian modes, the level of service letter grade (including F) is not achievable, because there is no maximum vehicle volume threshold using table input value defaults.

# Single-Family Detached Housing (210)

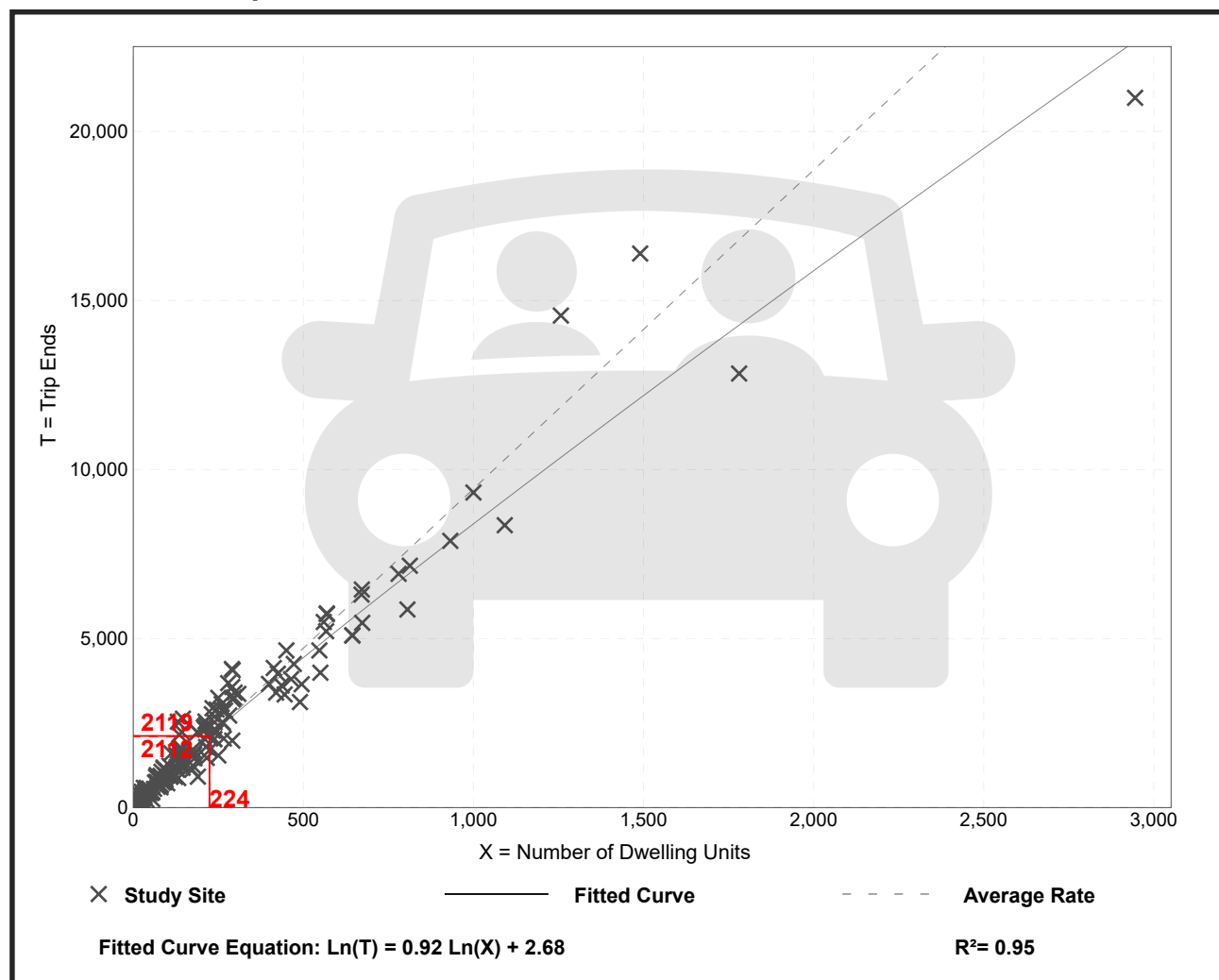
Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 174  
Avg. Num. of Dwelling Units: 246  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

## Data Plot and Equation



# Single-Family Detached Housing (210)

**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**

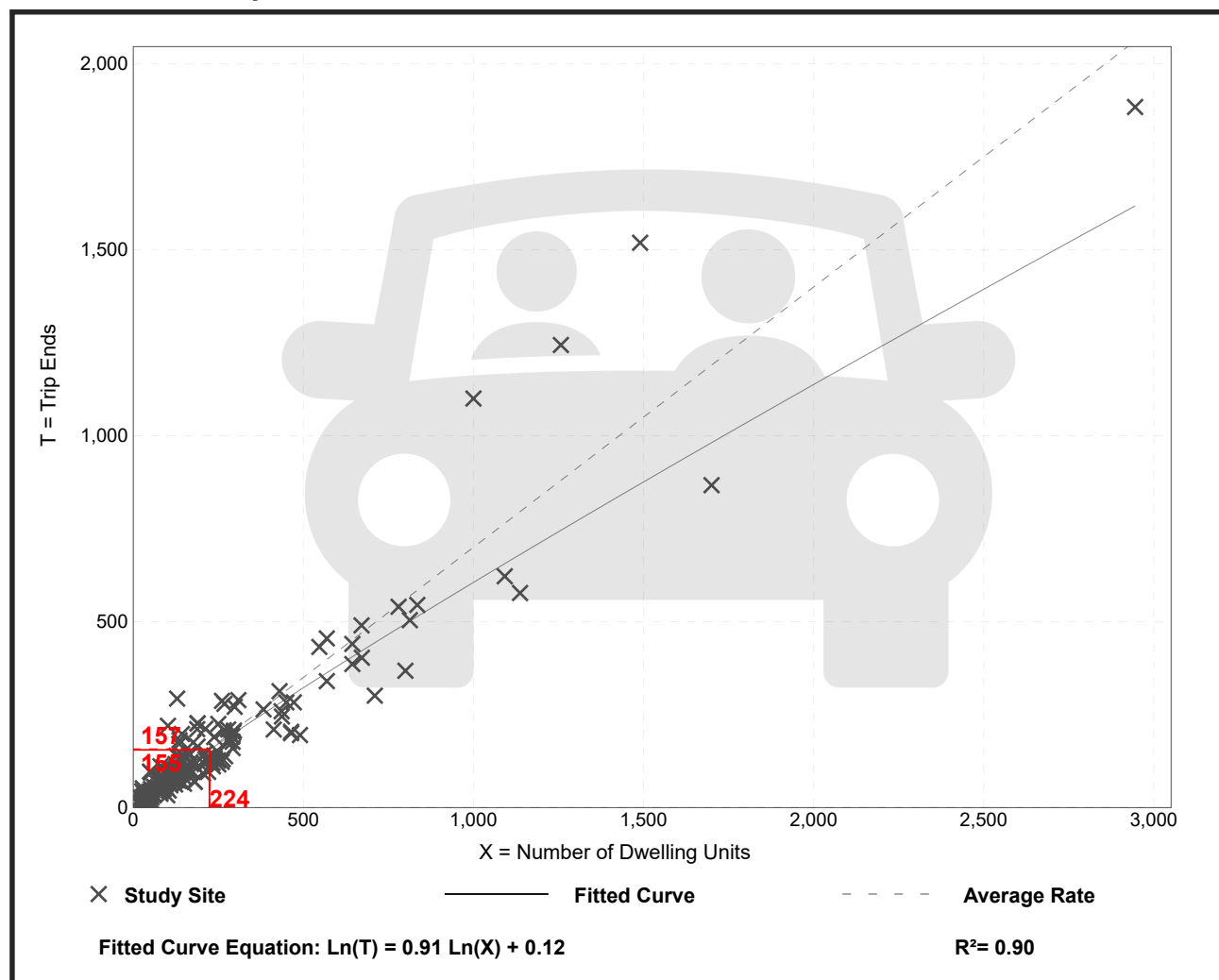
**Setting/Location: General Urban/Suburban**

Number of Studies: 192  
 Avg. Num. of Dwelling Units: 226  
 Directional Distribution: 25% entering, 75% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

## Data Plot and Equation



# Single-Family Detached Housing (210)

**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**

**Setting/Location: General Urban/Suburban**

Number of Studies: 208

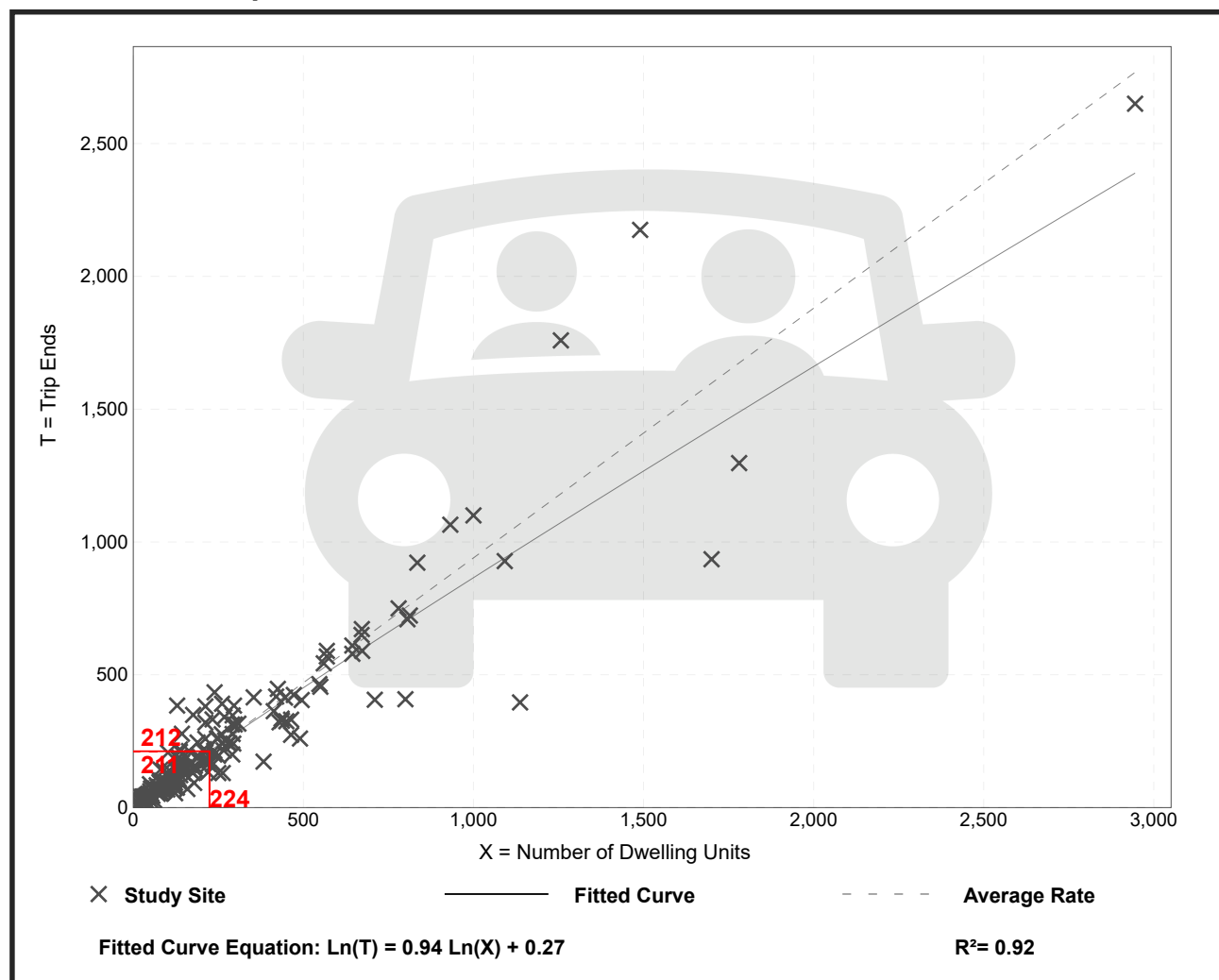
Avg. Num. of Dwelling Units: 248

Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

## Data Plot and Equation



# Single-Family Detached Housing (210)

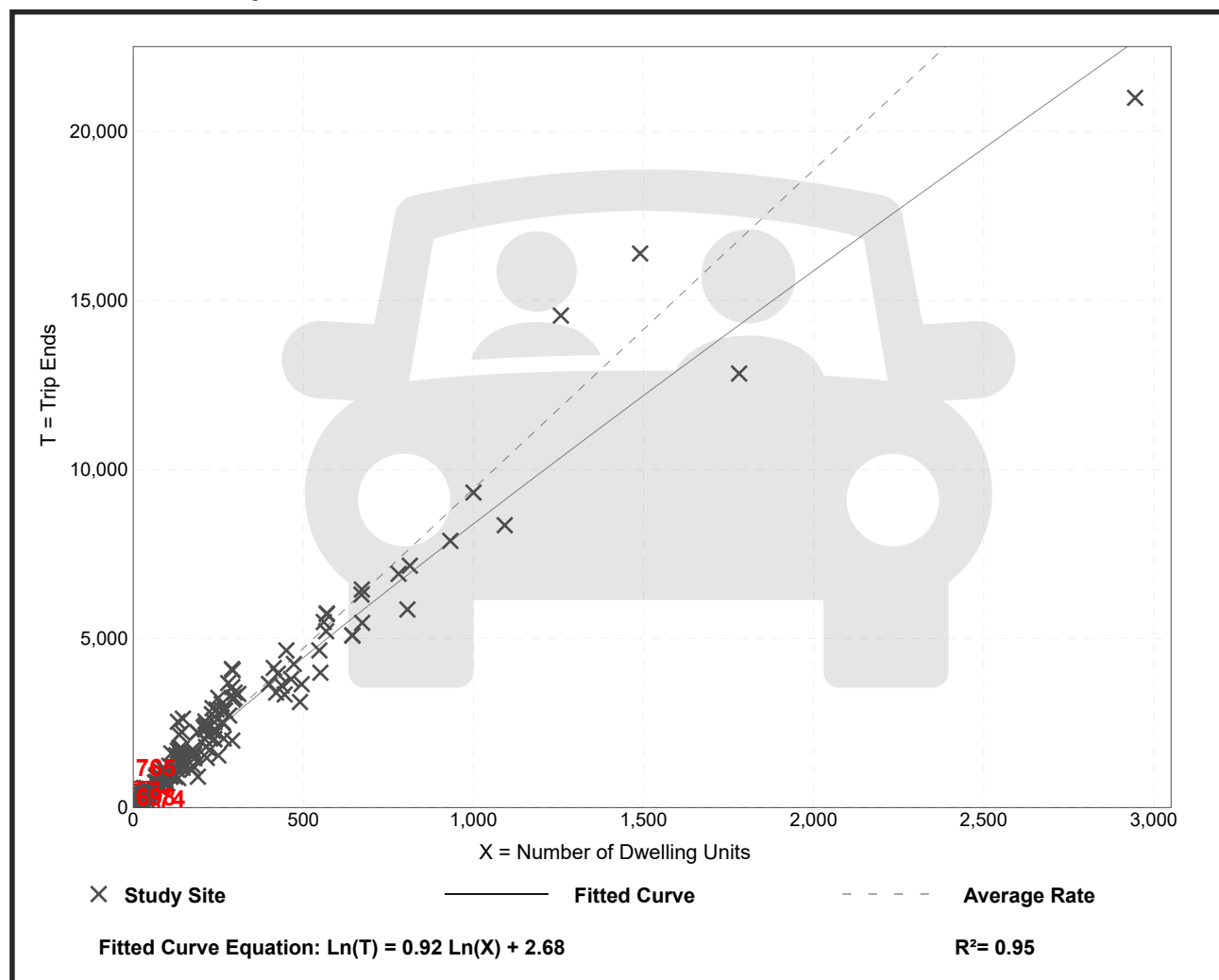
Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 174  
Avg. Num. of Dwelling Units: 246  
Directional Distribution: 50% entering, 50% exiting

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9.43	4.45 - 22.61	2.13

## Data Plot and Equation



# Single-Family Detached Housing (210)

**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
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**One Hour Between 7 and 9 a.m.**

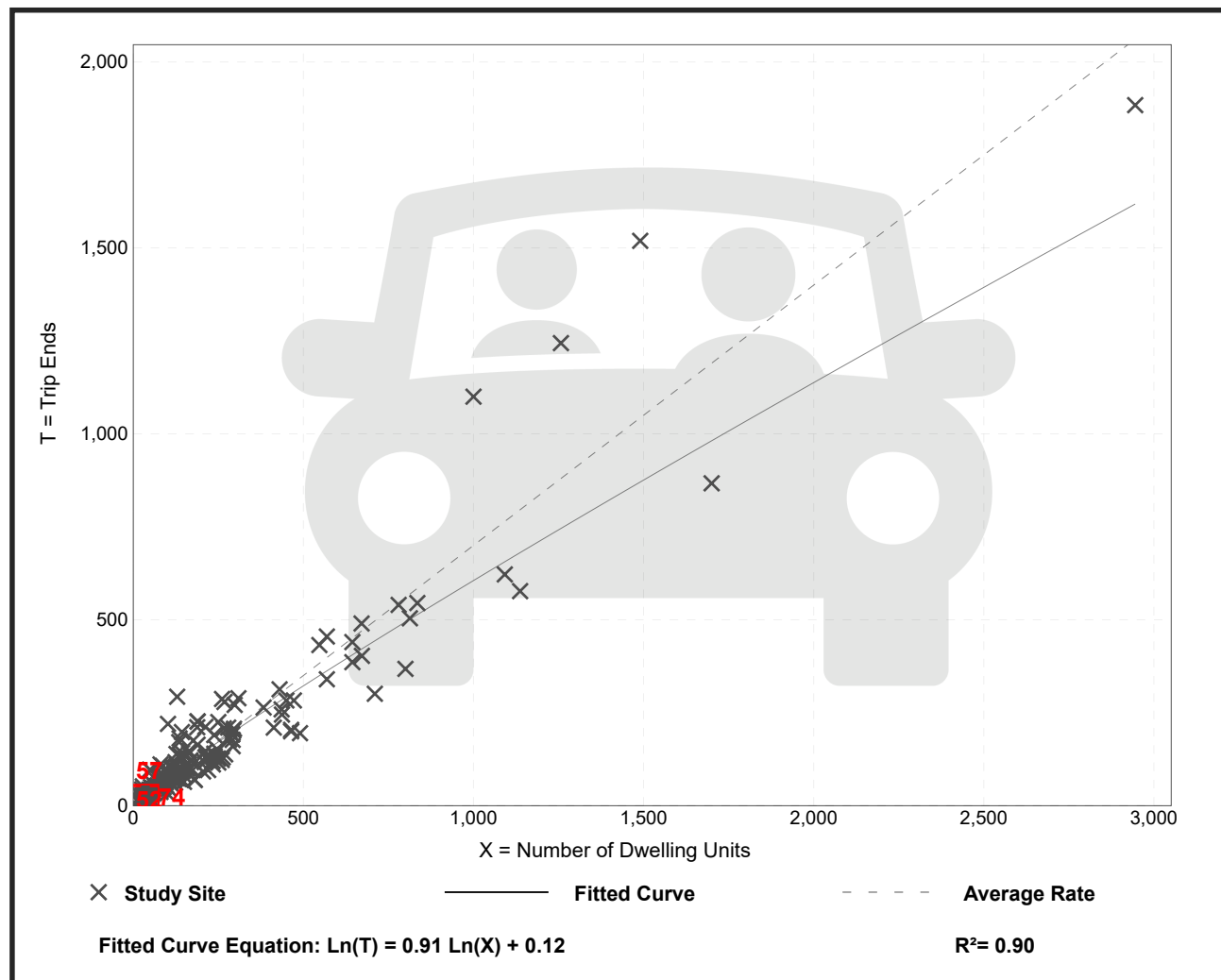
**Setting/Location: General Urban/Suburban**

Number of Studies: 192  
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## Data Plot and Equation





# Single-Family Detached Housing (210)

**Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**

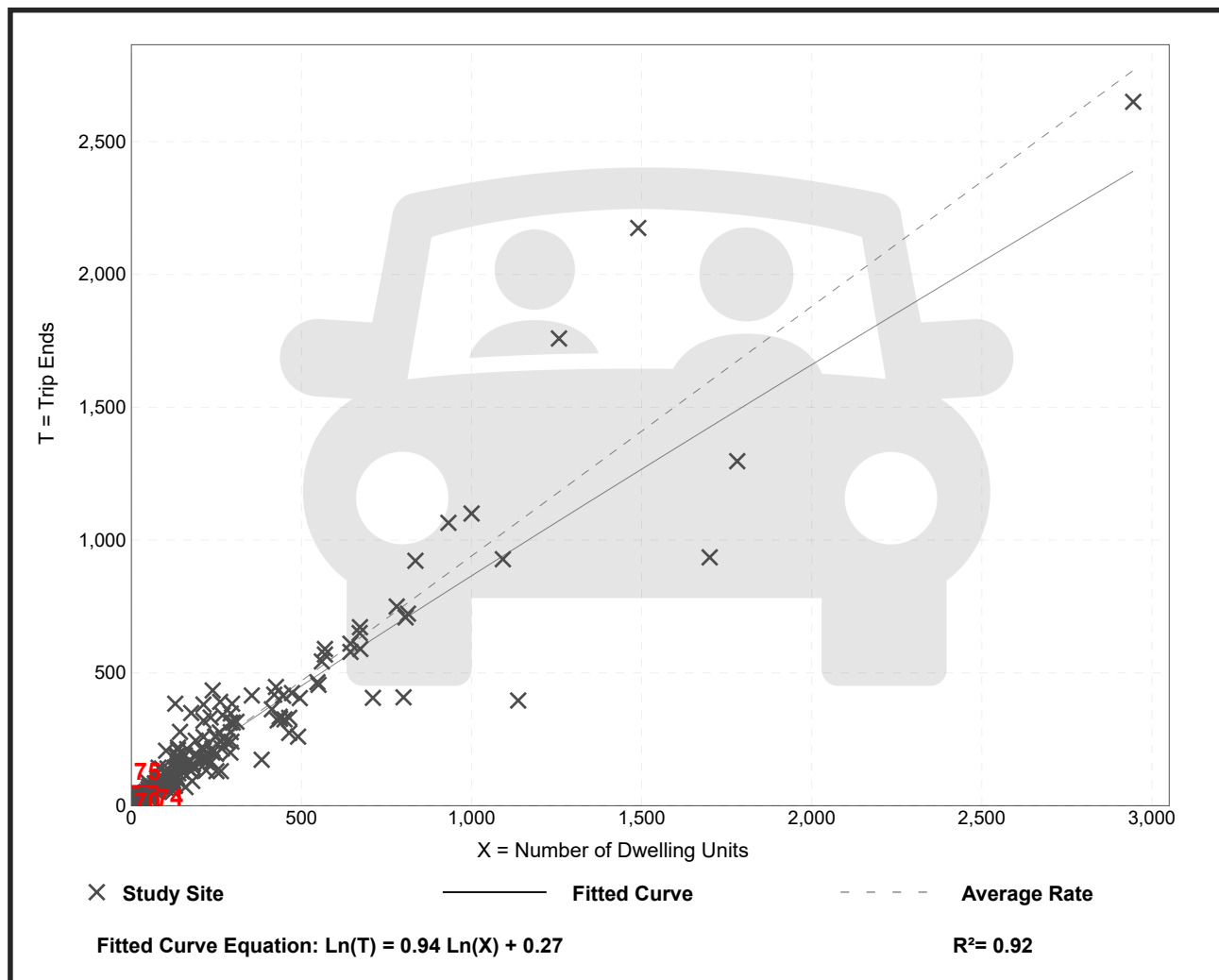
**Setting/Location: General Urban/Suburban**

Number of Studies: 208  
 Avg. Num. of Dwelling Units: 248  
 Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

## Data Plot and Equation



<b>TABLE 5A</b> <b>KNOX COUNTY LEFT-TURN LANE VOLUME THRESHOLDS</b> <b>FOR 2-LANE ROADWAYS WITH A PREVAILING SPEED OF 36 TO 45 MPH</b>	<b>Project No: 01203-0003</b> <b>Project Name: Roberts Rd Residential TIL</b> <b>Notes: Existing Traffic</b>
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(If the left-turn volume exceeds the table value a left-turn lane is needed)

OPPOSING VOLUME	THROUGH VOLUME PLUS RIGHT-TURN VOLUME *					
	100 - 149	150 - 199	200 - 249	250 - 299	300 - 349	350 - 399
100 - 149	250	180	140	110	80	70
150 - 199	200	140	105	90	70	60
200 - 249	160	115	85	75	65	55
250 - 299	130	100	75	65	60	50
300 - 349	110	90	70	60	55	45
350 - 399	100	80	65	55	50	40
400 - 449	90	70	60	50	45	35
450 - 499	80	65	55	45	40	30
500 - 549	70	60	45	35	35	25
550 - 599	65	55	40	35	30	25
600 - 649	60	45	35	30	25	25
650 - 699	55	35	35	30	25	20
700 - 749	50	35	30	25	20	20
750 or More	45	35	25	25	20	20

OPPOSING VOLUME	THROUGH VOLUME PLUS RIGHT-TURN VOLUME *					
	350 - 399	400 - 449	450 - 499	500 - 549	550 - 599	= / > 600
100 - 149	70	60	50	45	40	35
150 - 199	60	55	45	40	35	30
200 - 249	55	50	40	35	30	30
250 - 299	50	45	35	30	30	30
300 - 349	45	40	35	30	25	25
350 - 399	40	35	30	25	25	20
400 - 449	35	30	30	25	20	20
450 - 499	30	25	25	20	20	20
500 - 549	25	25	20	20	20	15
550 - 599	25	20	20	20	20	15
600 - 649	25	20	20	20	20	15
650 - 699	20	20	20	20	20	15
700 - 749	20	20	20	15	15	15
750 or More	20	20	20	15	15	15

\* Or through volume only if a right-turn lane exists

Intersection	Time Period	Opposing Volume	Through Volume	Left-Turn Volume	Warrant Threshold	Left-Turn Lane Warranted (Yes / No)
Rob. @ Wash	AM Peak	155	70	96	200	NO
Rob. @ Wash	PM Peak	62	111	178	250	NO
Rob. @ Emory	AM Peak	142	172	126	180	NO
Rob. @ Emory	PM Peak	231	90	35	160	NO

<b>TABLE 5B</b> <b>KNOX COUNTY RIGHT-TURN LANE VOLUME THRESHOLDS</b> <b>FOR 2-LANE ROADWAYS WITH A PREVAILING SPEED OF 36 TO 45 MPH</b>	<b>Project No: 01203-0003</b> <b>Project Name: Roberts Rd Residential TIL</b> <b>Notes: Existing Traffic</b>
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RIGHT-TURN VOLUME	THROUGH VOLUME PLUS LEFT-TURN VOLUME *					
	< 100	100 - 199	200 - 249	250 - 299	300 - 349	350 - 399
Fewer Than 25						
25 - 49						
50 - 99						
100 - 149						
150 - 199						
200 - 249						Yes
250 - 299					Yes	Yes
300 - 349				Yes	Yes	Yes
350 - 399			Yes	Yes	Yes	Yes
400 - 449			Yes	Yes	Yes	Yes
450 - 499		Yes	Yes	Yes	Yes	Yes
500 - 549		Yes	Yes	Yes	Yes	Yes
550 - 599	Yes	Yes	Yes	Yes	Yes	Yes
600 or More	Yes	Yes	Yes	Yes	Yes	Yes

RIGHT-TURN VOLUME	THROUGH VOLUME PLUS LEFT-TURN VOLUME *					
	350 - 399	400 - 449	450 - 499	500 - 549	550 - 599	= / > 600
Fewer Than 25						
25 - 49					Yes	Yes
50 - 99				Yes	Yes	Yes
100 - 149			Yes	Yes	Yes	Yes
150 - 199		Yes	Yes	Yes	Yes	Yes
200 - 249	Yes	Yes	Yes	Yes	Yes	Yes
250 - 299	Yes	Yes	Yes	Yes	Yes	Yes
300 - 349	Yes	Yes	Yes	Yes	Yes	Yes
350 - 399	Yes	Yes	Yes	Yes	Yes	Yes
400 - 449	Yes	Yes	Yes	Yes	Yes	Yes
450 - 499	Yes	Yes	Yes	Yes	Yes	Yes
500 - 549	Yes	Yes	Yes	Yes	Yes	Yes
550 - 599	Yes	Yes	Yes	Yes	Yes	Yes
600 or More	Yes	Yes	Yes	Yes	Yes	Yes

\* Or through volume only if a left-turn lane exists

Intersection	Time Period	Through Volume	Right-Turn Volume	Right-Turn Lane Warranted (Yes / No)
Rob. @ Wash	AM Peak	144	11	NO
Rob. @ Wash	PM Peak	59	3	NO
Rob. @ Emory	AM Peak	92	50	NO
Rob. @ Emory	PM Peak	156	75	NO

<b>TABLE 5A</b> <b>KNOX COUNTY LEFT-TURN LANE VOLUME THRESHOLDS</b> <b>FOR 2-LANE ROADWAYS WITH A PREVAILING SPEED OF 36 TO 45 MPH</b>	<b>Project No: 01203-0003</b> <b>Project Name: Roberts Rd Residential TIL</b> <b>Notes: Build-out Traffic</b>
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(If the left-turn volume exceeds the table value a left-turn lane is needed)

OPPOSING VOLUME	THROUGH VOLUME PLUS RIGHT-TURN VOLUME *					
	100 - 149	150 - 199	200 - 249	250 - 299	300 - 349	350 - 399
100 - 149	250	180	140	110	80	70
150 - 199	200	140	105	90	70	60
200 - 249	160	115	85	75	65	55
250 - 299	130	100	75	65	60	50
300 - 349	110	90	70	60	55	45
350 - 399	100	80	65	55	50	40
400 - 449	90	70	60	50	45	35
450 - 499	80	65	55	45	40	30
500 - 549	70	60	45	35	35	25
550 - 599	65	55	40	35	30	25
600 - 649	60	45	35	30	25	25
650 - 699	55	35	35	30	25	20
700 - 749	50	35	30	25	20	20
750 or More	45	35	25	25	20	20

OPPOSING VOLUME	THROUGH VOLUME PLUS RIGHT-TURN VOLUME *					
	350 - 399	400 - 449	450 - 499	500 - 549	550 - 599	= / > 600
100 - 149	70	60	50	45	40	35
150 - 199	60	55	45	40	35	30
200 - 249	55	50	40	35	30	30
250 - 299	50	45	35	30	30	30
300 - 349	45	40	35	30	25	25
350 - 399	40	35	30	25	25	20
400 - 449	35	30	30	25	20	20
450 - 499	30	25	25	20	20	20
500 - 549	25	25	20	20	20	15
550 - 599	25	20	20	20	20	15
600 - 649	25	20	20	20	20	15
650 - 699	20	20	20	20	20	15
700 - 749	20	20	20	15	15	15
750 or More	20	20	20	15	15	15

\* Or through volume only if a right-turn lane exists

Intersection	Time Period	Opposing Volume	Through Volume	Left-Turn Volume	Warrant Threshold	Left-Turn Lane Warranted (Yes / No)
Rob. @ Wash	AM Peak	158	70	120	180	NO
Rob. @ Wash	PM Peak	63	111	270	250	YES
Rob. @ Emory	AM Peak	145	172	135	180	NO
Rob. @ Emory	PM Peak	258	90	48	110	NO

<b>TABLE 5B</b> <b>KNOX COUNTY RIGHT-TURN LANE VOLUME THRESHOLDS</b> <b>FOR 2-LANE ROADWAYS WITH A PREVAILING SPEED OF 36 TO 45 MPH</b>	<b>Project No: 01203-0003</b> <b>Project Name: Roberts Rd Residential TIL</b> <b>Notes: Build-out Traffic</b>
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RIGHT-TURN VOLUME	THROUGH VOLUME PLUS LEFT-TURN VOLUME *					
	< 100	100 - 199	200 - 249	250 - 299	300 - 349	350 - 399
Fewer Than 25						
25 - 49						
50 - 99						
100 - 149						
150 - 199						
200 - 249						Yes
250 - 299					Yes	Yes
300 - 349				Yes	Yes	Yes
350 - 399			Yes	Yes	Yes	Yes
400 - 449			Yes	Yes	Yes	Yes
450 - 499		Yes	Yes	Yes	Yes	Yes
500 - 549		Yes	Yes	Yes	Yes	Yes
550 - 599	Yes	Yes	Yes	Yes	Yes	Yes
600 or More	Yes	Yes	Yes	Yes	Yes	Yes

RIGHT-TURN VOLUME	THROUGH VOLUME PLUS LEFT-TURN VOLUME *					
	350 - 399	400 - 449	450 - 499	500 - 549	550 - 599	= / > 600
Fewer Than 25						
25 - 49					Yes	Yes
50 - 99				Yes	Yes	Yes
100 - 149			Yes	Yes	Yes	Yes
150 - 199		Yes	Yes	Yes	Yes	Yes
200 - 249	Yes	Yes	Yes	Yes	Yes	Yes
250 - 299	Yes	Yes	Yes	Yes	Yes	Yes
300 - 349	Yes	Yes	Yes	Yes	Yes	Yes
350 - 399	Yes	Yes	Yes	Yes	Yes	Yes
400 - 449	Yes	Yes	Yes	Yes	Yes	Yes
450 - 499	Yes	Yes	Yes	Yes	Yes	Yes
500 - 549	Yes	Yes	Yes	Yes	Yes	Yes
550 - 599	Yes	Yes	Yes	Yes	Yes	Yes
600 or More	Yes	Yes	Yes	Yes	Yes	Yes

\* Or through volume only if a left-turn lane exists

Intersection	Time Period	Through Volume	Right-Turn Volume	Right-Turn Lane Warranted (Yes / No)
Rob. @ Wash	AM Peak	144	14	NO
Rob. @ Wash	PM Peak	59	4	NO
Rob. @ Emory	AM Peak	92	53	NO
Rob. @ Emory	PM Peak	75	102	NO