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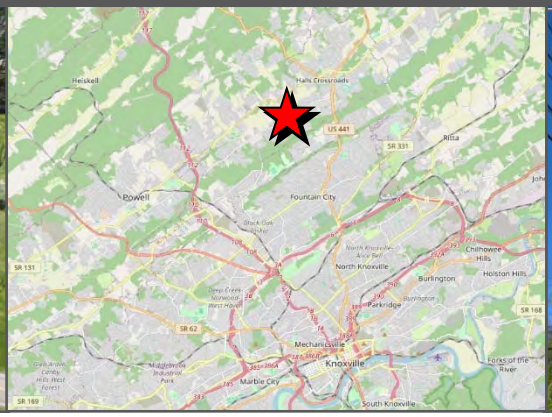
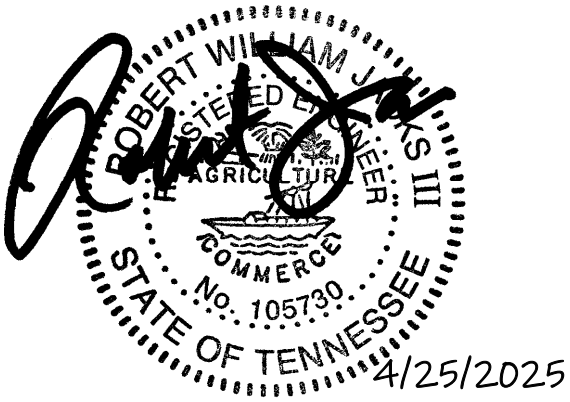
Transportation Impact Letter
2720 Cunningham Road Subdivision
Knox County, Tennessee



April 2025

Prepared for:
Eagle Bend Development, LLC
1920 Ebenezer Road
Knoxville, TN 37922



6-SD-25-C / 6-J-25-DP
TIL Version 1
4/25/2025

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▪ EXECUTIVE SUMMARY

Preface:

Eagle Bend Development, LLC proposes a residential subdivision at 2720 Cunningham Road opposite Imperial Drive in North Knox County, TN. The proposed development will include constructing 14 multi-family attached townhouses and 43 single-family detached houses on 19.14 +/- acres. The development is named and referenced in this report as "2720 Cunningham Road Subdivision" since a formal name has not yet been chosen. The development proposes a single entrance to Cunningham Road, providing a new southern approach at the existing t-intersection at Imperial Drive. The subdivision is anticipated to be fully built and occupied by 2027.

Report Results:

The significant findings of this report include the following:

- The proposed 2720 Cunningham Road Subdivision, with 14 multi-family attached townhouses and 43 single-family detached houses, is estimated to generate 627 vehicle trips at full build-out and occupancy on an average weekday. Of these daily trips, 44 are estimated to occur during the AM peak hour and 64 in the PM peak hour in 2027.
- The 4-way intersection of Cunningham Road at Imperial Drive and the Proposed Entrance is calculated to operate with average to low vehicle delays and queues in the projected 2027 conditions.
- Assuming vegetation removal and maintenance on the south side of Cunningham Road on the development property's road frontage in future conditions, the sight distance was visually estimated to be adequate in both directions at the Proposed Entrance location at Cunningham Road, opposite Imperial Drive.
- Separate entering left and right-turn lanes on Cunningham Road at the Proposed Entrance do not meet Knox County thresholds based on the calculated intersection volumes in the projected 2027 conditions.

Recommendations:

The following recommendations are offered based on the analyses to minimize the impacts of the proposed development on the adjacent transportation system while attempting to achieve an acceptable traffic flow and improved safety.

Cunningham Road at Imperial Drive and Proposed Entrance:

- Intersection sight distances from the Proposed Entrance at Cunningham Road must not be impacted by future landscaping, signage, or existing vegetation at the entrance.
- It is recommended that a Stop Sign (R1-1) be installed and a 24" white stop bar be applied at the Proposed Entrance approach at Cunningham Road. The stop bar should be applied a minimum of 4 feet away from the edge of the travel lane on Cunningham Road and placed at the desired stopping point that maximizes the sight distance.
- The curb radius returns at the Proposed Entrance on Cunningham Road should be a minimum of 30 feet to help facilitate turns and increase the speed at which vehicles can be removed from the thru movements on Cunningham Road and enter the Cunningham Road traffic stream from the proposed development.

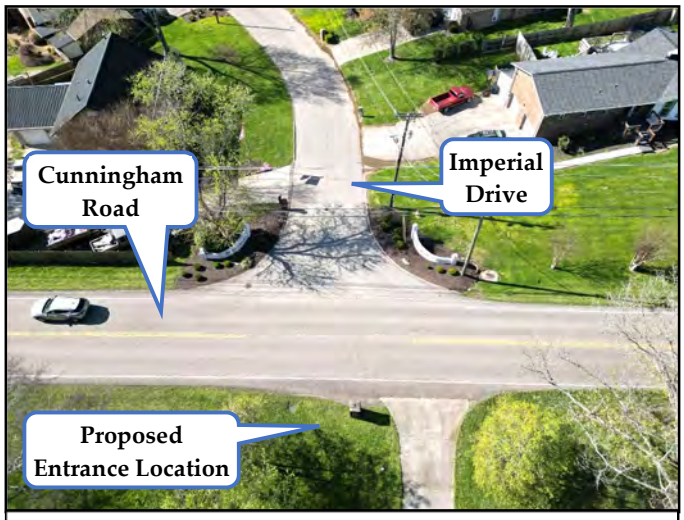
2720 Cunningham Road Subdivision Internal Roads:

- A 25-mph Speed Limit Sign (R2-1) with additional plaque signage, as shown adjacent, is recommended to be posted near the beginning of the Proposed Entrance road off Cunningham Road. It is also recommended that a "No Outlet" Sign (W14-2a) be posted at the front of the subdivision. This sign can be posted above or below the street name sign.
- Stop Signs (R1-1) with 24" white stop bars are recommended to be installed on the minor approaches at the internal roadway t-intersections.
- Dual end-of-roadway object markers (OM4-1) should be installed at the end of the internal road, Road "C", terminating at the creek to the south.
- The proposed lots in the 2720 Cunningham Road Subdivision adjacent to Cunningham Road should not be allowed direct vehicular access.
- Sight distance at the new internal intersections must not be impacted by new signage, parked cars, or future landscaping.
- The civil site designer should provide a centralized mail delivery center location within the development for the subdivision residents.
- All drainage grates and covers for the residential development must be pedestrian and bicycle-safe.
- All road and intersection elements should be designed to AASHTO and Knox County specifications and guidelines to ensure proper operation.

▪ INTRODUCTION AND ACCESS ROADWAY DESCRIPTIONS

The location of the proposed new residential development, the 2720 Cunningham Road Subdivision, is shown on a map in Figure 1. This proposed development will be located on the south side of Cunningham Road near the Halls Community of North Knox County, TN.

Cunningham Road roughly parallels East Emory Road to the south and traverses in a generally east-west direction. Cunningham Road is a two-lane road with white edge lines and a double yellow centerline. On its west end, the road begins at the signalized intersection with Dry Gap Pike and East Beaver Creek Drive. Cunningham Road ends to the east at a signalized intersection with Maynardville Pike. Cunningham Road has a total length of 2.7 miles.



Intersection of Cunningham Road at Imperial Drive and Proposed Entrance Location

Cunningham Road is classified as a Major Collector and has a posted speed limit of 40 mph. Along its length, Cunningham Road primarily provides access to residential properties, a golf course and country club, and commercial and retail businesses near its east and west terminations. The asphalt pavement width of Cunningham Road varies between 23.5 and 27 feet near the Proposed Entrance location.

Across Cunningham Road from the Proposed Entrance location for the 2720 Cunningham Road Subdivision, Imperial Drive provides singular external road access for residents in the Regency Heights Subdivision. This subdivision has 41 single-family detached houses and is fully built out and occupied.

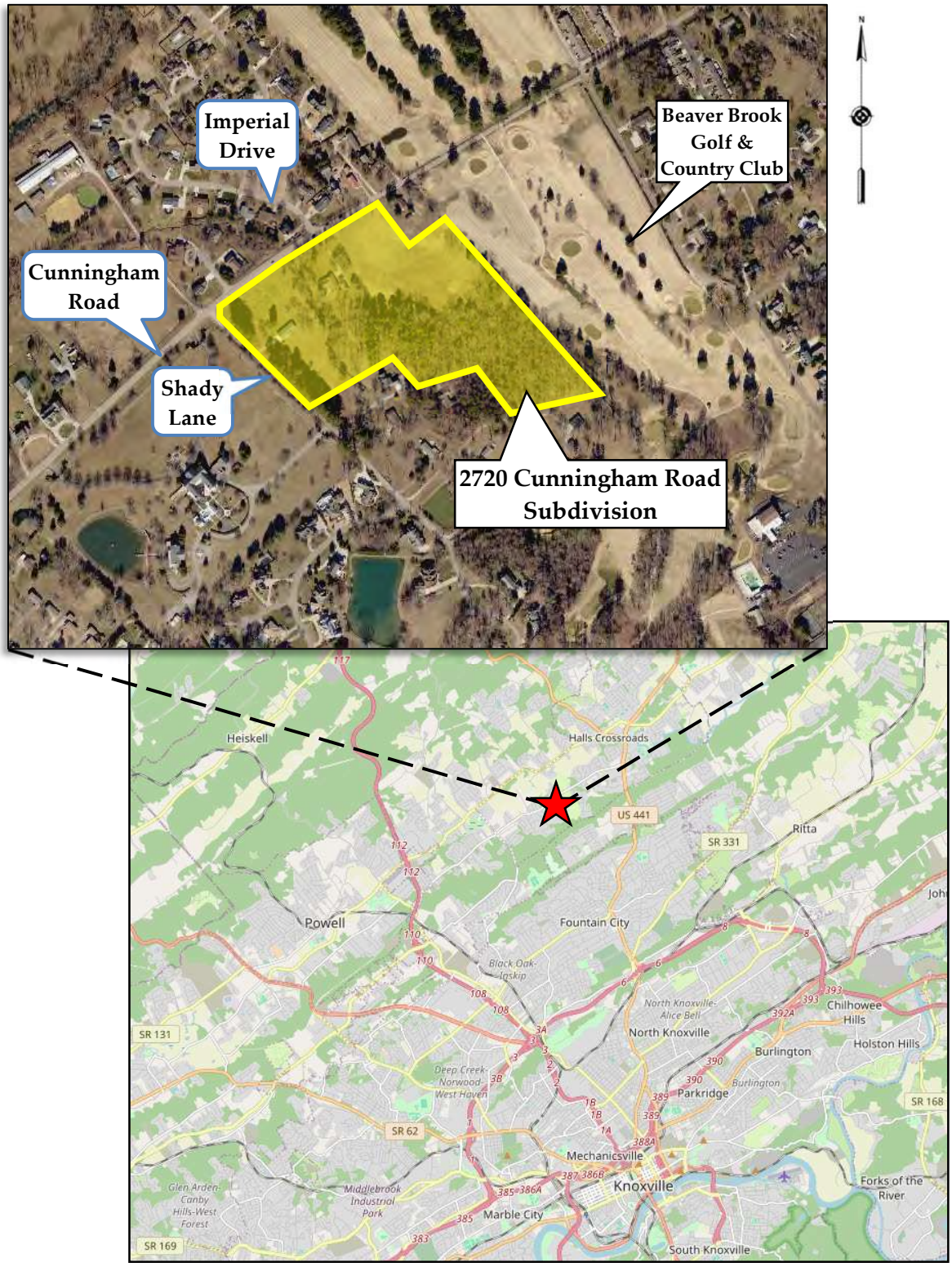


Figure 1
Location Map

- **PROJECT DESCRIPTION:**

The proposed development will have a single entrance constructed on the south side of Cunningham Road, opposite Imperial Drive. The entrance will be just slightly west of the existing concrete driveway for the residence at 2720 Cunninghan Road and will line up directly across from Imperial Drive.

The 2720 Cunningham Road Subdivision is projected to be fully built and occupied by residents by 2027. The residential development will include 14 multi-family townhouses and 43 single-family detached houses on approximately 19.14 acres. The construction of the subdivision will include the removal of the existing single-family house located at 2720 Cunningham Road and potentially the existing house at 6930 Shady Lane. The Shady Lane house's current owner comprises most of the proposed development's property.

The townhouses will be built on the northern portion of the proposed subdivision near Cunningham Road and provided two internal private roadways (Roads "B" and "E"). The three internal roadways for the single-family detached houses will be public (Roads "A", "C", and "D"). The internal roads will not have sidewalks; besides common areas, the development will not provide other amenities. A creek divides the development property's western side and will not be crossed by the new internal roads.

The proposed site layout is shown in Figure 2, and Figure 3 shows the lane configurations of the existing intersection traffic count location and the current traffic signage along Cunningham Road in the study area. The traffic signage shown in Figure 3 only includes warning and regulatory signage near the development site.

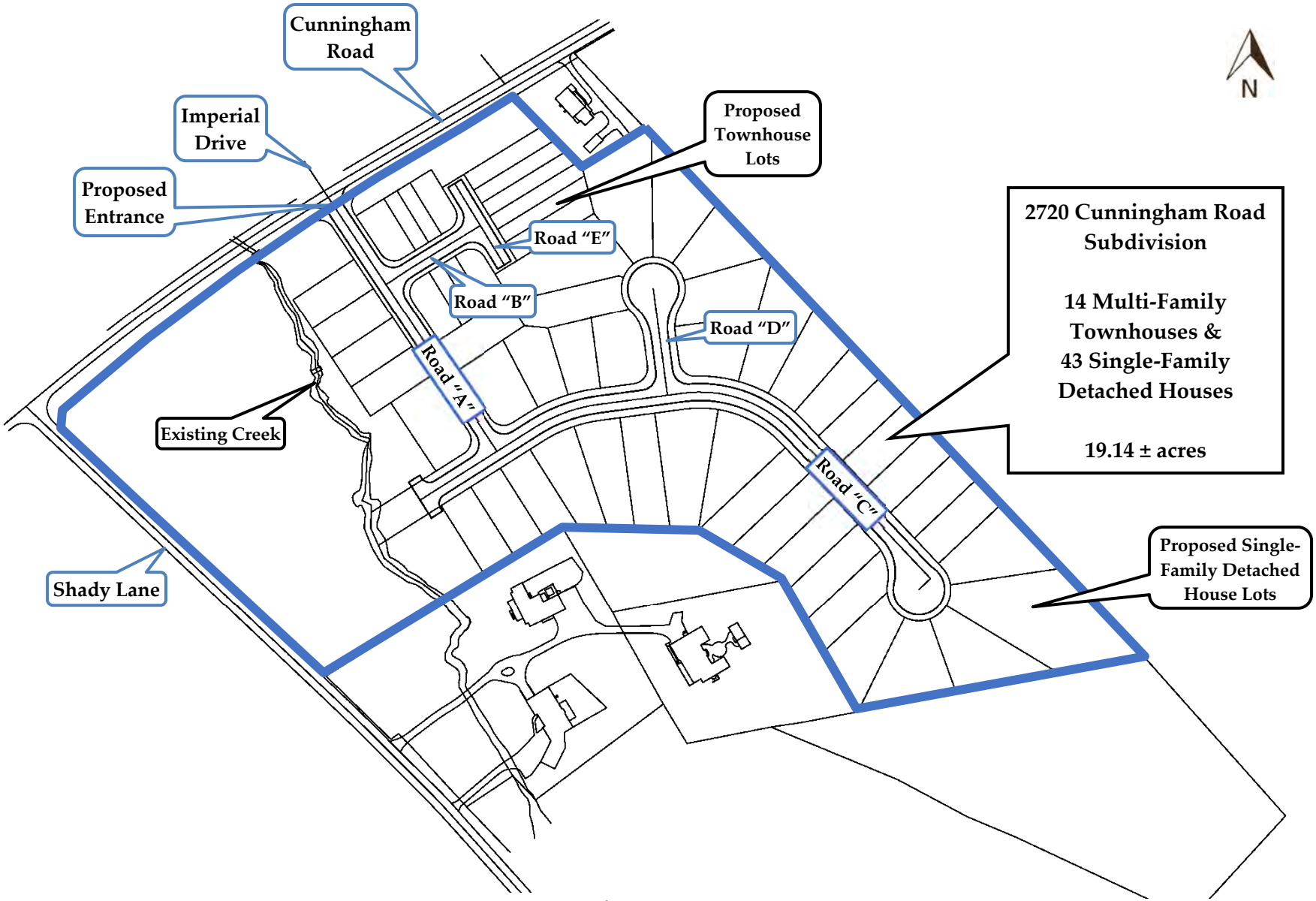


Figure 2
Proposed Plan Layout
2720 Cunningham Road Subdivision

Not to Scale – Edited by Ajax Engineering for Display Purposes

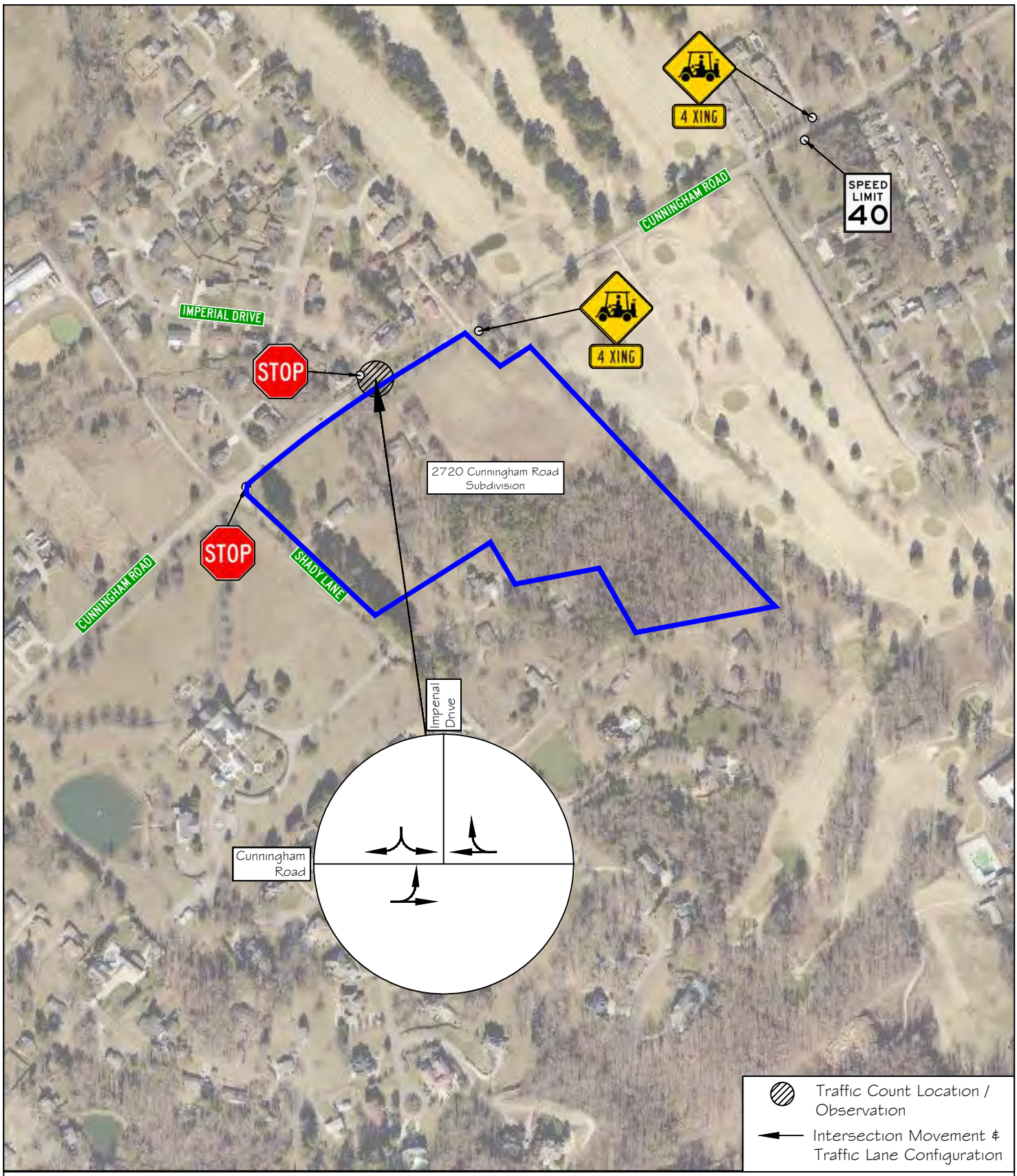


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FIGURE 3

2720 Cunningham Road Subdivision

Traffic Count Location, Traffic Signage & Existing Lane Configurations

▪ EXISTING TRAFFIC CONDITIONS

For this report, a 6-hour traffic count was conducted at the intersection of Cunningham Road at Imperial Drive on Wednesday, April 9th, 2025. Local public schools were in session when the traffic count was conducted. Based on the traffic volumes collected, the AM and PM peak hours were observed at 7:30 – 8:30 a.m. and 5:00 – 6:00 p.m. The manual tabulated traffic counts at the intersection can be reviewed in Figure 4 and the Appendix.

Overall, the majority pattern of travel from the existing Regency Heights Subdivision at Imperial Drive was to and from the west in the AM peak hour and more evenly split between east and west traffic in the PM peak hour. The thru movements on Cunningham Road showed predominant flows towards the west in the AM peak hour and towards the east in the PM peak hour.

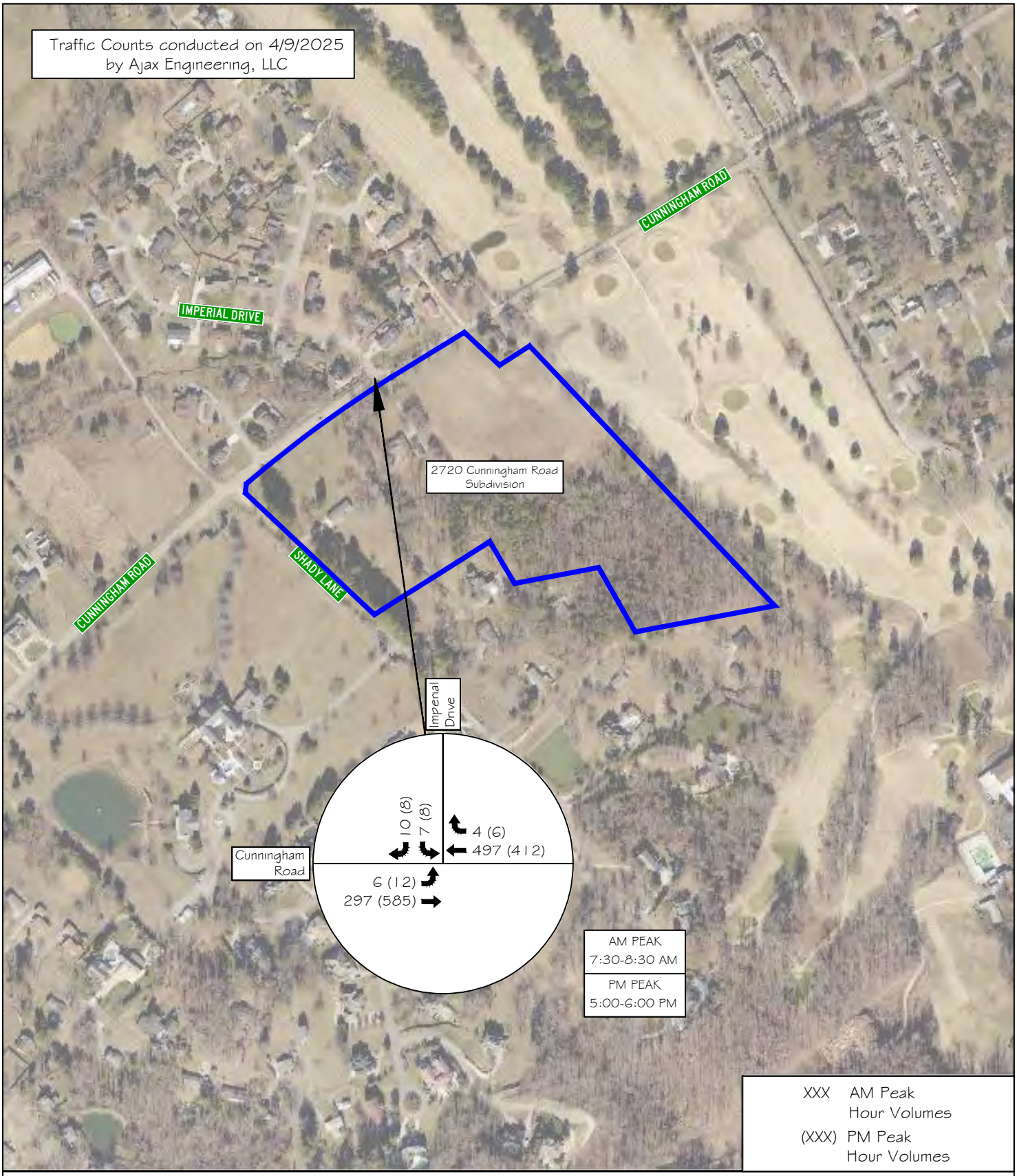

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FIGURE 4

2720 Cunningham Road Subdivision

2025 Peak Hour Traffic Volumes - EXISTING TRAFFIC CONDITIONS

Capacity analyses were undertaken to determine the Level of Service (LOS) for the existing 2025 traffic volumes shown at the intersection in Figure 4. The capacity analyses were calculated following the Highway Capacity Manual (HCM) methods and utilizing Synchro Traffic Software (Version 12).

Intersection capacity results from the existing 2025 peak hour traffic are shown in Table 1. The intersection in the table is shown with a LOS designation, delay (in seconds), and v/c ratio (volume/capacity) for the AM and PM peak hours. The Appendix includes the worksheets for all the peak hour capacity analyses.

As shown in Table 1, the intersection is calculated and shown to operate with average to good LOS and reasonable vehicle delays in the existing peak hour 2025 conditions.

TABLE 1
INTERSECTION CAPACITY ANALYSIS RESULTS -
2025 EXISTING PEAK HOUR TRAFFIC CONDITIONS

INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	AM PEAK			PM PEAK		
			LOS [a]	DELAY [b] (seconds)	v/c [c]	LOS [a]	DELAY [b] (seconds)	v/c [c]
Cunningham Road (WB & EB) at Imperial Drive (SB)	STOP Unsignalized	Eastbound Left	A	8.6	0.016	A	8.5	0.015
		Southbound Left/Right	C	15.7	0.087	C	19.3	0.100

Note: All analyses were calculated in Synchro 12 software and reported using HCM 7th Edition intersection methodology
[a] Level of Service , [b] Average Delay (sec/vehicle) , [c] Volume-to-Capacity Ratio

▪ PROJECTED TRAFFIC CONDITIONS WITHOUT THE PROJECT

Horizon year traffic conditions represent the projected traffic volumes in the study area without the proposed project being developed (no-build option). This proposed residential development's build-out and full occupancy are assumed to occur by 2027.

According to the nearby TPO and TDOT count station data (included in the Appendix), Cunningham Road's vehicular traffic has shown slightly negative growth (at the eastern end, -0.8%) to slightly positive growth (at the western end, +0.3%) over the past ten years.

For this report, an annual growth rate was assumed and applied to the existing thru 2025 volumes tabulated on Cunningham Road at Imperial Drive to estimate the future volumes in the horizon year of 2027 without the potential development traffic. The turning movements to and from Imperial Drive at the intersection were assumed will not experience any future growth due to the Regency Heights Subdivision being completely built out and occupied. An annual growth rate of 1% was used to calculate future growth up to 2027 to account for potential traffic growth in the study area. Figure 5 shows the projected 2027 horizon year traffic volumes at the intersection without the 2720 Cunningham Road Subdivision trips during the AM and PM peak hours.

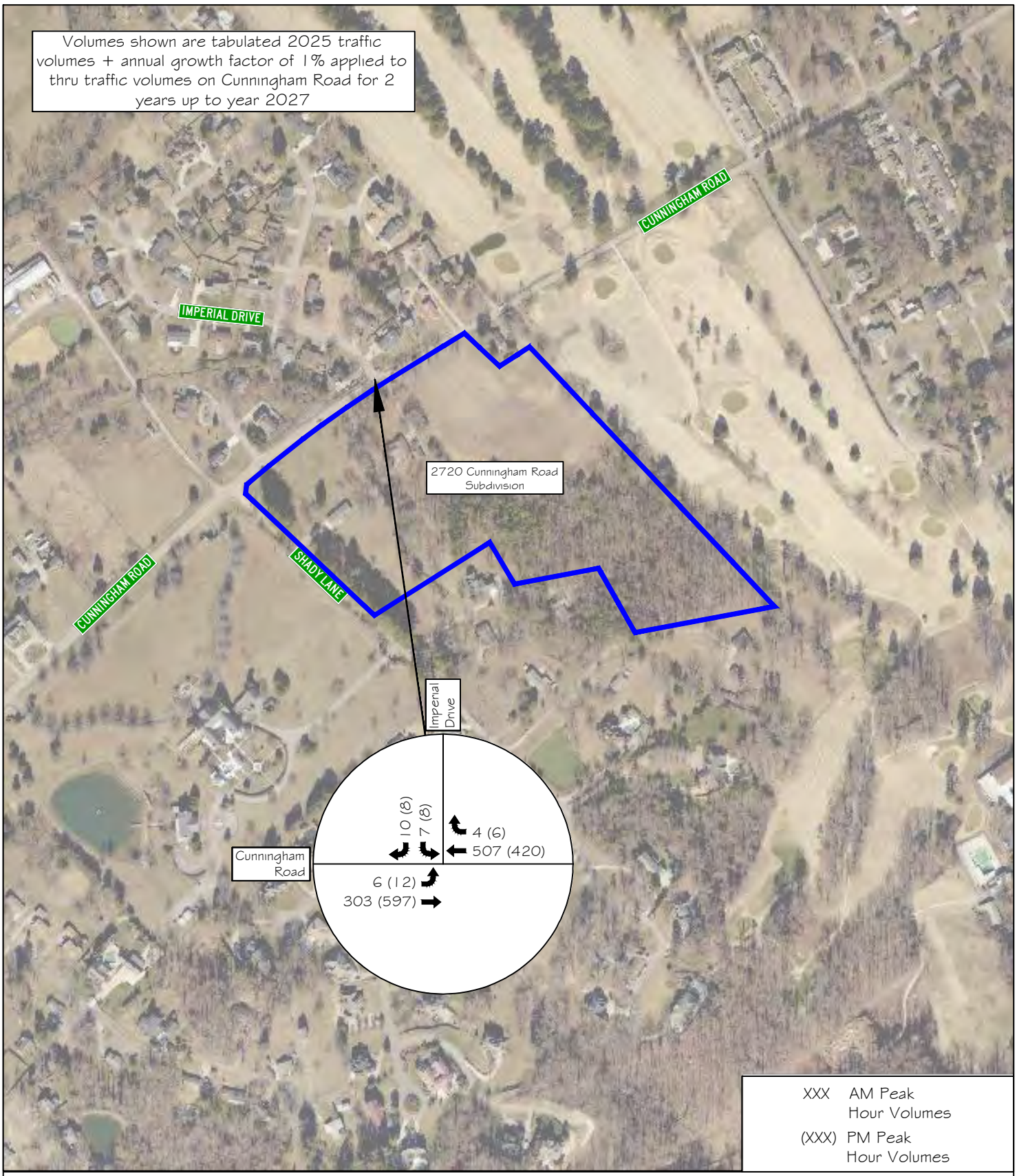

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FIGURE 5

2720 Cunningham Road Subdivision

2027 Peak Hour Traffic Volumes - PROJECTED TRAFFIC CONDITIONS WITHOUT THE PROJECT

Capacity analyses were undertaken to determine the projected LOS in 2027 without the proposed development trips at the studied intersection. The results are shown in Table 2, showing just slightly worse vehicle delays at the intersection in the 2027 projected conditions versus the existing 2025 conditions. This result is due to the small increase in traffic volumes on Cunningham Road from the assumed general vehicle growth of 1%.

TABLE 2
INTERSECTION CAPACITY ANALYSIS RESULTS -
2027 PEAK HOUR PROJECTED TRAFFIC CONDITIONS WITHOUT THE PROJECT

INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	AM PEAK			PM PEAK		
			LOS [a]	DELAY [b] (seconds)	v/c [c]	LOS [a]	DELAY [b] (seconds)	v/c [c]
Cunningham Road (WB & EB) at Imperial Drive (SB)	STOP Unsignalized	Eastbound Left	A	8.7	0.016	A	8.5	0.015
		Southbound Left/Right	C	16.0	0.088	C	19.8	0.103

Note: All analyses were calculated in Synchro 12 software and reported using HCM 7th Edition intersection methodology
[a] Level of Service , [b] Average Delay (sec/vehicle) , [c] Volume-to-Capacity Ratio

▪ TRIP GENERATION

A generated trip is a single or one-direction vehicle movement entering or exiting the study site. The estimated traffic the 2720 Cunningham Road Subdivision will generate was based on the equations provided by a local source and the Institute of Transportation Engineers (ITE). The trips generated by the 14 townhouses were based on equations provided by Knoxville/Knox County Planning. The trips generated by the 43 single-family detached houses were based on equations from the ITE Trip Generation Manual.

The data and calculations for the proposed land uses are shown in the Appendix. A summary of this information is presented in Table 3:

TABLE 3
TRIP GENERATION FOR 2720 CUNNINGHAM ROAD SUBDIVISION
14 Attached Townhouses and 43 Single-Family Detached Houses

ITE LAND USE CODE	LAND USE DESCRIPTION	# OF UNITS	GENERATED DAILY TRAFFIC	GENERATED TRAFFIC AM PEAK HOUR			GENERATED TRAFFIC PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
Local Trip Rate	Multi-Family Attached Townhouses	14	163	22%	78%		55%	45%	
				2	7	9	10	9	19
#210	Single-Family Detached Housing	43	464	26%	74%		63%	37%	
				9	26	35	28	17	45
Total New Volume Site Trips			**627**	**11**	**33**	**44**	**38**	**26**	**64**

ITE Trip Generation Manual, 11th Edition and Local Trip Rates
Trips calculated by using Fitted Curve Equations

For the proposed 2720 Cunningham Road Subdivision, it is estimated that 11 vehicles will enter and 33 will exit, for a total of 44 generated trips during the AM peak hour in the year 2027. Similarly, it is estimated that 38 vehicles will enter and 26 will exit, for a total of 64 generated trips during the PM peak hour in the year 2027. The calculated trips generated for an average weekday are estimated to be 627 vehicles for the proposed development. No vehicle trip reductions were included in the calculations or analysis.

- **TRIP DISTRIBUTION AND ASSIGNMENT:**

The assumed projected trip distribution and assignment for the 2720 Cunningham Road Subdivision were based on the observed distribution of trips entering and exiting the adjacent Regency Heights Subdivision.

Figure 6 shows the projected distribution of traffic entering and exiting the proposed residential subdivision at the studied intersection. Figure 7 shows the traffic assignment of the computed trips generated by the 2720 Cunningham Road Subdivision and is based on the assumed distribution of trips shown in Figure 6.

- **PROJECTED TRAFFIC CONDITIONS WITH THE PROJECT:**

The calculated peak hour traffic generated by the 2720 Cunningham Road Subdivision was added to the 2027 horizon year traffic by following the predicted trip distributions and assignments. This procedure was completed to obtain the total projected traffic volumes at the studied intersection when the 2720 Cunningham Road Subdivision is fully built and occupied in 2027. Figure 8 shows the projected 2027 AM and PM peak hour traffic volumes, which include the generated trips from the 2720 Cunningham Road Subdivision at the intersection.

Capacity analyses were conducted to determine the projected LOS at the studied intersection with the development traffic in 2027, as shown in Figure 8. Intersection capacity results from the projected 2027 peak hour traffic are shown in Table 4 and are based on Imperial Drive and the Proposed Entrance operating under stop control. As shown in Table 4, the intersection is projected to operate adequately in the AM and PM peak hours.

TABLE 4
INTERSECTION CAPACITY ANALYSIS RESULTS -
2027 PEAK HOUR PROJECTED TRAFFIC CONDITIONS WITH THE PROJECT

INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	AM PEAK			PM PEAK		
			LOS [a]	DELAY [b] (seconds)	v/c [c]	LOS [a]	DELAY [b] (seconds)	v/c [c]
Cunningham Road (WB & EB) at Imperial Drive (SB) and Proposed Entrance (NB)	STOP Unsignalized	Northbound Left/Thru/Right	C	19.2	0.143	C	24.5	0.135
		Eastbound Left	A	8.7	0.016	A	8.5	0.015
		Westbound Left	A	8.0	0.004	A	9.0	0.018
		Southbound Left/Thru/Right	C	18.1	0.104	D	25.4	0.137

Note: All analyses were calculated in Synchro 12 software and reported using HCM 7th Edition intersection methodology
[a] Level of Service , [b] Average Delay (sec/vehicle) , [c] Volume-to-Capacity Ratio

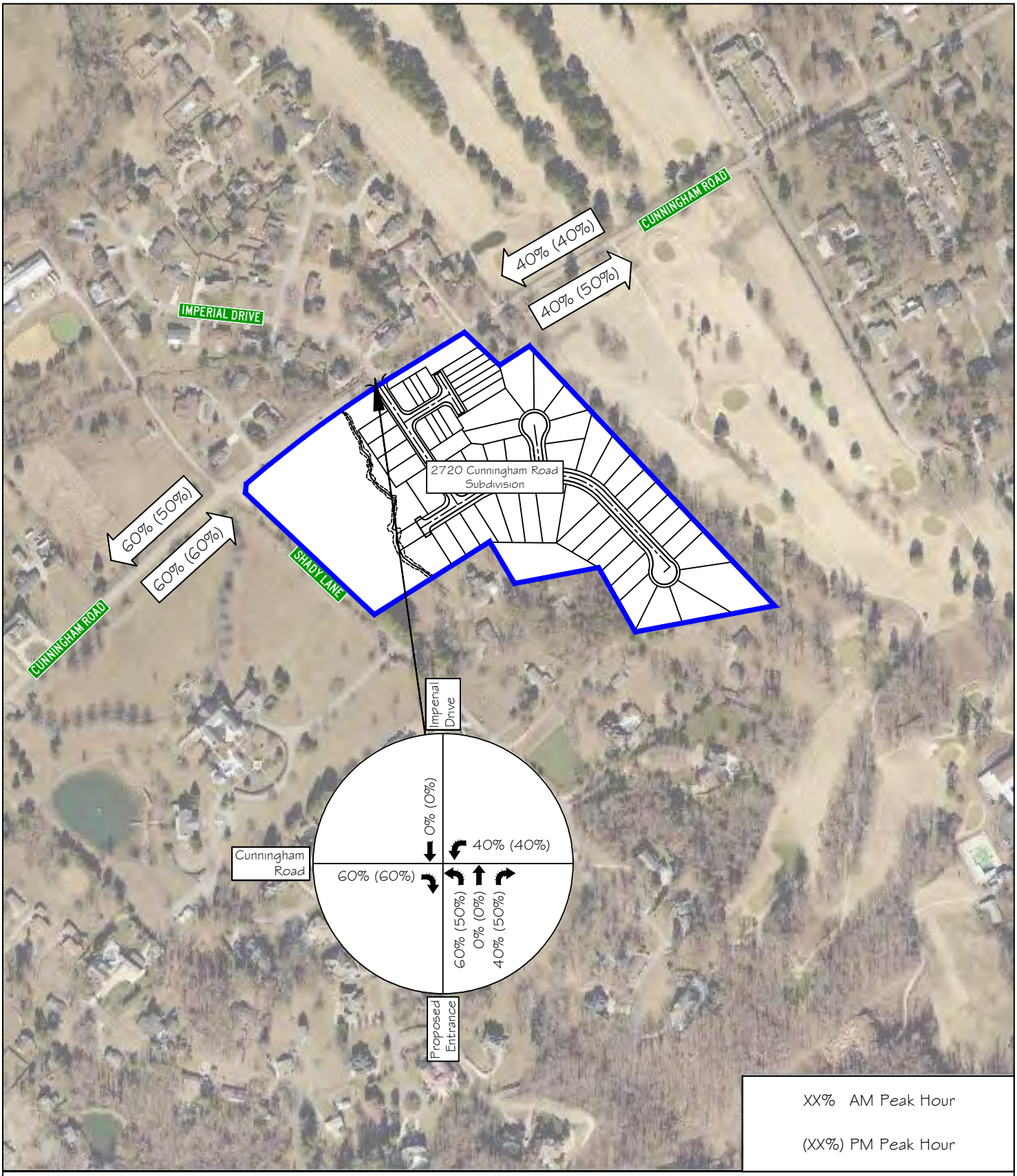

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FIGURE 6

2720 Cunningham Road Subdivision

Directional Distribution of Generated Traffic during AM and PM Peak Hour

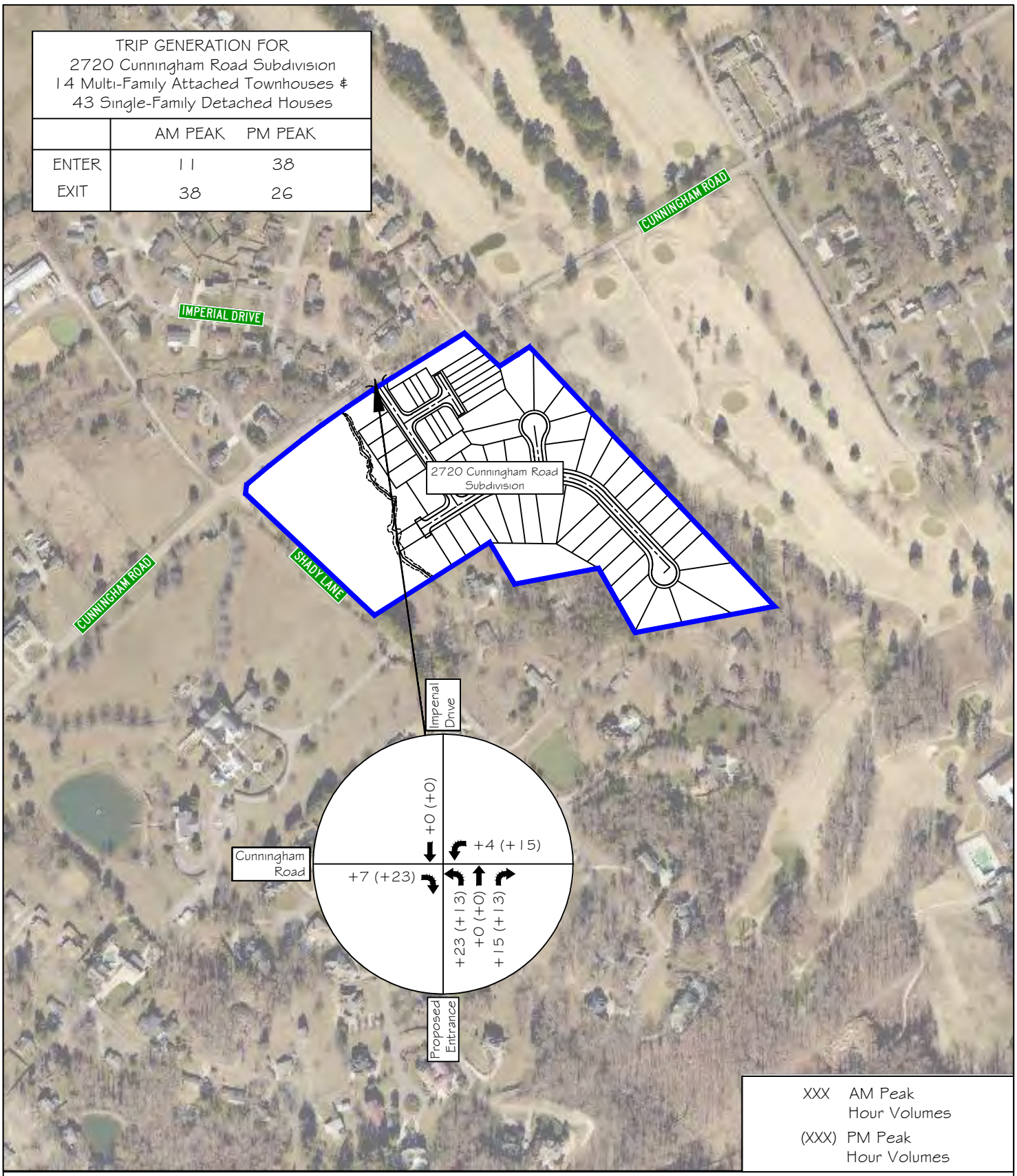

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FIGURE 7

2720 Cunningham Road Subdivision

Traffic Assignment of Generated Traffic during AM and PM Peak Hour

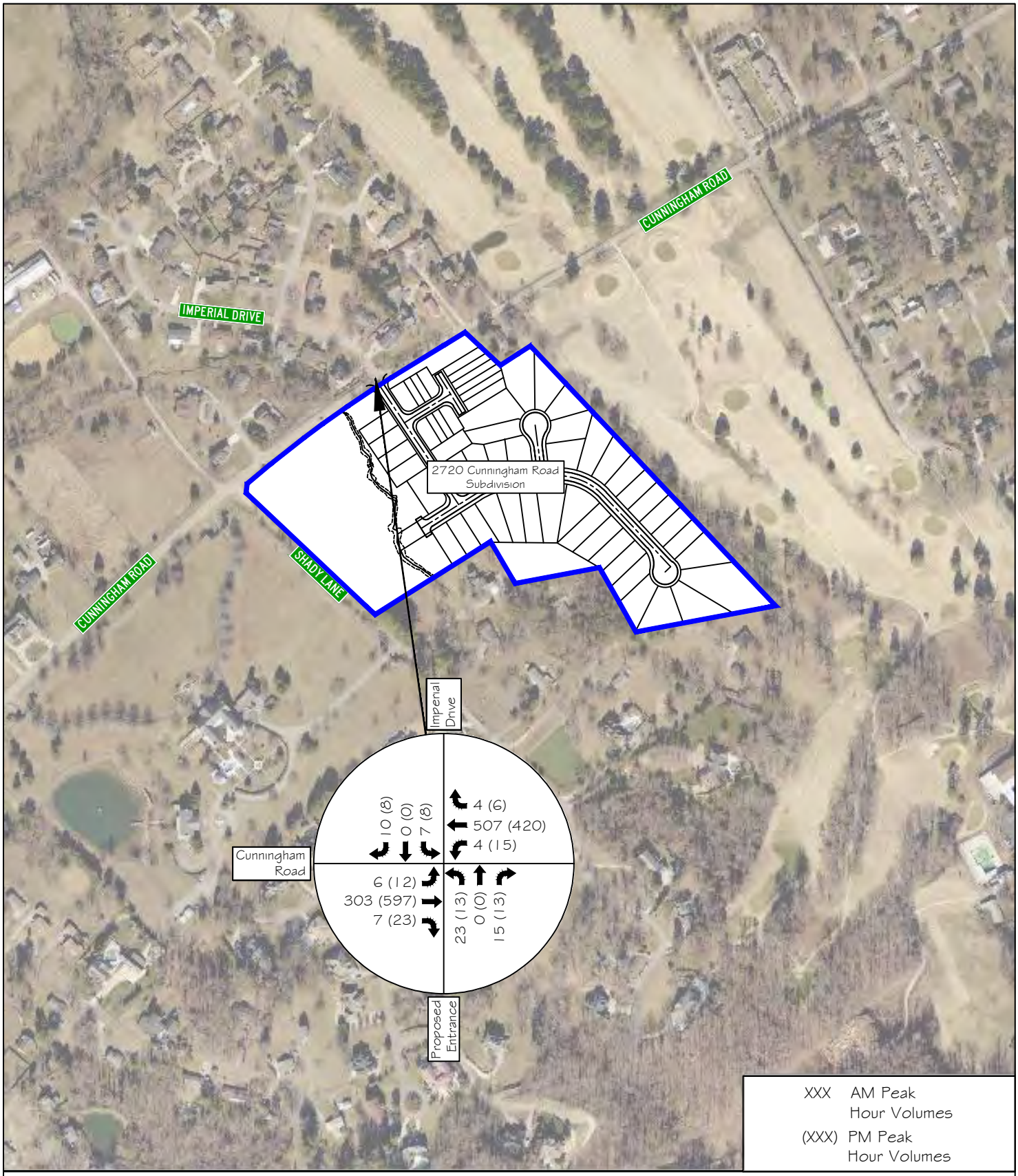

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FIGURE 8

2720 Cunningham Road Subdivision

2027 Peak Hour Traffic Volumes - PROJECTED TRAFFIC CONDITIONS WITH THE PROJECT

▪ EVALUATION OF SIGHT DISTANCE

With a posted speed limit of 40-mph on Cunningham Road at the Proposed Entrance, an Intersection Sight Distance (ISD) of 400 feet is necessary, based on Knox County's policy requiring 10 feet of sight distance per 1-mph of speed. This distance is required for a motorist to exit safely to the left or right at Cunningham Road from the Proposed Entrance.

Visual observations of the sight distances at the Proposed Entrance location on Cunningham Road were measured using a Nikon Laser Rangefinder. Sight distance was measured at a TDOT-prescribed distance of 14.5 feet from the edge of Cunningham Road. The available sight distance was visually estimated to be 500 feet to the west and 465 feet to the east, and it is estimated to be appropriate for future motorists exiting at the Proposed Entrance location. The existing vegetation on the south side of Cunningham Road along the development property's road frontage is assumed will be removed and maintained in the future conditions. The existing brick mailbox at 2720 Cunningham Road is also assumed will be removed during construction.

Images of the existing sight distances at Cunningham Road at the Proposed Entrance location are labeled in the following image with the required ISD and rangefinder-measured sight distances.

View of Sight Distance on Cunningham Road at the Proposed Entrance Location (Looking West)

View of Sight Distance on Cunningham Road at the Proposed Entrance Location (Looking East)

▪ EVALUATION OF TURN LANE THRESHOLDS

The need for separate left and right-turn lanes was evaluated in the projected 2027 conditions at the intersection of Cunningham Road at the Proposed Entrance.

The criteria used for these turn lane evaluations were based on Knox County's "Access Control and Driveway Design Policy". This design policy relates vehicle volume thresholds based on prevailing speeds for two-lane and four-lane roadways. The location of the Proposed Entrance intersection is within a 40 mph speed zone; thus, the intersection was evaluated based on this posted speed. The worksheets for these evaluations are provided in the Appendix.

Based on the projected 2027 traffic volumes at the Proposed Entrance intersection, separate left or right-turn entering lanes on Cunningham Road will not meet Knox County thresholds.

▪ PROJECTED VEHICLE QUEUES

An additional software program calculated the 2027 AM and PM peak hour projected vehicle queues at the studied intersection. The previously mentioned Synchro Traffic Software includes SimTraffic.

The calculated vehicle queue results were based on averaging the outcome obtained during ten traffic simulations in the software. The 95th percentile vehicle queue lengths at the studied intersection are shown in Table 5 for the projected 2027 conditions. The vehicle queue worksheet results from the SimTraffic Software (Version 12) are in the Appendix.

Table 5 shows short vehicle queues on Cunningham Road, Imperial Drive, and the Proposed Entrance road. For comparison, one passenger vehicle length is considered 25 feet once vehicle spacing is considered. Thus, the longest calculated vehicle queue at any of the approaches in the projected conditions is just under two passenger vehicles. The longest vehicle queues on Cunningham Road are calculated to be 46 feet for the westbound approach in the PM peak hour, roughly two passenger vehicles.

TABLE 5
VEHICLE QUEUE SUMMARY -
2027 PEAK HOUR PROJECTED TRAFFIC CONDITIONS WITH THE PROJECT

INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	95th PERCENTILE VEHICLE QUEUE LENGTH (ft)	
			AM PEAK HOUR	PM PEAK HOUR
Cunningham Road (WB & EB) at Imperial Drive (SB) and Proposed Entrance (NB)	STOP Unsignalized	Northbound Left/Thru/Right	49	45
		Eastbound Left/Thru/Right	20	31
		Westbound Left/Thru/Right	18	46
		Southbound Left/Thru/Right	38	40

Note: All analyses were calculated in SimTraffic 12 software

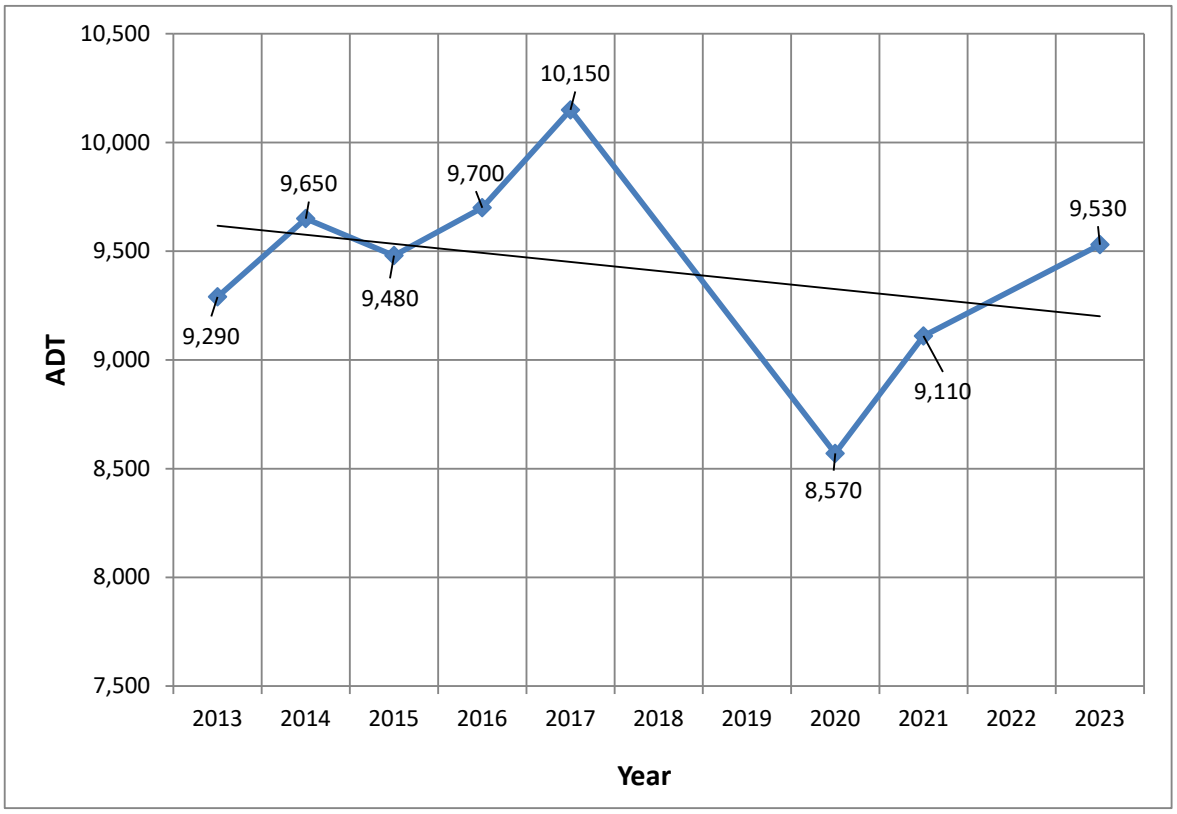
APPENDICES

Historical Traffic Counts

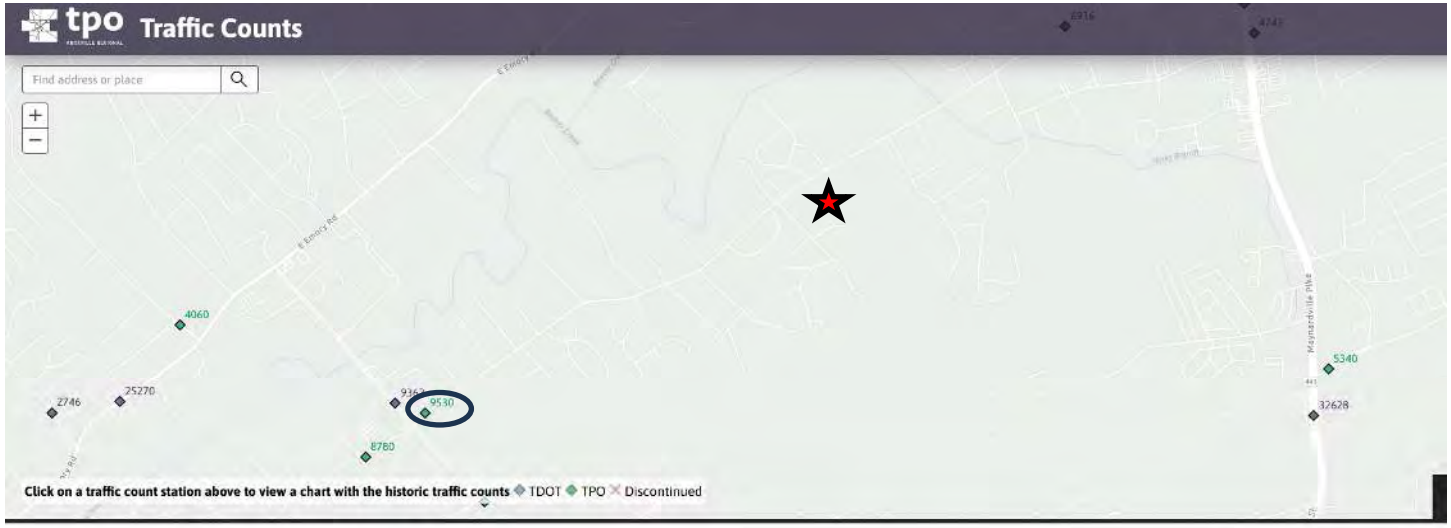
Organization: Knoxville Regional TPO
Station ID #: 093M091
Location: Cunningham Road, east of Dry Gap Pike

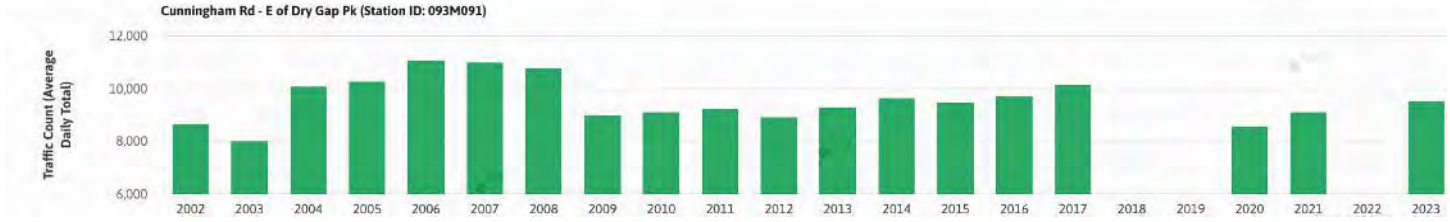
YEAR	AADT
2013	9,290
2014	9,650
2015	9,480
2016	9,700
2017	10,150
2018	-
2019	-
2020	8,570
2021	9,110
2022	-
2023	9,530

Trendline



2013 - 2023 Growth Rate = 2.6%
Average Annual Growth Rate = 0.3%


tpo
Traffic Counts
Find address or place
4060
2746
25270
9530
8780
5340
32628
Click on a traffic count station above to view a chart with the historic traffic counts
TDOT
TPO
Discontinued

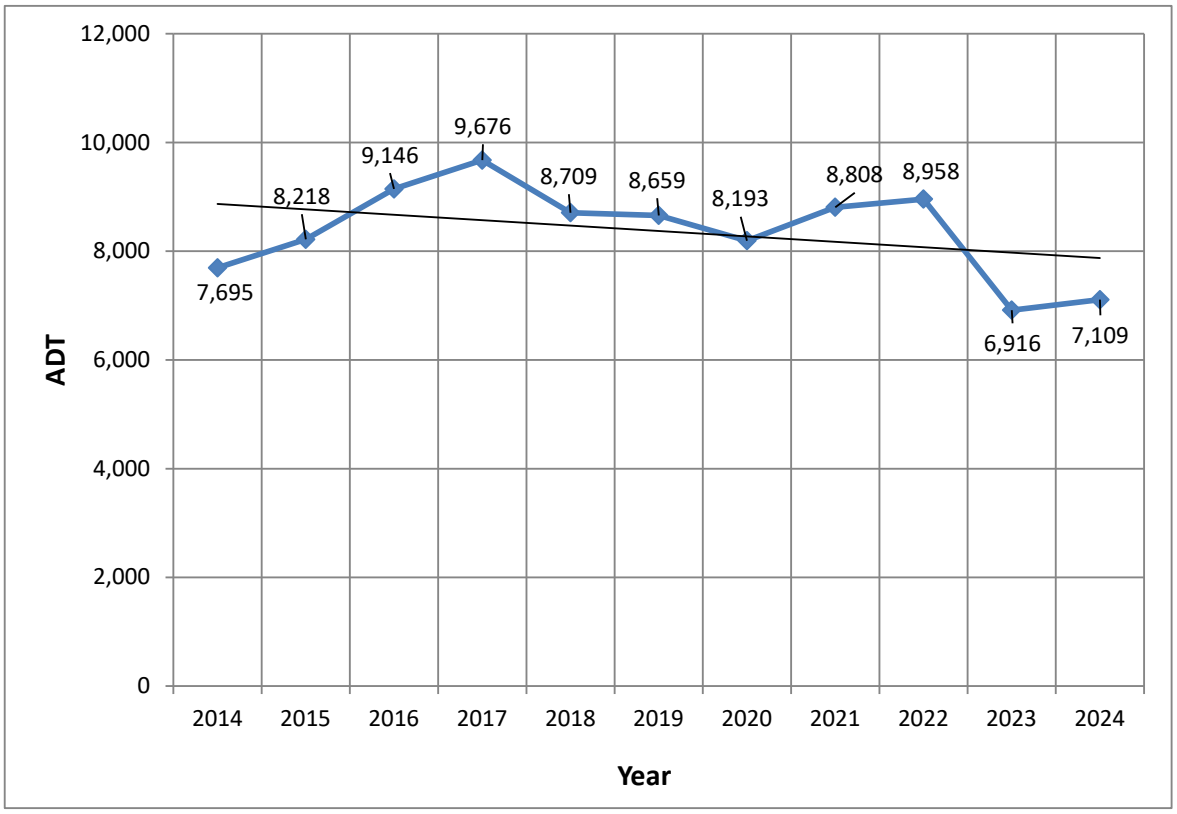

Cunningham Rd - E of Dry Gap Pk (Station ID: 093M091)
Traffic Count (Average Daily Total)
12,000
10,000
8,000
6,000
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023

Historical Traffic Counts

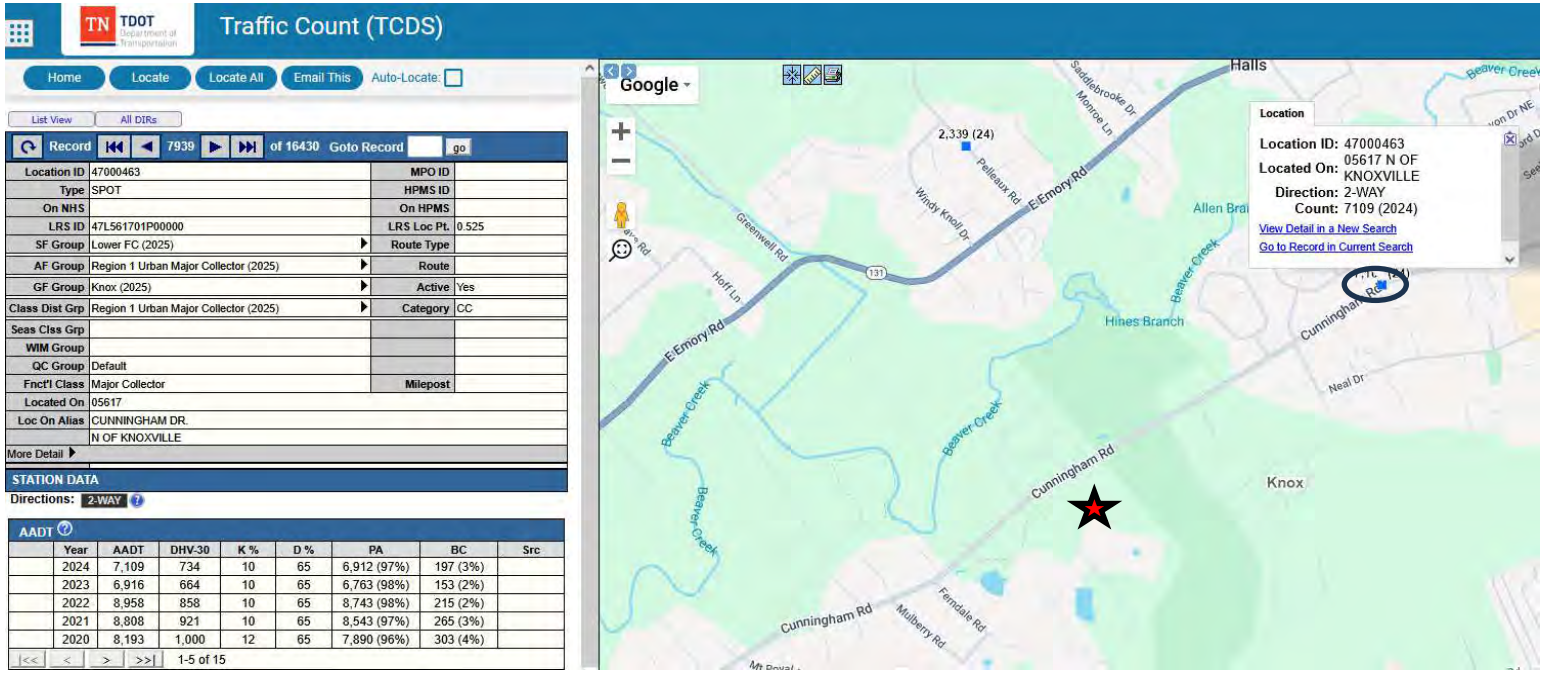
Organization: TDOT
Station ID #: 47000463
Location: Cunningham Road, west of Maynardville Highway

YEAR	AADT
2014	7,695
2015	8,218
2016	9,146
2017	9,676
2018	8,709
2019	8,659
2020	8,193
2021	8,808
2022	8,958
2023	6,916
2024	7,109

Trendline



2014 - 2024 Growth Rate = -7.6%
Average Annual Growth Rate = -0.8%


TN TDOT Department of Transportation
Traffic Count (TCDS)
Home
Locate
Locate All
Email This
Auto-Locate:
List View
All DIRs
Record 7939 of 16430 Goto Record go
Location ID 47000463
MPO ID
Type SPOT
HPMS ID
On NHS
On HPMS
LRS ID 47L561701P00000
LRS Loc Pt. 0.525
SF Group Lower FC (2025)
Route Type
AF Group Region 1 Urban Major Collector (2025)
Route
GF Group Knox (2025)
Active Yes
Class Dist Grp Region 1 Urban Major Collector (2025)
Category CC
Seas Clss Grp
WIM Group
QC Group Default
Fnct'l Class Major Collector
Milepost
Located On 05617
Loc On Alias CUNNINGHAM DR.
N OF KNOXVILLE
More Detail
STATION DATA
Directions: 2-WAY
AADT
Year AADT DHV-30 K % D % PA BC Src
2024 7,109 734 10 65 6,912 (97%) 197 (3%)
2023 6,916 664 10 65 6,763 (98%) 153 (2%)
2022 8,958 858 10 65 8,743 (98%) 215 (2%)
2021 8,808 921 10 65 8,543 (97%) 265 (3%)
2020 8,193 1,000 12 65 7,890 (96%) 303 (4%)
1-5 of 15
Google
Halls
2,339 (24)
E Emory Rd
Pelleaux Rd
Windy Knoll Dr
Saddlebrooke Dr
Montoe Ln
Greenwell Rd
Hoff Ln
131
Beaver Creek
Hines Branch
Cunningham Rd
Neal Dr
Knox
Mulberry Rd
Ferndale Rd
Location
Location ID: 47000463
Located On: 05617 N OF KNOXVILLE
Direction: 2-WAY
Count: 7109 (2024)
View Detail in a New Search
Go to Record in Current Search

TRAFFIC COUNT DATA

Major Street: Cunningham Road (WB and EB)
Minor Street: Imperial Drive (SB)
Traffic Control: Stop Conditions on Minor Street

4/9/2025 (Wednesday)
Sunny and Temperate
Conducted by: Ajax Engineering

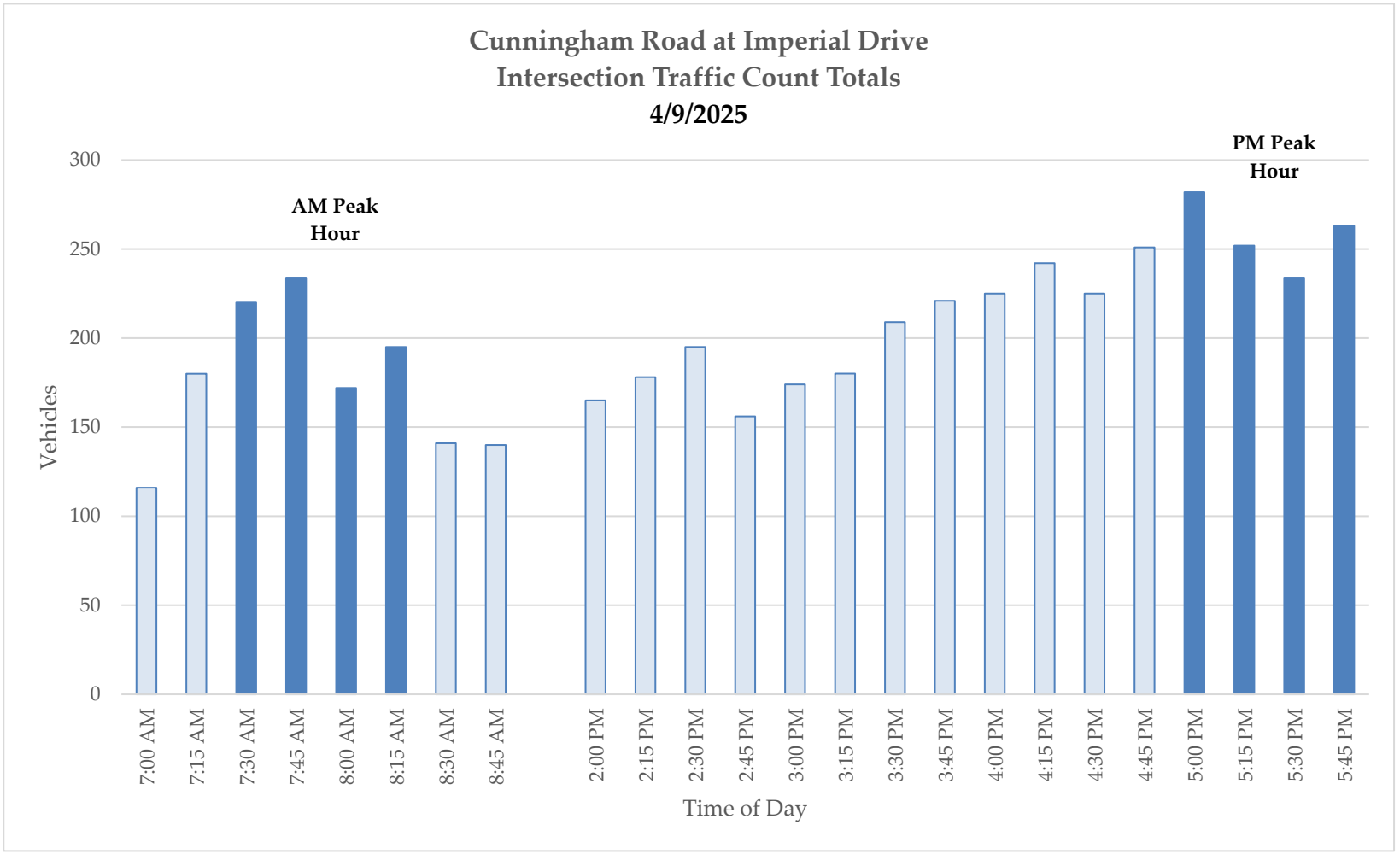
	Imperial Drive		Cunningham Road		Cunningham Road			
TIME	SOUTHBOUND		WESTBOUND		EASTBOUND		VEHICLE	PEAK
BEGIN	LT	RT	THRU	RT	LT	THRU	TOTAL	HOUR
7:00 AM	5	8	79	0	0	24	116	
7:15 AM	0	7	119	0	0	54	180	
7:30 AM	1	3	142	2	2	70	220	**7:30 AM - 8:30 AM**
7:45 AM	4	4	135	1	0	90	234	
8:00 AM	2	3	99	0	0	68	172	
8:15 AM	0	0	121	1	4	69	195	
8:30 AM	1	1	86	1	1	51	141	
8:45 AM	0	1	90	1	0	48	140	
TOTAL	13	27	871	6	7	474	1398	
2:00 PM	1	0	78	0	1	85	165	
2:15 PM	1	1	73	3	1	99	178	
2:30 PM	3	5	81	2	1	103	195	
2:45 PM	2	0	70	0	0	84	156	
3:00 PM	1	1	62	2	2	106	174	
3:15 PM	0	1	66	1	4	108	180	
3:30 PM	1	0	102	0	2	104	209	
3:45 PM	1	3	81	2	3	131	221	
4:00 PM	0	0	107	1	2	115	225	
4:15 PM	1	0	93	4	2	142	242	
4:30 PM	1	1	92	5	1	125	225	
4:45 PM	4	0	96	1	3	147	251	
5:00 PM	4	3	130	2	3	140	282	**5:00 PM - 6:00 PM**
5:15 PM	0	2	100	2	2	146	252	
5:30 PM	2	1	86	1	4	140	234	
5:45 PM	2	2	96	1	3	159	263	
TOTAL	24	20	1413	27	34	1934	3452	

2025 AM Peak Hour **7:30 AM - 8:30 AM**

	Imperial Drive		Cunningham Road		Cunningham Road	
TIME	SOUTHBOUND		WESTBOUND		EASTBOUND	
BEGIN	LT	RT	THRU	RT	LT	THRU
7:30 AM	1	3	142	2	2	70
7:45 AM	4	4	135	1	0	90
8:00 AM	2	3	99	0	0	68
8:15 AM	0	0	121	1	4	69
TOTAL	**7**	**10**	**497**	**4**	**6**	**297**
TRUCK %	**0.0%**	**0.0%**	**1.2%**	**0.0%**	**0.0%**	**0.0%**
PHF $_{mvmt}$	**0.44**	**0.63**	**0.88**	**0.50**	**0.38**	**0.83**
PHF $_{app}$	**0.53**		**0.87**		**0.84**	
PHF $_{int}$	**0.88**					

2025 PM Peak Hour **5:00 PM - 6:00 PM**

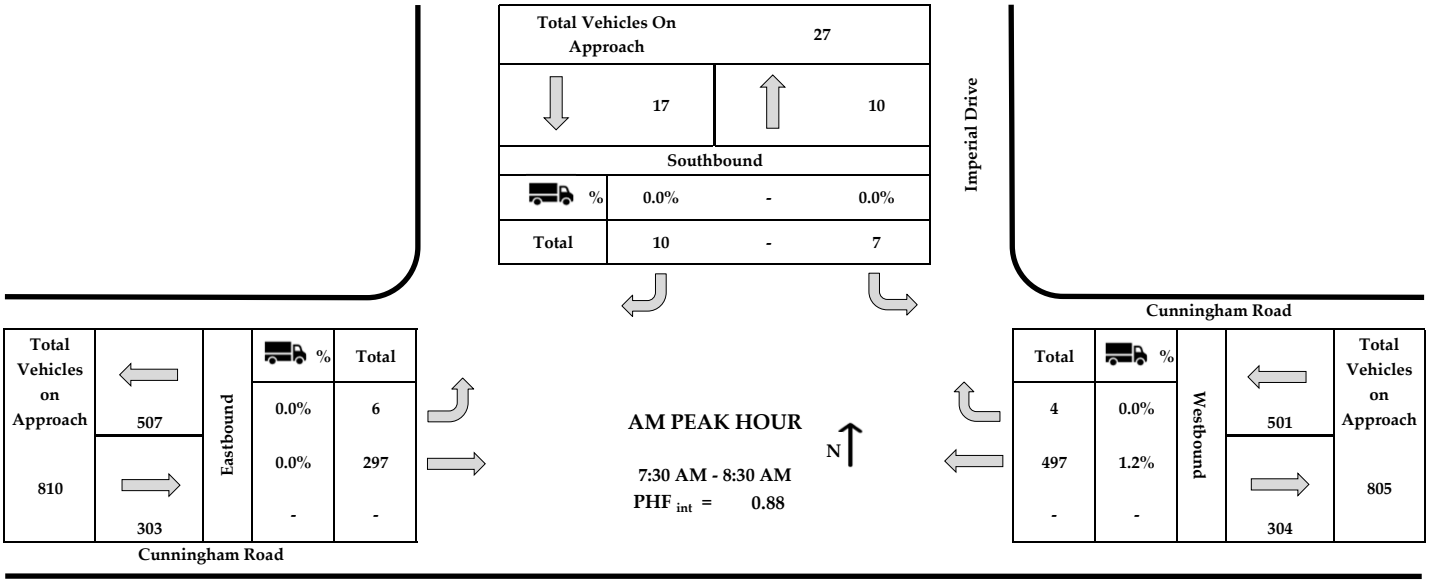
	Imperial Drive		Cunningham Road		Cunningham Road	
TIME	SOUTHBOUND		WESTBOUND		EASTBOUND	
BEGIN	LT	RT	THRU	RT	LT	THRU
5:00 PM	4	3	130	2	3	140
5:15 PM	0	2	100	2	2	146
5:30 PM	2	1	86	1	4	140
5:45 PM	2	2	96	1	3	159
TOTAL	**8**	**8**	**412**	**6**	**12**	**585**
TRUCK %	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.2%**
PHF $_{mvmt}$	**0.50**	**0.67**	**0.79**	**0.75**	**0.75**	**0.92**
PHF $_{app}$	**0.57**		**0.79**		**0.92**	
PHF $_{int}$	**0.91**					

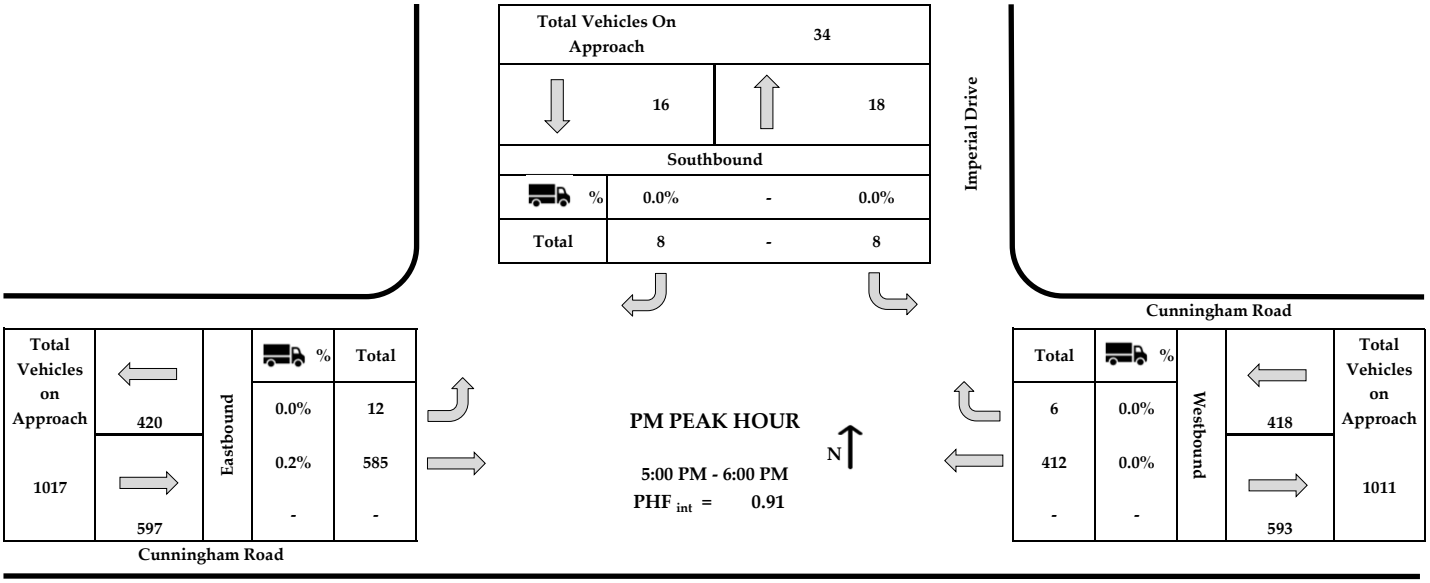

Cunningham Road at Imperial Drive
Intersection Traffic Count Totals
4/9/2025
AM Peak Hour
PM Peak Hour
Vehicles
300
250
200
150
100
50
0
7:00 AM
7:15 AM
7:30 AM
7:45 AM
8:00 AM
8:15 AM
8:30 AM
8:45 AM
2:00 PM
2:15 PM
2:30 PM
2:45 PM
3:00 PM
3:15 PM
3:30 PM
3:45 PM
4:00 PM
4:15 PM
4:30 PM
4:45 PM
5:00 PM
5:15 PM
5:30 PM
5:45 PM
Time of Day

PEAK HOUR DATA

Major Street: Cunningham Road (WB and EB)
Minor Street: Imperial Drive (SB)
Traffic Control: Stop Conditions on Minor Street

4/9/2025 (Wednesday)
Sunny and Temperate
Conducted by: Ajax Engineering





Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	297	497	4	7	10
Future Vol, veh/h	6	297	497	4	7	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	0	-
Peak Hour Factor	38	83	88	50	44	63
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	16	358	565	8	16	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	573	0	-	0	958	569
Stage 1	-	-	-	-	569	-
Stage 2	-	-	-	-	389	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1010	-	-	-	288	526
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	689	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1010	-	-	-	282	526
Mov Cap-2 Maneuver	-	-	-	-	282	-
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	689	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.36	0	15.73
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	76	-	-	-	367
HCM Lane V/C Ratio	0.016	-	-	-	0.087
HCM Ctrl Dly (s/v)	8.6	0	-	-	15.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	585	412	6	8	8
Future Vol, veh/h	12	585	412	6	8	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	0	-
Peak Hour Factor	75	92	79	75	50	67
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	16	636	522	8	16	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	530	0	-	0	1193	526
Stage 1	-	-	-	-	526	-
Stage 2	-	-	-	-	668	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1048	-	-	-	208	556
Stage 1	-	-	-	-	597	-
Stage 2	-	-	-	-	514	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1048	-	-	-	203	556
Mov Cap-2 Maneuver	-	-	-	-	203	-
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	514	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.21	0	19.33
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	44	-	-	-	279
HCM Lane V/C Ratio	0.015	-	-	-	0.1
HCM Ctrl Dly (s/v)	8.5	0	-	-	19.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	303	507	4	7	10
Future Vol, veh/h	6	303	507	4	7	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	0	-
Peak Hour Factor	38	83	88	50	44	63
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	16	365	576	8	16	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	584	0	-	0	977	580
Stage 1	-	-	-	-	580	-
Stage 2	-	-	-	-	397	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1000	-	-	-	281	518
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	684	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1000	-	-	-	275	518
Mov Cap-2 Maneuver	-	-	-	-	275	-
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	684	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.36	0	15.99
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	75	-	-	-	359
HCM Lane V/C Ratio	0.016	-	-	-	0.088
HCM Ctrl Dly (s/v)	8.7	0	-	-	16
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	597	420	6	8	8
Future Vol, veh/h	12	597	420	6	8	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	0	-
Peak Hour Factor	75	92	79	75	50	67
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	16	649	532	8	16	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	540	0	-	0	1217	536
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	681	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1039	-	-	-	202	549
Stage 1	-	-	-	-	591	-
Stage 2	-	-	-	-	506	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1039	-	-	-	197	549
Mov Cap-2 Maneuver	-	-	-	-	197	-
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	506	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.2	0	19.79
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	43	-	-	-	271
HCM Lane V/C Ratio	0.015	-	-	-	0.103
HCM Ctrl Dly (s/v)	8.5	0	-	-	19.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	303	7	4	507	4	23	0	15	7	0	10
Future Vol, veh/h	6	303	7	4	507	4	23	0	15	7	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	0	-
Peak Hour Factor	38	83	90	90	88	50	90	90	90	44	90	63
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	16	365	8	4	576	8	26	0	17	16	0	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	584	0	0	373	0	0	986	994	369	986	993	580
Stage 1	-	-	-	-	-	-	401	401	-	589	589	-
Stage 2	-	-	-	-	-	-	585	593	-	397	404	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1000	-	-	1197	-	-	229	247	681	229	247	518
Stage 1	-	-	-	-	-	-	630	605	-	498	499	-
Stage 2	-	-	-	-	-	-	500	497	-	633	602	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1000	-	-	1197	-	-	216	241	681	218	241	518
Mov Cap-2 Maneuver	-	-	-	-	-	-	216	241	-	218	241	-
Stage 1	-	-	-	-	-	-	617	593	-	495	496	-
Stage 2	-	-	-	-	-	-	482	494	-	605	590	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.35	0.06	19.17	18.11
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	296	73	-	-	14	-	-	306
HCM Lane V/C Ratio	0.143	0.016	-	-	0.004	-	-	0.104
HCM Ctrl Dly (s/v)	19.2	8.7	0	-	8	0	-	18.1
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	597	23	15	420	6	13	0	13	8	0	8
Future Vol, veh/h	12	597	23	15	420	6	13	0	13	8	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	2	-	-	-2	-	-	0	-	-	0	-
Peak Hour Factor	75	92	90	90	79	75	90	90	90	50	90	67
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	16	649	26	17	532	8	14	0	14	16	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	540	0	0	674	0	0	1259	1267	662	1250	1275	536
Stage 1	-	-	-	-	-	-	694	694	-	569	569	-
Stage 2	-	-	-	-	-	-	565	573	-	681	706	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1039	-	-	926	-	-	149	170	466	151	168	549
Stage 1	-	-	-	-	-	-	437	447	-	511	509	-
Stage 2	-	-	-	-	-	-	513	507	-	444	441	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1039	-	-	926	-	-	138	162	466	139	160	549
Mov Cap-2 Maneuver	-	-	-	-	-	-	138	162	-	139	160	-
Stage 1	-	-	-	-	-	-	426	436	-	498	496	-
Stage 2	-	-	-	-	-	-	489	494	-	419	431	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.2	0.27	24.49	25.4
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	213	41	-	-	54	-	-	204
HCM Lane V/C Ratio	0.135	0.015	-	-	0.018	-	-	0.137
HCM Ctrl Dly (s/v)	24.5	8.5	0	-	9	0	-	25.4
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.5	0	-	-	0.1	-	-	0.5

Local Apartment
Trip Generation Study

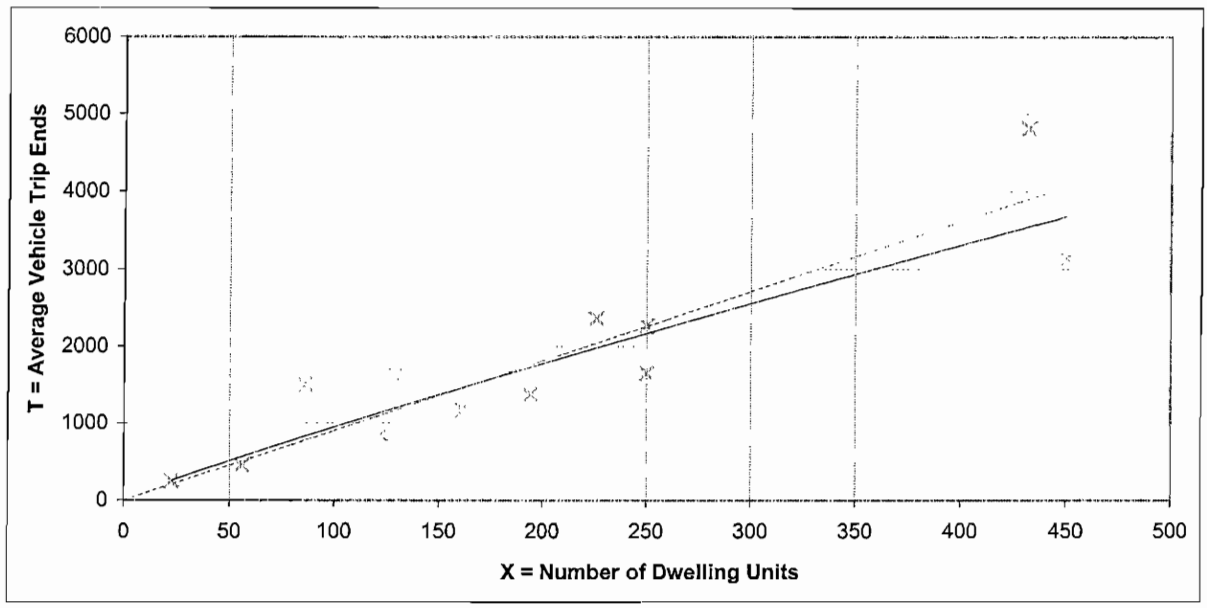
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Number of Studies: 13
Average Number of Dwelling Units: 193
Directional Distribution: 50% entering, 50% exiting

Trip Generation Per Dwelling Unit

Average Rate	Ranges of Rates	Standard Deviation
9.03	6.59 - 17.41	2.47

Data Plot and Equation



X Actual Data Points ——— Fitted Curve Average Rate

Fitted Curve Equation: $T = 15.193(X)^{0.899}$ $R^2 = 0.88$

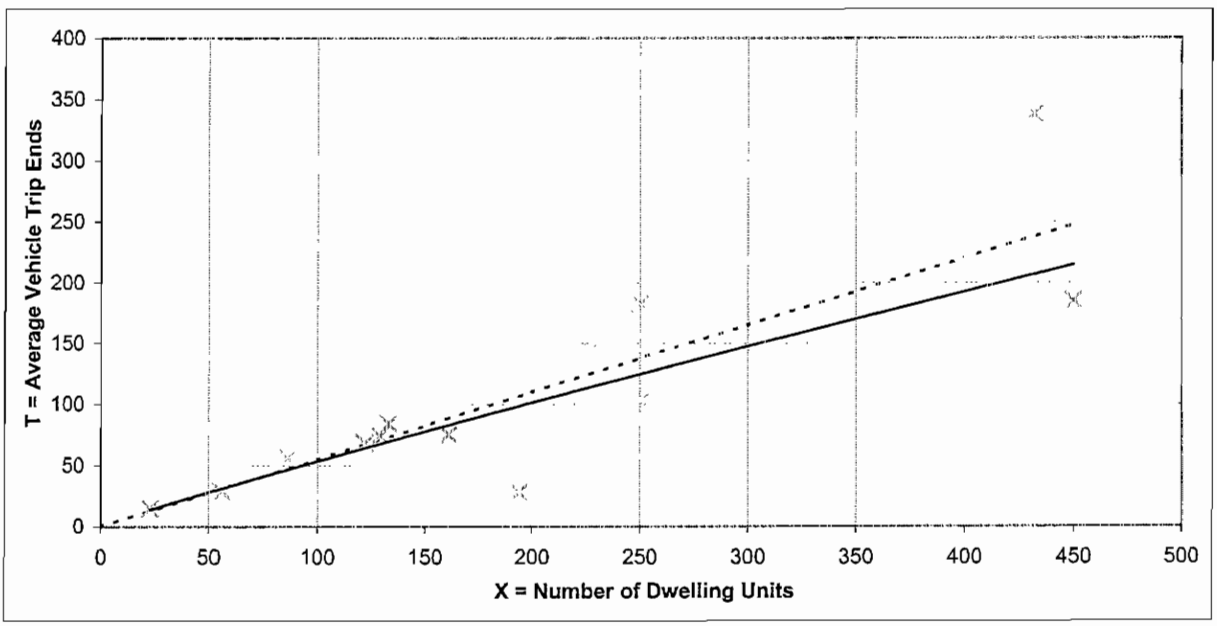
Local Apartment
Trip Generation Study

Average Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,** **Peak Hour of Adjacent Street Traffic,** **One Hour Between 7 and 9 a.m.**
Number of Studies:	13
Average Number of Dwelling Units:	193
Directional Distribution:	22% entering, 78% exiting

Trip Generation Per Dwelling Unit

Average Rate	Ranges of Rates	Standard Deviation
0.55	0.14 - 0.78	0.18

Data Plot and Equation



X Actual Data Points ——— Fitted Curve Average Rate

Fitted Curve Equation: $T = 0.758(X)^{0.924}$ $R^2 = 0.75$

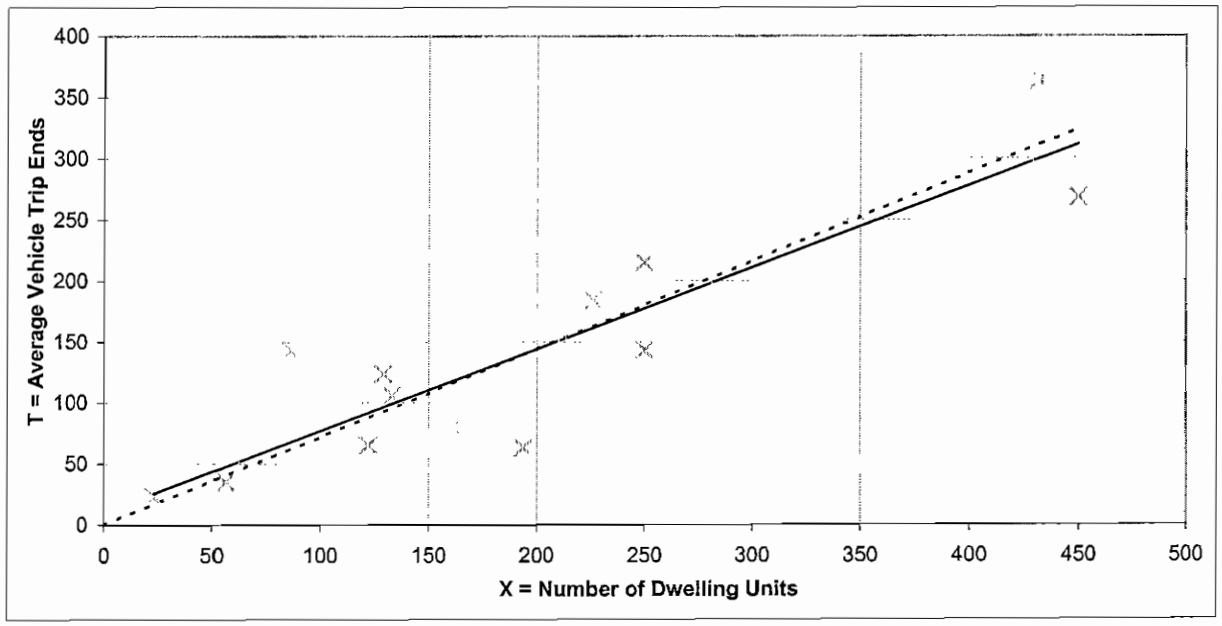
Local Apartment
Trip Generation Study

Average Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,** **Peak Hour of Adjacent Street Traffic,** **One Hour Between 4 and 6 p.m.**
Number of Studies:	13
Average Number of Dwelling Units:	193
Directional Distribution:	55% entering, 45% exiting

Trip Generation Per Dwelling Unit

Average Rate	Ranges of Rates	Standard Deviation
0.72	0.32 - 1.66	0.25

Data Plot and Equation



X Actual Data Points ——— Fitted Curve Average Rate

Fitted Curve Equation: T = 0.669(X) + 10.069 **R^2 = 0.79**

Land Use: 210
Single-Family Detached Housing

Description

A single-family detached housing site includes any single-family detached home on an individual lot. A typical site surveyed is a suburban subdivision.

Specialized Land Use

Data have been submitted for several single-family detached housing developments with homes that are commonly referred to as patio homes. A patio home is a detached housing unit that is located on a small lot with little (or no) front or back yard. In some subdivisions, communal maintenance of outside grounds is provided for the patio homes. The three patio home sites total 299 dwelling units with overall weighted average trip generation rates of 5.35 vehicle trips per dwelling unit for weekday, 0.26 for the AM adjacent street peak hour, and 0.47 for the PM adjacent street peak hour. These patio home rates based on a small sample of sites are lower than those for single-family detached housing (Land Use 210), lower than those for single-family attached housing (Land Use 251), and higher than those for senior adult housing -- single-family (Land Use 251). Further analysis of this housing type will be conducted in a future edition of *Trip Generation Manual*.

Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

For 30 of the study sites, data on the number of residents and number of household vehicles are available. The overall averages for the 30 sites are 3.6 residents per dwelling unit and 1.5 vehicles per dwelling unit.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Arizona, California, Connecticut, Delaware, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Minnesota, Montana, New Jersey, North Carolina, Ohio, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Vermont, Virginia, and West Virginia.

Source Numbers

100, 105, 114, 126, 157, 167, 177, 197, 207, 211, 217, 267, 275, 293, 300, 319, 320, 356, 357, 367, 384, 387, 407, 435, 522, 550, 552, 579, 598, 601, 603, 614, 637, 711, 716, 720, 728, 735, 868, 869, 903, 925, 936, 1005, 1007, 1008, 1010, 1033, 1066, 1077,1078, 1079

Single-Family Detached Housing
(210)

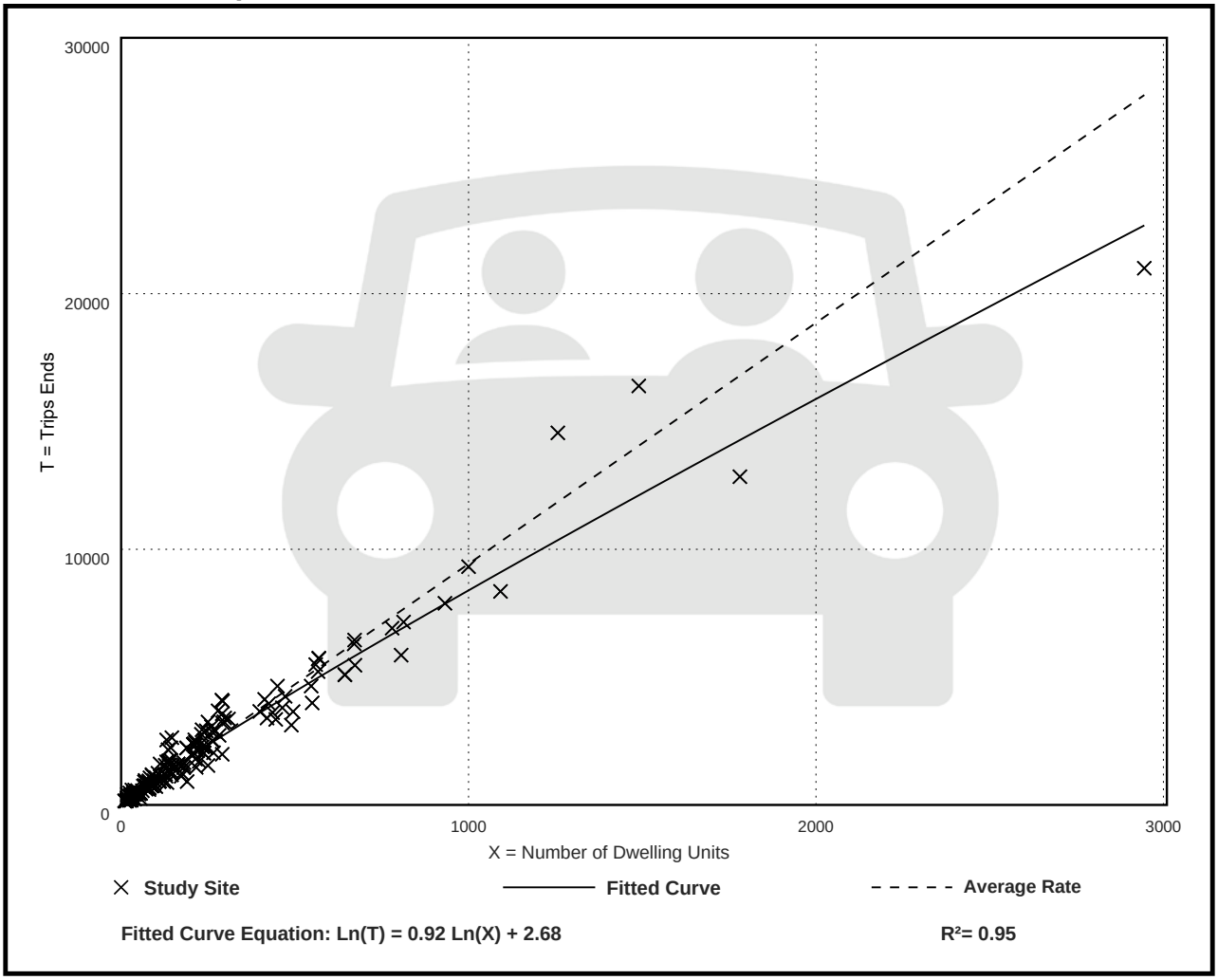
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

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



Fitted Curve Equation: Ln(T) = 0.92 Ln(X) + 2.68

R^2= 0.95

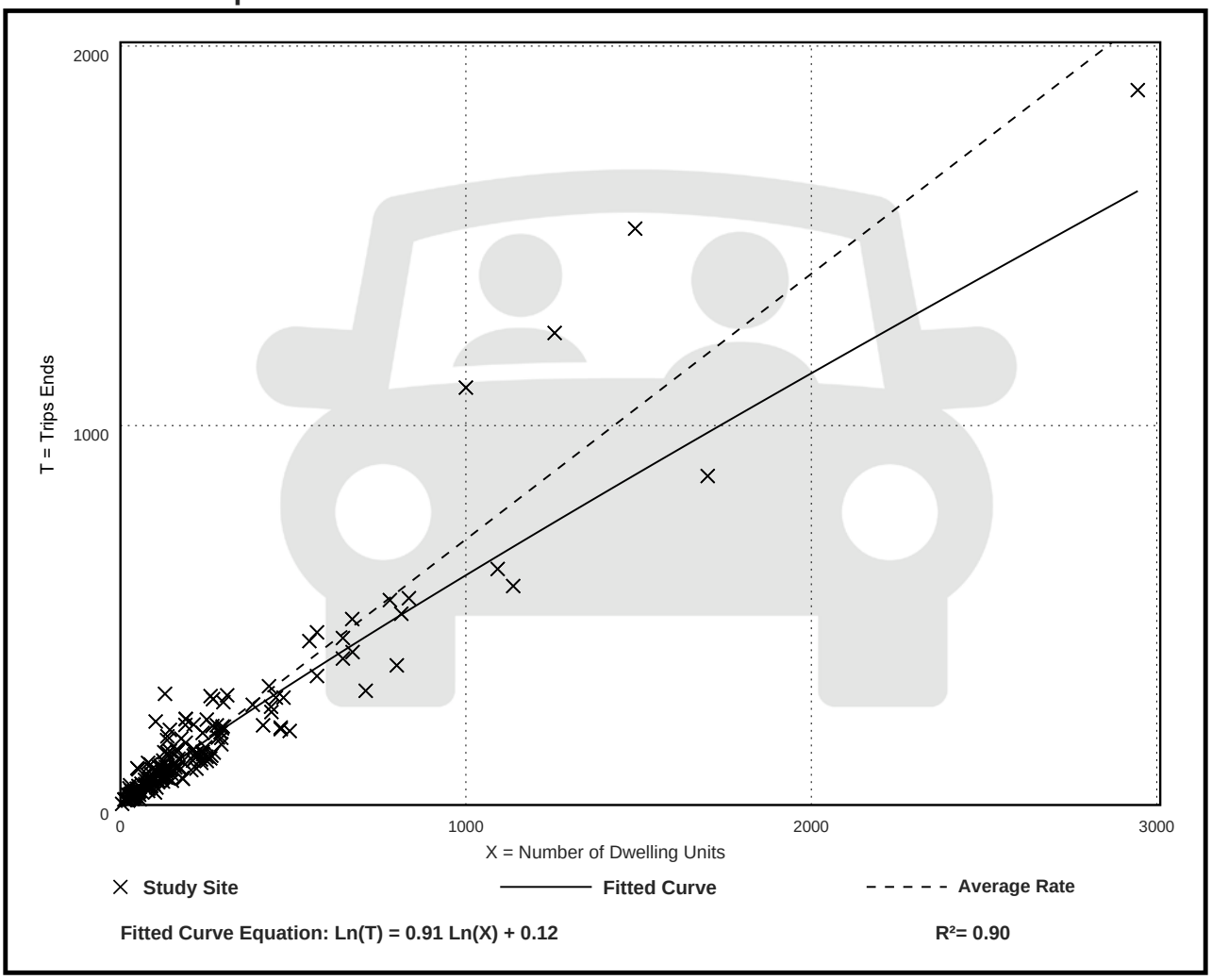
Single-Family Detached Housing
(210)

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: 26% entering, 74% 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



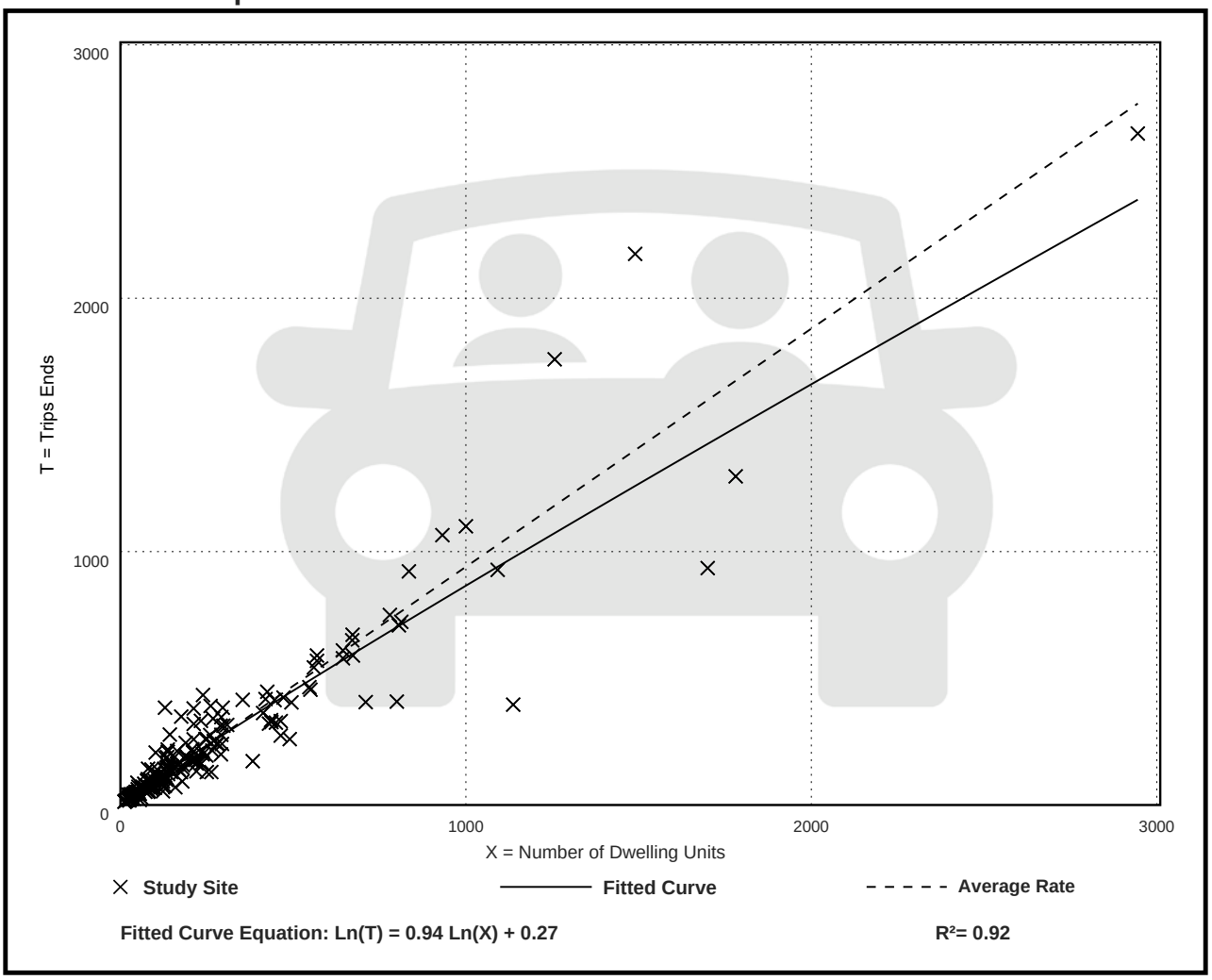
Single-Family Detached Housing
(210)

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



TRIP GENERATION FOR 2720 CUNNINGHAM ROAD SUBDIVISION

14 Attached Townhouses and 43 Single-Family Detached Houses

ITE LAND USE CODE	LAND USE DESCRIPTION	# OF UNITS	GENERATED DAILY TRAFFIC	GENERATED TRAFFIC AM PEAK HOUR			GENERATED TRAFFIC PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
Local Trip Rate	Multi-Family Attached Townhouses	14	163	22%	78%		55%	45%	
				2	7	9	10	9	19
#210	Single-Family Detached Housing	43	464	26%	74%		63%	37%	
				9	26	35	28	17	45
Total New Volume Site Trips			**627**	**11**	**33**	**44**	**38**	**26**	**64**

ITE Trip Generation Manual, 11th Edition and Local Trip Rates

Trips calculated by using Fitted Curve Equations

TRIP GENERATION FOR 2720 CUNNINGHAM ROAD SUBDIVISION

14 Attached Townhouses

14 Units = X

Weekday:

Fitted Curve Equation: $T = 15.193(X)^{0.899}$

T = 15 * 10.72

T = 163 trips

Peak Hour of Adjacent Traffic between 7 and 9 am:

Fitted Curve Equation: $T = 0.758(X)^{0.924}$

T = 0.758 * 11

T = 9 trips

Peak Hour of Adjacent Traffic between 4 and 6 pm:

Fitted Curve Equation: $T = 0.669(X)+10.069$

T = 0.669 * 14 + 10.07

T = 19 trips

TRIP GENERATION FOR 2720 CUNNINGHAM ROAD SUBDIVISION

43 Single-Family Detached Houses

43 Units = X

Weekday:

Fitted Curve Equation: Ln(T) = 0.92 Ln(X) + 2.68

Ln(T) =	0.92	*	3.76	+	2.68
Ln(T) =	6.14				
T =	**464 trips**				

Peak Hour of Adjacent Traffic between 7 and 9 am:

Fitted Curve Equation: Ln(T) = 0.91 Ln(X) + 0.12

T =	0.91	*	4	+	0.12
Ln(T) =	3.54				
T =	**35 trips**				

Peak Hour of Adjacent Traffic between 4 and 6 pm:

Fitted Curve Equation: Ln(T) = 0.94 Ln(X) + 0.27

Ln(T) =	0.94	*	3.76	+	0.27
Ln(T) =	3.81				
T =	**45 trips**				

TABLE 5A

LEFT-TURN LANE VOLUME THRESHOLDS FOR TWO-LANE ROADWAYS WITH A PREVAILING SPEED OF 36 TO 45 MPH

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

507+4 = 511

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

6+303+7 = 316

Cunningham Road at Proposed Entrance (and Imperial Drive)

2027 Projected AM WB Left Turns = 4

Left Turn Lane NOT Warranted

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

TABLE 5B

RIGHT-TURN LANE VOLUME THRESHOLDS FOR TWO-LANE ROADWAYS WITH A PREVAILING SPEED OF 36 TO 45 MPH

6+303 = 309

RIGHT-TURN VOLUME	THROUGH VOLUME PLUS LEFT-TURN VOLUME *					
	<100	100 - 199	200 - 249	250 - 299	300 - 349	350 - 399
7 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

Cunningham Road at Proposed Entrance (and Imperial Drive)

2027 Projected AM EB Right Turns = 7

Right Turn Lane NOT Warranted

RIGHT-TURN VOLUME	THROUGH VOLUME PLUS LEFT-TURN VOLUME *					
	350 - 399	400 - 449	450 - 499	500 - 549	550 - 600	+ / > 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.

TABLE 5A

LEFT-TURN LANE VOLUME THRESHOLDS FOR TWO-LANE ROADWAYS WITH A PREVAILING SPEED OF 36 TO 45 MPH

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

420+6 = 426

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

12+597+23 = 632

Cunningham Road at Proposed Entrance (and Imperial Drive)

2027 Projected PM WB Left Turns = 15

Left Turn Lane NOT Warranted

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

TABLE 5B

RIGHT-TURN LANE VOLUME THRESHOLDS FOR TWO-LANE ROADWAYS WITH A PREVAILING SPEED OF 36 TO 45 MPH

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 - 249 250 - 299					Yes	Yes Yes
300 - 349 350 - 399			Yes	Yes Yes	Yes Yes	Yes Yes
400 - 449 450 - 499		Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
500 - 549 550 - 599	Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
600 or More	Yes	Yes	Yes	Yes	Yes	Yes

12+597 = 609

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

Cunningham Road at Proposed Entrance (and Imperial Drive)

2027 Projected PM EB Right Turns = 23

Right Turn Lane NOT Warranted

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

Intersection: 4: Proposed Entrance/Imperial Drive & Cunningham Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	40	31	51	35
Average Queue (ft)	2	2	23	13
95th Queue (ft)	20	18	49	38
Link Distance (ft)	325	384	141	247
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Intersection: 4: Proposed Entrance/Imperial Drive & Cunningham Road

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	64	80	49	42
Average Queue (ft)	5	10	17	14
95th Queue (ft)	31	46	45	40
Link Distance (ft)	326	384	127	247
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

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