



TRAFFIC IMPACT ANALYSIS
REVISED DECEMBER 2023

Strawberry Meadows Phase 2



Prepared for:

Eddie D & C Investments
6110 Jim Luttrell Lane
Knoxville, TN 37918

Prepared by:

CDM Smith, Inc.
1100 Marion Street, Suite 300
Knoxville, TN 37921



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STRAWBERRY MEADOWS

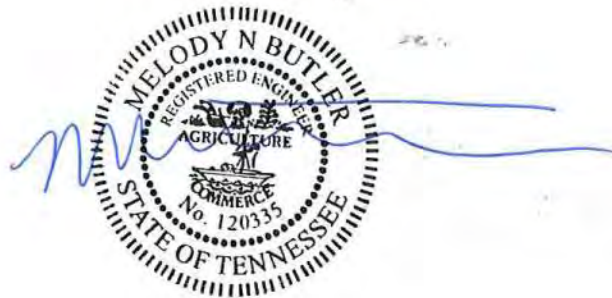
TRAFFIC IMPACT STUDY

6721 Strawberry Plains Pike

Knoxville, TN 37914

Prepared for:

**Eddie D & C Investments
6110 Jim Luttrell Lane
Knoxville, TN 37918**



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Prepared by:

**CDM Smith, Inc.
1100 Marion Street, Suite 300
Knoxville, TN 37921**



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- Appendix D Turn Lane Analysis
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- Appendix F Review Comments Response Letter

Executive Summary

Traffic Impact Analysis was performed for Strawberry Meadows, a proposed 89-unit townhome development located at 6721 Strawberry Plains Pike, Knoxville, TN 37914. The development site has one access along Strawberry Plains Pike – situated across from Wayland Road.

The study includes capacity analysis for the AM and PM peak periods during the 2023 existing, 2025 no-build, and 2025 build conditions. The yearly growth rate for the future conditions was 5.0% per year. For the 2023 existing and 2025 no-build conditions, the intersection operated at LOS B or better. For the 2025 build conditions, Strawberry Plains Pike will continue to operate at LOS A, and the Wayland Road approach will operate at LOS B. The Strawberry Meadows access is anticipated to operate at LOS D with a delay of approximately 25 seconds in the AM peak hour and 30 seconds in the PM peak hour. LOS D is typical for many minor approaches to major roadways. The estimated queue for the Strawberry Meadows access approach is less than one vehicle during the AM and PM peak hours.

A turn-lane assessment was performed and it was found that a westbound left-turn to Wayland Road lane is warranted in the existing condition, which is not associated with the proposed development's anticipated impacts.

Sight distance was also evaluated in the study. The minimum required sight distance to oncoming traffic is 450 feet. Looking north and south, the sight line is approximately 500 and 660 feet, respectively. Therefore, the existing sight distance is adequate. It is recommended that the vegetation and brush be routinely cleared to avoid any sight obstructions.



1.0 Introduction

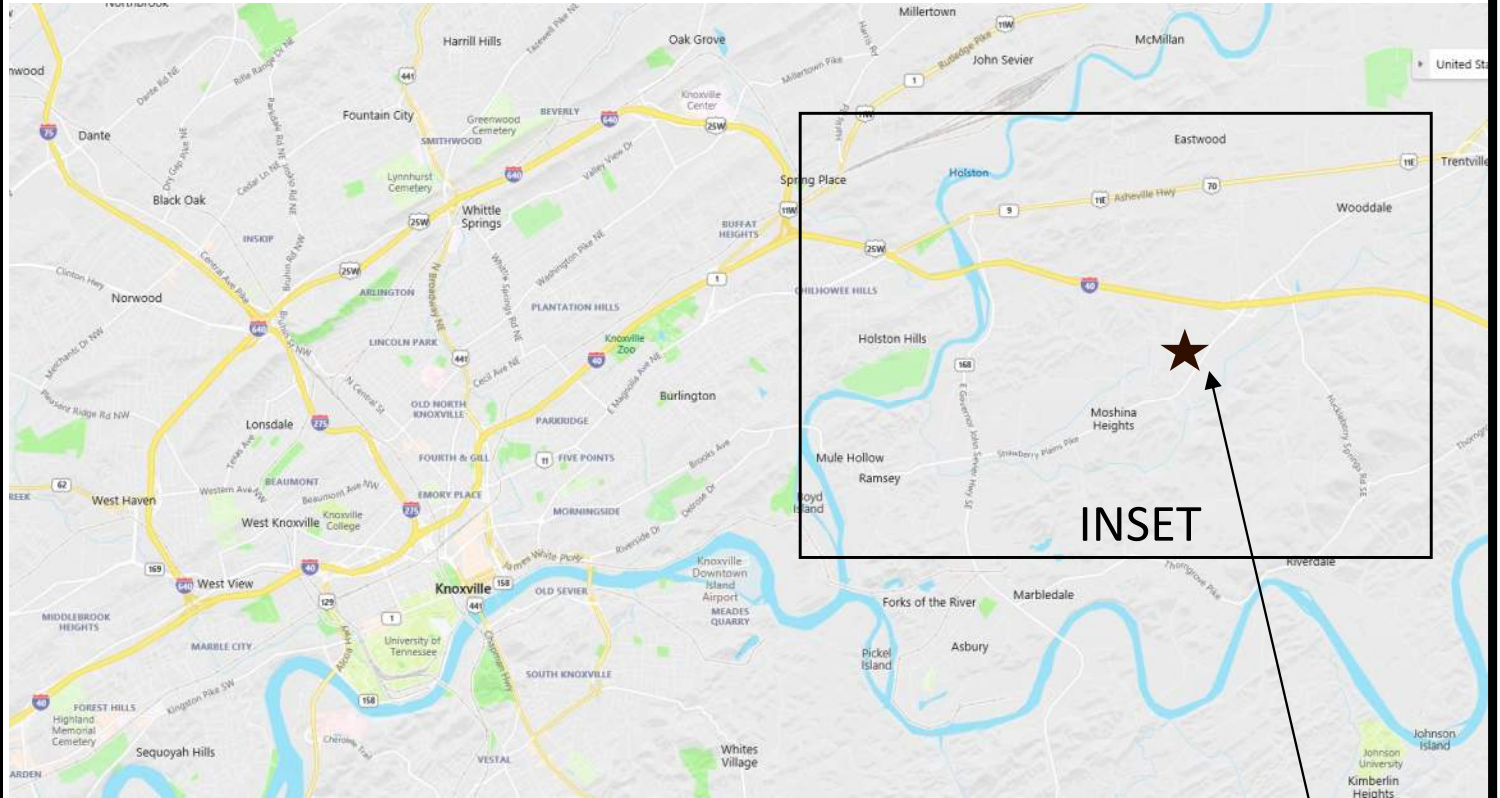
CDM Smith, Inc. is pleased to submit this report to address traffic impact and access issues related to the development of a proposed 89-unit townhome development to be located on Strawberry Plains Pike south of Interstate 40. Figure 1 is a location map identifying the major roadways in the vicinity of the site.

The basis for this study required the collection of traffic data, generation of anticipated traffic volumes for the proposed site, and development of projected traffic volumes for normal background growth and site-related growth for the proposed development. Analyses of the resulting traffic projections were conducted to determine the levels of service for the site access along Strawberry Plains Pike. This study will determine any mitigation measures necessary to minimize the traffic impact, including improved roadway geometrics and/or traffic control devices.

1.1 Project Description

The proposed development consists of 89 townhome units. Phase 1, consisting of 58 units, is currently under construction. There will be one access to the site located directly across Strawberry Plains Pike from Wayland Road. Figure 2 shows the proposed site plan for the Strawberry Meadows development.

PROJECT LOCATION MAP



INSET

SITE



INSET



Figure 1.1

SITE PLAN

Strawberry Meadows

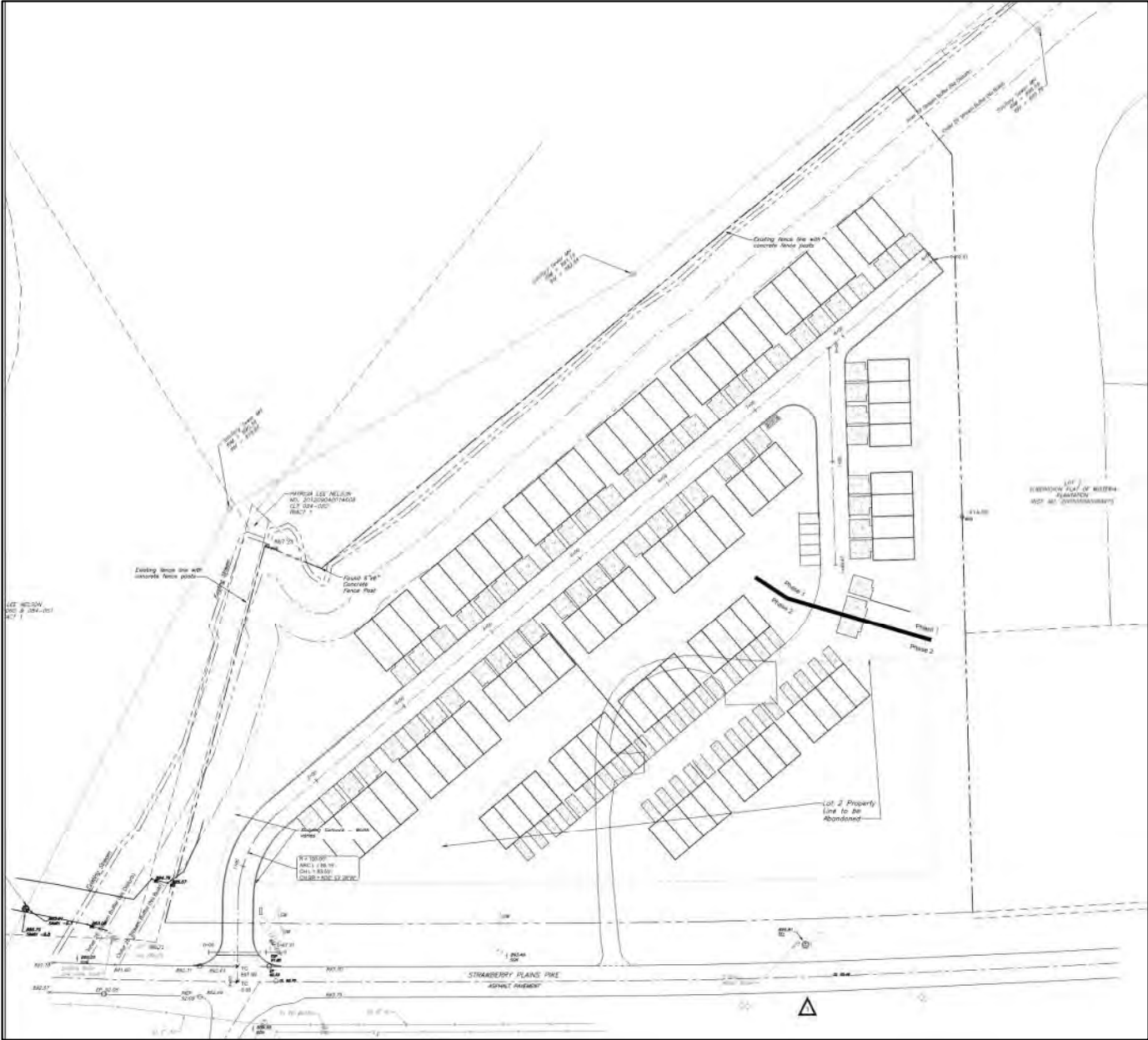


Figure 1.2

2.0 Existing Conditions

2.1 Existing Roadway Conditions

Strawberry Plains Pike will provide access to the proposed Strawberry Meadows development. Strawberry Plains Pike is a two-lane Minor Arterial roadway adjacent to the project site. The cross-section consists of two 12-foot wide lanes. There are no bicycle or pedestrian facilities. North of the project site, Strawberry Plains Pike transitions to a four-lane divided section at the I-40 interchange. To the southwest, Strawberry Plains Pike extends to Governor John Sevier Highway (SR 168) and continues into South Knoxville. The posted speed limit in the vicinity of the project is 45 mph. The Wayland Road approach to Strawberry Plains Pike is stop-controlled. The intersection does not have auxiliary lanes serving turning traffic.

2.2 Existing Traffic Data

According to the latest count information provided by TDOT, Strawberry Plains Pike has an average daily traffic (ADT) volume of 9,628 vehicles per day (vpd) approximately 0.5 miles southwest of the project location. Table 2.1 provides the previous 10 years of ADT volumes and the associated annual growth rates for this count location.

Table 2.1 Average Daily Traffic Count Summary (Location ID – 47000067)

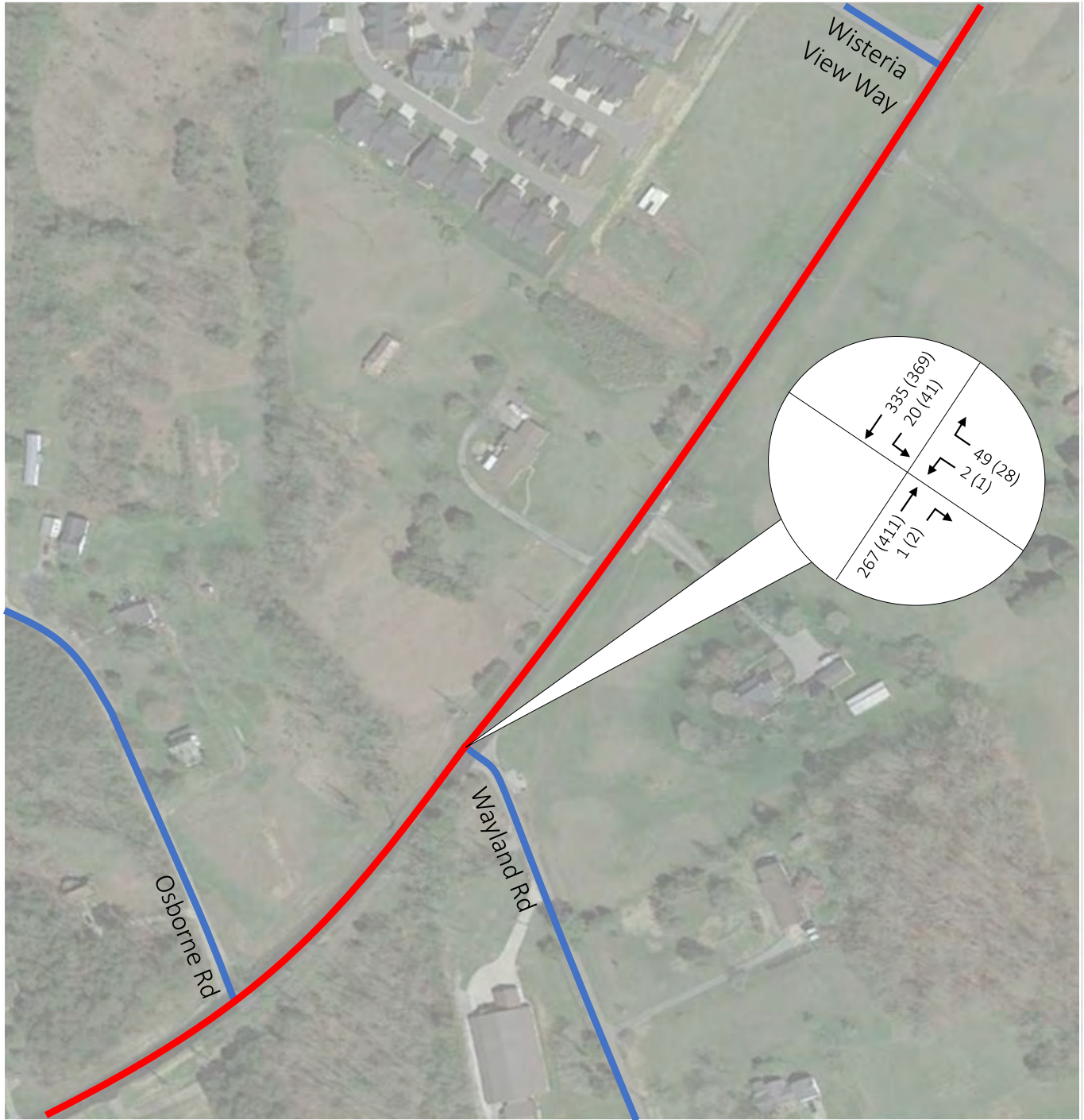
Count Year	Volume	Growth Rate
2013	7,084	
2014	7,459	5.3%
2015	8,252	10.6%
2016	8,019	-2.8%
2017	8,069	0.6%
2018	7,973	-1.2%
2019	9,073	13.8%
2020	8,137	-10.3%
2021	9,000	10.6%
2022	9,628	7.0%

Source: TDOT Traffic Count Database System

In addition to the available ADT data, intersection turning movement traffic counts were conducted at the intersection of Strawberry Plains Pike and Wayland Road on Wednesday, November 8, 2023 from 7:00 to 9:00 AM and 4:00 to 6:00 PM. Figure 3 shows the AM and PM peak-hour turning movement counts, and the raw count data are provided in Appendix A.

The AM peak hour was found to be from 7:15 to 8:15, with a prominent 15-minute peak period from 7:30 to 7:45 on the Wayland Road approach. The PM peak hour was found to be from 4:30 to 5:30. Heavy vehicle percentages along Strawberry Plains Pike (15% northbound and southbound in the AM peak hour; 10% northbound and 20% southbound in the PM peak hour) were taken from the recent Traffic Impact Study performed for the Estes Express Lines distribution terminal to present a conservative capacity analysis.

2023 EXISTING TRAFFIC VOLUMES



LEGEND

 Strawberry Plains Pike

 Side Street

XXX (XXX) AM (PM) Volume



Figure 2.1

2.3 Existing Levels of Service and Capacity Analysis

In order to evaluate the current operations of the traffic control devices, capacity and level of service were calculated using the methodology from the Highway Capacity Manual (HCM 2010). Intersections are evaluated based on estimated intersection delays, which may be related to level of service (LOS).

Level of service and capacity are the measurements of an intersection's ability to accommodate traffic volumes. Levels of service for intersections range from A to F. LOS A is the best and LOS F is failing. For unsignalized intersections, a LOS of A has an average estimated intersection delay of less than 10 seconds and a LOS of F exceeds estimated delays of 50 seconds. For urban arterials, minor approaches may frequently experience LOS E due to the higher volumes along the major route. The level of service thresholds are presented in Table 2.2.

Table 2.2 Level of Service Control Delay (seconds) Thresholds

Level of Service	Signalized	Unsignalized
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Source: Highway Capacity Manual

The existing traffic capacity analysis was performed using the 2023 traffic volumes, existing traffic control, and existing lane configurations. Table 2.3 presents the capacity and level of service summary for the intersection of Strawberry Plains Pike and Wayland Road. The capacity analysis reports are provided in Appendix B.

Table 2.3 Existing Conditions Capacity and LOS Summary

Movement	Time Period	v/c	Delay (sec)	LOS
Strawberry Plains Pike NB L/T/R	AM	-	-	-
	PM	-	-	-
Strawberry Plains Pike SB L/T/R	AM	0.02	7.9	A
	PM	0.04	8.4	A
Strawberry Meadows Access EB L/T/R	AM	-	-	-
	PM	-	-	-
Wayland Road WB L/T/R	AM	0.11	10.8	B
	PM	0.06	11.7	B

Note: Intersection analysis was calculated using Synchro 11 software and reported using HCM 2010 intersection methodology.

The study intersection is operating with acceptable LOS B or better.

3.0 Background Conditions

Background traffic is traffic that can be anticipated regardless of the proposed development and is projected for the purpose of establishing a baseline.

3.1 Background Traffic Data

The proposed development is anticipated to be completed in approximately two years. Therefore, 2025 was established as the appropriate analysis year for this study. In order to estimate future traffic, the historical traffic from the TDOT count station on Strawberry Plains Pike was used to estimate an annual growth rate. Over the previous five years, traffic volumes have increased at an annual rate of 5.2%. A yearly background rate of 5% was established and used to project 2025 volumes. Figure 4 shows the 2025 background traffic at the study intersection without the proposed development.

3.2 Background Levels of Service and Capacity Analysis

The projected 2025 condition was analyzed using the 2025 background volumes, existing intersection traffic control, and existing lane configurations. The 2025 No Build capacity and level of service summary results are shown in Table 3.1.

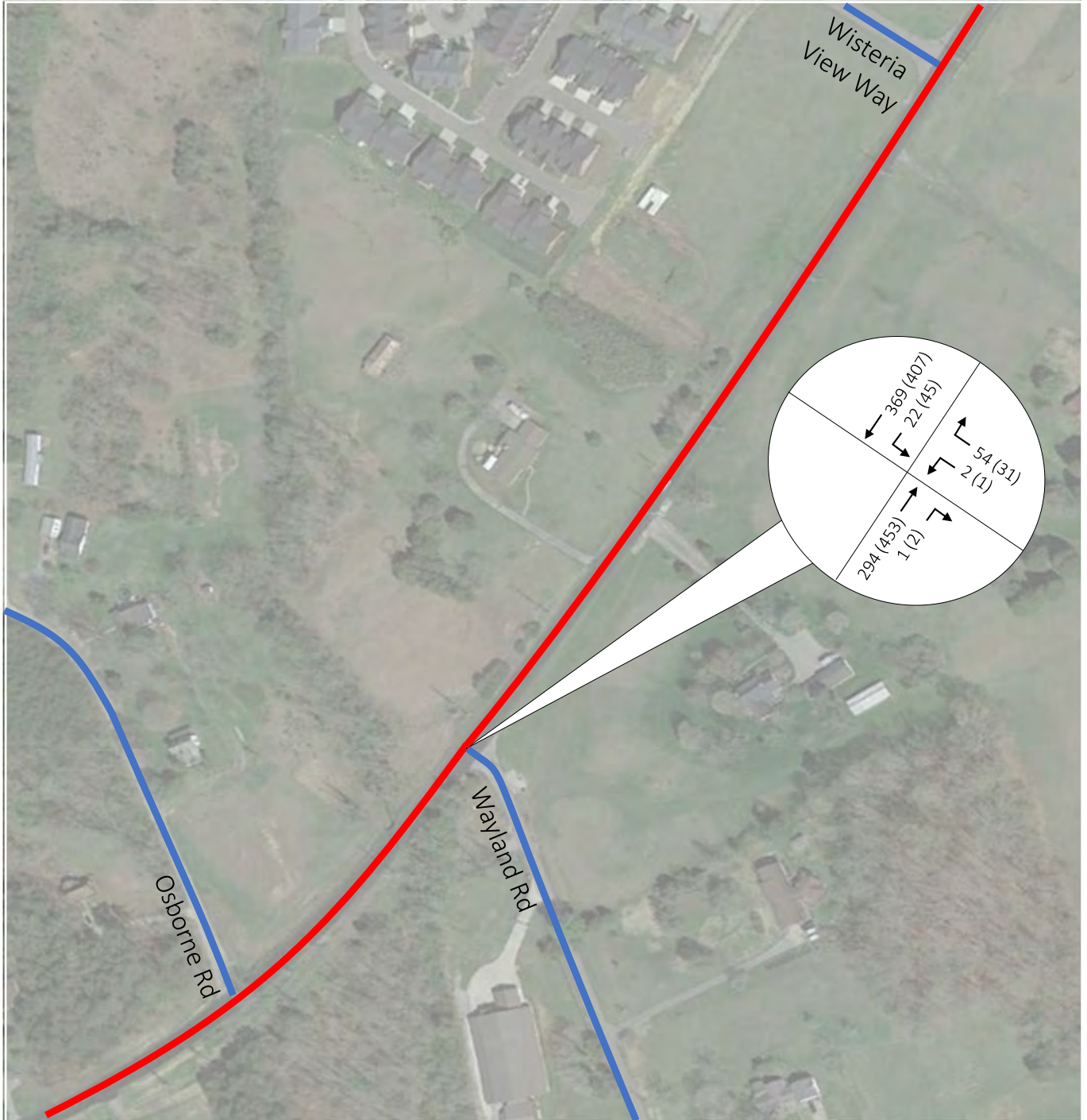
Table 3.1 2025 No Build Conditions Capacity and LOS Summary

Movement	Time Period	v/c	Delay	LOS
Strawberry Plains Pike NB L/T/R	AM	-	-	-
	PM	-	-	-
Strawberry Plains Pike SB L/T/R	AM	0.02	8.0	A
	PM	0.05	8.6	A
Strawberry Meadows Access EB L/T/R	AM	-	-	-
	PM	-	-	-
Wayland Road WB L/T/R	AM	0.13	11.2	B
	PM	0.07	12.2	B

Note: Intersection analysis was calculated using Synchro 11 software and reported using HCM 2010 intersection methodology.

The analysis determined that the study intersection will continue to operate with acceptable LOS B or better.

2025 NO BUILD TRAFFIC VOLUMES



LEGEND

 Strawberry Plains Pike

 Side Street

XXX (XXX) AM (PM) Volume



Figure 3.1

4.0 Future Conditions

4.1 Trip Generation

To estimate the expected traffic volumes generated by the proposed development, the procedures of Trip Generation, 11th Edition (Institute of Transportation Engineers) were used. The proposed Strawberry Meadows development will consist of 89 townhome units. The Knoxville local apartment trip generation rates were used to calculate the anticipated site volumes. Table 4.1 presents the trip generation for the proposed development. The trip generation equations are provided in Appendix C.

Table 4.1 Trip Generation Summary

Land Use	Density	Weekday				
		Daily	AM Peak		PM Peak	
			Enter	Exit	Enter	Exit
Multi-Family Apartments	89 d.u.	860	11	37	39	31

Note: Trips calculated from Knoxville Local Trip Rates for Multi-Family Apartments

4.2 Trip Distribution and Assignment

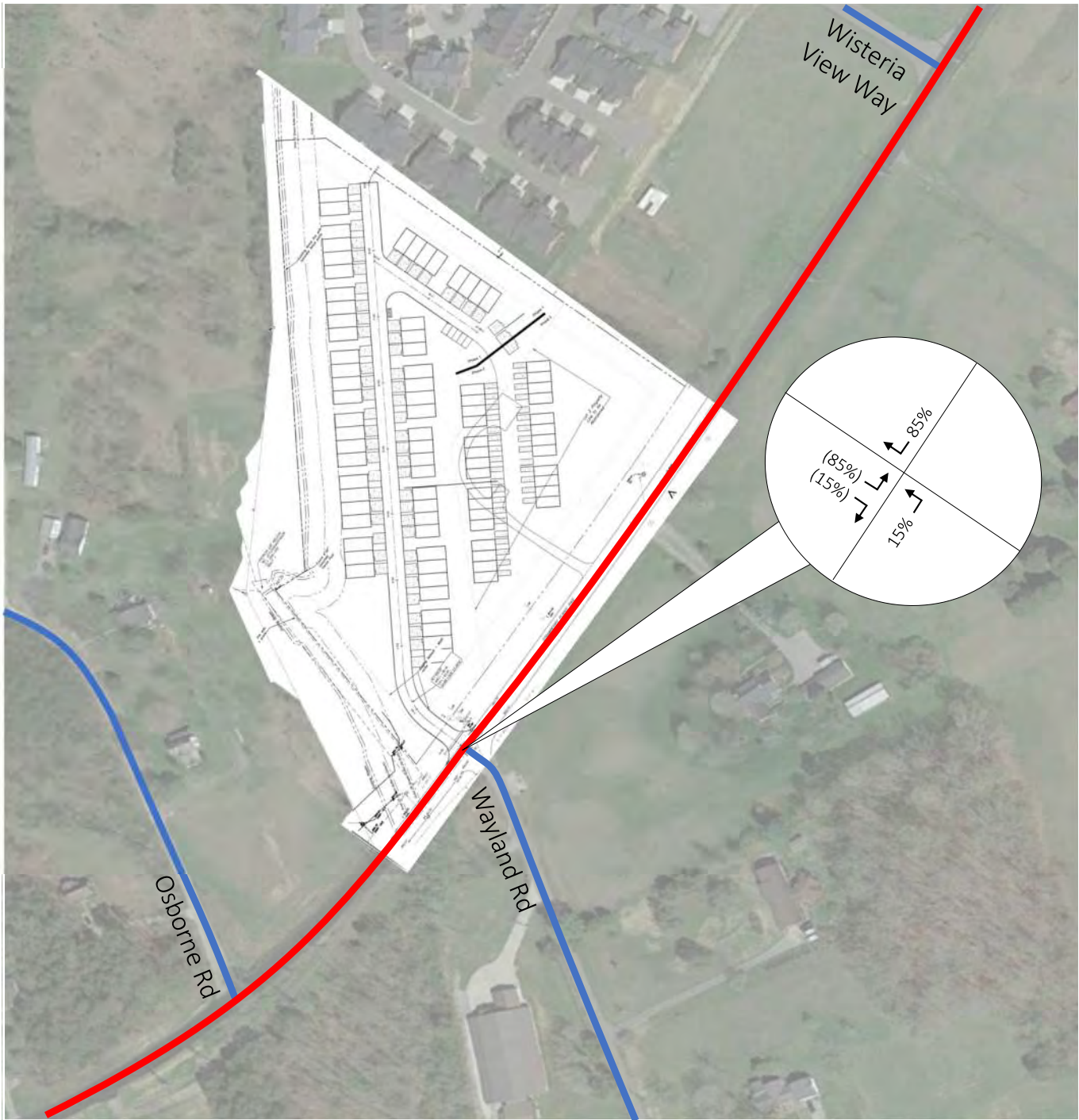
The project trip distribution patterns were determined using the existing traffic patterns derived from the traffic counts conducted for this study and knowledge of the local area. It is assumed that 85% of site traffic will originate from the north and 15% will enter and exit from the south. Figure 5 shows the trip distribution.

The trip generation values from Table 4.1 were assigned to the appropriate turning movements at the study intersection using the assumed trip distribution. Figure 6 shows the peak hour project trips.

4.3 Future Traffic Volumes

Background and site traffic volumes from the proposed Strawberry Meadows development were combined to develop 2025 Build traffic volumes. Figure 7 shows the peak hour total traffic assumed for the build-out of the development.

PEAK HOUR DISTRIBUTION & ASSIGNMENT



LEGEND

 Strawberry Plains Pike

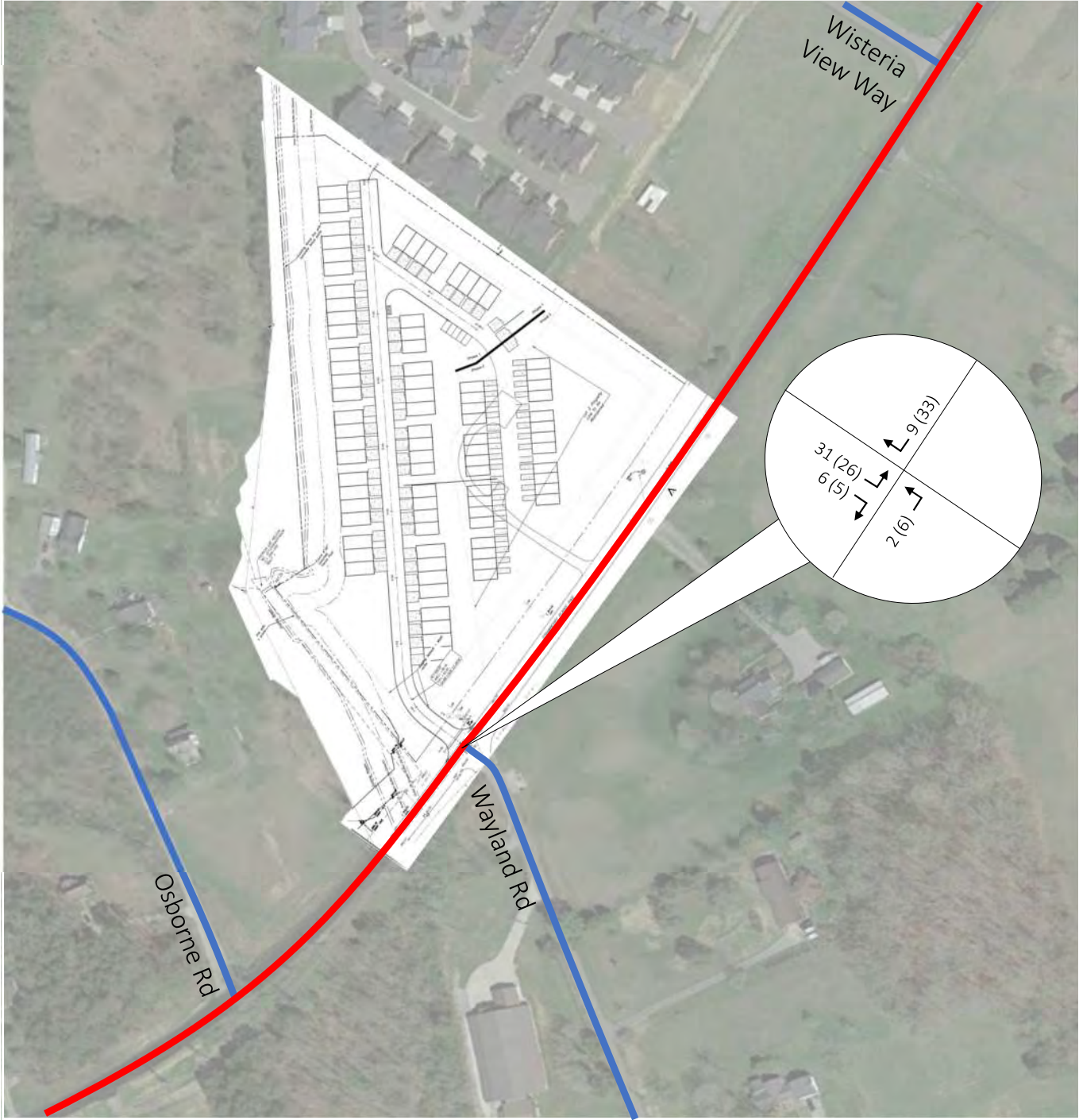
 Side Street

XXX (XXX) Entering (Exiting) Trips



Figure 4.1

PEAK HOUR SITE GENERATED TRIPS



LEGEND

 Strawberry Plains Pike

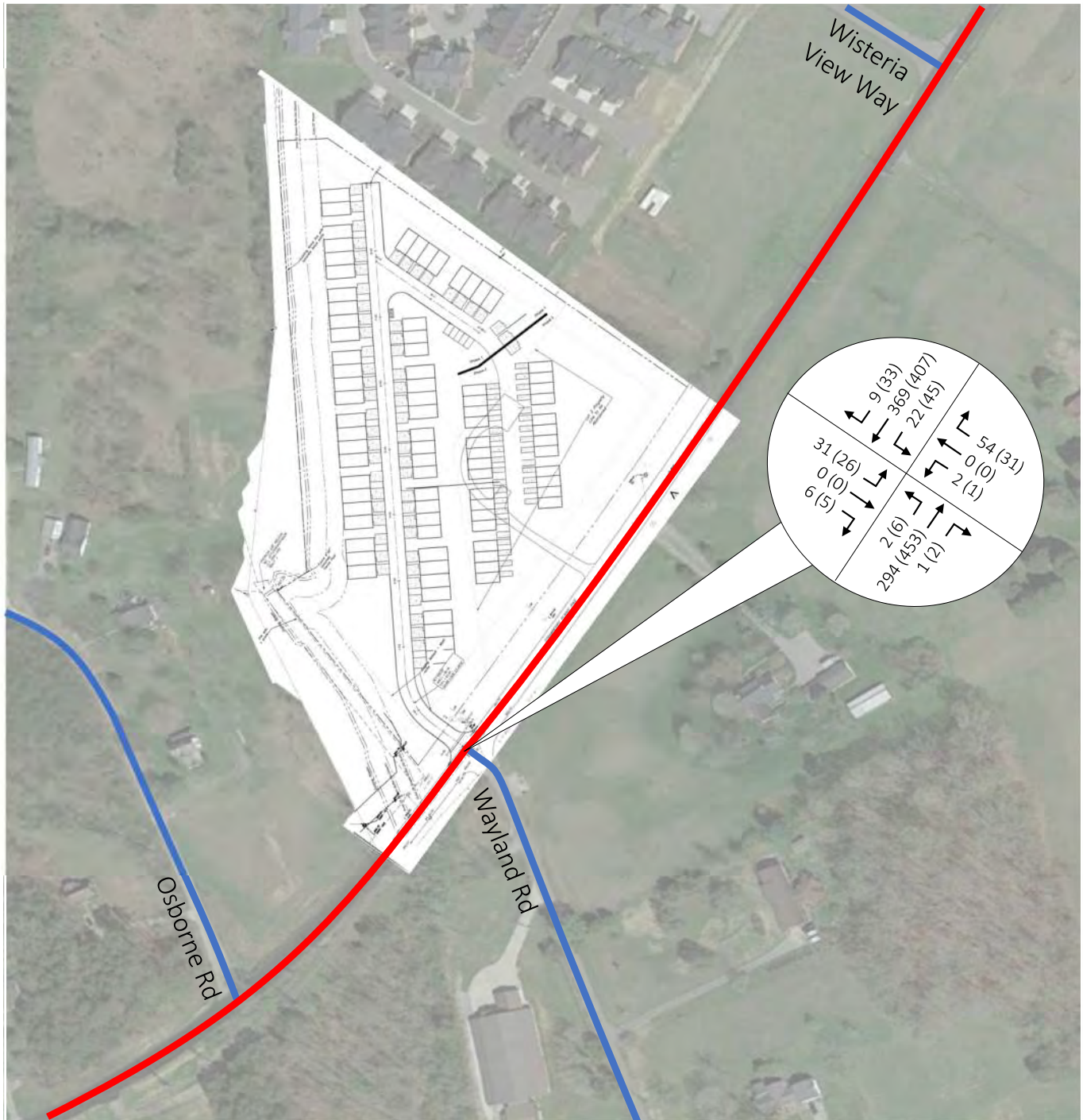
 Side Street

XXX (XXX) AM (PM) Trips



Figure 4.2

2025 PROPOSED TRAFFIC VOLUMES



LEGEND

 Strawberry Plains Pike

 Side Street

XXX (XXX) AM (PM) Volume



Figure 4.3

4.4 Future Levels of Service and Capacity Analysis

The 2025 Build condition was analyzed using the 2025 Build traffic volumes, existing traffic control, and existing lane configurations. The 2025 Build capacity and level of service summary results are shown in Table 4.2.

Table 4.2 2025 Build Conditions Capacity and LOS Summary

Movement	Time Period	v/c	Delay	LOS
Strawberry Plains Pike NB L/T/R	AM	0.01	8.3	A
	PM	0.01	8.4	A
Strawberry Plains Pike SB L/T/R	AM	0.02	8.0	A
	PM	0.05	8.6	A
Strawberry Meadows Access EB L/T/R	AM	0.25	25.2	D
	PM	0.21	30.3	D
Wayland Road WB L/T/R	AM	0.13	11.3	B
	PM	0.08	12.4	B

Note: Intersection analysis was calculated using Synchro 11 software and reported using HCM 2010 intersection methodology.

The analysis indicates that Strawberry Plains Pike will continue to operate at LOS A, and the Wayland Road approach will operate at LOS B. The Strawberry Meadows access is anticipated to operate at LOS D with a delay of approximately 25 seconds in the AM peak hour and 30 seconds in the PM peak hour. LOS D is typical for many minor approaches to major roadways. The estimated queue for the Strawberry Meadows access approach is less than one vehicle during the AM and PM peak hours.

5.0 Evaluations

5.1 Sight Distance Assessment

Intersection sight distance was assessed in the field looking both directions along Strawberry Plains Pike from the site access to Strawberry Meadows. The posted speed limit along Strawberry Plains Pike is 45 mph, so the minimum required sight distance to oncoming traffic is 450 feet in accordance with Knox County regulations.

The photos below show the sight distance available from the site access. Looking to the left, the sight line is approximately 500 feet. Looking to the right, the sight line is approximately 660 feet. The existing sight distance is adequate. The vegetation and brush should be routinely cleared to avoid any sight obstructions.



Looking left (to the north)



Looking right (to the south)

Wayland Road currently intersects Strawberry Plains Pike at a skewed angle. As part of Phase I of the Strawberry Meadows development, it was recommended that the Wayland Road centerline should be restriped in a manner that directs vehicles to approach Strawberry Plains Pike at a 90-degree angle. This improvement consists of a striping change only and does not require any construction.

5.2 Turn Lane Assessment

Turn lane analyses were performed using the Knox County Engineering Turn Lane Volume Threshold worksheets, which are provided in Appendix D. The purpose of this analysis is to determine whether left- or right-turn lanes are warranted based on the turning and opposing movement volumes.

The analysis looked at potential auxiliary lanes for the access to Strawberry Meadows and onto the existing Wayland Road approach. The 2025 Build volumes show that neither a left- nor right-turn lane are needed to access Strawberry Meadows; however, a westbound left-turn lane onto Wayland Road is warranted. To determine if this left-turn lane is a background need, the analysis for Wayland Road was run using the 2025 No-Build and 2023 Existing volumes. The findings indicate that the left-turn lane is warranted in the existing condition.

The 2025 Build condition was reanalyzed assuming left-turn lanes along Strawberry Plains Pike. Although the eastbound left-turn lane is not warranted based on the proposed volumes, if the westbound left-turn lane is installed, the left-turn lane into Strawberry Meadows could be easily accommodated within the same improvement project with minimal increase in complexity or cost. The left-turn lane would also provide additional safety benefits by displacing any left-turning vehicles out of the through lane.

The 2025 Build with Left-Turn Lanes analysis results are shown in Table 5.1. The left-turn lanes on Strawberry Plains Pike do not change the overall operation of the intersection.

Table 5.1 2025 Build Conditions (with Left-Turn Lanes) Capacity and LOS Summary

Movement	Time Period	v/c	Delay	LOS
Strawberry Plains Pike NB L	AM	0.01	8.3	A
	PM	0.01	8.4	A
Strawberry Plains Pike NB T/R	AM	-	-	-
	PM	-	-	-
Strawberry Plains Pike SB L	AM	0.02	8.0	A
	PM	0.05	8.6	A
Strawberry Plains Pike SB T/R	AM	-	-	-
	PM	-	-	-
Strawberry Meadows Access EB L/T/R	AM	0.25	25.1	D
	PM	0.21	29.8	D
Wayland Road WB L/T/R	AM	0.13	11.3	B
	PM	0.08	12.3	B

Note: Intersection analysis was calculated using Synchro 11 software and reported using HCM 2010 intersection methodology.



6.0 Conclusions and Recommendations

The primary conclusion of this study is that the proposed development trips will have minimal impacts on the study intersection. The capacity analysis indicates that even with a 5% annual growth rate over two years plus the site-generated traffic, the intersection approaches will operate at LOS D or better in both peak hour periods. The following improvements are recommended:

- Although no additional turn lanes are needed as a result of the development, a westbound left-turn lane onto Wayland Road is warranted based on existing traffic volumes. If the westbound left-turn lane is installed by Knox County, the left-turn lane into Strawberry Meadows could be easily accommodated within the same improvement project with minimal increase in complexity or cost. The preliminary recommendations for required turn-lane lengths are based on a 12-foot lane width and 45 mph posted speed limit and are listed below:
 - Westbound Left-Turn Lane
 - Approach Taper Length: 540'
 - Deceleration Length (Bay Taper + Storage): 350'
 - Bay Taper Length: 180'
 - Storage Length: minimum 170' (based on required deceleration length)
 - Eastbound Left-Turn Lane
 - Approach Taper Length: 540'
 - Deceleration Length (Bay Taper + Storage): 350'
 - Bay Taper Length: 180'
 - Storage Length: minimum 170' (based on required deceleration length)
- Ensure the Wayland Road centerline is restriped to alleviate the skewed intersection as discussed during Phase I.
- Ensure that vegetation at the site driveway is cleared routinely to maintain acceptable sight lines.



Appendix A Traffic Count Data

CDM Smith

1100 Marion Street, Suite 300
Knoxville, TN 37921

Groups Printed- Unshifted - Bank 1

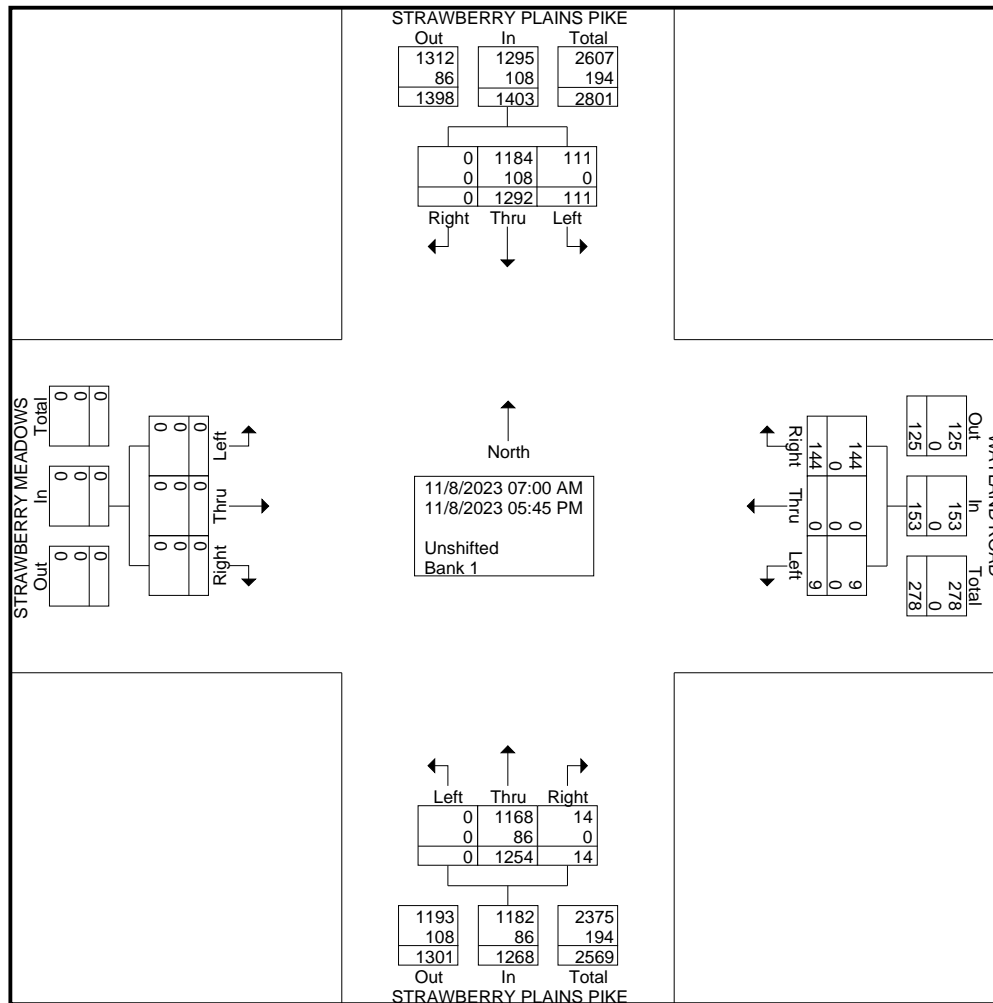
Start Time	STRAWBERRY PLAINS PIKE Southbound				WAYLAND ROAD Westbound				STRAWBERRY PLAINS PIKE Northbound				STRAWBERRY MEADOWS Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	1	73	0	74	1	0	16	17	0	53	0	53	0	0	0	0	144
07:15 AM	5	78	0	83	1	0	12	13	0	61	0	61	0	0	0	0	157
07:30 AM	5	111	0	116	0	0	20	20	0	55	1	56	0	0	0	0	192
07:45 AM	7	86	0	93	0	0	9	9	0	71	0	71	0	0	0	0	173
Total	18	348	0	366	2	0	57	59	0	240	1	241	0	0	0	0	666
08:00 AM	3	60	0	63	1	0	8	9	0	80	0	80	0	0	0	0	152
08:15 AM	1	76	0	77	1	0	5	6	0	56	0	56	0	0	0	0	139
08:30 AM	4	78	0	82	0	0	7	7	0	53	0	53	0	0	0	0	142
08:45 AM	3	69	0	72	0	0	9	9	0	45	0	45	0	0	0	0	126
Total	11	283	0	294	2	0	29	31	0	234	0	234	0	0	0	0	559
*** BREAK ***																	
04:00 PM	12	88	0	100	1	0	7	8	0	74	2	76	0	0	0	0	184
04:15 PM	11	71	0	82	0	0	7	7	0	99	4	103	0	0	0	0	192
04:30 PM	10	108	0	118	0	0	7	7	0	86	0	86	0	0	0	0	211
04:45 PM	7	94	0	101	0	0	6	6	0	109	1	110	0	0	0	0	217
Total	40	361	0	401	1	0	27	28	0	368	7	375	0	0	0	0	804
05:00 PM	14	82	0	96	1	0	6	7	0	115	1	116	0	0	0	0	219
05:15 PM	10	85	0	95	0	0	9	9	0	101	0	101	0	0	0	0	205
05:30 PM	9	54	0	63	3	0	7	10	0	114	1	115	0	0	0	0	188
05:45 PM	9	79	0	88	0	0	9	9	0	82	4	86	0	0	0	0	183
Total	42	300	0	342	4	0	31	35	0	412	6	418	0	0	0	0	795

CDM Smith

1100 Marion Street, Suite 300
Knoxville, TN 37921

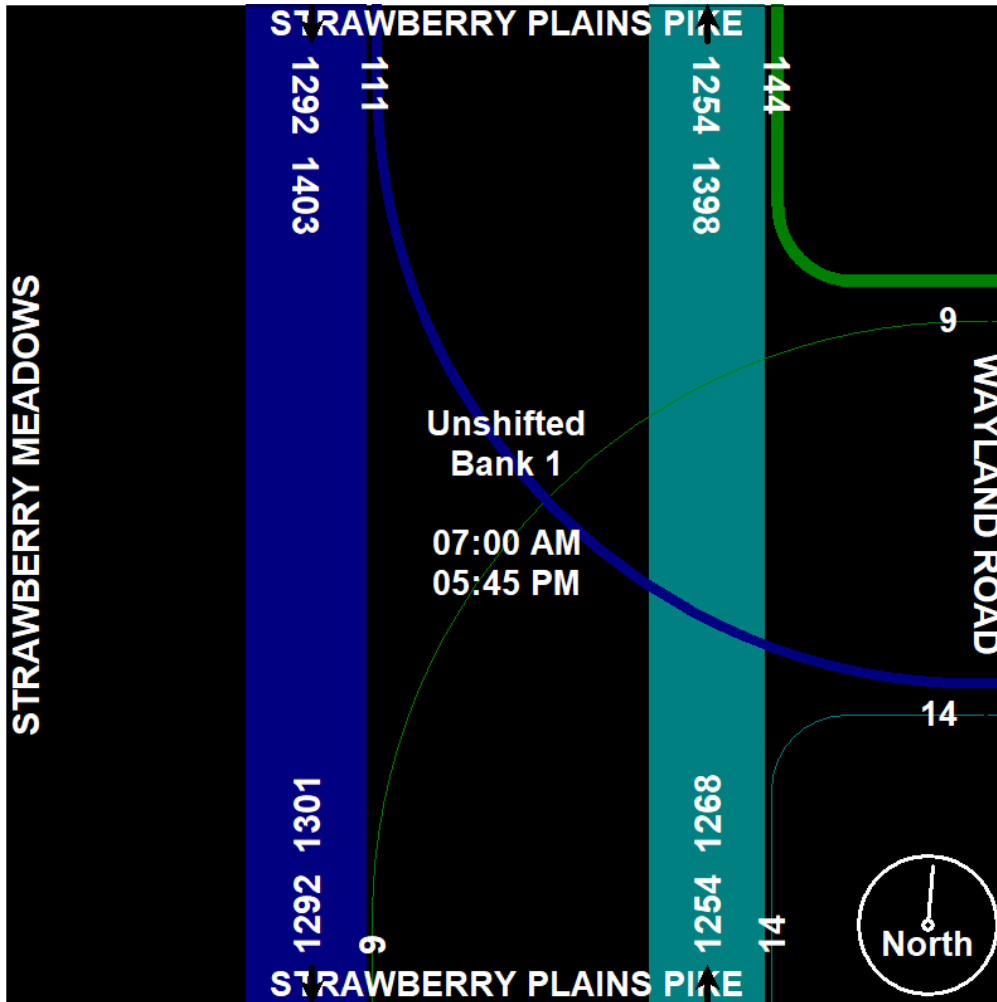
Groups Printed- Unshifted - Bank 1

	STRAWBERRY PLAINS PIKE Southbound				WAYLAND ROAD Westbound				STRAWBERRY PLAINS PIKE Northbound				STRAWBERRY MEADOWS Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Grand Total	111	1292	0	1403	9	0	144	153	0	1254	14	1268	0	0	0	0	2824
Apprch %	7.9	92.1	0		5.9	0	94.1		0	98.9	1.1		0	0	0		
Total %	3.9	45.8	0	49.7	0.3	0	5.1	5.4	0	44.4	0.5	44.9	0	0	0	0	
Unshifted	111	1184	0	1295	9	0	144	153	0	1168	14	1182	0	0	0	0	2630
% Unshifted	100	91.6	0	92.3	100	0	100	100	0	93.1	100	93.2	0	0	0	0	93.1
Bank 1	0	108	0	108	0	0	0	0	0	86	0	86	0	0	0	0	194
% Bank 1	0	8.4	0	7.7	0	0	0	0	0	6.9	0	6.8	0	0	0	0	6.9



CDM Smith

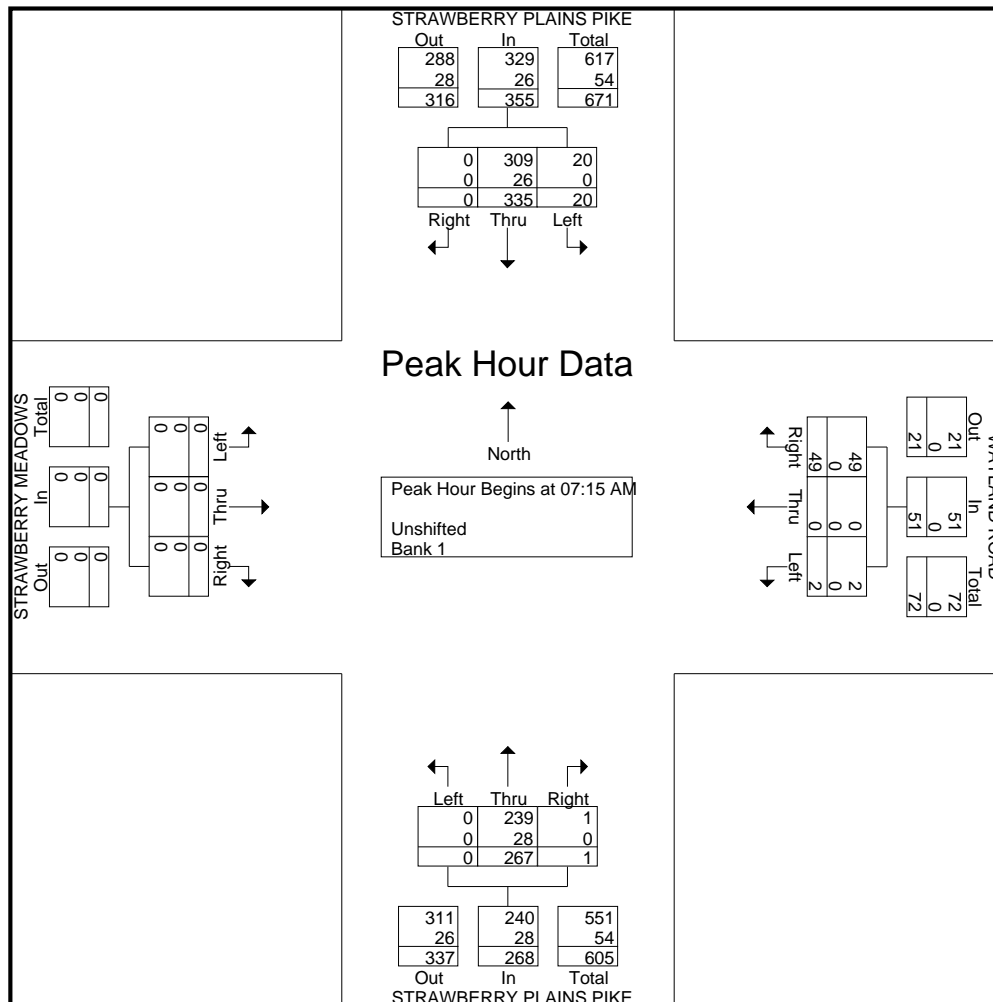
1100 Marion Street, Suite 300
Knoxville, TN 37921



CDM Smith

1100 Marion Street, Suite 300
Knoxville, TN 37921

Start Time	STRAWBERRY PLAINS PIKE Southbound				WAYLAND ROAD Westbound				STRAWBERRY PLAINS PIKE Northbound				STRAWBERRY MEADOWS Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	5	78	0	83	1	0	12	13	0	61	0	61	0	0	0	0	157
07:30 AM	5	111	0	116	0	0	20	20	0	55	1	56	0	0	0	0	192
07:45 AM	7	86	0	93	0	0	9	9	0	71	0	71	0	0	0	0	173
08:00 AM	3	60	0	63	1	0	8	9	0	80	0	80	0	0	0	0	152
Total Volume	20	335	0	355	2	0	49	51	0	267	1	268	0	0	0	0	674
% App. Total	5.6	94.4	0		3.9	0	96.1		0	99.6	0.4		0	0	0		
PHF	.714	.755	.000	.765	.500	.000	.613	.638	.000	.834	.250	.838	.000	.000	.000	.000	.878
Unshifted	20	309	0	329	2	0	49	51	0	239	1	240	0	0	0	0	620
% Unshifted	100	92.2	0	92.7	100	0	100	100	0	89.5	100	89.6	0	0	0	0	92.0
Bank 1	0	26	0	26	0	0	0	0	0	28	0	28	0	0	0	0	54
% Bank 1	0	7.8	0	7.3	0	0	0	0	0	10.5	0	10.4	0	0	0	0	8.0



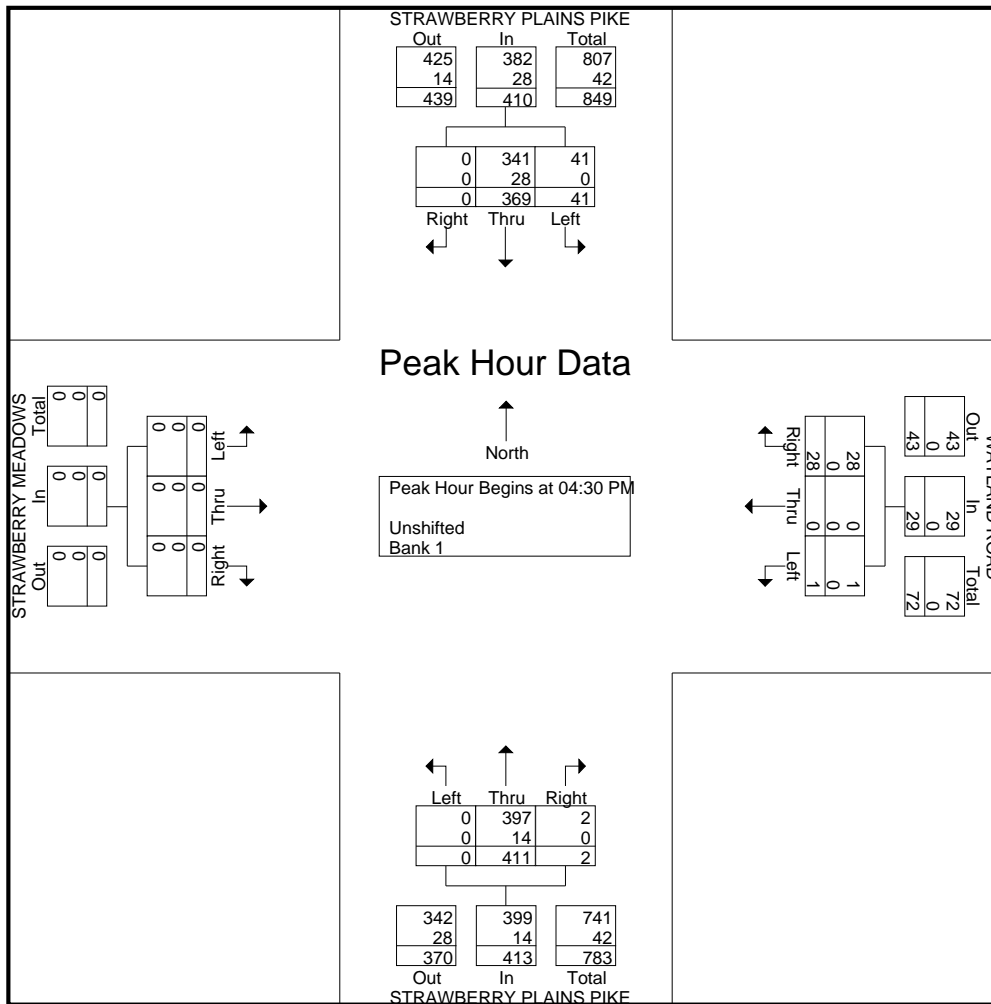
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1100 Marion Street, Suite 300
Knoxville, TN 37921

Start Time	STRAWBERRY PLAINS PIKE Southbound				WAYLAND ROAD Westbound				STRAWBERRY PLAINS PIKE Northbound				STRAWBERRY MEADOWS Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:30 PM	10	108	0	118	0	0	7	7	0	86	0	86	0	0	0	0	211
04:45 PM	7	94	0	101	0	0	6	6	0	109	1	110	0	0	0	0	217
05:00 PM	14	82	0	96	1	0	6	7	0	115	1	116	0	0	0	0	219
05:15 PM	10	85	0	95	0	0	9	9	0	101	0	101	0	0	0	0	205
Total Volume	41	369	0	410	1	0	28	29	0	411	2	413	0	0	0	0	852
% App. Total	10	90	0		3.4	0	96.6		0	99.5	0.5		0	0	0		
PHF	.732	.854	.000	.869	.250	.000	.778	.806	.000	.893	.500	.890	.000	.000	.000	.000	.973
Unshifted	41	341	0	382	1	0	28	29	0	397	2	399	0	0	0	0	810
% Unshifted	100	92.4	0	93.2	100	0	100	100	0	96.6	100	96.6	0	0	0	0	95.1
Bank 1	0	28	0	28	0	0	0	0	0	14	0	14	0	0	0	0	42
% Bank 1	0	7.6	0	6.8	0	0	0	0	0	3.4	0	3.4	0	0	0	0	4.9

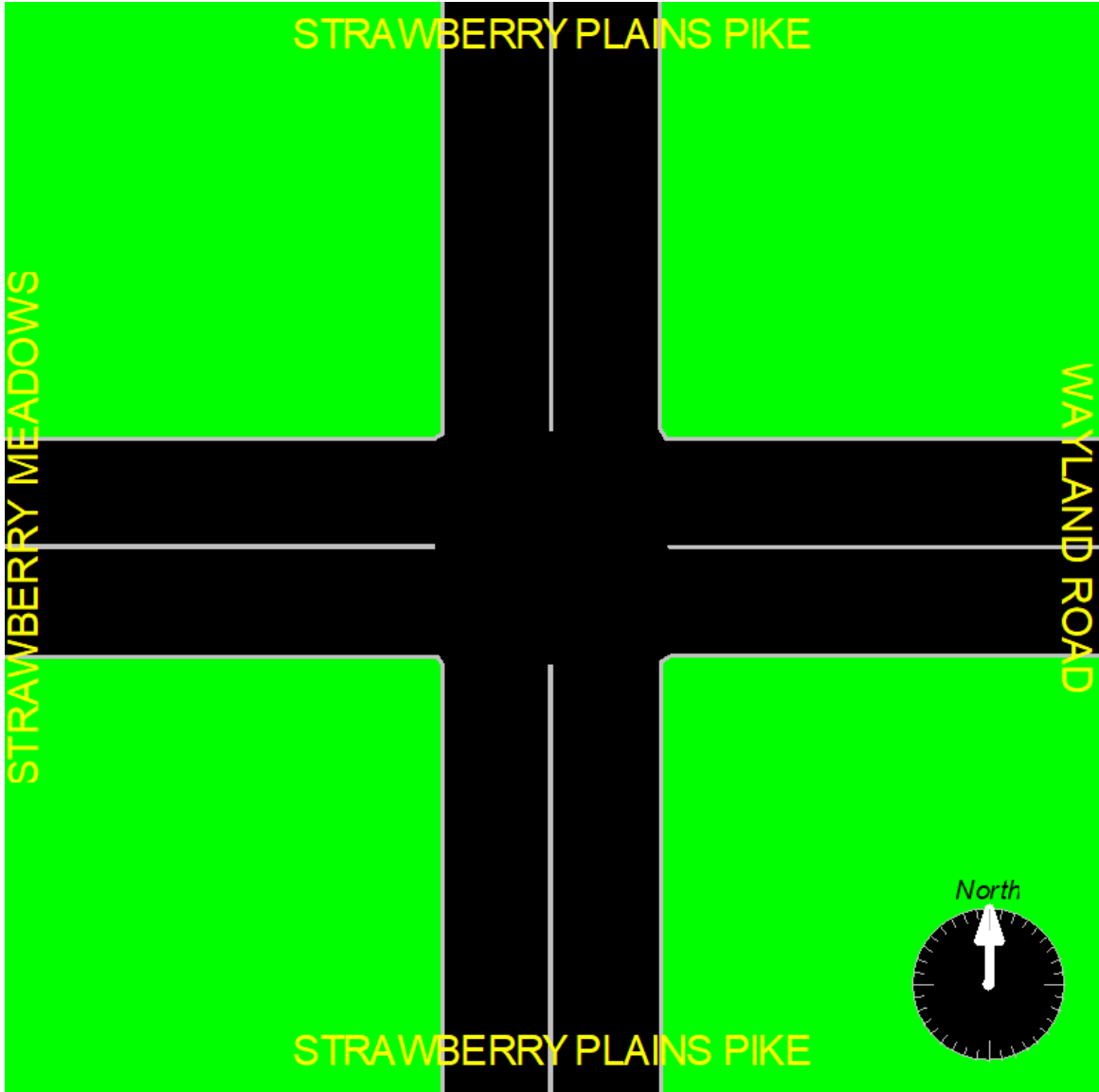
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM



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1100 Marion Street, Suite 300
Knoxville, TN 37921





Appendix B Synchro Reports

Intersection						
Int Delay, s/veh	1.2					
Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	267	1	20	335	2	49
Future Vol, veh/h	267	1	20	335	2	49
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, %	0	-	-	0	0	-
Peak Hour Factor	84	84	77	77	64	64
Heavy Vehicles, %	15	0	0	15	0	0
Mvmt Flow	318	1	26	435	3	77

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	319	0	806
Stage 1	-	-	-	-	319
Stage 2	-	-	-	-	487
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1252	-	354
Stage 1	-	-	-	-	741
Stage 2	-	-	-	-	622
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1252	-	344
Mov Cap-2 Maneuver	-	-	-	-	344
Stage 1	-	-	-	-	741
Stage 2	-	-	-	-	605

Approach	NB	SB	NW
HCM Control Delay, s	0	0.4	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBT	NBRNWLn1	SBL	SBT
Capacity (veh/h)	-	-	696	1252
HCM Lane V/C Ratio	-	-	0.114	0.021
HCM Control Delay (s)	-	-	10.8	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1

Intersection						
Int Delay, s/veh	0.8					
Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	411	2	41	369	1	28
Future Vol, veh/h	411	2	41	369	1	28
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, %	0	-	-	0	0	-
Peak Hour Factor	89	89	87	87	81	81
Heavy Vehicles, %	10	0	0	20	0	0
Mvmt Flow	462	2	47	424	1	35

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	464	0	981
Stage 1	-	-	-	-	463
Stage 2	-	-	-	-	518
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1108	-	279
Stage 1	-	-	-	-	638
Stage 2	-	-	-	-	602
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1108	-	264
Mov Cap-2 Maneuver	-	-	-	-	264
Stage 1	-	-	-	-	638
Stage 2	-	-	-	-	569

Approach	NB	SB	NW
HCM Control Delay, s	0	0.8	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBT	NBRNWLn1	SBL	SBT
Capacity (veh/h)	-	-	577	1108
HCM Lane V/C Ratio	-	-	0.062	0.043
HCM Control Delay (s)	-	-	11.7	8.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1

Intersection						
Int Delay, s/veh	1.3					
Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	294	1	22	369	2	54
Future Vol, veh/h	294	1	22	369	2	54
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, %	0	-	-	0	0	-
Peak Hour Factor	84	84	77	77	64	64
Heavy Vehicles, %	15	0	0	15	0	0
Mvmt Flow	350	1	29	479	3	84

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	351	0	888	351
Stage 1	-	-	-	-	351	-
Stage 2	-	-	-	-	537	-
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	-	-	1219	-	317	697
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	590	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1219	-	307	697
Mov Cap-2 Maneuver	-	-	-	-	307	-
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	571	-

Approach	NB	SB	NW
HCM Control Delay, s	0	0.5	11.2
HCM LOS			B

Minor Lane/Major Mvmt	NBT	NBRNWLn1	SBL	SBT
Capacity (veh/h)	-	-	667	1219
HCM Lane V/C Ratio	-	-	0.131	0.023
HCM Control Delay (s)	-	-	11.2	8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1

Intersection						
Int Delay, s/veh	0.9					
Movement	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations						
Traffic Vol, veh/h	453	2	45	407	1	31
Future Vol, veh/h	453	2	45	407	1	31
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, %	0	-	-	0	0	-
Peak Hour Factor	89	89	87	87	81	81
Heavy Vehicles, %	10	0	0	20	0	0
Mvmt Flow	509	2	52	468	1	38

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	511	0	1082
Stage 1	-	-	-	-	510
Stage 2	-	-	-	-	572
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1065	-	243
Stage 1	-	-	-	-	607
Stage 2	-	-	-	-	569
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1065	-	227
Mov Cap-2 Maneuver	-	-	-	-	227
Stage 1	-	-	-	-	607
Stage 2	-	-	-	-	531

Approach	NB	SB	NW
HCM Control Delay, s	0	0.9	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBT	NBRNWLn1	SBL	SBT
Capacity (veh/h)	-	-	542	1065
HCM Lane V/C Ratio	-	-	0.073	0.049
HCM Control Delay (s)	-	-	12.2	8.6
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2

Intersection												
Int Delay, s/veh	2.6											
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	294	1	22	369	9	31	0	6	2	0	54
Future Vol, veh/h	2	294	1	22	369	9	31	0	6	2	0	54
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, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	77	77	77	64	64	64	64	64	64
Heavy Vehicles, %	0	15	0	0	15	0	0	0	0	0	0	0
Mvmt Flow	2	350	1	29	479	12	48	0	9	3	0	84

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	491	0	0	351	0	0	940	898	485	903	904	351
Stage 1	-	-	-	-	-	-	543	543	-	355	355	-
Stage 2	-	-	-	-	-	-	397	355	-	548	549	-
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	1083	-	-	1219	-	-	246	281	586	260	279	697
Stage 1	-	-	-	-	-	-	528	523	-	666	633	-
Stage 2	-	-	-	-	-	-	633	633	-	524	520	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1083	-	-	1219	-	-	211	271	586	249	269	697
Mov Cap-2 Maneuver	-	-	-	-	-	-	211	271	-	249	269	-
Stage 1	-	-	-	-	-	-	527	506	-	665	632	-
Stage 2	-	-	-	-	-	-	555	632	-	499	503	-

Approach	NB			SB			SE			NW		
HCM Control Delay, s	0.1			0.4			25.2			11.3		
HCM LOS							D			B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	NWLn1	SELn1	SBL	SBT	SBR
Capacity (veh/h)	1083	-	-	655	235	1219	-	-
HCM Lane V/C Ratio	0.002	-	-	0.134	0.246	0.023	-	-
HCM Control Delay (s)	8.3	0	-	11.3	25.2	8	0	-
HCM Lane LOS	A	A	-	B	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.9	0.1	-	-

Intersection												
Int Delay, s/veh	1.9											
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	453	2	45	407	33	26	0	5	1	0	31
Future Vol, veh/h	6	453	2	45	407	33	26	0	5	1	0	31
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, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	87	87	87	81	81	81	81	81	81
Heavy Vehicles, %	0	10	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	7	509	2	52	468	38	32	0	6	1	0	38

Major/Minor	Major1		Major2		Minor2		Minor1					
Conflicting Flow All	506	0	0	511	0	0	1134	1116	487	1118	1134	510
Stage 1	-	-	-	-	-	-	591	591	-	524	524	-
Stage 2	-	-	-	-	-	-	543	525	-	594	610	-
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	1069	-	-	1065	-	-	181	209	585	186	204	567
Stage 1	-	-	-	-	-	-	497	498	-	540	533	-
Stage 2	-	-	-	-	-	-	528	533	-	495	488	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1069	-	-	1065	-	-	159	193	585	173	188	567
Mov Cap-2 Maneuver	-	-	-	-	-	-	159	193	-	173	188	-
Stage 1	-	-	-	-	-	-	493	464	-	535	528	-
Stage 2	-	-	-	-	-	-	488	528	-	456	455	-

Approach	NB		SB		SE		NW	
HCM Control Delay, s	0.1		0.8		30.3		12.4	
HCM LOS					D		B	

Minor Lane/Major Mvmt	NBL	NBT	NBR	NWLn1	SELn1	SBL	SBT	SBR
Capacity (veh/h)	1069	-	-	529	180	1065	-	-
HCM Lane V/C Ratio	0.006	-	-	0.075	0.213	0.049	-	-
HCM Control Delay (s)	8.4	0	-	12.4	30.3	8.6	0	-
HCM Lane LOS	A	A	-	B	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.8	0.2	-	-

HCM 2010 TWSC
 4: Strawberry Plains Pk & Wayland Rd/Strawberry Meadows

Strawberry Meadows TIA
 Proposed 2025 AM Peak
 with Left-Turn Lane

Intersection												
Int Delay, s/veh	2.6											
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	2	294	1	22	369	9	31	0	6	2	0	54
Future Vol, veh/h	2	294	1	22	369	9	31	0	6	2	0	54
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	150	-	-	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	77	77	77	64	64	64	64	64	64
Heavy Vehicles, %	0	15	0	0	15	0	0	0	0	0	0	0
Mvmt Flow	2	350	1	29	479	12	48	0	9	3	0	84

Major/Minor	Major1	Major2	Minor2	Minor1
Conflicting Flow All	491	0	0	351
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.1	-	-	4.1
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2
Pot Cap-1 Maneuver	1083	-	-	1219
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1083	-	-	1219
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	NB	SB	SE	NW
HCM Control Delay, s	0.1	0.4	25.1	11.3
HCM LOS			D	B

Minor Lane/Major Mvmt	NBL	NBT	NBRNWLn1	SELn1	SBL	SBT	SBR
Capacity (veh/h)	1083	-	-	655	236	1219	-
HCM Lane V/C Ratio	0.002	-	-	0.134	0.245	0.023	-
HCM Control Delay (s)	8.3	-	-	11.3	25.1	8	-
HCM Lane LOS	A	-	-	B	D	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.9	0.1	-

HCM 2010 TWSC
 4: Strawberry Plains Pk & Wayland Rd/Strawberry Meadows

Strawberry Meadows TIA
 Proposed 2025 PM Peak
 with Left-Turn Lane

Intersection												
Int Delay, s/veh	1.8											
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations	↖	↗		↖	↗			↕			↕	
Traffic Vol, veh/h	6	453	2	45	407	33	26	0	5	1	0	31
Future Vol, veh/h	6	453	2	45	407	33	26	0	5	1	0	31
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	150	-	-	250	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	87	87	87	81	81	81	81	81	81
Heavy Vehicles, %	0	10	0	0	20	0	0	0	0	0	0	0
Mvmt Flow	7	509	2	52	468	38	32	0	6	1	0	38

Major/Minor	Major1		Major2		Minor2		Minor1					
Conflicting Flow All	506	0	0	511	0	0	1134	1116	487	1118	1134	510
Stage 1	-	-	-	-	-	-	591	591	-	524	524	-
Stage 2	-	-	-	-	-	-	543	525	-	594	610	-
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	1069	-	-	1065	-	-	181	209	585	186	204	567
Stage 1	-	-	-	-	-	-	497	498	-	540	533	-
Stage 2	-	-	-	-	-	-	528	533	-	495	488	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1069	-	-	1065	-	-	162	197	585	176	193	567
Mov Cap-2 Maneuver	-	-	-	-	-	-	162	197	-	176	193	-
Stage 1	-	-	-	-	-	-	494	474	-	536	529	-
Stage 2	-	-	-	-	-	-	489	529	-	466	464	-

Approach	NB		SB		SE		NW		
HCM Control Delay, s	0.1		0.8		29.8		12.3		
HCM LOS					D		B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	NWLn1	SELn1	SBL	SBT	SBR
Capacity (veh/h)	1069	-	-	530	183	1065	-	-
HCM Lane V/C Ratio	0.006	-	-	0.075	0.209	0.049	-	-
HCM Control Delay (s)	8.4	-	-	12.3	29.8	8.6	-	-
HCM Lane LOS	A	-	-	B	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.8	0.2	-	-



Appendix C Trip Generation Information

Local Apartment Trip Generation Study

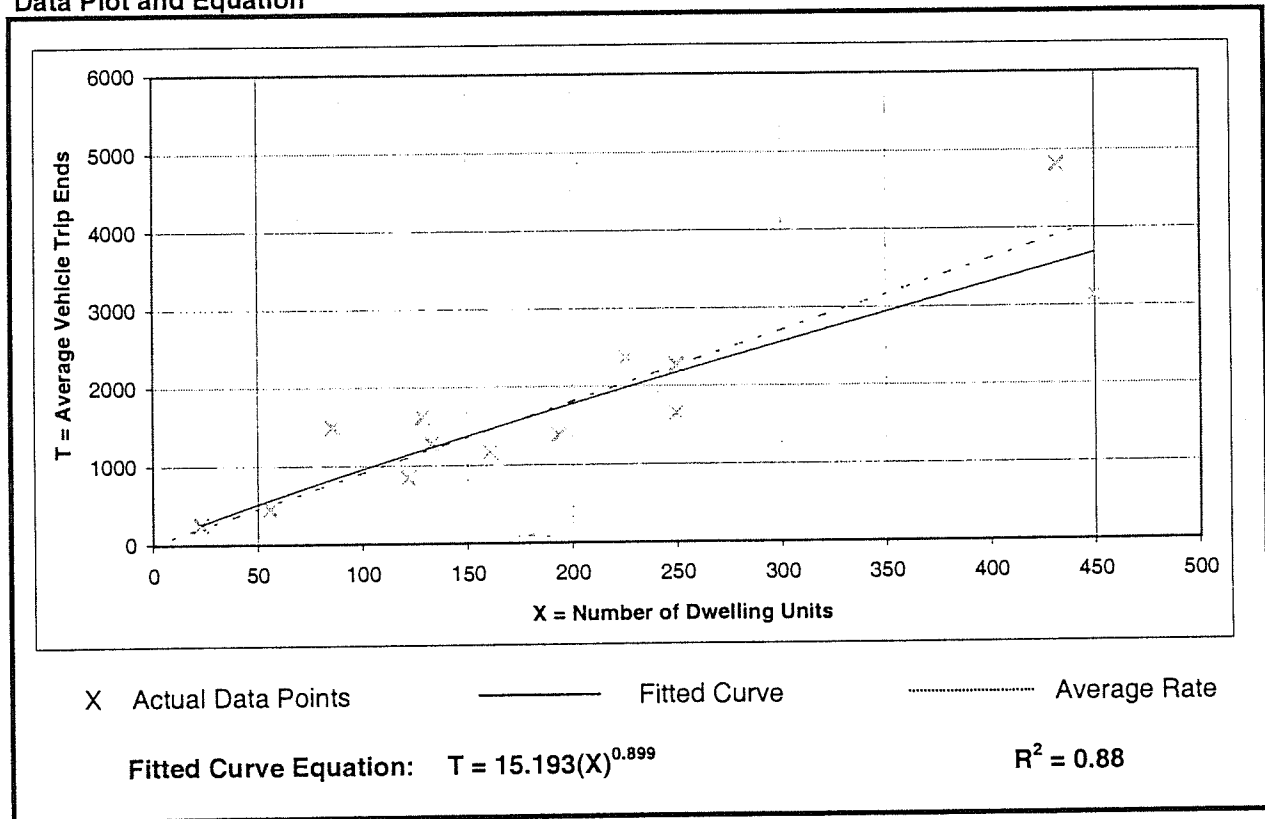
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

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



Local Apartment Trip Generation Study

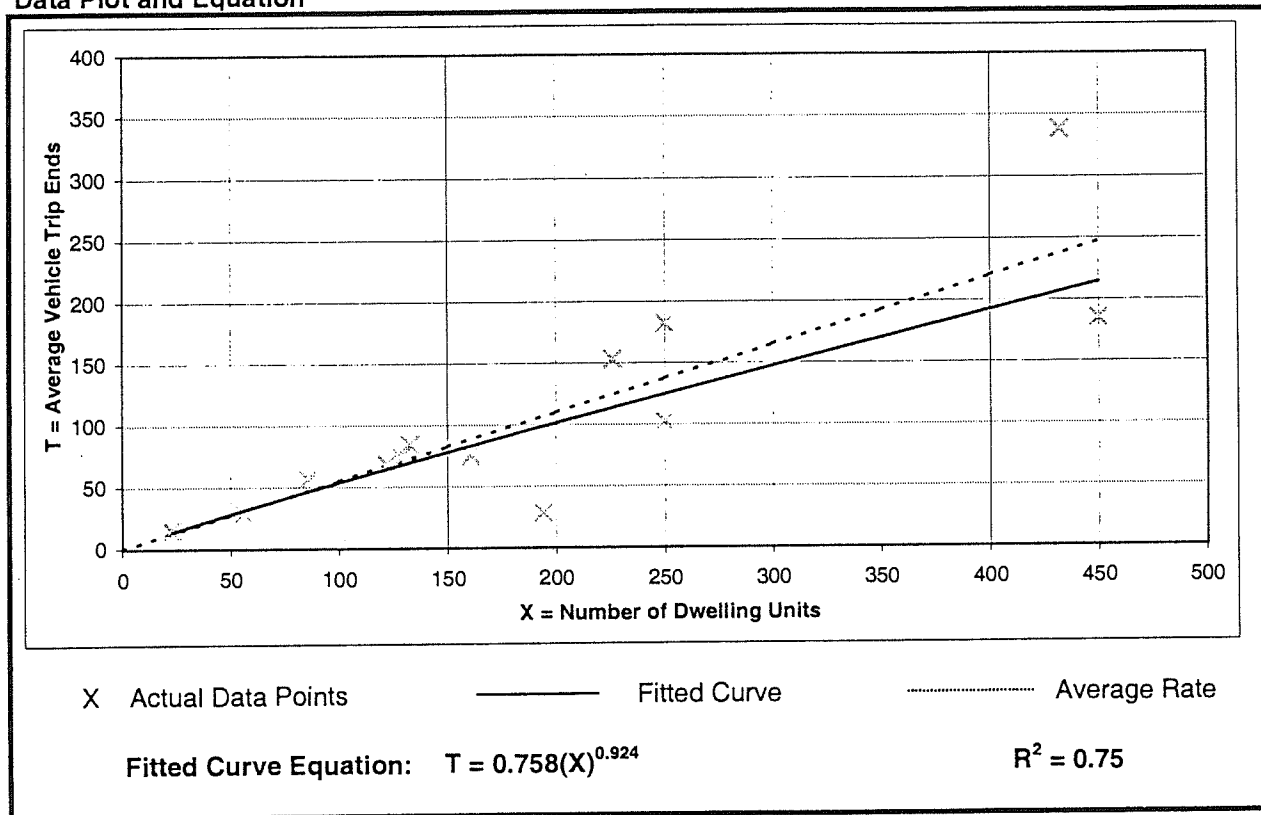
Average Vehicle Trip Ends vs: Dwelling Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.

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



Local Apartment Trip Generation Study

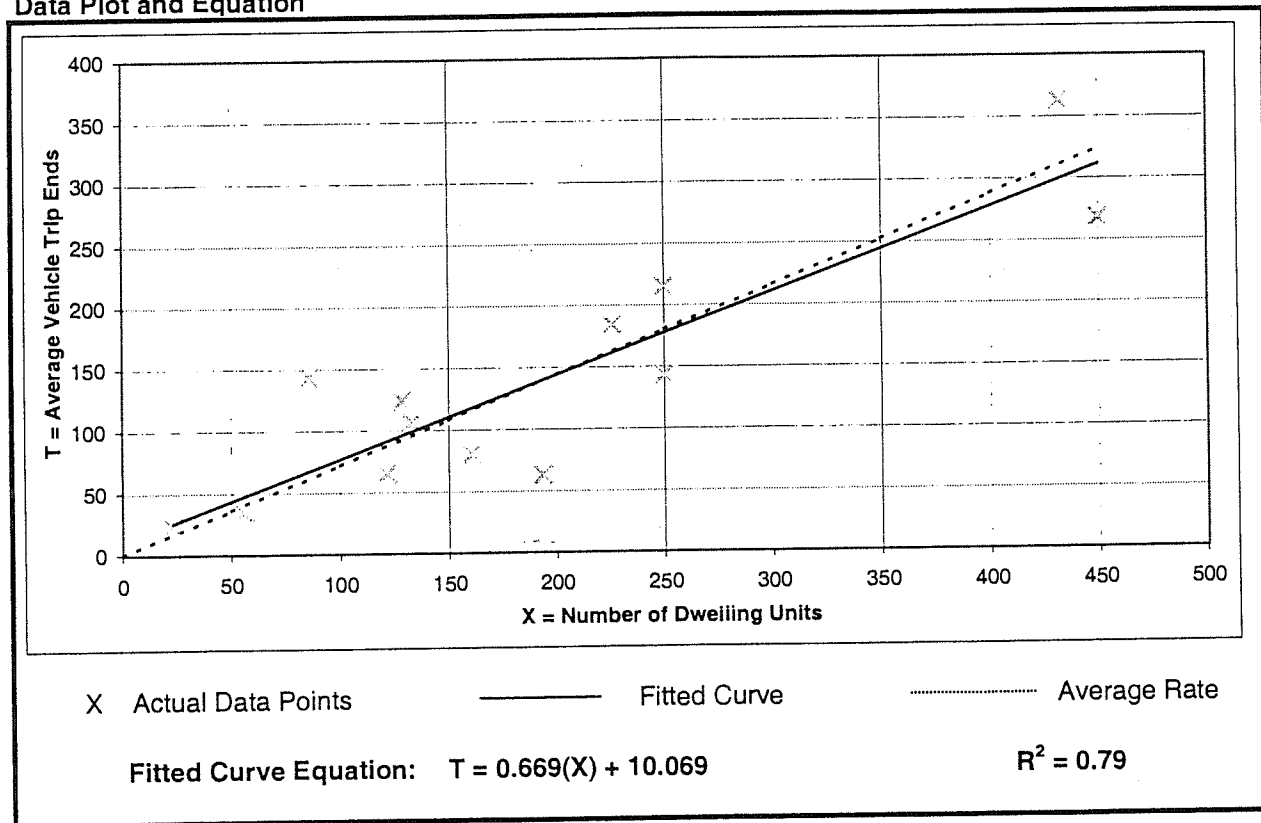
Average Vehicle Trip Ends vs: Dwelling Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.

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





Appendix D Turn Lane Analysis

ACCESS CONTROL
and
DRIVEWAY DESIGN POLICY

Department of Engineering and Public Works
Knox County, Tennessee

November 1996
(Includes changes from December 2015 County Commission Meeting)

AM Peak Hour

Turn-Lane Analysis onto Wayland Road (Existing Condition)

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	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

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
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

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 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	Yes Yes	Yes Yes
300 - 349 350 - 399	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
400 - 449 450-499	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
500 - 549 550 - 599	Yes Yes	Yes Yes	Yes Yes	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.

PM Peak Hour

Turn-Lane Analysis onto Wayland Road (Existing Condition)

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	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

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
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

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 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	Yes Yes	Yes Yes
300 - 349 350 - 399	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
400 - 449 450-499	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
500 - 549 550 - 599	Yes Yes	Yes Yes	Yes Yes	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.

AM Peak Hour

Turn-Lane Analysis into Strawberry Meadows

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	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

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
300 - 349 350 - 399			Yes	Yes	Yes	Yes
400 - 449 450 - 499		Yes	Yes	Yes	Yes	Yes
500 - 549 550 - 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 - 600	+ / >600
Fewer Than 25 25 - 49 50 - 99				Yes	Yes	Yes
100 - 149 150 - 199		Yes	Yes	Yes	Yes	Yes
200 - 249 250 - 299	Yes	Yes	Yes	Yes	Yes	Yes
300 - 349 350 - 399	Yes	Yes	Yes	Yes	Yes	Yes
400 - 449 450-499	Yes	Yes	Yes	Yes	Yes	Yes
500 - 549 550 - 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.

PM Peak Hour

Turn-Lane Analysis into Strawberry Meadows

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	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

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
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

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 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	Yes Yes	Yes Yes
300 - 349 350 - 399	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
400 - 449 450-499	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
500 - 549 550 - 599	Yes Yes	Yes Yes	Yes Yes	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.

AM Peak Hour

Turn-Lane Analysis onto Wayland Road (Build Condition)

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	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

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
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

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 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	Yes Yes	Yes Yes
300 - 349 350 - 399	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
400 - 449 450-499	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
500 - 549 550 - 599	Yes Yes	Yes Yes	Yes Yes	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.

PM Peak Hour

Turn-Lane Analysis onto Wayland Road (Build Condition)

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	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

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
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

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 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	Yes Yes	Yes Yes
300 - 349 350 - 399	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
400 - 449 450-499	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
500 - 549 550 - 599	Yes Yes	Yes Yes	Yes Yes	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.



Appendix E Development Information

DEVELOPMENT INFORMATION	
Project name:	
Project Description:	
Project Location	
Existing Zoning:	
Development Name:	
Developer name & address:	
Telephone number:	
Email:	
Tax Map & Parcel #:	
CHECKLIST (All items should be available at the time of discussion)	
Complete description of the development that includes:	
	Site Map details (this should be <u>attached</u>):
<input type="checkbox"/>	Building footprints
<input type="checkbox"/>	Number of units/unit size
<input type="checkbox"/>	Access points
<input type="checkbox"/>	Internal roadways (if any)
<input type="checkbox"/>	Adjacent streets
<input type="checkbox"/>	Proposed sidewalks and bicycle facilities, and
<input type="checkbox"/>	Location and number of proposed parking spaces (if applicable)
	Phasing plan (if applicable) that includes:
<input type="checkbox"/>	Phase size, location, & timing

BELOW TO BE FILLED OUT BY KNOXVILLE-KNOX COUNTY PLANNING STAFF

- Pre-study scope meeting **needed**
- Pre-study scope meeting **not needed**

Intersection(s) to study:

Level of Analysis:

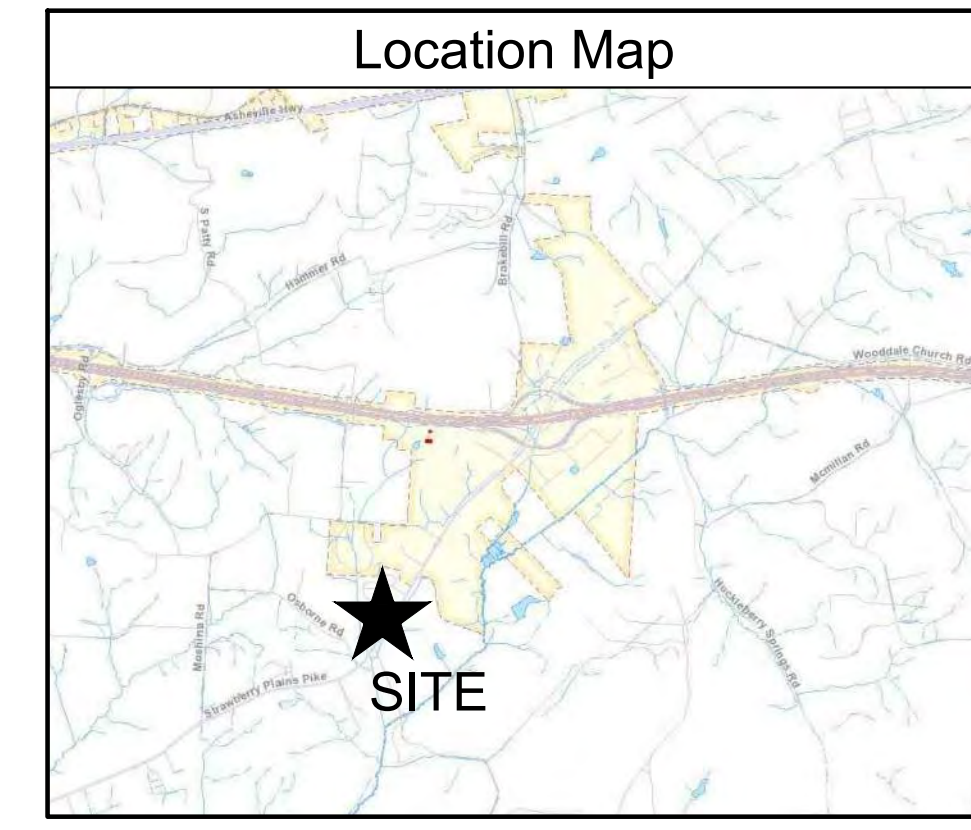
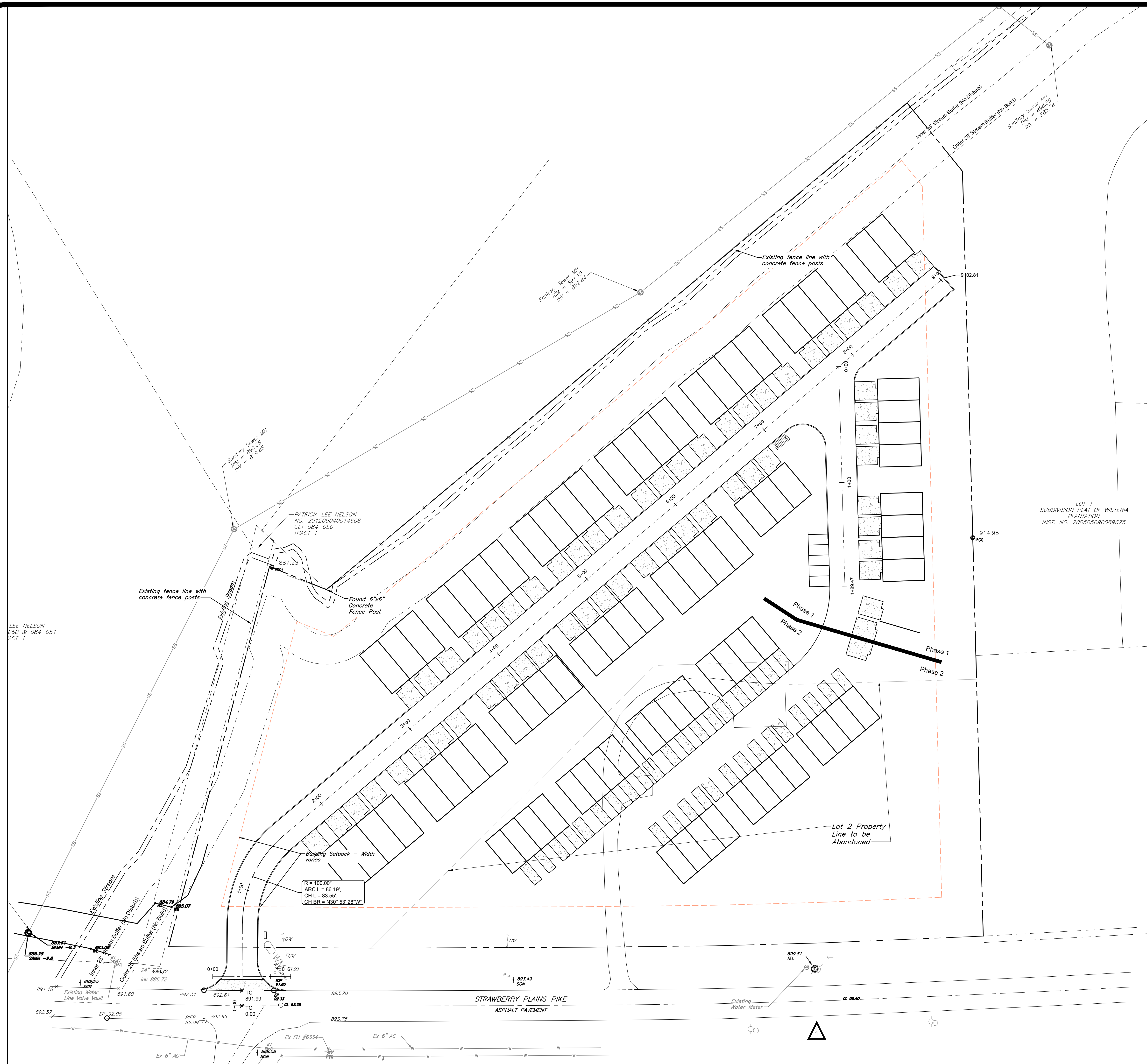
Notes:



Signature

Date

X:\2021\2021057 - Eddie D & C - Strawberry Plains Subdivision\DWG\Strawberry Plains SD - Master - Site Drop #2 - Phase 2.dwg Sep 08, 2023 - 11:17am rbaksa - LDS Copyright 2023

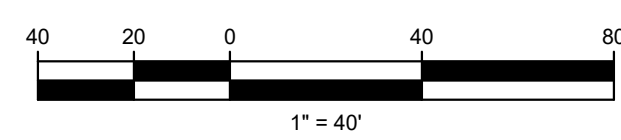


General Notes

- The contractor is specifically cautioned that the location and/or elevation of existing utilities as shown on these plans is based on records and where possible measurements taken in the field. This information is not to be relied upon as being exact or complete. The contractor must call Tennessee One Call and any utility that does not subscribe to one call at least 72 hours before any excavation, to request exact field location of the utilities. It shall be the responsibility of the contractor to relocate all existing utilities which conflict with the proposed improvements shown on the plans.
- Phase 1 included 58 units.
- Phase 2 proposes 29 additional units.
- Property is located in Knox County and is Zoned PR <12 DU/AC (Planned Residential).
Parcel ID: 084 04901 City Block: N/A
- Setbacks: Peripheral - 35 ft; Front - 20 ft; Side - 5 ft; Rear - 15 ft
- Total Acreage = 7.53 acres
- Utility Providers: Water, Sanitary Sewer, & Electric: Knoxville Utility Board

Survey Notes

- Survey by: Land Development Solutions
- Utility information is based on information obtained from the utility providers. Underground utility locations shown are taken from historical drawings and shall not be relied upon as exact locations. The contractor is responsible for determining the accuracy of this information.
- Vertical Datum is NAVD88



Project: **Strawberry Meadows Phase 2**
6721 Strawberry Plains Pike
Eddie D & C Investments
Knoxville, Tennessee



Drawing Description: **Phase 2 Site Layout Plan**

No.	Date	Revision

Drawn By	RML
Checked	EJB
Approved	
Job No.	220003
1" = 40' Scale	08-21-2023 Date

C101
Sheet No.



Appendix F Review Comments Response Letter



December 18, 2023

Knoxville-Knox County Planning
400 Main Street
Suite 403
Knoxville, TN 37902

Subject: Response Document for Strawberry Meadows Phase 2 Traffic Impact Study Review
Comments dated December 14, 2023

Dear Knoxville-Knox County Planning Staff:

The following comment response document is submitted to address comments from a letter and email dated December 14, 2023, and this letter is added to Appendix F of the revised report.

1. **The turn lane assessment needs to include both AM and PM peak period evaluations and for both directions of travel. The information that was provided in Appendix D appears to only show an evaluation for the PM peak and only for the eastbound direction of travel for left turns and westbound for right turns. Please also include the AM peak and warrants for turn lanes in the opposite direction, i.e. turning onto Wayland Rd.**

Response:

Included AM and PM peak hour turn-lane warrant calculations for both Wayland Road and Strawberry Meadows. It was determined that a westbound left-turn lane is warranted under the existing condition.

- The **Executive Summary** was updated to include this finding.
- In **5.2 Turn Lane Assessment**, provided further clarification of which alternatives were analyzed. Updated worksheets are provided in Appendix D.
- Included additional capacity and LOS analysis with the left-turn lane in **5.2 Turn Lane Assessment** and provided Synchro outputs in **Appendix B**. The inclusion of the left-turn lane along Strawberry Plains Pike did not change the overall operations of the intersection.
- Revised **6.0 Conclusions and Recommendations** to include mention of the westbound left-turn lane onto Wayland Road being warranted in the existing condition.

2. **Please include reference to the minor realignment work that was planned in conjunction with Phase 1 that includes centerline striping modification on Wayland Rd to provide closer to 90 degree intersection angle.**

Response:

Included reference to the centerline restriping along Wayland Road in **5.1 Sight Distance Assessment** and **6.0 Conclusions and Recommendations**.

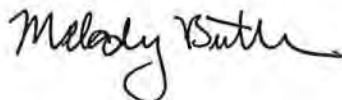
3. The turn lane warrant analysis tables appear to have a couple errors as noted below, please review and revise as necessary:
 - a. Table 5A has highlighted the 400-449 row for Opposing Volume, but total opposing volume appears to instead be 485 vehicles so should highlight the next row down.
 - b. Table 6A has highlighted the "fewer than 25" row for Right-Turn volume, but the right-turn volume is 33 for the PM peak so it should be the next row down that is highlighted.

Response:

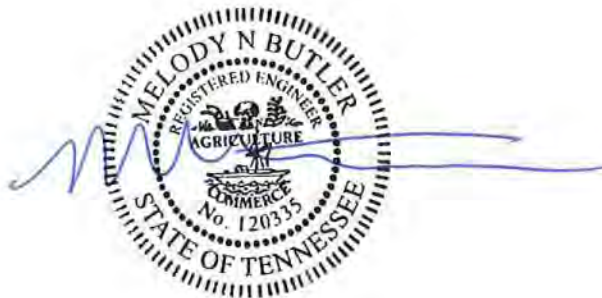
Revised turn-lane warrant analysis worksheets. Updated worksheets are provided in **Appendix D**.

If you have any questions or further comments, please feel free to contact me at any time. I look forward to your review and approval.

Sincerely,



Melody Butler, PE, AICP
Transportation Engineer
CDM Smith Inc.



- cc: Curtis Eddie, Eddie D & C Investments
Doug Eddie, Eddie D & C Investments
Rusty Baksa, Land Development Solutions