WOODBURY CROSSING
Knox County

TRAFFIC IMPACT STUDY

Prepared for :
WODA COOPER COMPANIES, INC.

Prepared By:

CDM Smith

MARCH 2020
REVISED OCTOBER 2020

WOODBURY CROSSING

KNOX COUNTY, TENNESSEE

TRAFFIC IMPACT STUDY

Prepared for

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March 2020
Revised October 2020

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Project Number 253594

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

CDM Smith was commissioned to prepare this report to address the impact of an additional proposed single-family residential development located within the Edwards Place subdivision on Thompson School Road in northeast Knox County, TN. The Edwards Place subdivision was previously studied in 2007 for 187 single-family unit development. The development of these additional single-family units would buildout the Edwards Place subdivision with a total of 175 single family units. The study required the collection of traffic data, generation of anticipated traffic volumes from the proposed site and development of projected traffic volumes from normal growth and from the potential site. Analysis of the resulting traffic projections was conducted to determine the capacity and levels of service for the site access with Thompson School Road. This study will develop measures necessary to mitigate any traffic impacts including improved roadway geometrics and traffic control devices with its access with Thompson School Road.

Knox County Traffic Engineering assisted in developing the required scope of this study. The proposed residential development site was assessed as a Level 1 Traffic Impact Study. This study will address the anticipated traffic impacts of the proposed residential development on the study access intersection.

Project Description

The proposed Woodbury Crossing site is a 79-unit single-family residential development on approximately 54 acres with a zoning of PR (1-4). Access for the site are the extensions from Edwards Place Boulevard and Lawgiver Circle. **Figure 1** illustrates the proposed site plan.

Site Location

The proposed Woodbury Crossing site is at the termini of Edwards Place Boulevard, which intersects with Thompson School Road to the north, and Lawgiver Circle. The site is near the Gibbs Community in northeast Knox County. The single-family residential development is east of Thompson School Road, south of Karnes Drive, west of Tazewell Pike, and north of E. Emory Road. **Figure 2** illustrates the site location relative to local and regional access.

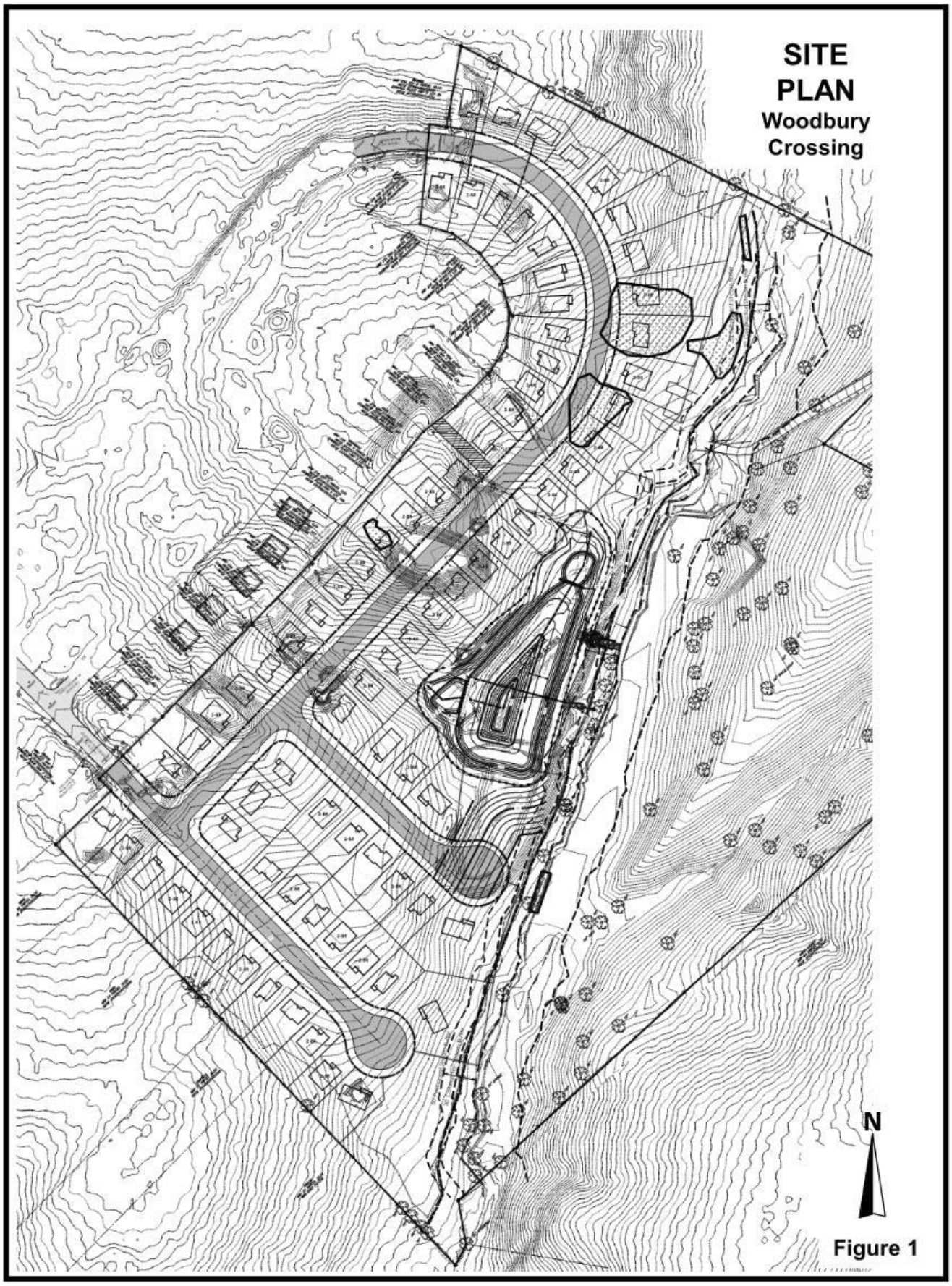


Figure 1

VICINITY MAP
Woodbury Crossing

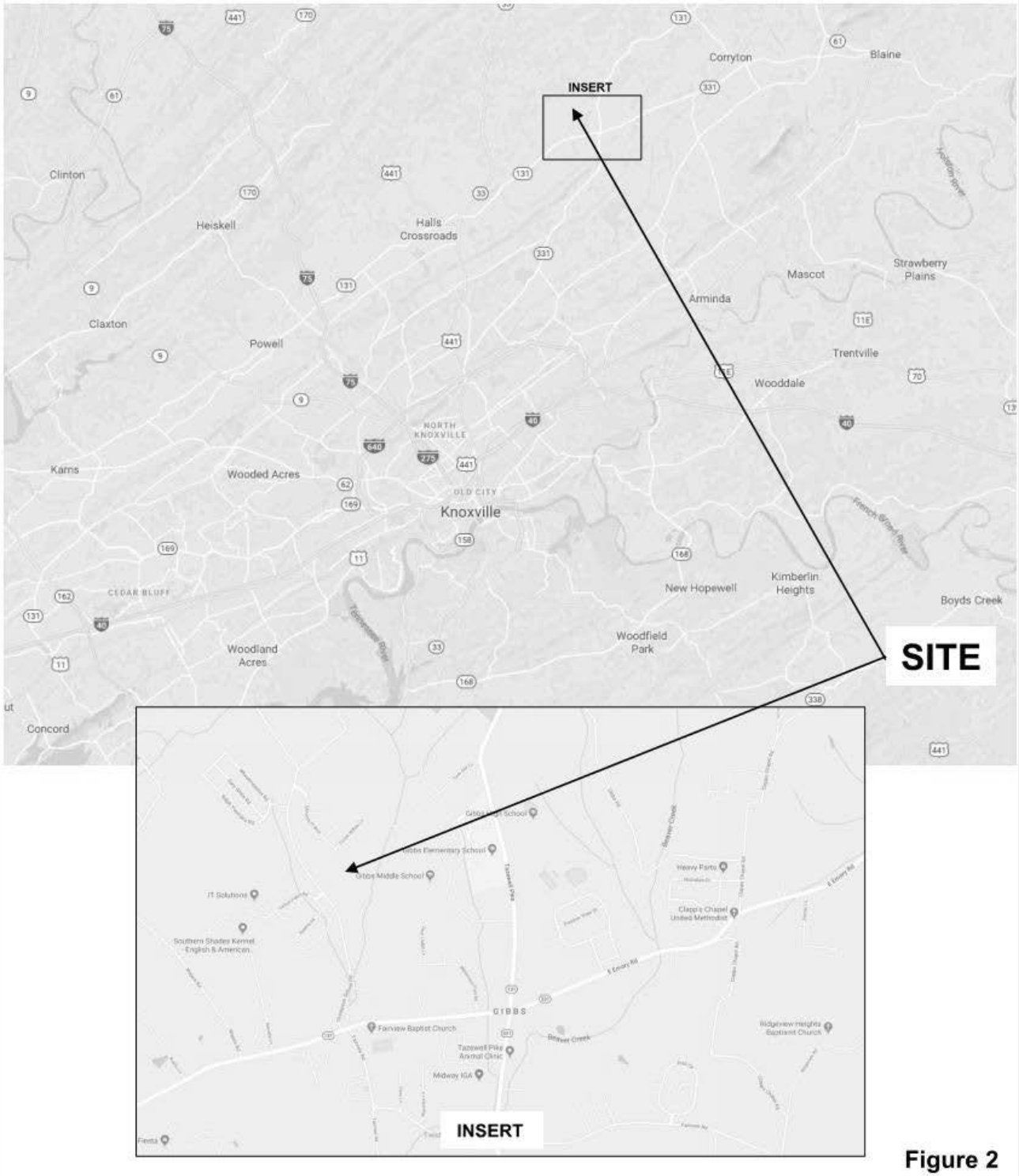


Figure 2

LOCAL AND REGIONAL ACCESS

Local Access

Local access to this site is from the Edwards Place Boulevard and its intersection with Thompson School Road. Edwards Place Boulevard is a residential street. Thompson School Road through a series of connections provides access to Tazewell Pike, Maynardville Highway, and several intersections along E. Emory Road. Thompson School Road is a major collector having a width of 20 feet and a 2017 average daily traffic (ADT) of 2,630. The posted speed limit is 30 mph. Its intersection with E. Emory Road, south of the site, is currently undergoing improvements which includes an alignment with Fairview Road, a minor arterial between E. Emory Road and Tazewell Pike.

Regional Access

Emory Road (SR 131) extends for more than 26 miles across northern Knox County. Emory Road extends west to Oak Ridge Highway near the Anderson County line and east into Grainger County. Emory Road to the west had a 2017 ADT of approximately 12,220 and 5,180 to the east. Major intersections include Clinton Highway, Interstate 75, Norris Freeway, Maynardville Highway, Tazewell Pike, and Washington Pike. Oak Ridge Highway (SR 62) near the Anderson County line had a 12,270 ADT in 2017. Clinton Highway (US 25W/SR 9) had a recorded 2017 ADT of 30,090. The ADT south of Exit 112 on I-75 in 2017 was approximately 64,360. Norris Freeway (US 441/SR 71) is principle highway with a 2017 ADT of approximately12,380. The Maynardville Highway (SR 33) 2017 ADT, north of Emory Road, was 16,150. Tazewell Pike (SR 331) have approximate 2017 ADTs of 7,200 and 14,280 north and south of Emory Road, respectively. Washington Pike near the Grainger County line had a 2017 ADT of approximately 620. These roadways provide a significant north-south connection between north Knox County and the downtown Knoxville central business district (CBD).

Modes of Travel in the Site Vicinity

Some sidewalks are provided in the subdivision but are not extensive. There are not any bike facilities in the vicinity of the proposed site. Knoxville Area Transit does not extend to the site; bus Route 22 extends as far north as Jacksboro Pike and Garden Drive.

EXISTING TRAFFIC CONDITIONS

Existing Traffic Control

The Edwards Place Boulevard approach to Thompson School Road is stop controlled. Thompson School Road has a posted speed limit of 30mph. E. Emory Road has a posted speed limit of 45 mph.

Existing Traffic Volumes

Peak-hour turning movement count was conducted February 20, 2020 for the intersection of Edwards Place Boulevard and Thompson School Road. The peak hours were measured to be 7:00 AM to 8:00 AM and 4:45 PM to 5:45 PM. **Figure 3** illustrates the resulting intersection peak-hour turning movements for the AM and PM peak hours.

Existing Capacity and Level of Service

In order to evaluate the current operations of the traffic control devices, capacity and level of service were calculated using the **Highway Capacity Manual, Special Report 209, Sixth Edition** published by the Transportation Research Board (TRB). Unsignalized intersections are evaluated based on estimated intersection delays, which may be related to level of service (LOS).

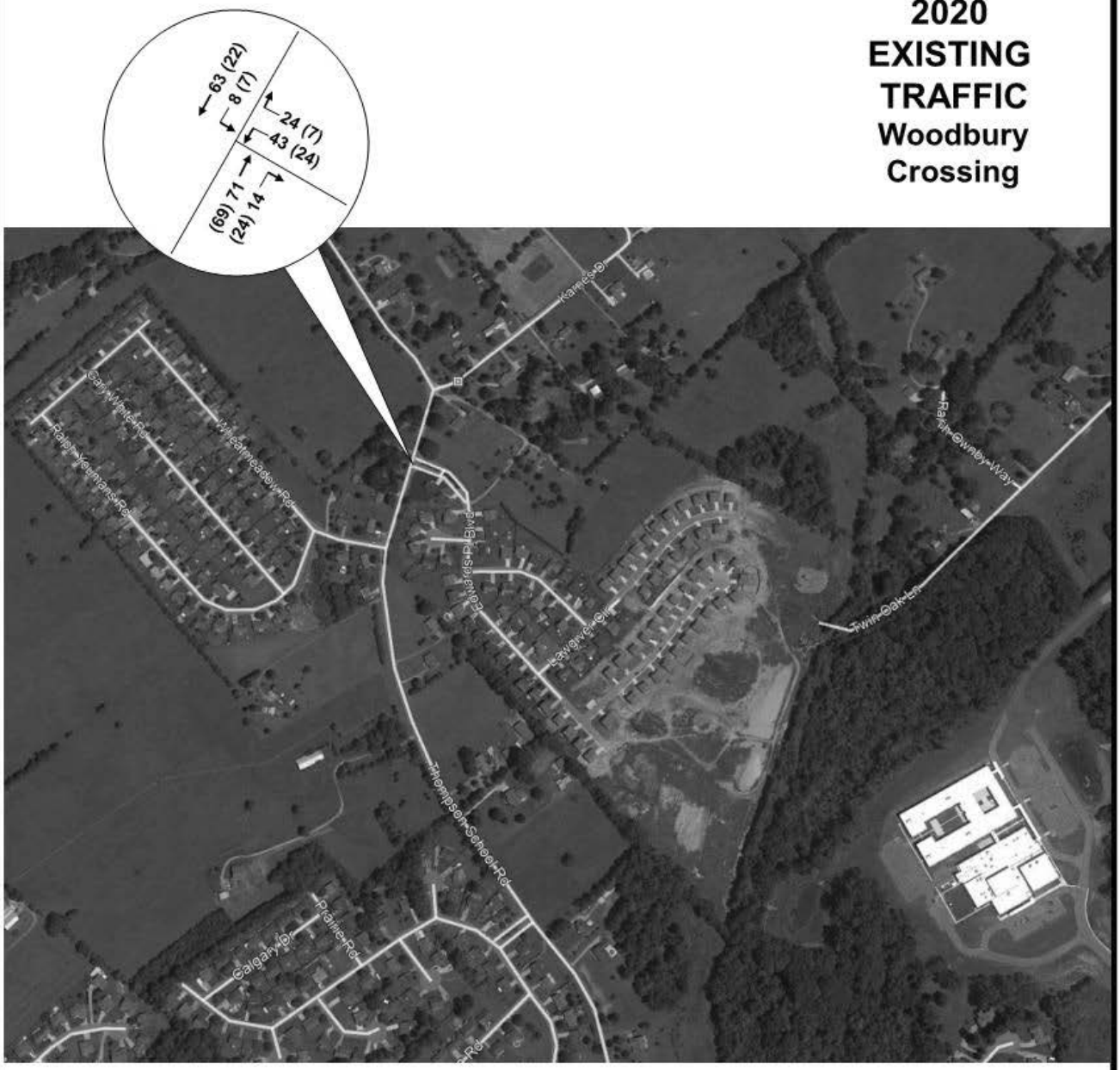
Level of service and capacity are the measurements of an intersection's ability to accommodate traffic volumes. Levels of service for intersections range from A to F. A LOS A is the best, and LOS F is failing. Unsignalized intersections levels of service have lower thresholds of delays than do signalized intersections. A LOS of F exceeds estimated delays of 50 seconds. For urban arterials, minor approaches may frequently experience levels of service E. A full level of service description for unsignalized intersections is presented in **Table 1**.

TABLE 1
LEVEL OF SERVICE (LOS) DESCRIPTION
FOR TWO-WAY STOP INTERSECTIONS

Level of Service	Average Control Delay per Vehicle (seconds)		
A		≤ 10.0	
B	> 10.0	and	≤ 15.0
C	> 15.0	and	≤ 25.0
D	> 25.0	and	≤ 35.0
E	> 35.0	and	≤ 50.0
F		> 50.0	

SOURCE: Highway Capacity Manual, TRB Special Report 209

2020 EXISTING TRAFFIC Woodbury Crossing



LEGEND

TURNING MOVEMENT

XXX AM PEAK

(XXX) PM PEAK

N

Figure 3

Analyses were conducted using the Synchro Software, developed by Trafficware. **Table 2** presents the levels of service for the existing traffic conditions; the levels of service for both the AM and PM peak hours were determined acceptable for the site access from Edwards Place Boulevard to Thompson School Road.

TABLE 2
2020 EXISITNG LEVELS OF SERVICE

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	V/C	DELAY	LOS
Thompson School Road	**STOP**	**AM**	**0.15 / 0.01**	**10.4 / 7.5**	**B / A**
Edwards Place Boulevard	**WB-LR/SB-L**	**PM**	**0.05 / 0.01**	**9.5 / 7.5**	**A / A**

Note: Average vehicle delay

TRIP GENERATION

Project site traffic is typically generated using the publication, **Trip Generation, 10th Edition**. This reference is published by the Institute of Transportation Engineers (ITE) and represents national data collected for many different land uses including industrial, residential, and commercial uses. **Trip Generation** is an essential tool in calculating the traffic, which may be generated by a proposed development.

Daily trips generated for the Woodbury Crossing 79 single-family units are approximately 739, and peak-hour trips are approximately 56 and 76 generated during the AM and PM peaks, respectively. In addition to the proposed 79 units, it was assumed for background traffic conditions, that the existing and proposed subdivision would be built-out with 175 single-family units.

Table 3 presents the trip generation of this proposed site. The resulting trip generation of the single-family buildout and the proposed 79-unit single-family Woodbury Crossing is 1,740 daily trips, 129 AM peak-hour trips, and 174 PM peak-hour trips. This trip generation reflects an insignificant change from the trip generation studied in the 2007 Edwards Place traffic impact assessment.

TABLE 3. TRIP GENERATION

LAND USE	L.U.C	UNITS	DAILY TRAFFIC	AM PEAK			PM PEAK		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
SINGLE FAMILY[1] (Exisitng+Proposed Subdivision)	210	175	1,740	32	97	129	110	64	174
SINGLE FAMILY[1] (Exisitng Subdivision)	210	96	1,001	18	55	73	62	36	98
SINGLE FAMILY (Proposed Subdivision)		***79***	***739***	***14***	***42***	***56***	***48***	***28***	***76***

Reference: (1) Trip Generation, 10 Edition

BACKGROUND TRAFFIC CONDITION

Background traffic is traffic that can be anticipated regardless of the proposed development. Traffic within the study area should continue to grow due to other developments as well as the continued growth within the surrounding area. This background traffic must be analyzed and evaluated for the purpose of establishing a baseline. The background traffic reflects the historical traffic volumes in the area of the proposed development.

Background Traffic Volumes

An average growth rate was determined using historical ADT traffic data from the Tennessee Department of Transportation count stations on Thompson School Road, E. Emory Road, and Tazewell Pike. Count stations in the site vicinity indicated an annual growth between 2.0- and 3.0-percent. The annual growth rate applied to the Thompson School Road traffic was, therefore, 3.0-percent. Assuming a buildout year of 2022 for Woodbury Crossing, the growth applied to the Thompson School Road traffic is 6-percent, a factor of 1.06 applied to the 2020 existing though traffic volumes. **Figure 4A** illustrates the projected traffic for intersection of Thompson School Road and Edwards Place with the growth rate applied.

In addition to the background growth applied, trips were assigned for the proposed Thompson Meadows subdivision located southwest of the proposed Woodbury Crossing site. The Thompson Meadows subdivision is 193 single family units. **Figure 4B** illustrates the tips assigned for this subdivision.

Turning movements to and from Edwards Place Boulevard at Thompson School Road also assumed buildout of the current single-family unit subdivision. **Figure 4C** illustrates the total trips generated for the current 96 single-family units of Edwards Place.

Figure 5 illustrates the 2022 background traffic for the Edwards Place Boulevard and Thompson School Road intersection.

BACKGROUND 2022 TRAFFIC GROWTH
Woodbury Crossing

NOTE: Thompson School Road traffic increased by 6% for 2022 background growth

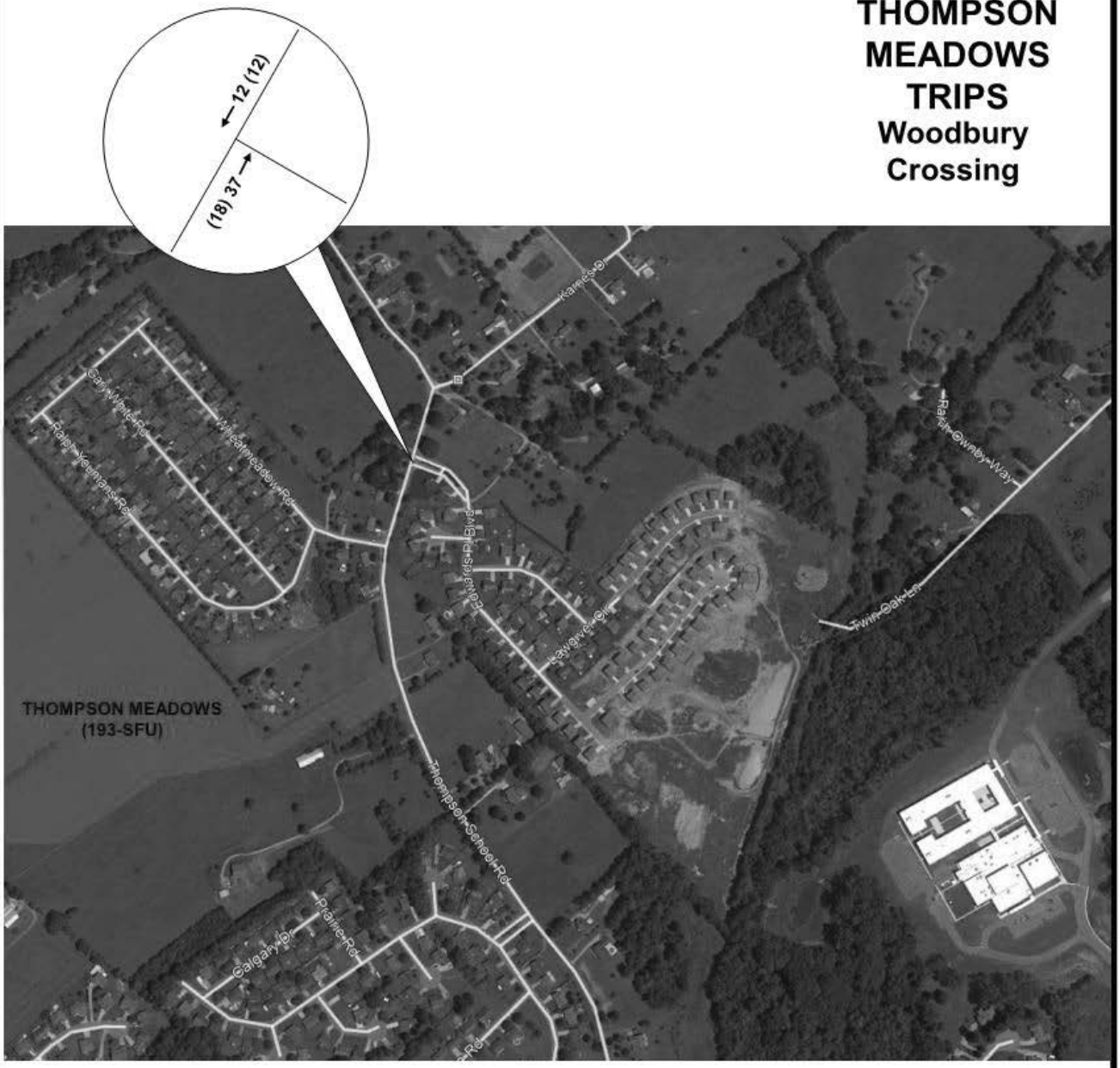
LEGEND

TURNING MOVEMENT
XXX AM PEAK
(XXX) PM PEAK

N

Figure 4A

THOMPSON MEADOWS TRIPS
Woodbury Crossing



LEGEND

TURNING MOVEMENT

XXX AM PEAK

(XXX) PM PEAK

N

Figure 4B

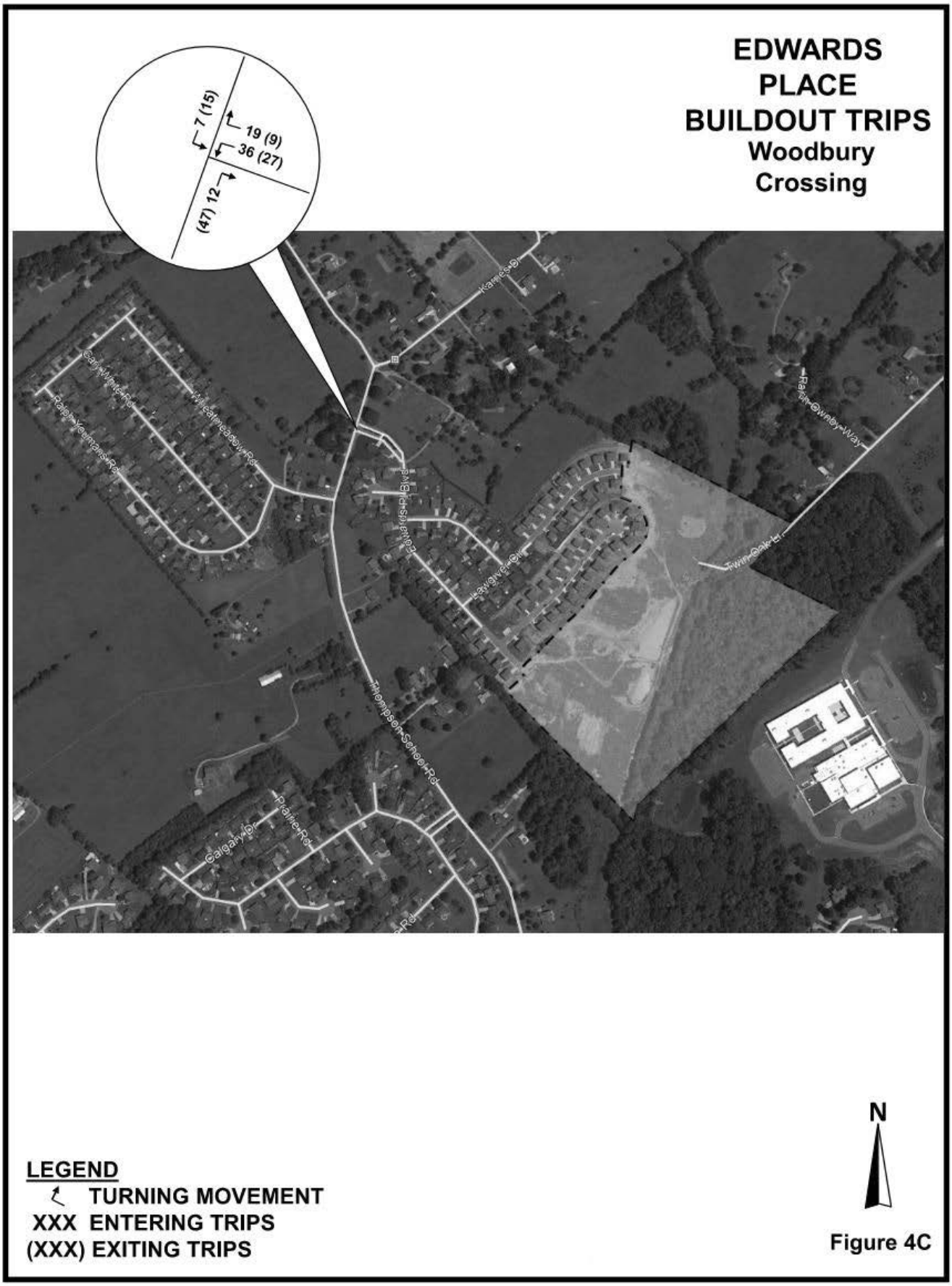
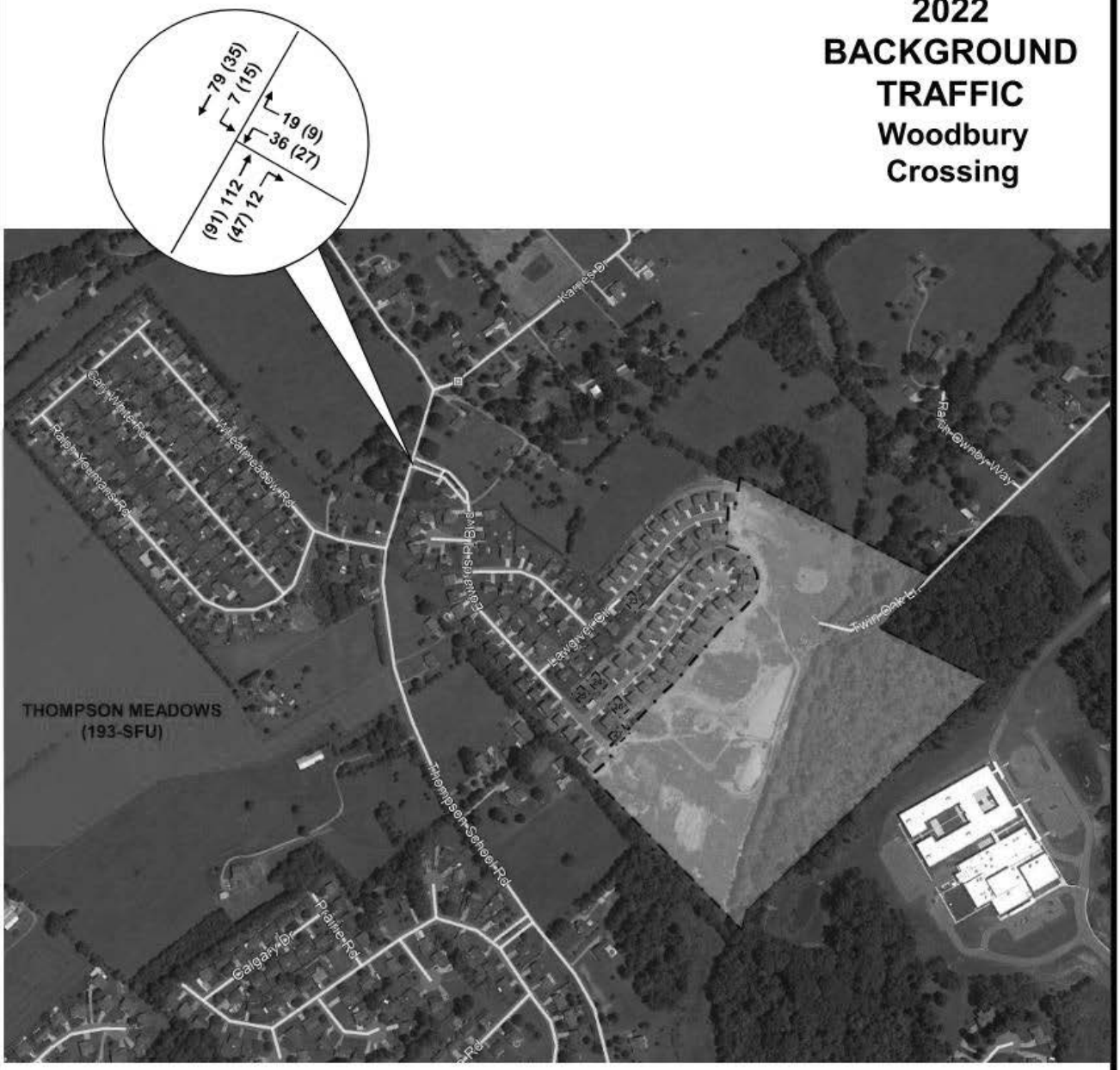

EDWARDS
PLACE
BUILDOUT TRIPS
Woodbury
Crossing
7 (15)
19 (9)
36 (27)
(47) 12
Karnes Dr
Carry Wind Rd
Ralph Yeomans Rd
Hillsalmeadow Rd
Edwards Place Blvd
Twin Oaks Ln
Ralph Owsley Way
Thompson School Rd
Prairie Rd
Calgary Dr
LEGEND
TURNING MOVEMENT
XXX ENTERING TRIPS
(XXX) EXITING TRIPS
N

Figure 4C

2022 BACKGROUND TRAFFIC
Woodbury Crossing



LEGEND

TURNING MOVEMENT
XXX AM PEAK
(XXX) PM PEAK

N

Figure 5

Background Capacity and Level of Service

Analysis was performed with the grown traffic volumes presented in Figure 5. The levels of service are found to be acceptable and not failing for the unsignalized study intersections. The Edwards Place Boulevard approach traffic is expected to experience a LOS B in both the AM and PM peak hours. **Table 4** presents the level of service findings of the analyses conducted.

TABLE 4
2022 BACKGROUND LEVELS OF SERVICE

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	V/C	DELAY	LOS
Thompson School Road	**STOP**	**AM**	**0.14 / 0.01**	**10.9 / 7.6**	**B / A**
Edwards Place Boulevard	**WB-LR/SB-L**	**PM**	**0.07 / 0.02**	**10.2 / 7.6**	**B / A**

Note: Average vehicle delay

PROJECT IMPACTS

Projected traffic conditions are developed by distributing the trips generated to the study access intersection of Edwards Place Boulevard at Thompson School Road and again conducting analyses for capacity and level of service.

Trip Distribution and Assignment

Using the turning-movement count from the current residents of the Edwards Place subdivision, trips were distributed to the Thompson School Road for the AM and PM peak hours. **Figures 6A and 6B** illustrate the traffic distributions for the AM and PM peak hours, respectively.

Project Traffic Volumes

By multiplying the trips generated by the distribution percentages, the project traffic volumes were determined. **Figure 7** illustrates the resulting site traffic volumes.

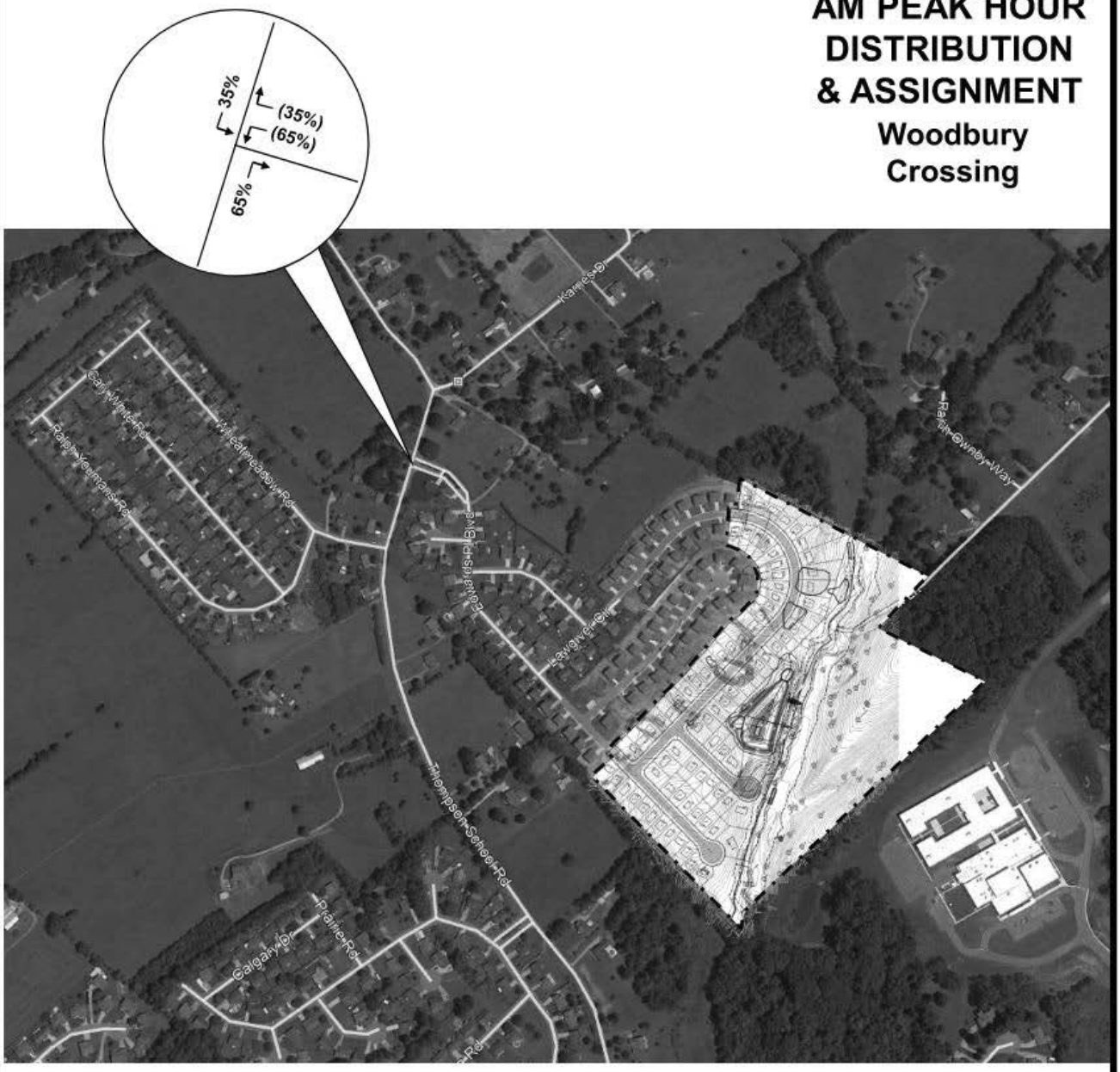
Total Projected Traffic Volumes

Background and project traffic volumes were added together to develop post-development traffic volumes for the year 2022. **Figure 8** illustrates this 2022 projected traffic with the buildout of 175 single-family units. Using these projections, mitigation measures including traffic control devices and intersection geometry can be evaluated.

Projected traffic for the intersection of Thompson School Road and Edwards Place Boulevard do not meet any thresholds for turn lanes. Though traffic on Thompson School Road is well below traffic volumes required to meet turn-lane warrants.

AM PEAK HOUR DISTRIBUTION & ASSIGNMENT

Woodbury Crossing



LEGEND

↱ TURNING MOVEMENT

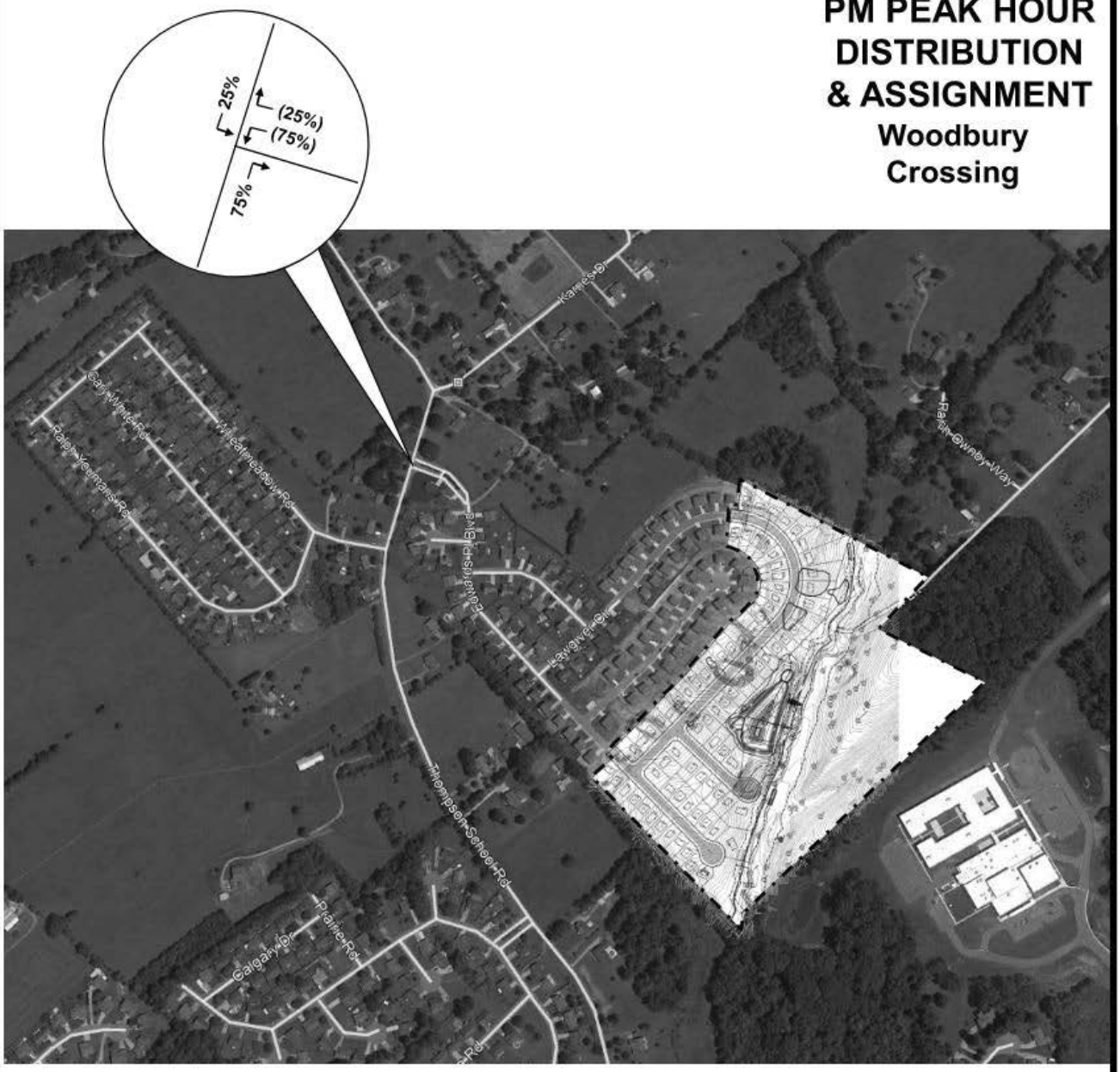
XXX ENTERING TRIPS

(XXX) EXITING TRIPS

N

Figure 6A

PM PEAK HOUR DISTRIBUTION & ASSIGNMENT
Woodbury Crossing



LEGEND

↱ TURNING MOVEMENT

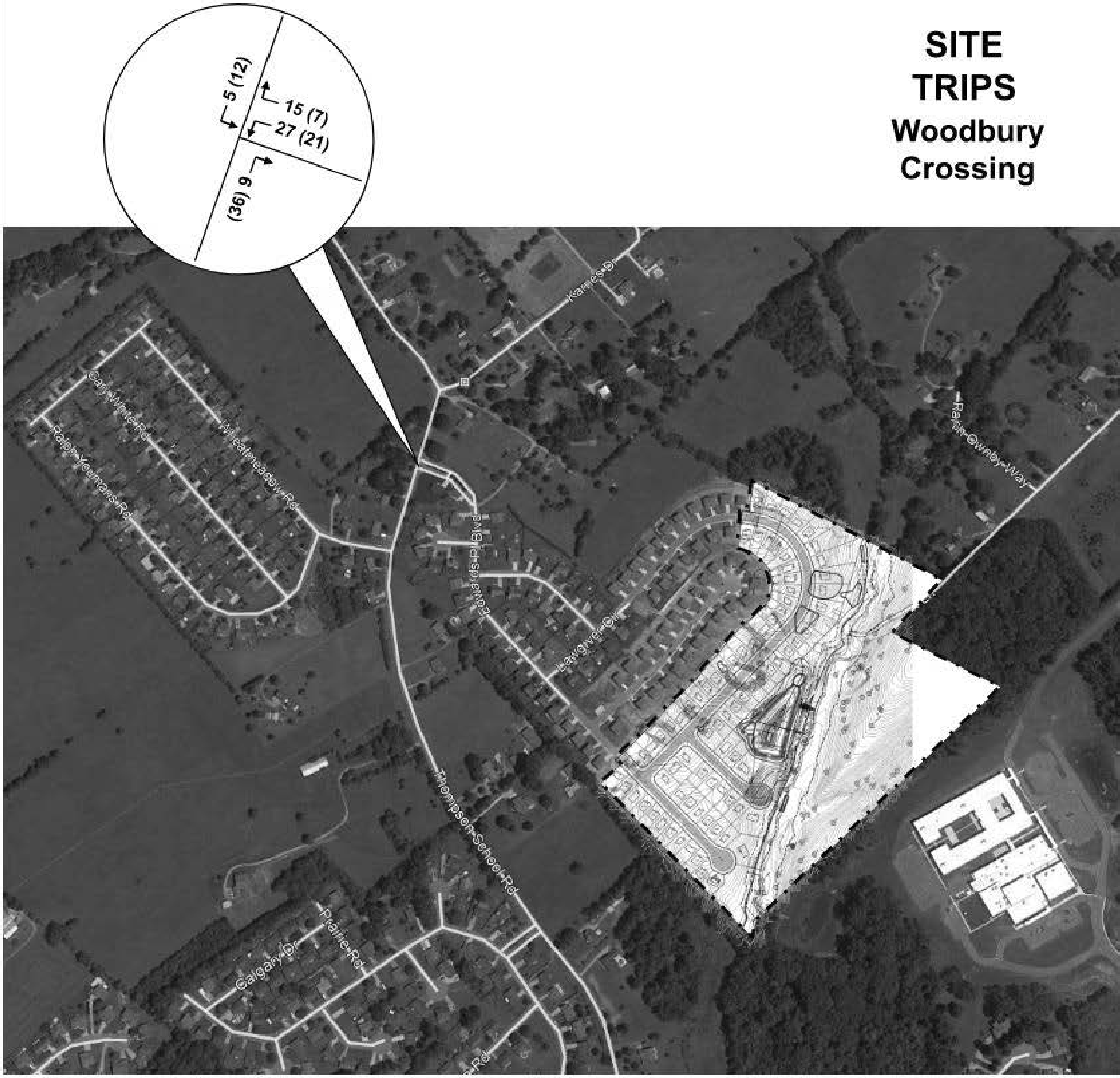
XXX ENTERING TRIPS

(XXX) EXITING TRIPS

N

Figure 6B

SITE TRIPS Woodbury Crossing

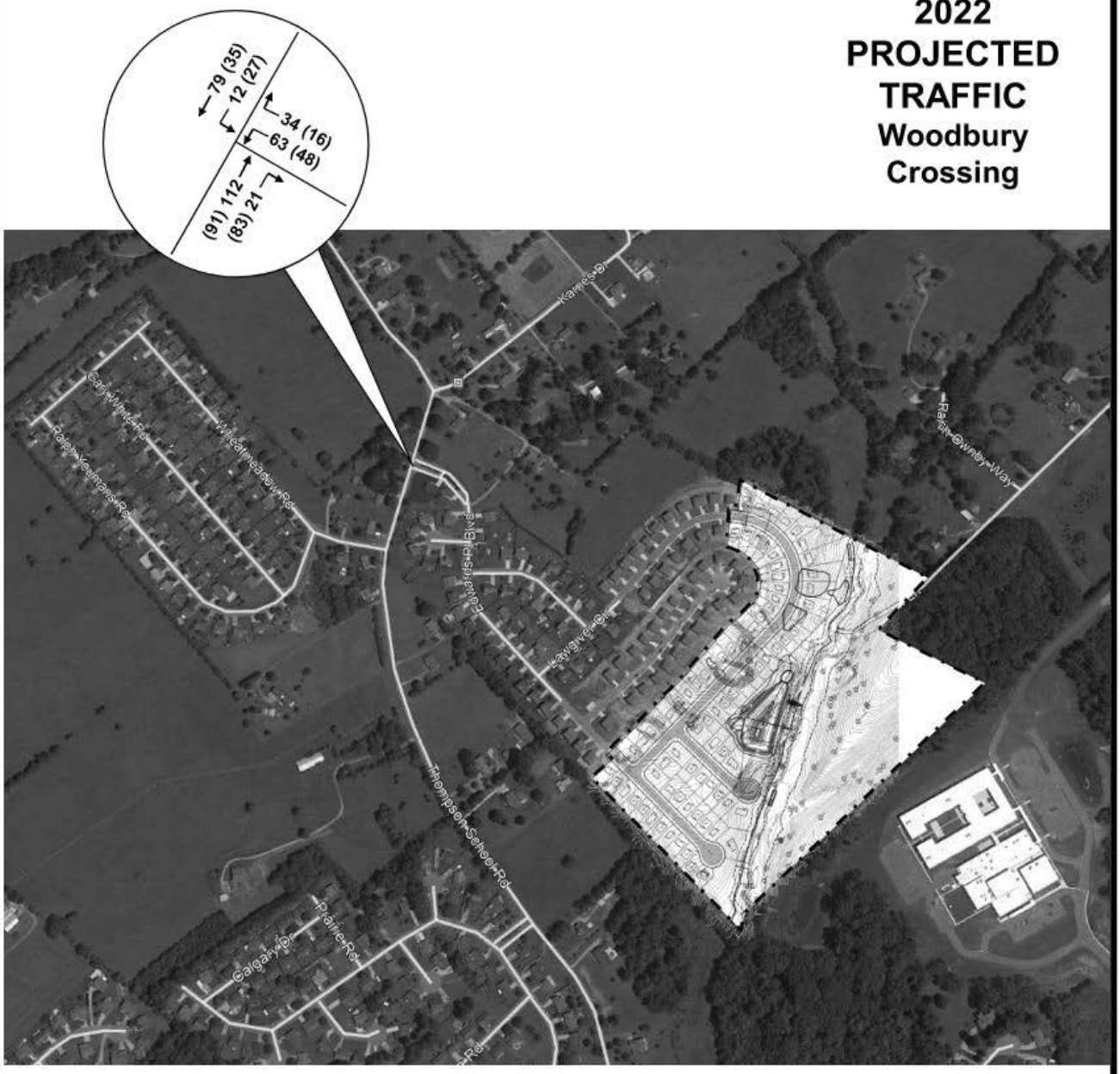


LEGEND
TURNING MOVEMENT
XXX ENTERING TRIPS
(XXX) EXITING TRIPS

N

Figure 7

2022 PROJECTED TRAFFIC
Woodbury Crossing



LEGEND

↰ TURNING MOVEMENT

XXX ENTERING TRIPS

(XXX) EXITING TRIPS

N

Figure 8

Projected Capacity and Level of Service

The development traffic was analyzed to assess the impact at the unsignalized intersection of Edwards Place Boulevard at Thompson School Road. The proposed site access is expected to operate at a LOS B during the peak hours. The resulting 2022 levels of service are presented in **Table 5** and illustrated in **Figure 9**.

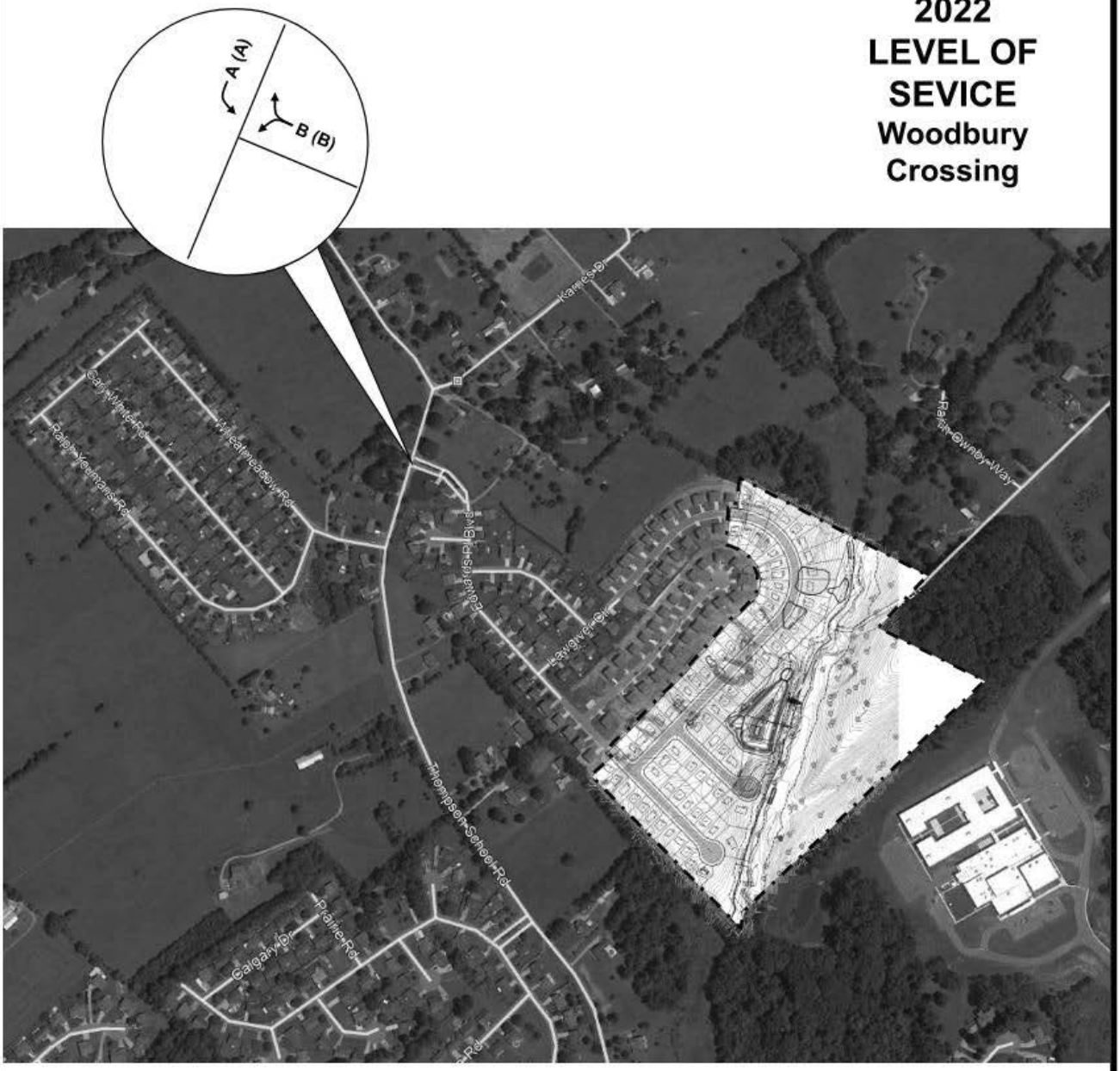
TABLE 5
2022 PROJECTED LEVELS OF SERVICE

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	V/C	DELAY	LOS
Thompson School Road	STOP	AM	0.25 / 0.01	11.9 / 7.7	B / A
Edwards Place Boulevard	WB-LR/SB-L	PM	0.14 / 0.04	11.2 / 7.8	B / A

Note: Average vehicle delay

From the projected traffic and the analyses conducted, the current traffic control and intersection geometry are acceptable providing very good levels of service for both AM and PM peak hours.

2022 LEVEL OF SEVICE Woodbury Crossing



LEGEND
XXX AM PEAK-HOUR LOS
(XXX) PM PEAK-HOUR LOS

N

Figure 9

CONCLUSION AND RECOMMENDATIONS

The study of the proposed 79-unit single-family residential development evaluated the projected traffic conditions. Background traffic was determined using a 3.0% annual growth rate applied to the Thompson School Road traffic until the year 2022 and turning movement to and from Edwards Place Boulevard assuming buildout of the Edwards Place single-family units. Using the identified turning movements for the projected traffic conditions, unsignalized capacity and level of service analyses were conducted using the **Highway Capacity Manual, 6th Edition**. Unsignalized levels of service were found to be acceptable with very good levels of service for the existing traffic and background conditions with and without the proposed Woodbury Crossing development. The proposed development has a negligible impact on the access intersection of Edwards Place Boulevard at Thompson School Road. No improvements were found necessary for acceptable access for the residential development. The Woodbury Crossing connections with Edwards Place Boulevard and Lawgiver Circle must be provided in accordance with all applicable subdivision regulations and standards adopted by Knoxville-Knox County Planning and the Knox County Department of Public Works.

APPENDIX

Trip Generation

HCS Unsignalized Analyses

Turn Lane Analyses

Traffic Counts

Historical ADT Counts

TRIP GENERATION

03-Oct-20

LAND USE	L.U.C	SIZE	AVERAGE DAILY TRAFFIC	AM PEAK ENTER	AM PEAK EXIT	AM PEAK TOTAL	PM PEAK ENTER	PM PEAK EXIT	PM PEAK TOTAL
0	0	0	0	0	0	0	0	0	0
SINGLE FAMILY	210	175	1,652	32	97	130	109	64	173
SINGLE FAMILY	210	96	906	18	53	71	60	35	95
0	0	0	0	0	0	0	0	0	0
SINGLE FAMILY	210	193	1,822	36	107	143	120	71	191
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
			4,380	86	258	343	289	170	459

LAND USE	L.U.C	SIZE	REGRESSION DAILY TRAFFIC	AM PEAK ENTER	AM PEAK EXIT	AM PEAK TOTAL	PM PEAK ENTER	PM PEAK EXIT	PM PEAK TOTAL
0	0	0	0	0	0	0	0	0	0
SINGLE FAMILY	210	175	1,740	32	97	129	110	64	174
SINGLE FAMILY	210	96	1,001	18	55	73	62	36	98
0	0	0	0	0	0	0	0	0	0
SINGLE FAMILY	210	193	1,904	35	106	142	120	71	191
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
			4,645	86	258	344	291	171	463

LAND USE	L.U.C	SIZE	SATURDAY DAILY TRAFFIC	SATURDAY PEAK ENTER	SATURDAY PEAK EXIT	SATURDAY PEAK TOTAL	SUNDAY DAILY TRAFFIC	SUNDAY PEAK ENTER	SUNDAY PEAK EXIT	SUNDAY PEAK TOTAL
0	0	0	0	0	0	0	0	0	0	0
SINGLE FAMILY	210	175	1,661	89	76	165	1,487	79	70	149
SINGLE FAMILY	210	96	944	53	45	99	786	46	41	87
0	0	0	0	0	0	0	0	0	0	0
SINGLE FAMILY	210	193	1,821	97	83	180	1,647	87	77	163
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
			4,425	240	204	444	3,920	212	188	400

TRIP GENERATION

SINGLE-FAMILY RESIDENTIAL (175 UNITS)-ITE Trip Generation, 10th Ed

DAILY TRIPS

Ln (T)=0.92Ln(X)+2.71

Ln (T)=0.92Ln(175)+2.71

T=1,652

AM PEAK HOUR OF ADJACENT STREET

T=0.71(X)+4.8

T=0.71(175)+4.8

T=130

PM PEAK HOUR OF ADJACENT STREET

Ln(T)=0.96Ln(X)+0.20

Ln(T)=0.96Ln(175)+0.20

T=173

SINGLE-FAMILY RESIDENTIAL (96 UNITS)-ITE Trip Generation, 10th Ed

DAILY TRIPS

Ln (T)=0.92Ln(X)+2.71

Ln (T)=0.92Ln(96)+2.71

T=906

AM PEAK HOUR OF ADJACENT STREET

T=0.71(X)+4.8

T=0.71(96)+4.8

T=71

PM PEAK HOUR OF ADJACENT STREET

Ln(T)=0.96Ln(X)+0.20

Ln(T)=0.96Ln(96)+0.20

T=95

Trip Generation

Project: Thompson Meadows
Date Conducted: 3/16/2020

Single-Family Detached Housing (LUC 210)
193 Single Family Lots

Average Daily Traffic
$Ln(T) = 0.92Ln(X) + 2.71$
$Ln(T) = 0.92Ln(193) + 2.71$
$T = 1904$

Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.
$T = 0.71(X) + 4.80$
$T = 0.71(193) + 4.80$
$T = 142$

Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.
$Ln(T) = 0.96Ln(X) + 0.20$
$Ln(T) = 0.96Ln(193) + 0.20$
$T = 191$

		Percent		Number	
Time Period	Total Trips	Enter	Exit	Enter	Exit
Weekday (24 hours)	1904	50%	50%	952	952
AM Peak Hour	142	25%	75%	36	107
PM Peak Hour	191	63%	37%	120	71

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	43	24	71	14	8	63
Future Vol, veh/h	43	24	71	14	8	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	55	55	62	62	66	66
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	78	44	115	23	12	95

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	246	127	0	0	138	0
Stage 1	127	-	-	-	-	-
Stage 2	119	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	742	923	-	-	1446	-
Stage 1	899	-	-	-	-	-
Stage 2	906	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	735	923	-	-	1446	-
Mov Cap-2 Maneuver	735	-	-	-	-	-
Stage 1	891	-	-	-	-	-
Stage 2	906	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	793	1446	-
HCM Lane V/C Ratio	-	-	0.154	0.008	-
HCM Control Delay (s)	-	-	10.4	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	7	69	24	7	22
Future Vol, veh/h	24	7	69	24	7	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	70	83	83	48	48
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	10	83	29	15	46

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	174	98	0	0	112	0
Stage 1	98	-	-	-	-	-
Stage 2	76	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	816	958	-	-	1478	-
Stage 1	926	-	-	-	-	-
Stage 2	947	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	808	958	-	-	1478	-
Mov Cap-2 Maneuver	808	-	-	-	-	-
Stage 1	917	-	-	-	-	-
Stage 2	947	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	1.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	838	1478	-
HCM Lane V/C Ratio	-	-	0.053	0.01	-
HCM Control Delay (s)	-	-	9.5	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	2.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	19	112	12	7	79
Future Vol, veh/h	36	19	112	12	7	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	55	55	62	62	66	66
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	35	181	19	11	120

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	333	191	0	0	200	0
Stage 1	191	-	-	-	-	-
Stage 2	142	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	662	851	-	-	1372	-
Stage 1	841	-	-	-	-	-
Stage 2	885	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	656	851	-	-	1372	-
Mov Cap-2 Maneuver	656	-	-	-	-	-
Stage 1	833	-	-	-	-	-
Stage 2	885	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	712	1372	-
HCM Lane V/C Ratio	-	-	0.14	0.008	-
HCM Control Delay (s)	-	-	10.9	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	9	91	47	15	35
Future Vol, veh/h	27	9	91	47	15	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	70	83	83	48	48
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	13	110	57	31	73

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	274	139	0	0	167	0
Stage 1	139	-	-	-	-	-
Stage 2	135	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	716	909	-	-	1411	-
Stage 1	888	-	-	-	-	-
Stage 2	891	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	700	909	-	-	1411	-
Mov Cap-2 Maneuver	700	-	-	-	-	-
Stage 1	868	-	-	-	-	-
Stage 2	891	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	2.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	743	1411	-
HCM Lane V/C Ratio	-	-	0.069	0.022	-
HCM Control Delay (s)	-	-	10.2	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	4.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	63	34	112	21	12	79
Future Vol, veh/h	63	34	112	21	12	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	55	55	62	62	66	66
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	115	62	181	34	18	120

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	354	198	0	0	215	0
Stage 1	198	-	-	-	-	-
Stage 2	156	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	644	843	-	-	1355	-
Stage 1	835	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	635	843	-	-	1355	-
Mov Cap-2 Maneuver	635	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	872	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	695	1355	-
HCM Lane V/C Ratio	-	-	0.254	0.013	-
HCM Control Delay (s)	-	-	11.9	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1	0	-

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	48	16	91	83	27	35
Future Vol, veh/h	48	16	91	83	27	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	70	83	83	48	48
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	69	23	110	100	56	73

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	345	160	0	0	210	0
Stage 1	160	-	-	-	-	-
Stage 2	185	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	652	885	-	-	1361	-
Stage 1	869	-	-	-	-	-
Stage 2	847	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	624	885	-	-	1361	-
Mov Cap-2 Maneuver	624	-	-	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	847	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	3.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	674	1361	-
HCM Lane V/C Ratio	-	-	0.136	0.041	-
HCM Control Delay (s)	-	-	11.2	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

TABLE 4A

LEFT-TURN LANE VOLUME THRESHOLDS FOR TWO-LANE ROADWAYS WITH A PREVAILING SPEED OF 35 MPH OR LESS

(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	300	235	185	145	120	100
150 - 199	245	200	160	130	110	90
200 - 249	205	170	140	115	100	80
250 - 299	175	150	125	105	90	70
300 - 349	155	135	110	95	80	65
350 - 399	135	120	100	85	70	60
400 - 449	120	105	90	75	65	55
450 - 499	105	90	80	70	60	50
500 - 549	95	80	70	65	55	50
550 - 599	85	70	65	60	50	45
600 - 649	75	65	60	55	45	40
650 - 699	70	60	55	50	40	35
700 - 749	65	55	50	45	35	30
750 or More	60	50	45	40	35	30

OPPOSING VOLUME	THROUGH VOLUME PLUS RIGHT-TURN VOLUME *					
	350 - 399	400 - 449	450 - 499	500 - 549	550 - 599	= / > 600
100 - 149	100	80	70	60	55	50
150 - 199	90	75	65	55	50	45
200 - 249	80	72	460	55	50	45
250 - 299	70	65	55	50	45	40
300 - 349	65	60	50	50	45	40
350 - 399	60	55	50	45	40	40
400 - 449	55	50	45	45	40	35
450 - 499	50	45	45	40	35	35
500 - 549	50	45	40	40	35	35
550 - 599	45	40	40	35	35	35
600 - 649	40	35	35	35	35	30
650 - 699	35	35	35	30	30	30
700 - 749	30	30	30	30	30	30
750 or More	30	30	30	30	30	30

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

TABLE 4B
RIGHT-TURN LANE VOLUME THRESHOLDS
FOR TWO-LANE ROADWAYS WITH A PREVAILING SPEED OF 35 MPH OR LESS

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
300 - 349					Yes	Yes
350 - 399				Yes	Yes	Yes
400 - 449			Yes	Yes	Yes	Yes
450 - 499			Yes	Yes	Yes	Yes
500 - 549		Yes	Yes	Yes	Yes	Yes
550 - 599		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						Yes
50 - 99					Yes	Yes
100 - 149				Yes	Yes	Yes
150 - 199			Yes	Yes	Yes	Yes
200 - 249		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.

Prepared by National Data & Surveying Services

Thompson School Rd & Edwards Pl Blvd

Peak Hour Turning Movement Count

ID: 20-10003-001
City: Corryton

Day: Thursday
Date: 02/20/2020

PEAK HOURS

AM	07:00 AM - 08:00 AM
NOON	NONE
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

SOUTHBOUND — Thompson School Rd

AM	0	63	8	0	95	AM
NOON	0	0	0	0	0	NOON
PM	0	22	7	0	76	PM

EASTBOUND — Edwards Pl Blvd

AM	NOON	PM	
0	0	0	⇦
0	0	0	↶ 0
0	0	0	↱ 0
0	0	0	→ 0
0	0	0	↷ 0
AM	NOON	PM	

WESTBOUND — Edwards Pl Blvd

PM	NOON	AM	
7	0	24	0 ↷
0	0	0	1 ←
24	0	43	0 ↰
0	0	1	0 ↶
31	0	23	⇨
PM	NOON	AM	

CONTROL

No Control

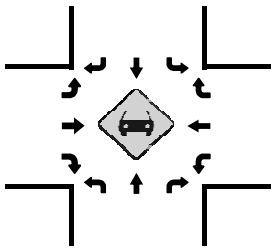
TEV	224	0	153
	AM	NOON	PM
PHF	0.75		0.83

NORTHBOUND — Thompson School Rd

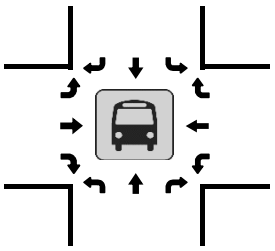
PM	46	0	0	69	24	PM
NOON	0	0	0	0	0	NOON
AM	106	0	0	71	14	AM

0 1 0 0 — ↶ ↰ ↑ ↱ 0 0 1 0

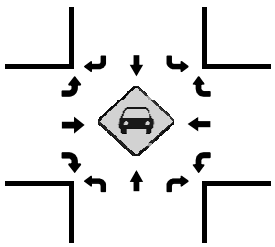
Total Vehicles (AM)



Total Vehicles (AM)



Total Vehicles (NOON)



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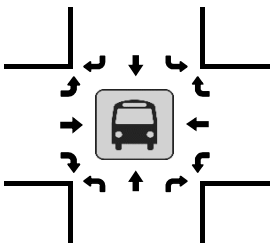
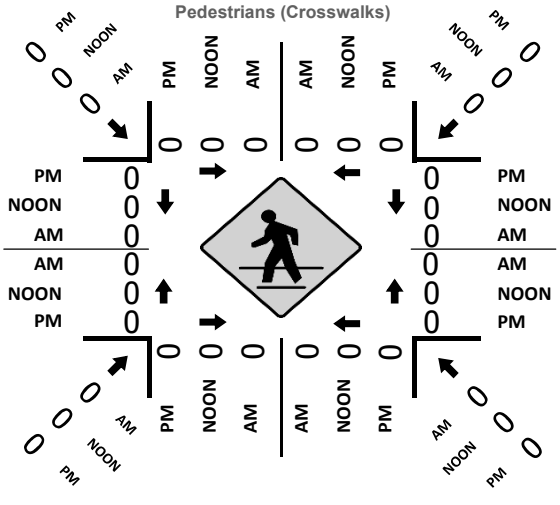
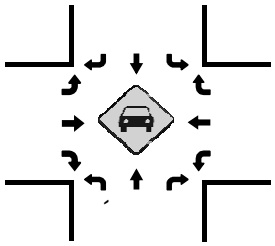


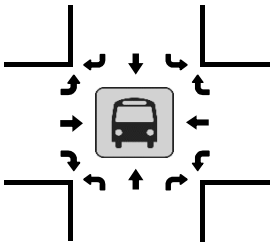
Pedestrians (Crosswalks)



Total Vehicles (PM)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

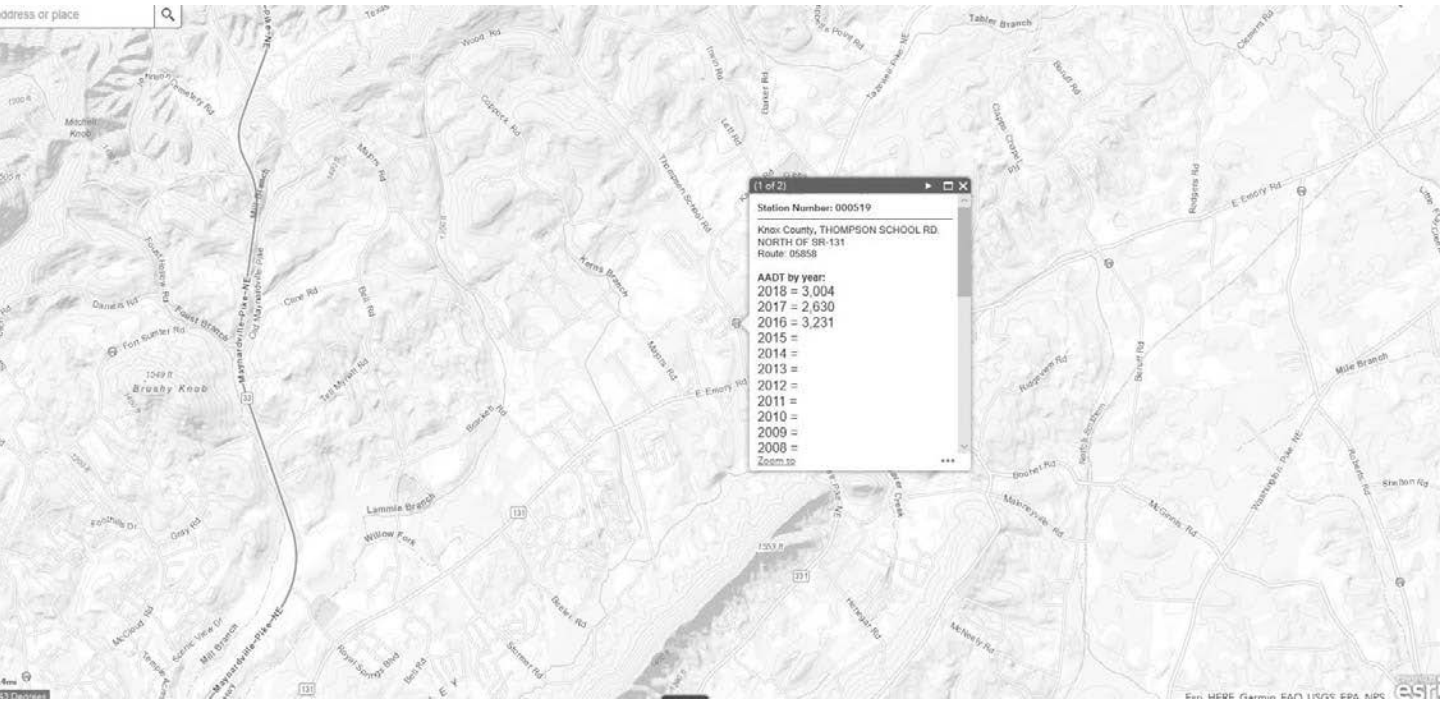
Location: Thompson School Rd & Edwards Blvd
City: Corryton
Control: No Control

Project ID: 20-10003-001
Date: 2/20/2020

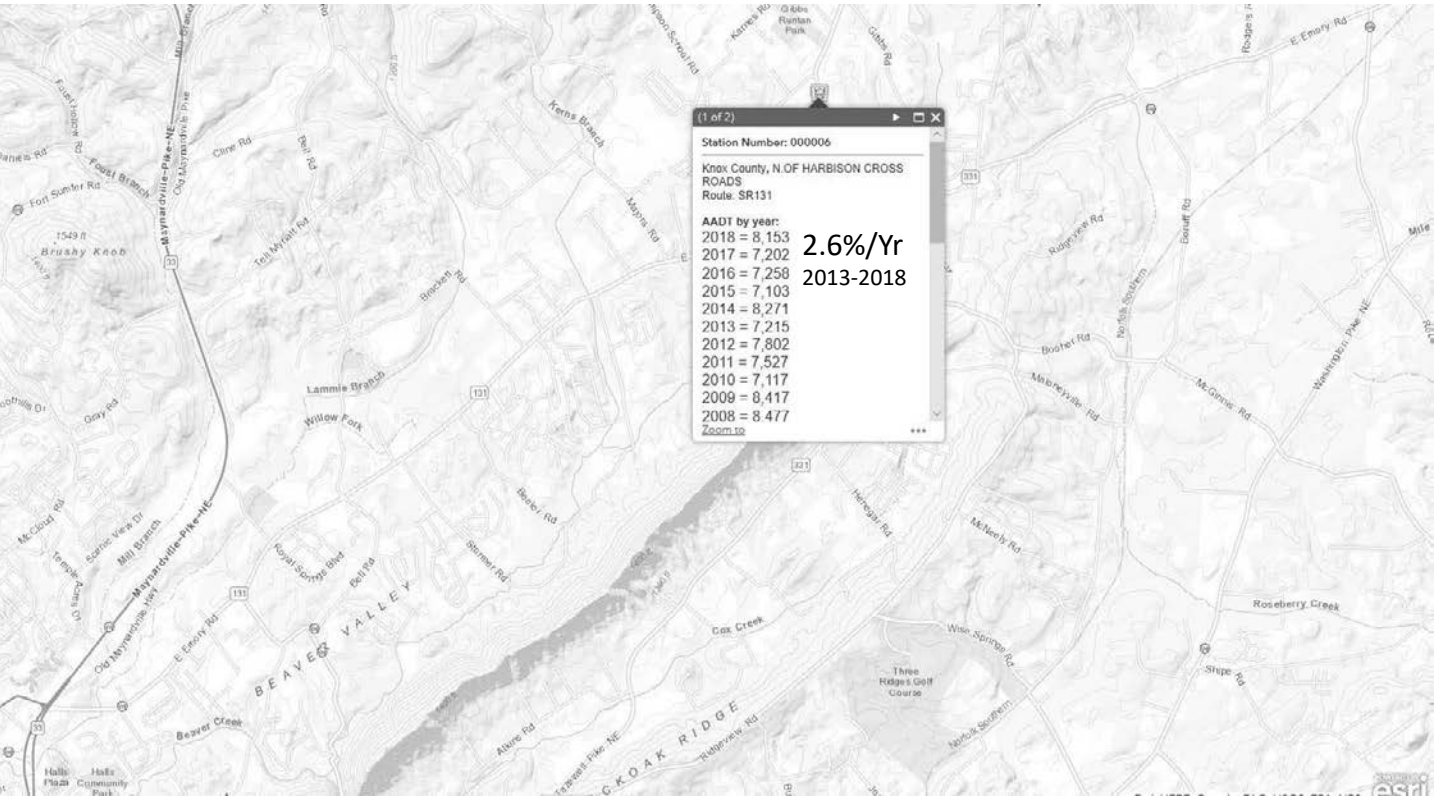
Total

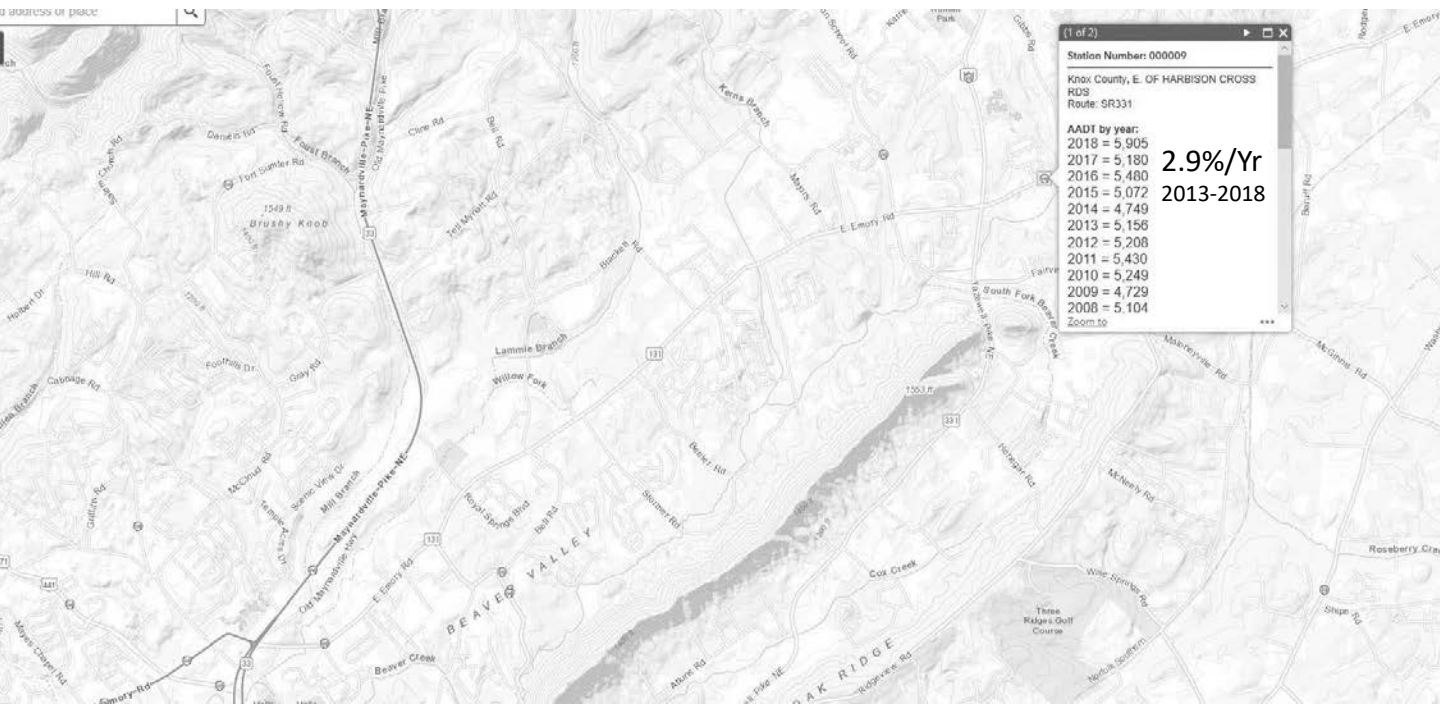
NS/EW Streets:	Thompson School Rd				Thompson School Rd				Edwards Pl Blvd				Edwards Pl Blvd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	9	1	0	0	16	0	0	0	0	0	0	11	0	4	1	42
7:15 AM	0	31	3	0	1	9	0	0	0	0	0	0	18	0	13	0	75
7:30 AM	0	28	5	0	4	14	0	0	0	0	0	0	7	0	6	0	64
7:45 AM	0	3	5	0	3	24	0	0	0	0	0	0	7	0	1	0	43
8:00 AM	0	10	3	0	1	13	0	0	0	0	0	0	7	0	4	0	38
8:15 AM	0	4	4	0	2	8	0	0	0	0	0	0	10	0	2	0	30
8:30 AM	0	5	7	0	1	14	0	0	0	0	0	0	2	0	2	0	31
8:45 AM	0	2	1	0	0	7	0	0	0	0	0	0	2	0	0	0	12
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	92	29	0	12	105	0	0	0	0	0	0	64	0	32	1	335
APPROACH %'s :	0.00%	76.03%	23.97%	0.00%	10.26%	89.74%	0.00%	0.00%					65.98%	0.00%	32.99%	1.03%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	71	14	0	8	63	0	0	0	0	0	0	43	0	24	1	224
PEAK HR FACTOR :	0.000	0.573	0.700	0.000	0.500	0.656	0.000	0.000	0.000	0.000	0.000	0.000	0.597	0.000	0.462	0.250	0.747
		0.625				0.657								0.548			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	14	6	0	0	5	0	0	0	0	0	0	4	0	0	0	29
4:15 PM	0	7	9	0	0	4	0	0	0	0	0	0	1	0	1	0	22
4:30 PM	0	14	8	0	0	5	0	0	0	0	0	0	5	0	1	0	33
4:45 PM	0	15	7	0	5	10	0	0	0	0	0	0	7	0	2	0	46
5:00 PM	0	13	4	0	1	4	0	0	0	0	0	0	5	0	1	0	28
5:15 PM	0	19	9	0	0	4	0	0	0	0	0	0	7	0	4	0	43
5:30 PM	0	22	4	0	1	4	0	0	0	0	0	0	5	0	0	0	36
5:45 PM	0	12	12	0	1	6	0	0	0	0	0	0	4	0	0	0	35
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	116	59	0	8	42	0	0	0	0	0	0	38	0	9	0	272
APPROACH %'s :	0.00%	66.29%	33.71%	0.00%	16.00%	84.00%	0.00%	0.00%					80.85%	0.00%	19.15%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	69	24	0	7	22	0	0	0	0	0	0	24	0	7	0	153
PEAK HR FACTOR :	0.000	0.784	0.667	0.000	0.350	0.550	0.000	0.000	0.000	0.000	0.000	0.000	0.857	0.000	0.438	0.000	0.832
		0.830				0.483								0.705			


(1 of 2)
Station Number: 000519
Knox County, THOMPSON SCHOOL RD. NORTH OF SR-131
Route: 05858
AADT by year:
2018 = 3,004
2017 = 2,630
2016 = 3,231
2015 =
2014 =
2013 =
2012 =
2011 =
2010 =
2009 =
2008 =
Zoom to


(1 of 2)
Station Number: 000019
Knox County, NE OF HALLS CROSS RDS
Route: SR131
AADT by year:
2018 = 11,976
2017 = 12,222
2016 = 12,299
2015 = 12,727
2014 = 10,363
2013 = 10,806
2012 = 10,403
2011 = 11,406
2010 = 10,728
2009 = 11,112
2008 = 11,236
Zoom to
2.2%/Yr
2013-2018


(1 of 2)
Station Number: 000006
Knox County, N.OF HARBISON CROSS ROADS
Route: SR131
AADT by year:
2018 = 8,153
2017 = 7,202
2016 = 7,258
2015 = 7,103
2014 = 8,271
2013 = 7,215
2012 = 7,802
2011 = 7,527
2010 = 7,117
2009 = 8,417
2008 = 8,477
Zoom to
2.6%/Yr
2013-2018


(1 of 2)
Station Number: 000009
Knox County, E. OF HARBISON CROSS RDS
Route: SR331
AADT by year:
2018 = 5,905
2017 = 5,180
2016 = 5,480
2015 = 5,072
2014 = 4,749
2013 = 5,156
2012 = 5,208
2011 = 5,430
2010 = 5,249
2009 = 4,729
2008 = 5,104
Zoom to
2.9%/Yr
2013-2018

CDM Smith