

Lovell Road Villas Development Knox County, Tennessee

TRAFFIC IMPACT STUDY



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May 2008

**LOVELL ROAD VILLAS
DEVELOPMENT
KNOX COUNTY, TENNESSEE
TRAFFIC IMPACT STUDY**

Prepared for

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May 2008

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Project No. 102692

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INTRODUCTION

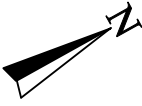
Wilbur Smith Associates (WSA) is pleased to submit this report to address any traffic impact and access of a residential development located on Lovell Road in west Knox County. The basis for this study required the collection of traffic data, generation of anticipated traffic volumes for the proposed site and development of projected traffic volumes for normal growth and from the potential site. Analyses of the resulting traffic projections were conducted to determine the capacity and levels of service for the site access to Lovell Road (SR 131). This study will evaluate the development's impact and determine if any mitigation measures are necessary to minimize the traffic impact including improved roadway geometrics and traffic control devices.

Project Description

The proposed project is an 80 unit villa style residential development on approximately 16.25 acres. The building footprints vary between 2, 4, 7 and 8 unit configurations. The site access is to Lovell Road from a proposed residential street. Access to the residential units is proposed to be via private drives from the proposed Road "A". Figure 1 shows the proposed site plan.

Site Location

The location of the proposed residential development is the southeast side of Lovell Road, north of Hickey Road, and south of Middlebrook Pike in west Knox County, Tennessee. Figure 2 illustrates the site location relative to local and regional access.



SITE PLAN

Lovell Road Villas Development Knox County, Tennessee

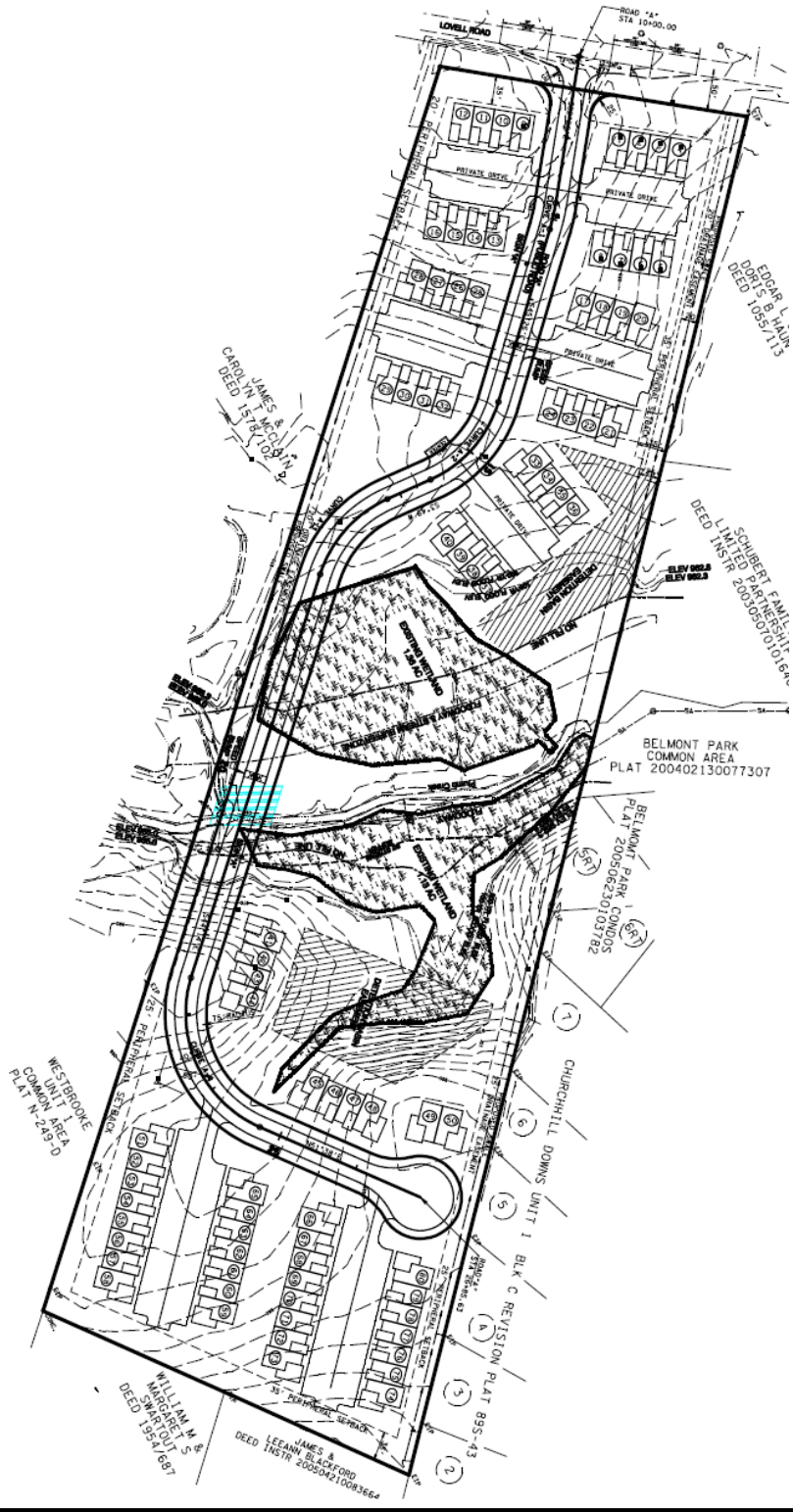


Figure 1



VICINITY MAP

Lovell Road Villas Development Knox County, Tennessee

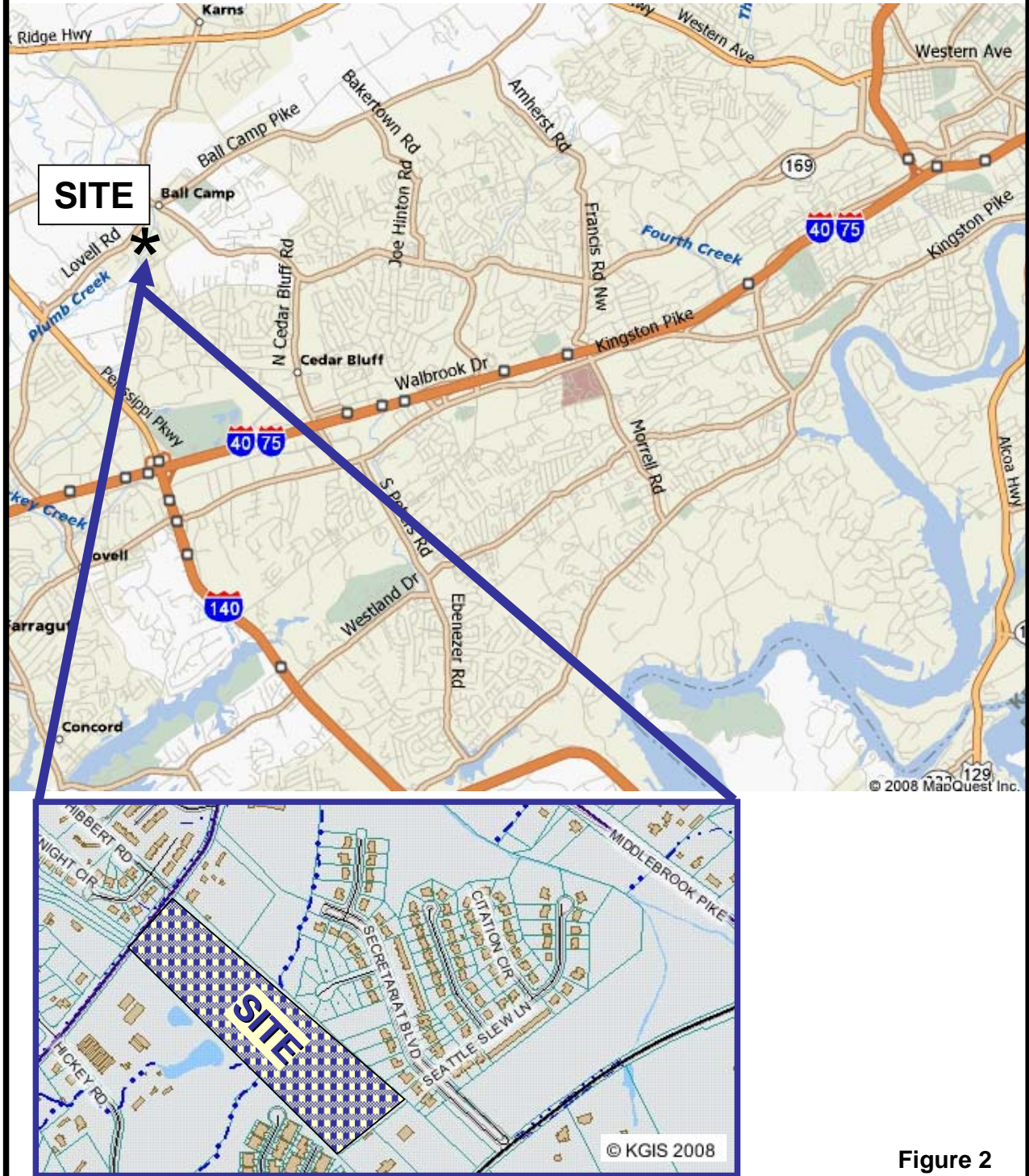


Figure 2

LOCAL AND REGIONAL ACCESS

Local Access

The proposed local access is to Lovell Road. The adjacent street facility is approximately 23-feet in width and extends between Middlebrook Pike (SR 169) and Kingston Pike (U.S. 70). Lovell Road is a minor arterial with an estimated 2007 average daily traffic (ADT) of 10,910. To the north of Middlebrook Pike, Lovell Road aligns with Ball Camp Pike providing connection to Oak Ridge Highway (SR 62).

Regional Access

Regional access to this site is from Pellissippi Parkway (SR 162) accessed to the southwest of the site or northwest of the site. Pellissippi Parkway extends northwest into Anderson County and south to Interstate 40/75 and Interstate 140. The 2007 ADT of Pellissippi Parkway is approximately 52,080 vehicles.

Interstate 40/75 extends west to Watt Road (Exit 369) and I-40 continues west to Nashville and I-75 continues south to Chattanooga. Interstate 40/75 extends east to the Knoxville CBD. Interstate 140 with a 2007 ADT of 51,370 extends south from I-40/75 to Alcoa. Interstate 40, west of Pellissippi Parkway, has a 2007 ADT of 112,210. The approximate 2007 ADT for I-40/75 east of Pellissippi Parkway is 142,510.

EXISTING TRAFFIC CONDITIONS

Existing Traffic Control and Speed

Lovell Road has a posted speed limit of 35mph. Street approaches to Lovell Road in the project vicinity are STOP controlled. The horizontal curve to the northeast of the site has an advisory speed limit of 25mph on Lovell Road.

Existing Traffic Volumes

WSA conducted a mechanical traffic count for Lovell Road adjacent to the site in May 2008 while Knox County schools were in session. The AM and PM peak hours are found between 7:15 to 8:15a.m. and 4:15 to 5:15p.m. Figure 3 illustrates the AM and PM peak-hour traffic volumes on Lovell Road in the vicinity of the proposed site access.



2008 TRAFFIC

Lovell Road Villas Development Knox County, Tennessee



LEGEND
XXX AM PEAK
(XXX) PM PEAK

Figure 3

BACKGROUND TRAFFIC CONDITIONS

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 development as well as the continued growth through the study area. This background traffic is projected for the purpose of establishing a baseline.

Background Traffic Volumes

Historical traffic data is reviewed to determine traffic growth trends in the study area. Using the TDOT count station on Lovell Road (SR 131), the annual growth rate was determined to be 2.49-percent over the past 23 years. For the purpose of this study, background traffic volumes were developed assuming an annual growth rate of 2.5-percent. Background traffic is projected for the year 2015 resulting in a 17.5-percent growth in the adjacent street traffic volume. Build-out of the site is planned in the next few years. Actual build-out, however, will depend largely on the housing market.

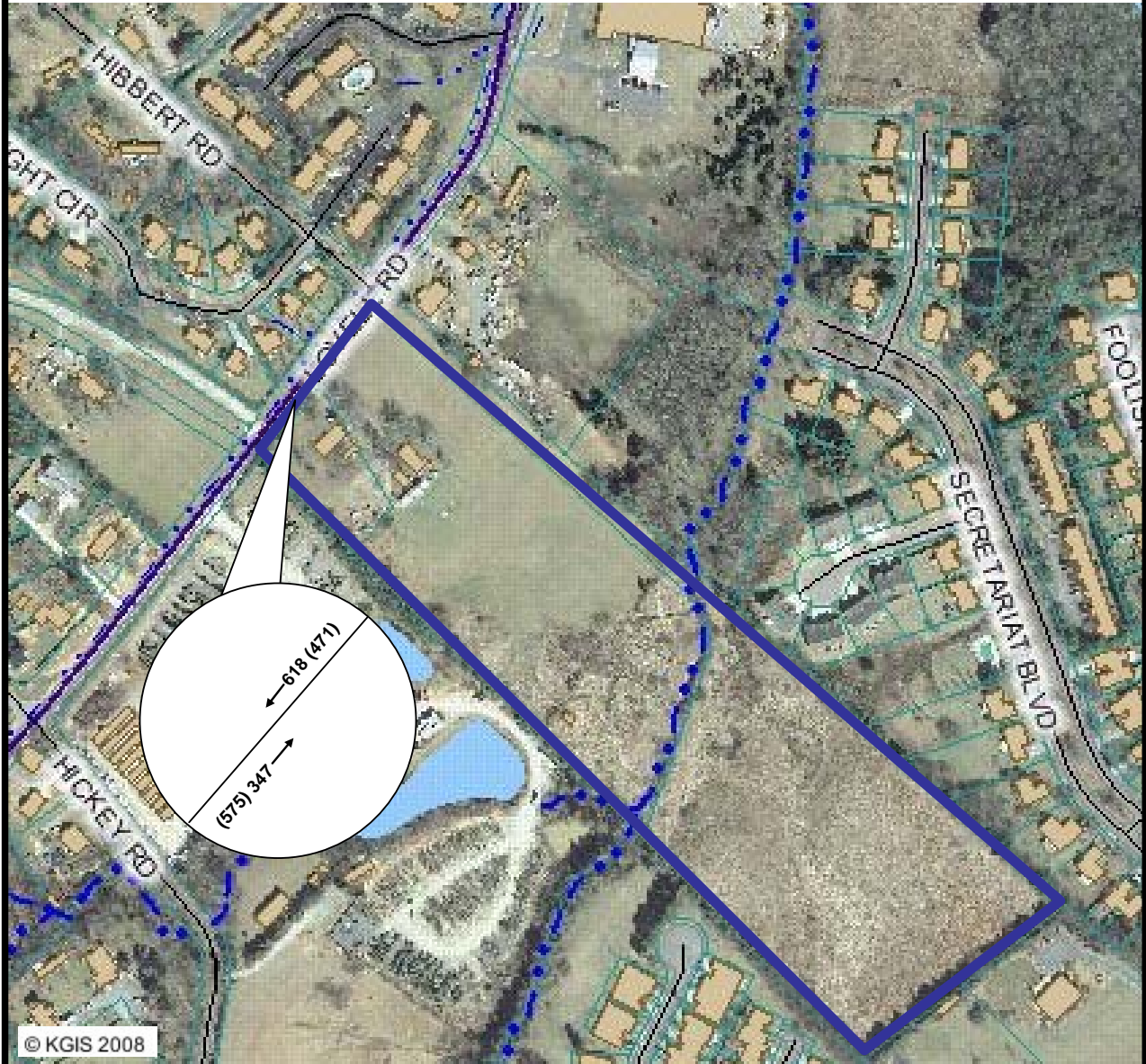
Figure 4 presents the resulting Year 2015 AM and PM peak-hour traffic volumes without the proposed development.



2015 BACKGROUND TRAFFIC

Lovell Road Villas Development

Knox County, Tennessee



LEGEND
XXX AM PEAK
(XXX) PM PEAK

Figure 4

PROJECT IMPACTS

Project conditions are developed by generating traffic based on the proposed land use, distributing the trips to the transportation network, and again conducting analyses for capacity and level of service.

Trip Generation

Project traffic was determined using the publication, **Trip Generation, 7th 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. The study will generate traffic for 80 multi-family units. A local trip generation study conducted by the Knoxville-Knox County Metropolitan Planning Commission indicated that multi-family (i.e. apartments and condominium/townhouse) attached style housing units in the local area generate trips greater than apartment and residential condominiums and less than single-family detached housing as presented in the **Trip Generation** manual. Factors such as population density, transit availability, and regional characteristics may contribute to the increase in trip rates. From the local trip generation calculations, the proposed site may generate approximately 782 daily trips. Table 1 presents the trip generation of this proposed site.

**Table 1
TRIP GENERATION**

LAND USE	L.U.C.	Units	DAILY	AM PEAK HR TRIPS			PM PEAK HR TRIPS		
			TRIPS	TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT
Local Apartment (Multi-family)	MPC	80	782	43	9	34	66	36	30
<i>Directional Distribution</i>			50%/50%		22%	78%		55%	45%

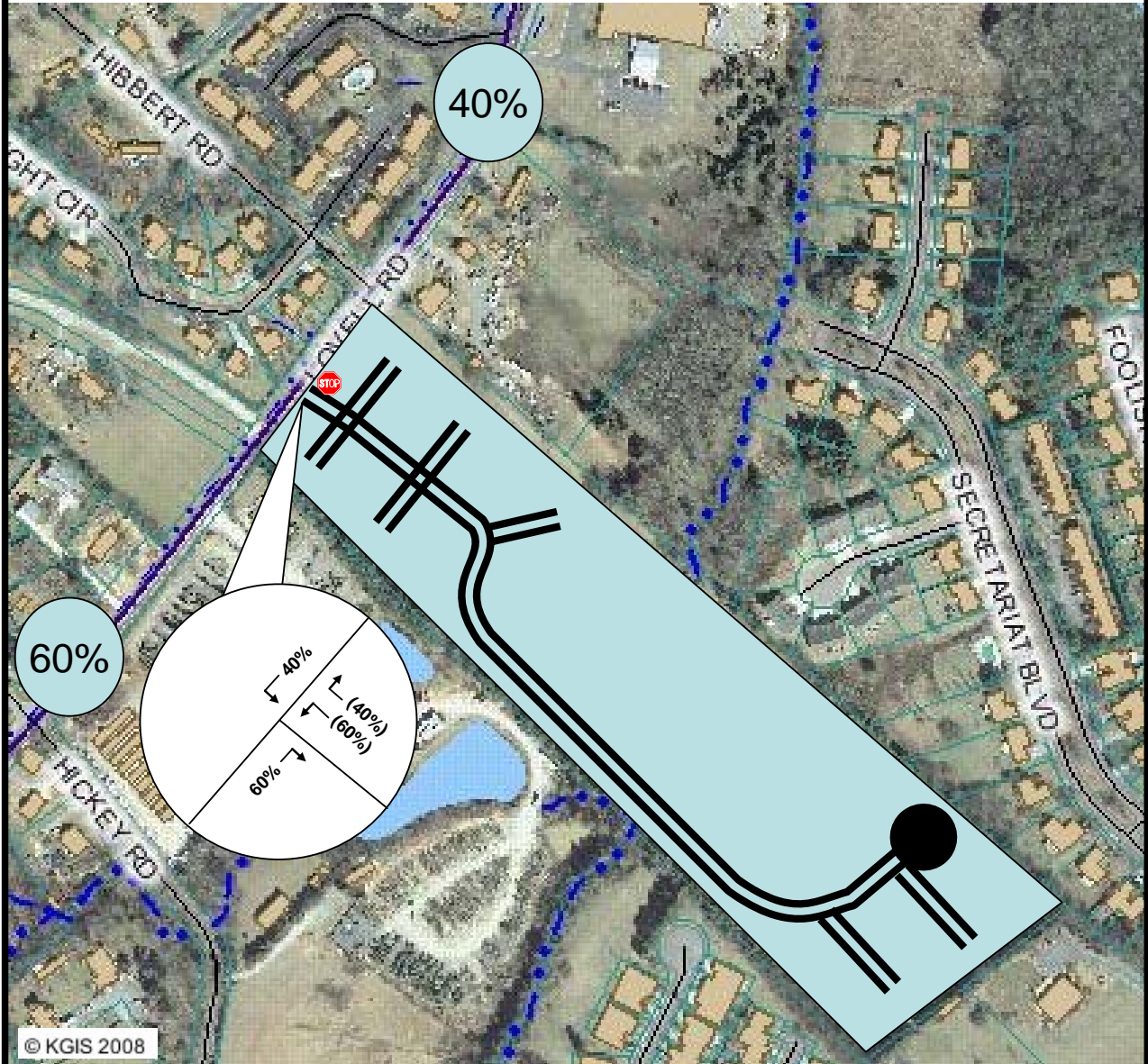
Source: Knoxville-Knox County Metropolitan Planning Commission, Local Apartment Trip Generation Study, December 1999.

Trip Distribution and Assignment

Using the mechanical traffic count conducted on Lovell Road, the residential traffic distribution characteristics were assumed to be similar to other work and school trips experienced currently. The Lovell Road Villas development generated trips are distributed to Lovell Road with 60-percent distributed to the south/west toward Pellissippi Parkway and 40-percent to the north/east toward Middlebrook Pike during the AM and PM peak hours. Figure 5 illustrates this distribution and assignment.

DISTRIBUTION AND ASSIGNMENT

Lovell Road Villas Development Knox County, Tennessee



LEGEND
 XX% ENTERING TRIP PERCENT
 (XX%) EXITING TRIP PERCENT

Figure 5

Project Traffic Volumes

By multiplying the trips generated by the distribution percentages, the project traffic volumes are determined. Figure 6 illustrates the resulting project traffic volumes associated with the proposed project.

Total Projected Traffic Volumes

Background and project traffic volumes were added together to develop post-development traffic volumes for the year 2015. Figure 7 illustrates this 2015 projection. Using these projections, mitigation measures including traffic control devices and roadway and intersection geometry can be evaluated. The requirements of left- and right-turn lanes were evaluated using the criteria adopted by the MPC and Knox County.

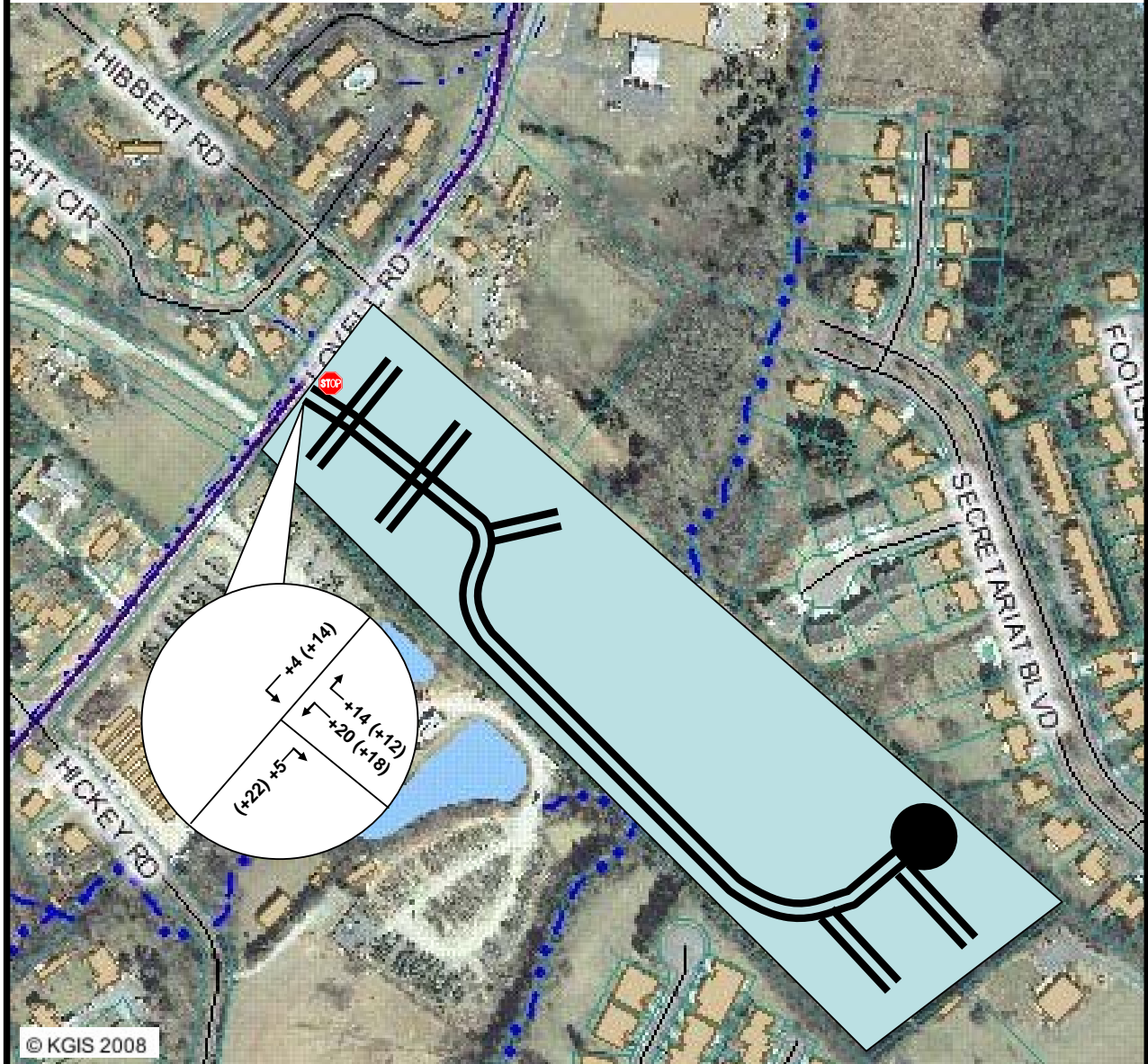
Auxiliary Lane Evaluation

Using the Knox County policy for turn lane requirements, found in the Knox County's **Access Control and Driveway Design Policy**, projected traffic volumes for the proposed street were evaluated for the need to provide auxiliary lanes. The Knox County policy for left-turn lanes is based on the **Highway Research Record** report titled, *Volume Warrants for Left-turn Storage Lanes at Unsignalized Grade Intersections*, by M.D. Harmelink, and an extrapolation of that report by Knox County. The criterion relates volume thresholds to prevailing speeds on two-lane roadways. The speed classifications are 35mph or less, 36-45mph, and 46-55mph. Since the posted speed limit is 35mph on Lovell Road in the section adjacent to the site, a conservative approach was taken by using the 36-45mph criteria to evaluate the need for auxiliary lanes. The evaluation indicates that the expected left- and right- turn lane volumes are below the threshold warranting turn lanes. The anticipated left-turn volume of 14 with an opposing traffic volume of approximately 575 vehicles is less than the 20 vehicle criteria for a prevailing speed between 36 and 45mph. The right-turn volume from Lovell Road to the proposed street is expected to be 22vph and the advancing through traffic flow should be approximately 575vph; therefore, a right-turn lane is less than the 25vph threshold in the Knox County criteria. However, a right-turn lane or large curb radius would facilitate the right turn and provide a deceleration/refuse to improve safety and reduce mainline friction. The right-turn lane provides an area for vehicles to reduce their speed upon turning right into the development without having to excessively slow the traffic on Lovell Road. The large turning radius is an option that allows the right-turn to occur with less of a speed reduction.



PROJECT TRIPS

Lovell Road Villas Development Knox County, Tennessee

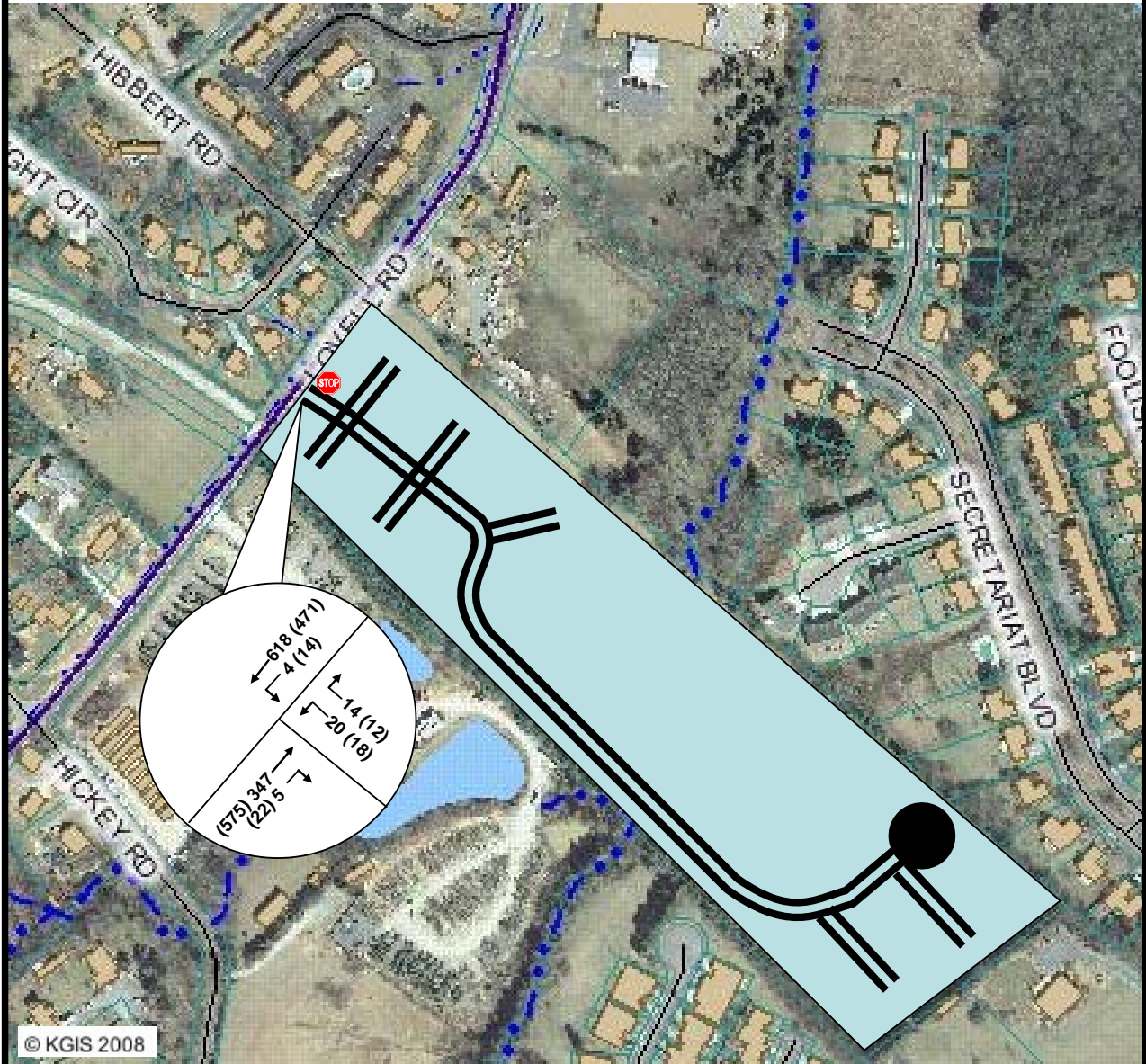


LEGEND
+XX AM NEW PROJECT TRIPS
(+XX) PM NEW PROJECT TRIPS

Figure 6



2015 PROJECTED TRAFFIC Lovell Road Villas Development Knox County, Tennessee



LEGEND
XXX AM PEAK
(XXX) PM PEAK

Figure 7

Projected Capacity and Level of Service

In order to evaluate the projected operations of the traffic control devices, capacity and level of service were calculated using the 2000 Highway Capacity Manual, Special Report 209 published by the Transportation Research Board (TRB). Signalized and 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. LOS A is the best, and LOS F is failing. For signalized intersections, a LOS of A has an average estimated intersection delay of less than 10 seconds, and LOS F has an estimated delay of greater than 80 seconds. A LOS of C and D are typical design values. Within urban areas, a LOS D, delay between 35 and 55 seconds, is considered acceptable by the Institute of Transportation Engineers (ITE) for signalized intersections.

Unsignalized intersection levels of service have lower thresholds of delays. 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 2.

**Table 2
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

As shown in Table 3, the results indicate that the study intersection should operate at an acceptable level of service for projected traffic volumes during the AM and PM peak hours. Exiting the development, a LOS C is expected and the left-turn entering the development should operate at LOS A.

**Table 3
2015 PROJECTED TRAFFIC
CAPACITY AND LEVEL OF SERVICE**

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	V/C	DELAY	LOS
Lovell Road at Road "A" (Site Access)	STOP	AM	0.11 / 0.00	17.1 / 0.1	C / A
	NB/WB-L	PM	0.12 / 0.02	20.3 / 0.5	C / A

Note: Average vehicle delay estimated in seconds. STOP control analyses presented by total minor approaches.

Sight Distance

The project is proposed to access Lovell Road, which has a posted speed limit of 35mph. Sight distance was measured using the criteria published by the American Association of State Highway and Transportation Officials (AASHTO). Measured sight-distance for the proposed residential street at Lovell Road was measured to be greater than 600 feet to the west and 600 to the east provided vegetation overgrowth along the embankment is removed. The vegetation overgrowth would seem to be eliminated with site preparation.

The speed limit of 35mph requires a minimum sight-distance of 305 feet to meet the minimum stopping sight-distance for AASHTO and 350 feet to meet the adopted Knox County minimum corner sight-distance standard. Therefore, the measured sight-distance is more than adequate for safe egress from the proposed development. Even with speeds greater than 35 and up to 55mph both the minimum and corner sight-distance criteria are met.

RECOMMENDATIONS

The analyses conducted and the review of the traffic volumes identified the following recommendations:

- Provide minimum 50-foot right-turn lane on Lovell Road turning into the site.
- Minimize landscaping, using low growing vegetation, and signing at the proposed street access to insure that safe sight distance is maintained.
- Use a minimum intersection radius of 30-foot for the efficient and safe ingress and egress of the site.
- Post STOP signs (R1-1) at the proposed residential street (Road "A") at Lovell Road.
- Intersection design should conform to the recommended standards and practices of the American Association of State Highway and Transportation Officials, the Institute of Transportation Engineers, and the Knox County Engineering and Public Works Department.

CONCLUSION

The study of this proposed residential development evaluated the projected traffic conditions. Background traffic was determined using a 17.5-percent annual growth rate until the horizon year 2015. Traffic associated with the proposed project was then generated and distributed to the proposed site access. Using the identified turning movements for the projected traffic conditions, unsignalized capacity and level of service analyses were conducted using the **2000 Highway Capacity Manual**. Unsignalized levels of service are found to be acceptable for the projected traffic conditions. The evaluation of the sight-distance for the proposed intersection is found to exceed that required for speeds in excess of the posted 35mph and up to 55mph. An evaluation for the requirement of left- and right-turn lanes using the Knox County policy determined that auxiliary turn lanes would not be necessary for the projected traffic volume. However, a right-turn lane into the site would improve safety by providing an area for vehicles to decelerate. Therefore, with the recommendations of this report, the efficient and safe flow of traffic should be maintained with the development of the proposed subdivision.

APPENDIX

History ADT's

Trip Generation

Synchro Analyses

Knox County Turn Lane Volume Thresholds

Traffic Counts

HISTORICAL ADT'S

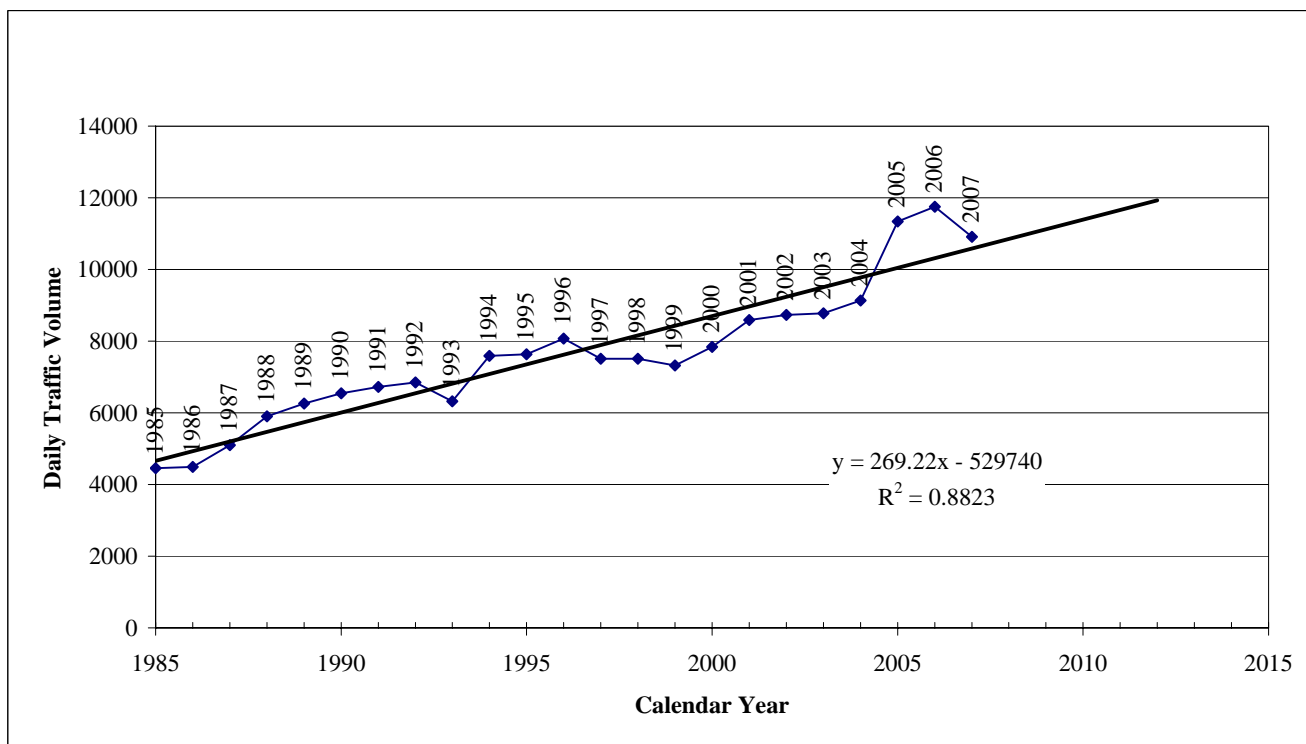
Station #	County	Location	Route #	Route Name	Station Out
85	Knox	Lovell Road-near Ball Camp	SR131	SR-131	N

Remarks	Adj. Ave.		Linear Regression	Diff.	Annual Increase
	Year	Daily Traffic			
	1985	4457	4660		
	1986	4487	4930	270	5.8%
	1987	5099	5200	270	5.5%
	1988	5906	5470	270	5.2%
	1989	6261	5740	270	4.9%
	1990	6546	6010	270	4.7%
	1991	6720	6280	270	4.5%
	1992	6848	6550	270	4.3%
STA 86 DOWN	1993	6320	6820	270	4.1%
	1994	7585	7080	260	3.8%
	1995	7634	7350	270	3.8%
	1996	8071	7620	270	3.7%
	1997	7507	7890	270	3.5%
	1998	7513	8160	270	3.4%
	1999	7320	8430	270	3.3%
	2000	7840	8700	270	3.2%
	2001	8590	8970	270	3.1%
EST	2002	8733	9240	270	3.0%
	2003	8778	9510	270	2.9%
EST	2004	9137	9780	270	2.8%
2ND COUNT HIGH - KEEP	2005	11341	10050	270	2.8%
	2006	11748	10320	270	2.7%
	2007	10914	10580	260	2.5%

Assumed Growth Percent
2.5%

Historical Growth 5.77%
Forecast Growth 2.49%

Year	Linear Regression	Diff.	Annual Increase	Projected
2008	10850	270	2.6%	11,187
2009	11120	270	2.5%	11,460
2010	11390	270	2.4%	11,733
2011	11660	270	2.4%	12,005
2012	11930	270	2.3%	12,278
2013	12200	270	2.3%	12,551
2014	12470	270	2.2%	12,824
2015	12740	270	2.2%	13,097
2016	13010	270	2.1%	
2017	13280	270	2.1%	
2018	13550	270	2.0%	
2019	13820	270	2.0%	
2020	14090	270	2.0%	



	EB	WB	Total
AM	295	526	821
PM	489	401	890

	EB	WB
AM Dir Dis	36%	64%
PM Dir Dis	55%	45%

Average	40%	60%
---------	-----	-----

Average	40%	60%
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TRIP GENERATION

Local Apartment Trip Generation Study

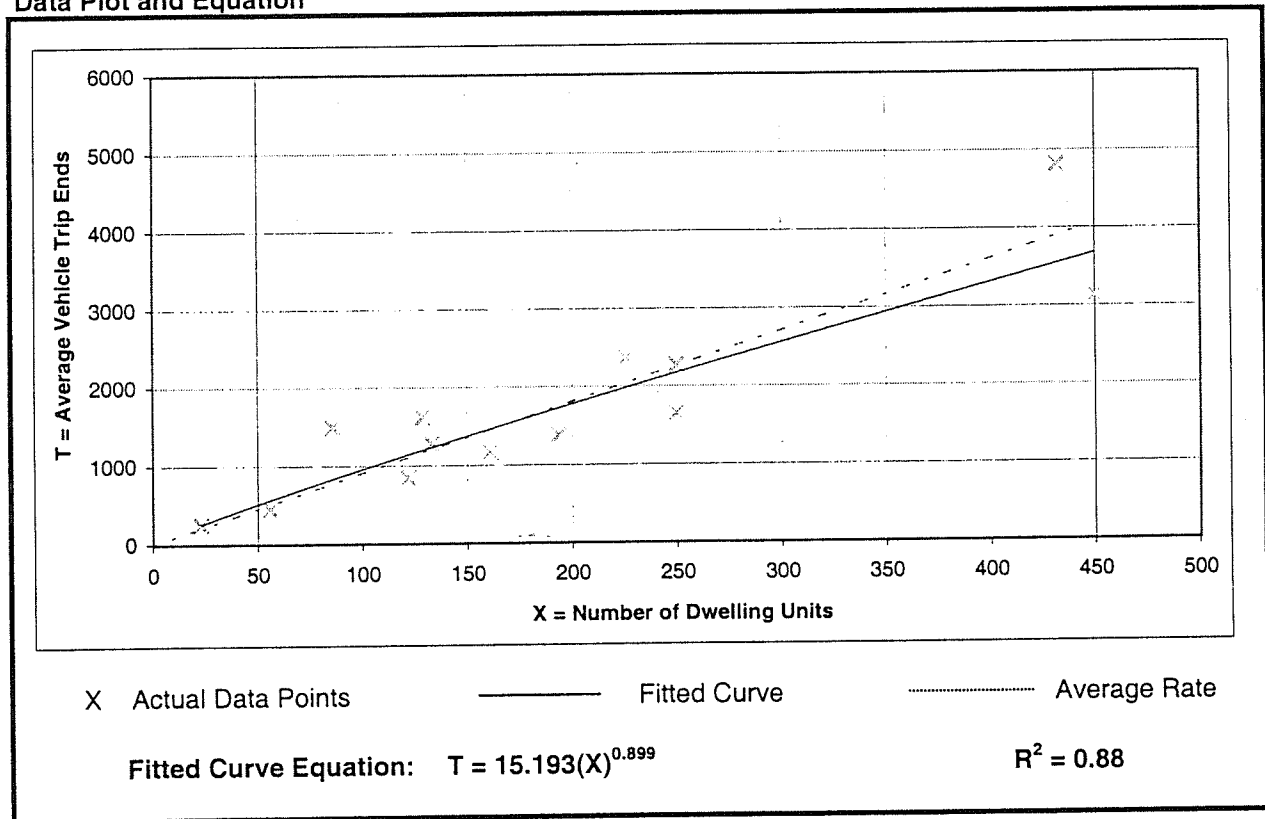
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

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

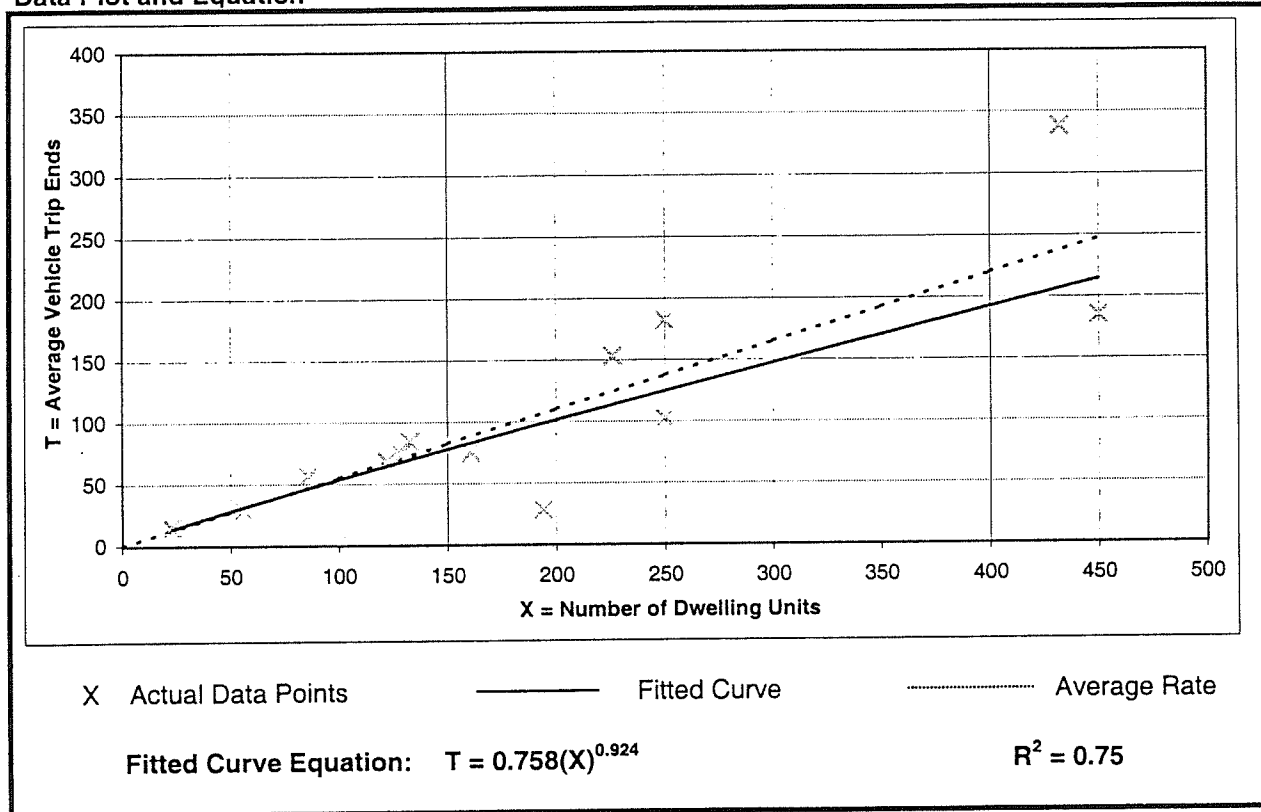
Average Vehicle Trip Ends vs: Dwelling Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.

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

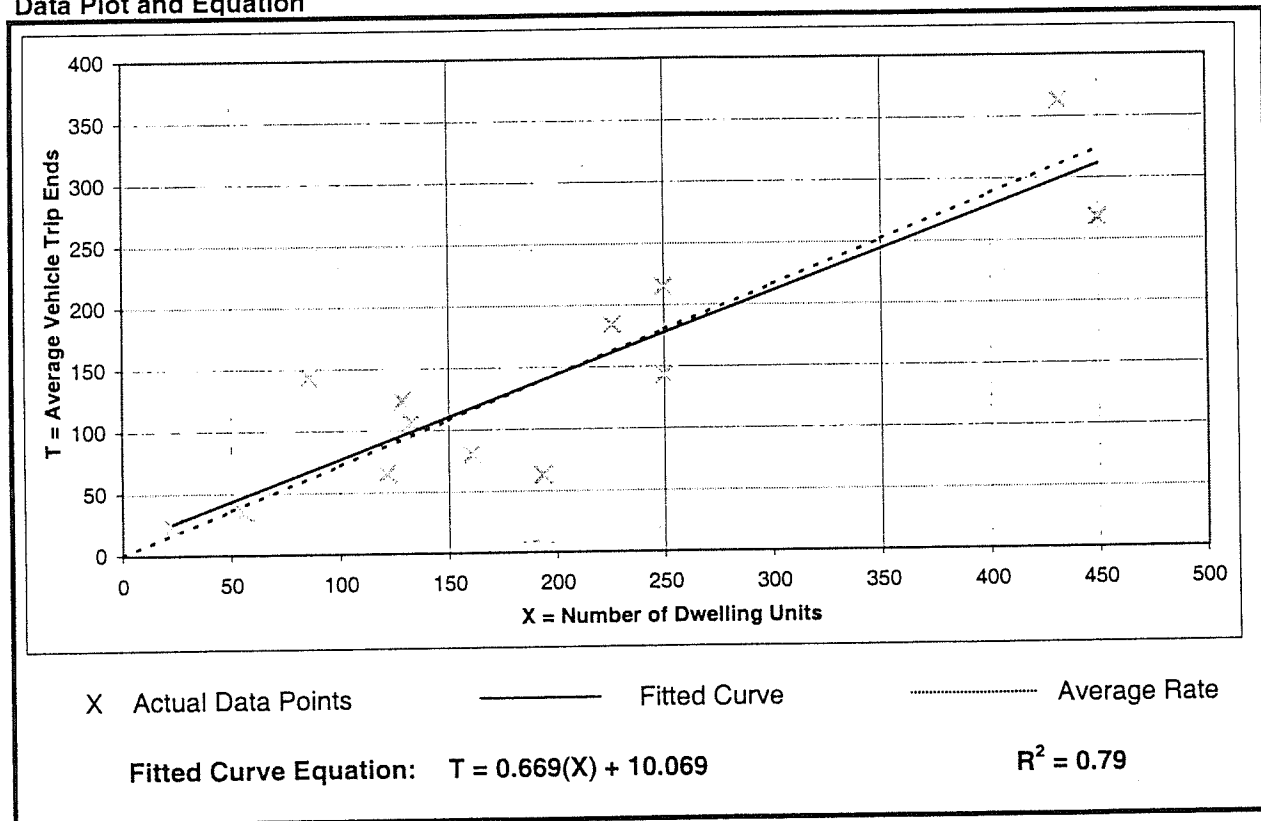
Average Vehicle Trip Ends vs: Dwelling Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.

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



Local Apartment (Multi-Family Attached Housing)	210	80 Daily	782	
		Entering	391	50%
Local Apartment (Multi-Family Attached Housing)	210	80 AM Pk Hr	43	
		Entering	9	22%
Local Apartment (Multi-Family Attached Housing)	210	80 PM Pk Hr	66	
		Entering	36	55%
		Exiting	30	45%

Directional Distribution
to the East (toward Middlebrook Pike) 40%
to the West (toward Pell Pkwy) 60%

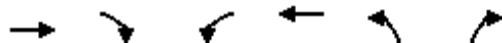
Trip Assignment	AM	PM
Exit Left	20	18
Exit Right	14	12
	34	30
Enter Left	4	14
Enter Right	5	22
	9	36

		2008		Annual	Factor	New Trips		2015 with Project	
		AM	PM	2.5%	17.5%	AM	PM	AM	PM
EB	L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	T	295	489	347	575			347	575
	R					5	22	5	22
WB	L					4	14	4	14
	T	526	401	618	471			618	471
	R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NB	L					20	18	20	18
	T	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	R					14	12	14	12

SYNCHRO ANALYSES

HCM Unsignalized Intersection Capacity Analysis
 3: Lovell Rd & Villas Access

2015 AM with Dev.
 Lovell Road Villas Dev.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	→
Volume (veh/h)	347	5	4	618	20	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	377	5	4	672	22	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			383		1060	380
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			383		1060	380
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		91	98
cM capacity (veh/h)			1176		247	667

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	383	676	37
Volume Left	0	4	22
Volume Right	5	0	15
cSH	1700	1176	334
Volume to Capacity	0.23	0.00	0.11
Queue Length 95th (ft)	0	0	9
Control Delay (s)	0.0	0.1	17.1
Lane LOS		A	C
Approach Delay (s)	0.0	0.1	17.1
Approach LOS			C

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization	45.7%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 3: Lovell Rd & Villas Access

2015 PM with Dev.
 Lovell Road Villas Dev.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↔	↔
Volume (veh/h)	575	22	14	471	18	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	625	24	15	512	20	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			649	1179	637	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			649	1179	637	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			98	91	97	
cM capacity (veh/h)			937	207	477	

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	649	527	33
Volume Left	0	15	20
Volume Right	24	0	13
cSH	1700	937	268
Volume to Capacity	0.38	0.02	0.12
Queue Length 95th (ft)	0	1	10
Control Delay (s)	0.0	0.5	20.3
Lane LOS		A	C
Approach Delay (s)	0.0	0.5	20.3
Approach LOS			C

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

KNOX COUNTY TURN-LANE
VOLUME THRESHOLDS

LT = 14 less than 20 (criteria)

TABLE 5A

575 →
22 →
← 471
14

DOES NOT MEET WARRANTS

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

Return DOES NOT MEET WARRANTS TABLE 5B

575 →
22 ↘

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

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

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					NO 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.

TRAFFIC COUNTS

WILBUR SMITH ASSOCIATES

1100 MARION ST, SUITE 200
KNOXVILLE, TN 37921
865-963-4300

Site Code: LOVELL 2
Station ID:

Latitude: 0' 0.000 South

Start Time	16-May-0 Fri	EB		Hour Totals		WB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		*	106			*	93				
12:15		*	75			*	82				
12:30		*	88			*	86				
12:45		*	90	0	359	*	96	0	357	0	716
01:00		*	85			*	99				
01:15		*	91			*	90				
01:30		*	98			*	84				
01:45		*	82	0	356	*	94	0	367	0	723
02:00		*	82			*	75				
02:15		*	84			*	77				
02:30		*	109			*	79				
02:45		*	102	0	377	*	81	0	312	0	689
03:00		*	83			*	66				
03:15		*	110			*	94				
03:30		*	91			*	111				
03:45		*	86	0	370	*	104	0	375	0	745
04:00		*	82			*	90				
04:15		*	116			*	111				
04:30		*	133			*	115				
04:45		*	138	0	469	*	105	0	421	0	890
05:00		*	102			*	70				
05:15		*	132			*	70				
05:30		*	146			*	102				
05:45		*	131	0	511	*	86	0	328	0	839
06:00		*	80			*	80				
06:15		*	159			*	90				
06:30		*	113			*	69				
06:45		*	82	0	434	*	111	0	350	0	784
07:00		69	91			89	82				
07:15		80	87			153	76				
07:30		89	70			152	88				
07:45		60	57	298	305	89	86	483	332	781	637
08:00		66	78			132	49				
08:15		57	74			125	50				
08:30		54	72			123	45				
08:45		63	68	240	292	103	57	483	201	723	493
09:00		59	58			81	54				
09:15		50	69			86	52				
09:30		41	51			75	44				
09:45		60	73	210	251	80	35	322	185	532	436
10:00		54	69			71	32				
10:15		65	60			65	49				
10:30		48	60			84	25				
10:45		66	*	233	189	72	*	292	106	525	295
11:00		74	*			85	*				
11:15		64	*			87	*				
11:30		63	*			64	*				
11:45		83	*	284	0	80	*	316	0	600	0
Total		1265	3913			1896	3334			3161	7247
Percent		24.4%	75.6%			36.3%	63.7%			30.4%	69.6%
Grand Total		1265	3913			1896	3334			3161	7247
Percent		24.4%	75.6%			36.3%	63.7%			30.4%	69.6%

ADT Not Calculated