HICKORY CREEK RESIDENTIAL DEVELOPMENT
Knox County, Tennessee

TRAFFIC IMPACT STUDY

Prepared for :

Mr. Dan Burton
5886 East Ashland Drive
Nashville, TN 37215

Prepared By:

CDM Smith

January 2016

Revised

April 2016

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KNOX COUNTY, TENNESSEE

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January 2016
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Project No. 102245

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INTRODUCTION

CDM Smith is pleased to submit this report to address any traffic impact and access of the Hickory Creek residential development located on Everett Road and Yarnell Road in west Knox County. This traffic 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 Everett Road and Yarnell Road. 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

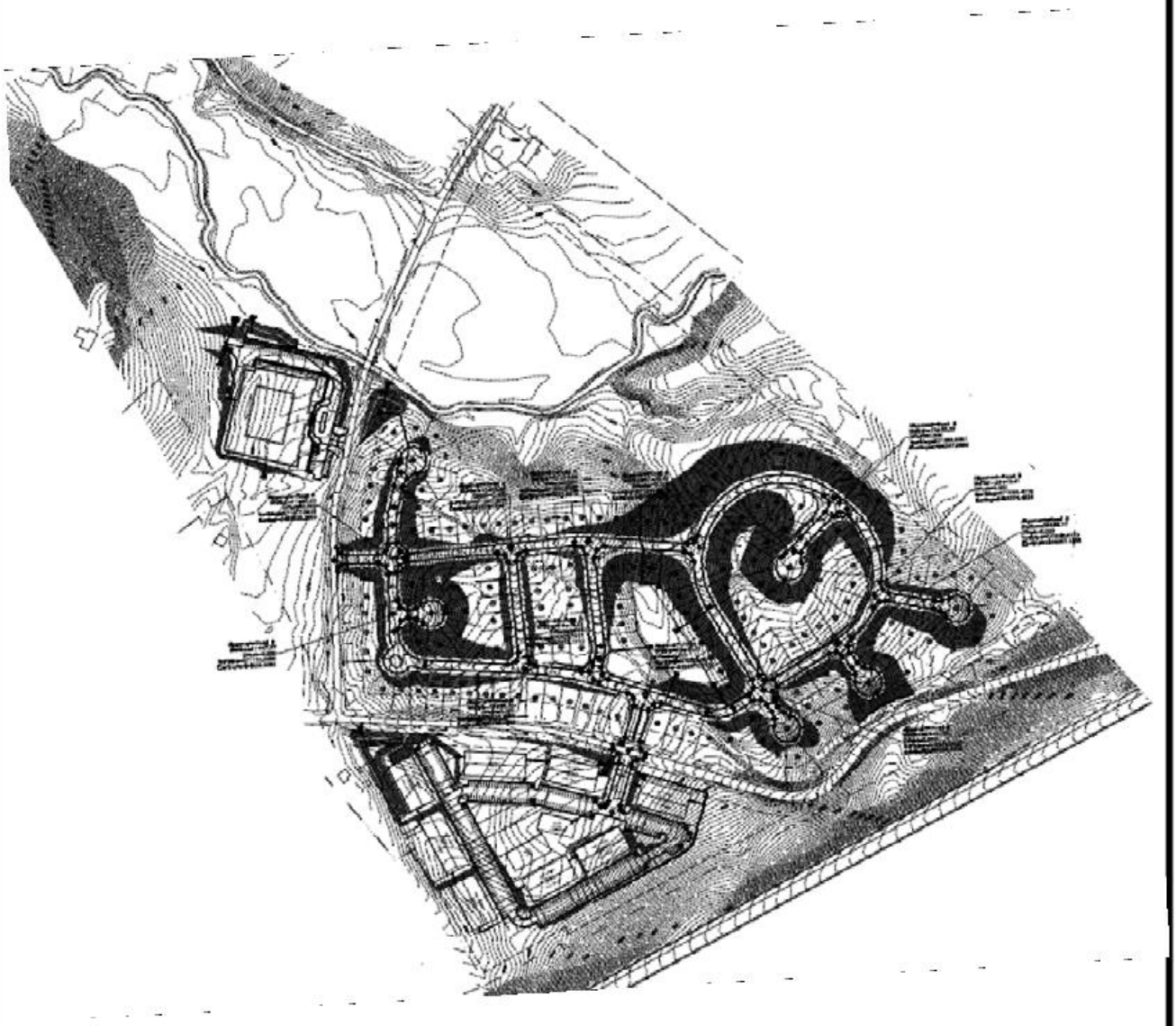
The proposed Hickory Creek project is a mixed residential development with single- and multi-family development as well as an assisted living facility on a total of approximately 90 acres, with current zoning of Planned Residential (PR) permitting up to 5 residential units per acre. The development is 169 single-family units with access to both Everett Road and Yarnell Road. The multi-family is 224 units accessing Everett Road. A 100 bed assisted living facility will include 25 beds for memory care and will access Yarnell Road. **Figure 1** shows the proposed site plan.

Site Location

The location of the proposed residential development is southeast of Everett Road and Yarnell Road. This site is north of Interstate 40/75 in west Knox County, Tennessee, near Loudon County. **Figure 2** illustrates the site location relative to local and regional access.

SITE PLAN

Hickory Creek Residential Development



N

Figure 1

VICINITY MAP
Hickory Creek Residential Development

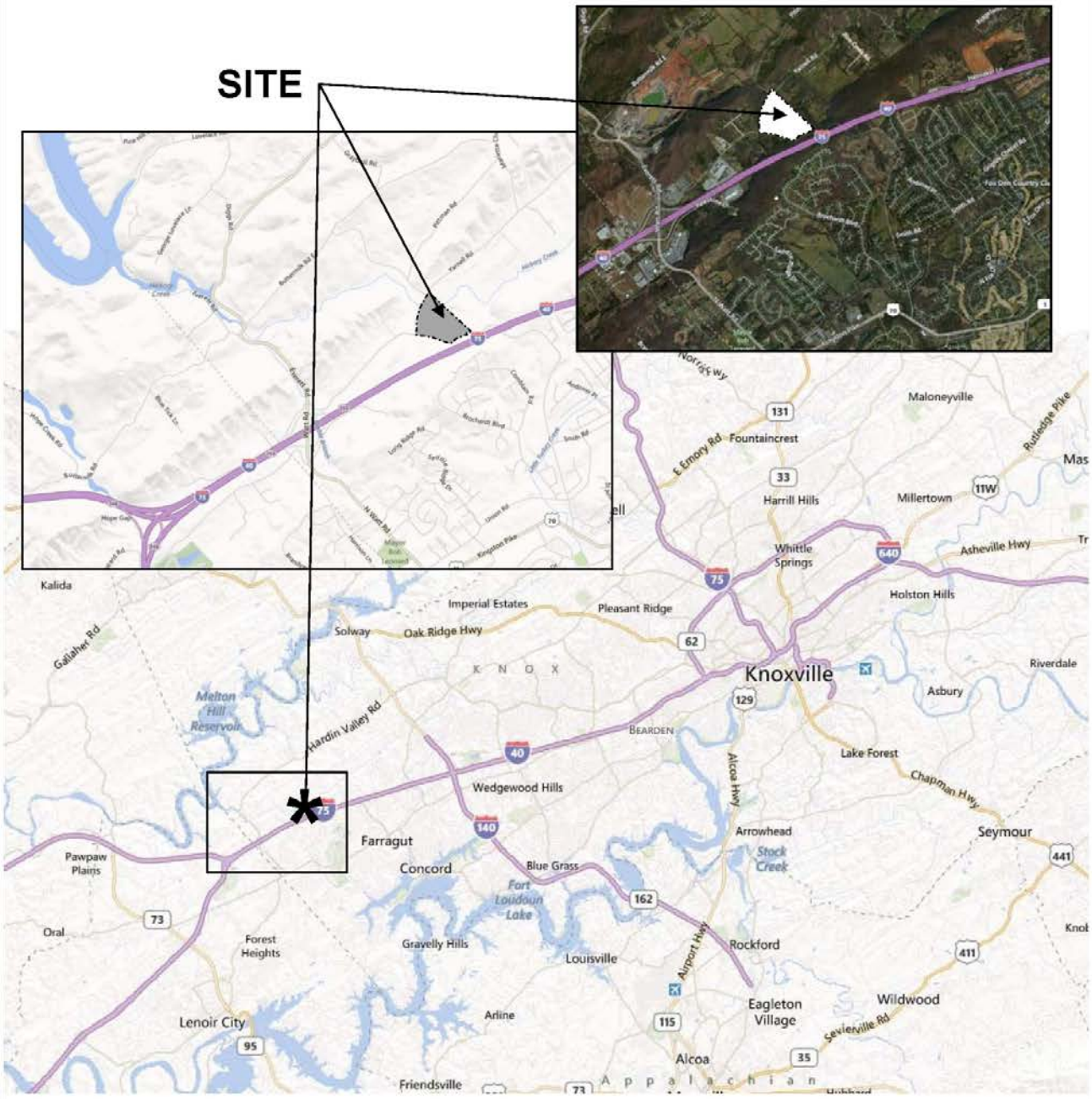


Figure 2

LOCAL AND REGIONAL ACCESS

Local Access

The proposed local access is to Everett Road and Yarnell Road. Everett Road intersects Yarnell Road, adjacent to the site, and Watt Road to the west. These facilities provide access to the west and north to Hardin Valley. To the south, Everett Road enters the Town of Farragut, where it is currently being improved, and intersects Smith Road, Union Road, and Kingston Pike (US 70). The street facility adjacent to the site is approximately 18 feet. This width of roadway is currently substandard but is the minimum section considered acceptable to the County. Much of the traffic on Everett Road, west of the site, currently turns to Yarnell Road, thereby reflecting a significant reduction of traffic on Everett Road to the east. Two segments of Everett Road between Watt Road and Yarnell Road, with a 20-foot roadway width, was identified in Knox County's 2016 Strategic Plan top 25 list for roadway improvements based on safety, width, and ADT. The strategic planning study conducted recommended that road safety audits (RSA) be conducted for these segments of Everett Road. The access to this section of Everett Road appears to have a very good line of sight for the required corner sight distance. Everett Road has a 2014 Tennessee Department of Transportation (TDOT) average daily traffic (ADT) of approximately 880 vehicles per day (vpd) east of the site. West of the site on Everett Road, the 2014 TDOT ADT was approximately 2,130.

Regional Access

Regional access to this site is from Watt Road and Kingston Pike (US 70) accessed to the west of the site or south of the site. Watt Road extends north from Kingston Pike intersecting I-40 interchange and Everett Road. Kingston Pike (US 70) intersects Everett Road south of the site. The intersection of Everett Road and Kingston Pike was recently signalized and widened to provide a left-turn lane from Kingston Pike. Kingston Pike is a five-lane major arterial extending through Farragut, between Knoxville to the east and the Knox County line to the west, where U.S. 11 and 70 split and extend into Lenoir City and Loudon County. The 2014 average daily traffic (ADT) on Kingston Pike is 22,560 east of Everett Road and 15,780 to the west of Watt Road.

Interstate 40/75 access is provided from Campbell Station Road and Watt Road, east and west of the proposed development site, respectively. Interstate 40 is an east and west six-lane facility running through Knoxville to the east and Nashville to the west. Interstate 75 extends north to Lexington, Kentucky, and to the west, I-75 turns south to Chattanooga, Tennessee. The Interstate 40/75 facility has a 2014 ADT of 90,550 east of Watt Road and north of the site.

EXISTING TRAFFIC CONDITIONS

Existing Traffic Control and Speed

The proposed site has access is to Everett Road north of the I-40/75 overpass and two accesses to Yarnell Road. The posted speed limit for Everett Road is 30mph and Yarnell Road is 40mph. Yarnell Road is STOP controlled at Everett Road.

Existing Traffic Volumes

CDM Smith conducted a 24-hr mechanical count on Everett Road in early February 2013. The mechanical traffic count found an ADT for Everett Road of 825. Turning movement counts were conducted for the Everett Road and Watt Road near the end of 2013 for an earlier study of this site. The 2013 count data was used for this study as it is the most current available traffic counts prior to the closure of Everett Road this past year for improvements contracted by the Town of Farragut. Because the traffic growth in the vicinity of this site has been nominal over the past few years, these counts remain valid and should be acceptable grown by 4.6 percent, assuming a growth rate discussed in the Background traffic of this report to reflect the study's existing year of 2016. Peak hour counts were conducted for the intersection of Everett Road at Kingston Pike and adjusted for the thru traffic on Everett Road to and from Yarnell Road. **Figure 3** illustrates the AM and PM peak-hour turning movements for 2016.

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 **2010 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 are related to level of service (LOS).

Level of service and capacity are 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, LOS A has an average estimated delay of less than 10 seconds per vehicle, and LOS F has an estimated delay of greater than 80 seconds. LOS C and D are typical design values. Within urban areas, LOS D (delay between 35 and 55 seconds) is considered acceptable by the Institute of Transportation Engineers (ITE) for signalized intersections.

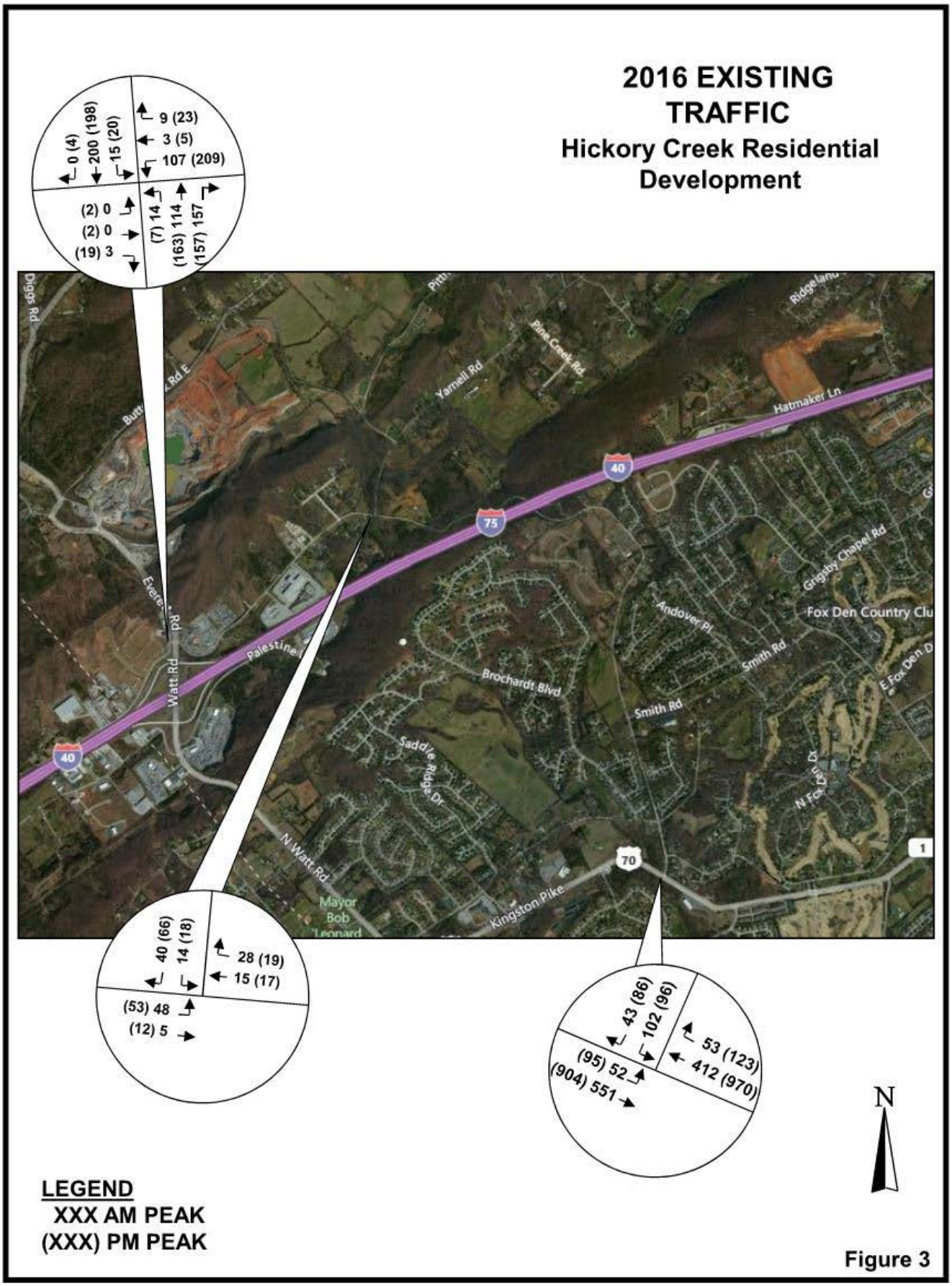

2016 EXISTING TRAFFIC
Hickory Creek Residential Development
0 (4)
200 (198)
15 (20)
9 (23)
3 (5)
107 (209)
(2) 0
(2) 0
(19) 3
(7) 14
(163) 114
(157) 157
40 (66)
14 (18)
28 (19)
15 (17)
(53) 48
(12) 5
43 (86)
102 (96)
53 (123)
412 (970)
(95) 52
(904) 551
Hatmaker Ln
Yarnell Rd
Pine Creek Rd
Ridgelane
Gigsby Chapel Rd
Fox Den Country Clu
Andover Pl
Smith Rd
Brochardt Blvd
Saddle Ridge Dr
N Watt Rd
Watt Rd
Palestine
Everett Rd
Kingston Pike
Mayor Bob Leonard
N Fox Den Ct
E Fox Den D
40
75
70
1
N
LEGEND
XXX AM PEAK
(XXX) PM PEAK

Figure 3

Unsignalized intersection levels of service have lower thresholds of delays. LOS F exceeds estimated delays of 50 seconds per vehicle. For urban arterials, minor approaches may frequently experience levels of service E. Full level of service descriptions for unsignalized and signalized intersections are presented in **Tables 1 and 2**, respectively.

Table 1
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

Table 2
LEVEL-OF-SERVICE (LOS) DESCRIPTION
FOR SIGNALIZED INTERSECTIONS

LOS	Average Control Delay per Vehicle (seconds)	Description
A	≤ 10.0	Very low delay with extremely favorable progression. Most vehicles don't stop.
B	> 10.0 and ≤ 20.0	Generally good progression. Increase number of stops from that described for LOS "A" resulting in higher delays
C	> 20.0 and ≤ 35.0	Fair progression with increased delay. Number of stopping vehicles become significant; however, many still pass through the intersection without stopping. Stable flow.
D	> 35.0 and ≤ 55.0	The influence of congestion becomes more noticeable. Longer delays resulting from unfavorable progression, longer cycles, or high V/C ratios. Approaching unstable flow.
E	> 55.0 and ≤ 80.0	Limit of acceptable delay. Long delays associated with poor progression, long cycles, or high V/C ratios.
F	> 80.0	Unacceptable operation resulting from oversaturation (flow rates exceed capacity). Poor progression, long cycles, and high V/C ratios.

SOURCE: Highway Capacity Manual, TRB Special Report 209

A second measure of performance that is particularly valuable under signalized operation is the volume-to-capacity ratio (V/C). This reflects the portion of capacity that is being utilized. As the V/C exceeds 0.90, the movement or intersection is less able to absorb additional traffic demand, so that relatively small increases in traffic volume can lead to significant increases in delay and possible failing conditions.

Analyses were conducted using the **Synchro** Software, developed by Trafficware. **Table 3** presents the signalized analyses of the study intersections. Current conditions at all intersections are LOS C or better.

TABLE 3
2016 EXISTING
CAPACITY AND LEVEL OF SERVICE

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	V/C	DELAY	LOS
Everett Road &	STOP	AM	0.08	9.2	A
Yarnell Road	SB	PM	0.12	9.3	A
Everett Road &	STOP	AM	0.00 / 0.26	10.3 / 13.6	B / B
Watt Road	EB/WB	PM	0.03 / 0.53	10.3 / 19.9	A / C
Everett Road &	SIGNAL	AM	0.32	10.4	B
Kingston Pike		PM	0.71	10.8	B

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

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. 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 136 on Everett Road adjacent to the site, the annual growth over the past 10 years has been negligible. For the purpose of this study, background traffic volumes were developed assuming an annual compounded growth rate of 1.5-percent. Background traffic is projected for the year 2020 thereby reflecting a 6.1-percent growth (compounded 1.5-percent for 4 years) in the adjacent street traffic volume. Build-out of the site is planned in the next few years. Actual build-out, however, will largely depend on the housing market. **Figure 4A** illustrates the grown turning movements reflecting the 2020 background traffic growth.

Included in the background traffic condition is the planned Split Farm subdivision with 48 single-family units located south of the proposed Hickory Creek development and Interstate 40/75. These trips were distributed with 55-percent to the south and 45-percent to the north with 25-percent assigned to Yarnell Road. These assigned Split Farm assigned trips are illustrated in Figure 4B. **Figure 4C** presents the resulting Year 2016 AM and PM total peak-hour traffic volumes without the proposed development.

Background Capacity and Level of Service

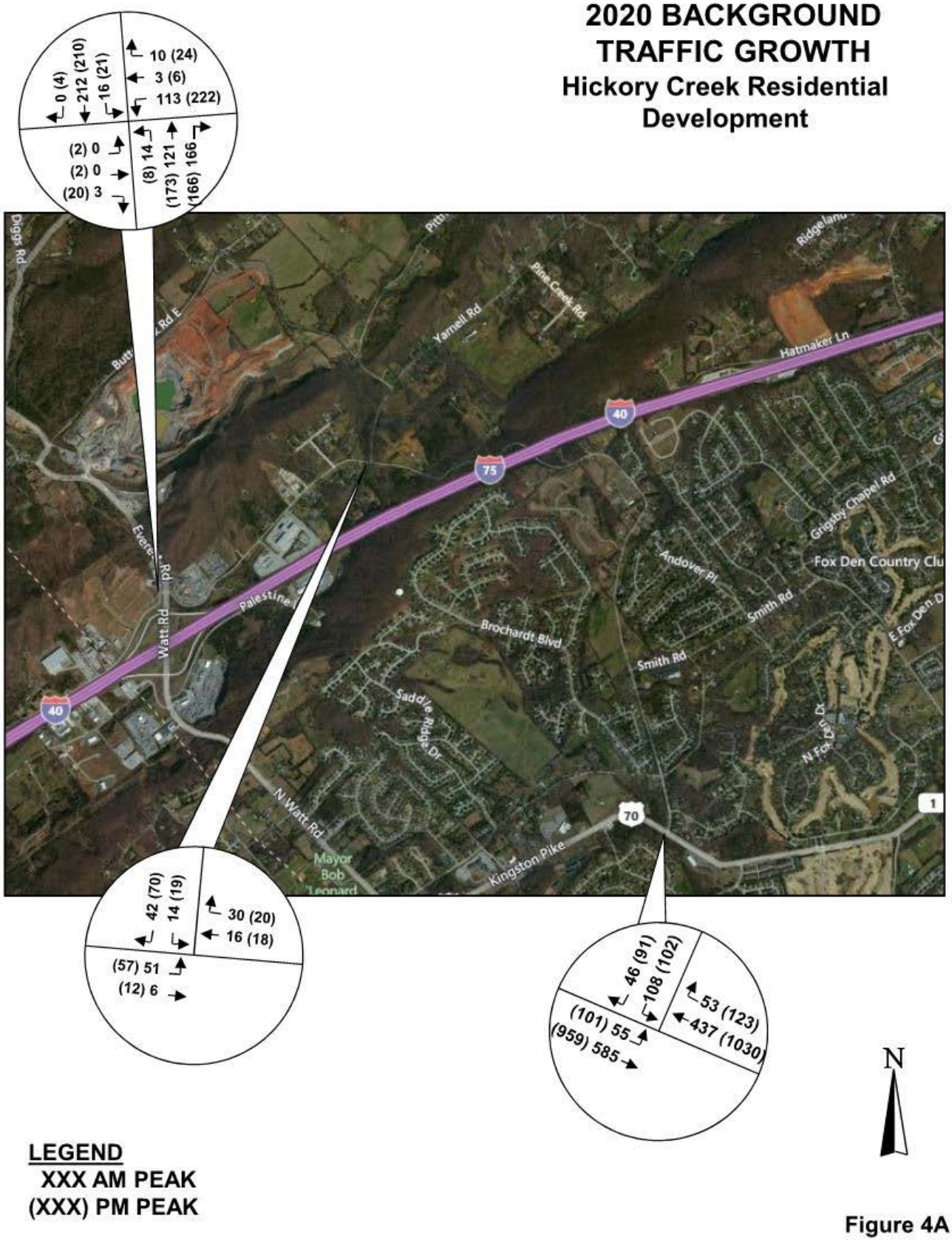
Analyses were performed for both background conditions including the planned Split Farms development. The results of these analyses are presented in **Table 4**. The levels of service for Year 2020 are maintained from existing conditions.

TABLE 4
2020 BACKGROUND
CAPACITY AND LEVEL OF SERVICE

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	V/C	DELAY	LOS
Everett Road &	STOP	AM	0.07	9.0	A
Yarnell Road	SB	PM	0.11	9.2	A
Everett Road &	STOP	AM	0.00 / 0.26	10.6 / 14.1	B / B
Watt Road	EB/WB	PM	0.03 / 0.53	10.2 / 19.9	A / C
Everett Road &	SIGNAL	AM	0.35	14.4	B
Kingston Pike		PM	0.72	10.2	B

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

2020 BACKGROUND TRAFFIC GROWTH
Hickory Creek Residential Development

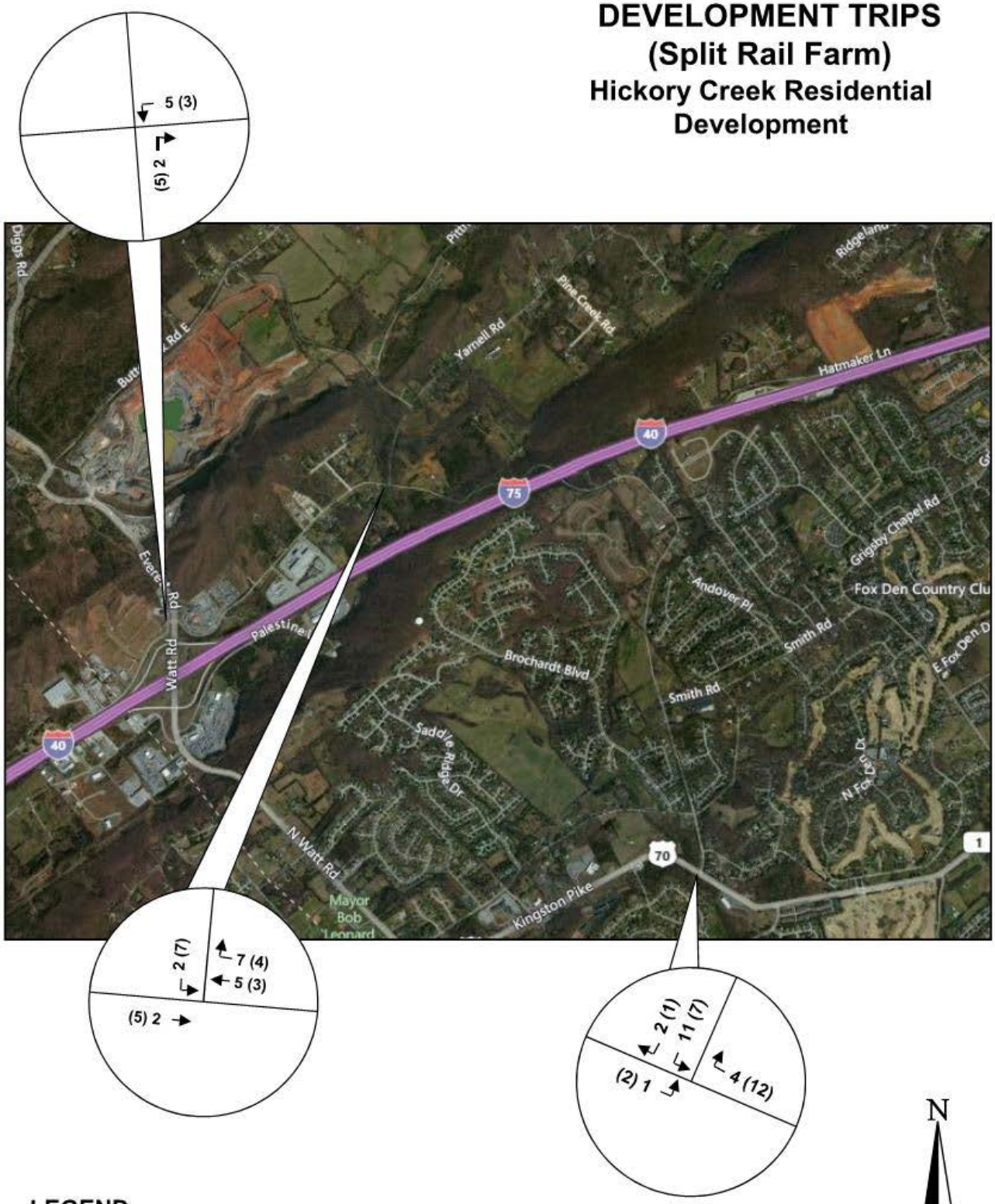


LEGEND
XXX AM PEAK
(XXX) PM PEAK

Figure 4A

2020 BACKGROUND DEVELOPMENT TRIPS (Split Rail Farm)

Hickory Creek Residential Development

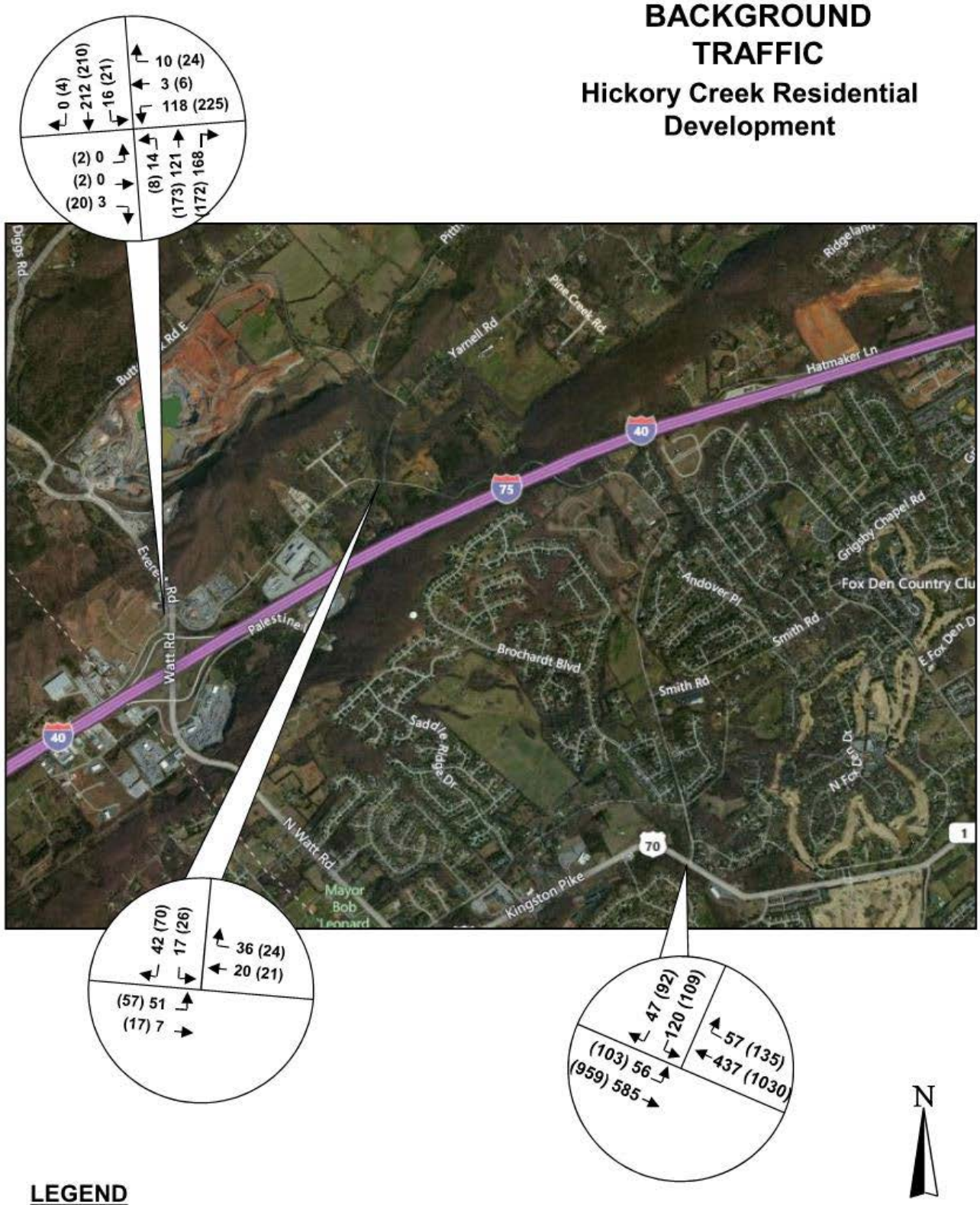


LEGEND
XXX AM PEAK
(XXX) PM PEAK

Figure 4B

2020 TOTAL BACKGROUND TRAFFIC

Hickory Creek Residential Development



LEGEND

XXX AM PEAK

(XXX) PM PEAK

Figure 4C

PROJECT IMPACTS

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

Trip Generation

Project traffic is typically generated using the publication, **Trip Generation, 9th 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. However, trips generated for this multi-family development was determined using local trip generation rates adopted by the Knoxville-Knox County Metropolitan Planning Commission in July of 2000 for multi-family developments. Local trip rates were studied in accordance with the publication, **Trip Generation, 6th Edition**. The local trip generation rates are relatively consistent with the rates published by ITE with the exception of exiting trips for the PM peak hour, which is higher with the local rates utilized. Daily trips generated could be approximately 3,965. **Table 5** presents the trip generation for this proposed site.

TABLE 5 TRIP GENERATION

Land Use	Land-Use Code	Units	Daily Trips	AM Peak-Hour Trips		PM Peak-Hour Trips	
				Enter	Exit	Enter	Exit
Single-Family	210	169	1702	32	96	106	62
Multi-Family	220	224	1,970	25	88	88	72
Assisted Living	254	100	293	12	6	15	15
TOTAL			**3,965**	**96**	**190**	**209**	**149**

Reference: Knoxville/Knox Co. MPC trip rates adopted in July of 2000

Trip Distribution and Assignment

The assumed trip distribution used the mechanical traffic count conducted for Everett Road, residential development characteristics, and the local and regional roadway network. The mechanical count indicated the directional flow of traffic with 65-percent to the north and 35-percent to the south. With the residential character of the development and the more regional influence of this section of Everett Road, however, a greater distribution was assumed to the south. Generated trips were, therefore, distributed to Everett Road with 40-percent distributed to

the north and west toward Watt Road and Yarnell Road. To the west, Everett Road is assigned 15-percent and 20-percent to Yarnell Road to the north. To the southeast toward the Town of Farragut, 60-percent was assigned to Everett Road during the AM and PM peak hours. Prior to Kingston Pike, 25-percent were assumed for Smith Road and Union Road. **Figures 5A, 5B and 5C** illustrate this distribution and assignments for the single-family, multi-family, and assisted living facility, respectively.

Project Traffic Volumes

By multiplying the trips generated by the distribution percentages, the project traffic volumes are determined. **Figure 6** illustrates the resulting peak hour residential trips associated with the proposed project. The projected Hickory Creek Residential development trips on Everett Road are 2,379 daily trips to the south, 595 to the west on Everett Road, and 991 trips on Yarnell Road to the north.

Total Projected Traffic Volumes

Background and new project traffic volumes were added together to develop post-development traffic volumes for the year 2020. **Figure 7** illustrates this 2020 projection. Using these projections, mitigation measures including traffic control devices and roadway and intersection geometry can be evaluated.

For the site access, left and right turn lanes were determined unnecessary as the projected traffic is well below the minimum volume thresholds established in the County criteria.

Projected Capacity and Level of Service

Analyses were again conducted finding that the study intersections are expected to operate at acceptable levels of service with the existing traffic control. **Table 6** presents the capacity and levels of service for the study intersections. A summary of the capacity and LOS analyses is presented in **Table 7**. A minimum LOS C is achieved with the proposed development.

SINGLE-FAMILY PEAK-HOUR DISTRIBUTION AND ASSIGNMENT

Hickory Creek Residential Development

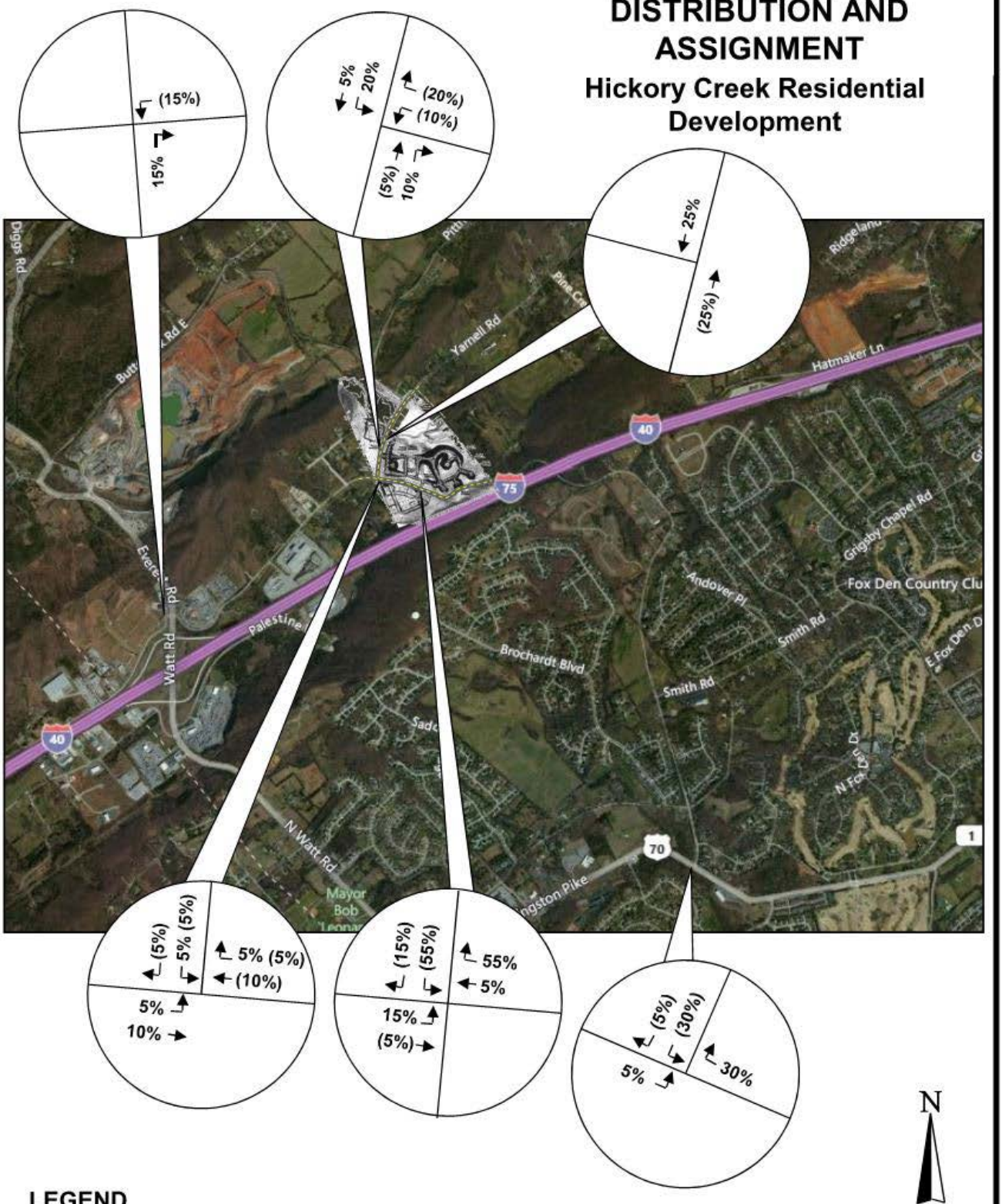
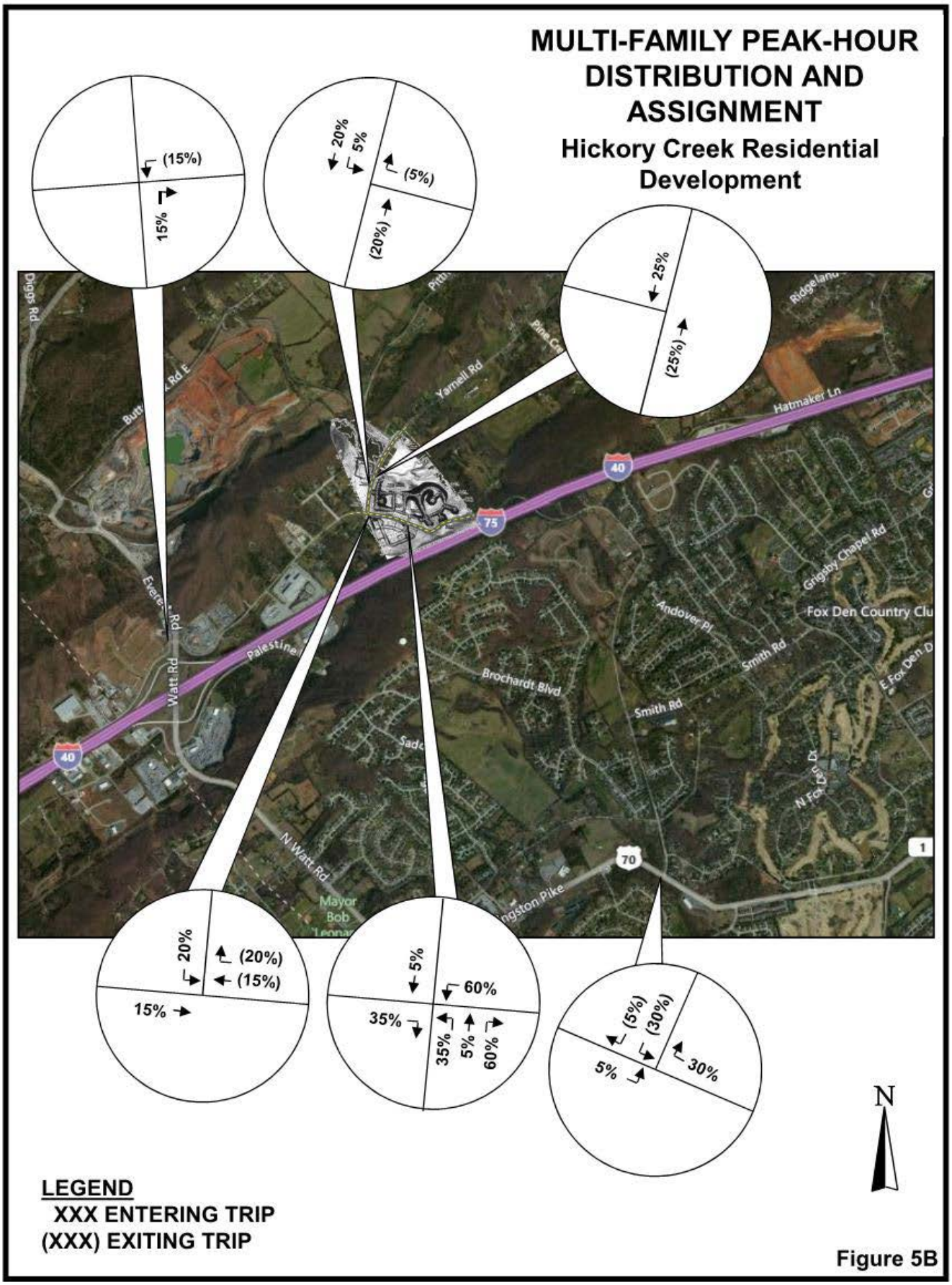
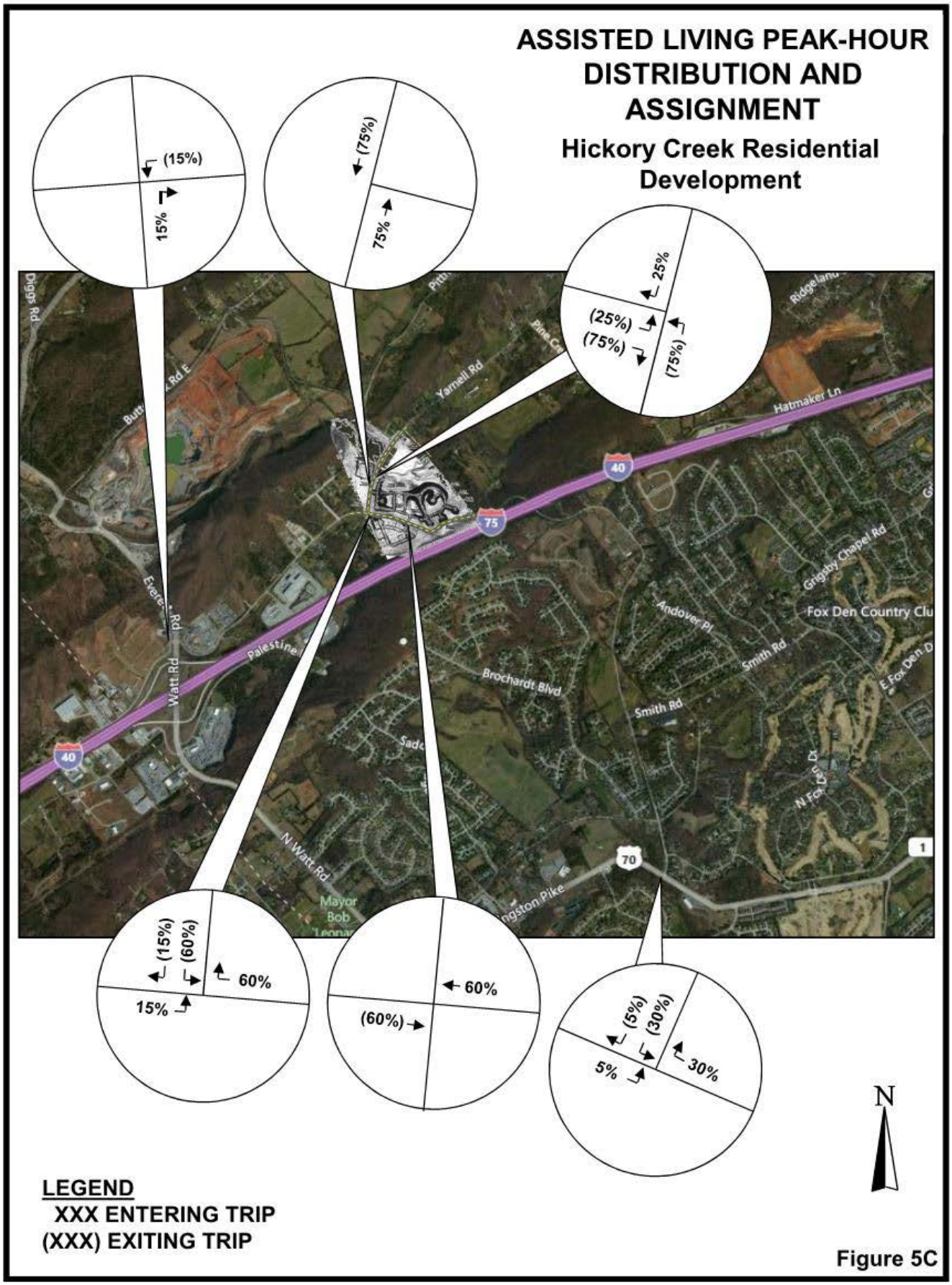


Figure 5A


MULTI-FAMILY PEAK-HOUR DISTRIBUTION AND ASSIGNMENT
Hickory Creek Residential Development
(15%)
15%
20%
5%
(5%)
(20%)
25%
(25%)
20%
(20%)
(15%)
15%
5%
60%
35%
35%
5%
60%
(5%)
(30%)
30%
5%
N
LEGEND
XXX ENTERING TRIP
(XXX) EXITING TRIP
Figure 5B


ASSISTED LIVING PEAK-HOUR DISTRIBUTION AND ASSIGNMENT
Hickory Creek Residential Development
(15%)
15%
(75%)
75%
25%
(25%)
(75%)
(75%)
(15%)
(60%)
60%
15%
60%
(60%)
(5%)
(30%)
30%
5%
N
LEGEND
XXX ENTERING TRIP
(XXX) EXITING TRIP
Figure 5C

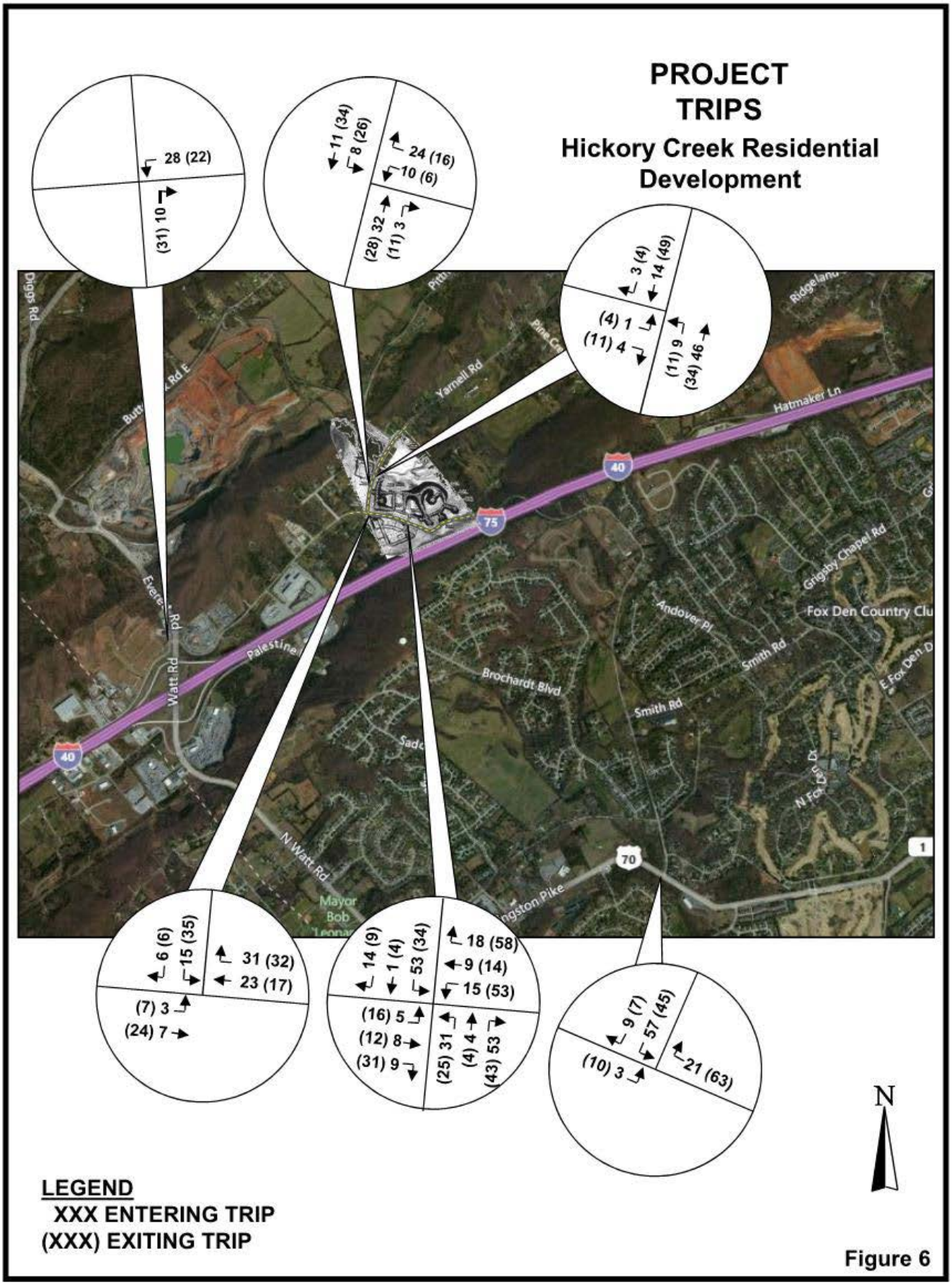

PROJECT
TRIPS
Hickory Creek Residential
Development
28 (22)
(31) 10
11 (34)
8 (26)
24 (16)
10 (6)
(28) 32
(11) 3
3 (4)
14 (49)
(4) 1
(11) 4
(11) 9
(34) 46
6 (6)
15 (35)
31 (32)
23 (17)
(7) 3
(24) 7
14 (9)
1 (4)
53 (34)
18 (58)
9 (14)
15 (53)
(16) 5
(12) 8
(31) 9
(25) 31
(4) 4
(43) 53
9 (7)
57 (45)
(10) 3
21 (63)
Hatmaker Ln
Yarnell Rd
Watt Rd
N Watt Rd
Brochardt Blvd
Smith Rd
Andover Pl
Grigsby Chapel Rd
Fox Den Country Clu
Palestine
Mayor
Bob
40
75
70
1
N
LEGEND
XXX ENTERING TRIP
(XXX) EXITING TRIP

Figure 6

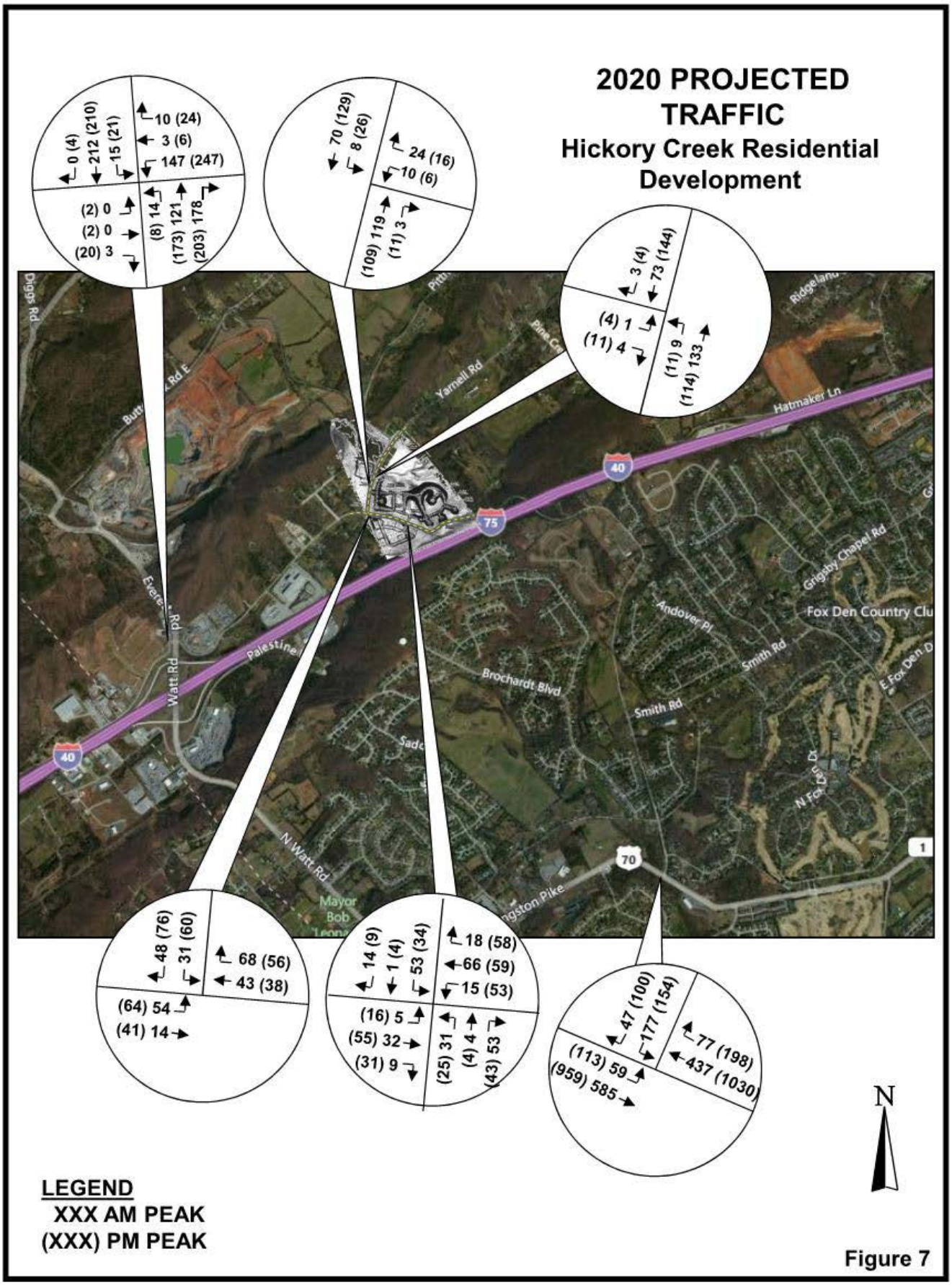

2020 PROJECTED TRAFFIC
Hickory Creek Residential Development
0 (4)
212 (210)
15 (21)
10 (24)
3 (6)
147 (247)
(2) 0
(2) 0
(20) 3
(8) 14
(173) 121
(203) 178
70 (129)
8 (26)
24 (16)
10 (6)
(109) 119
(11) 3
3 (4)
73 (144)
(4) 1
(11) 4
(11) 9
(114) 133
48 (76)
31 (60)
68 (56)
43 (38)
(64) 54
(41) 14
14 (9)
1 (4)
53 (34)
18 (58)
66 (59)
15 (53)
(16) 5
(55) 32
(31) 9
(25) 31
(4) 4
(43) 53
47 (100)
177 (154)
77 (198)
437 (1030)
(113) 59
(959) 585
Hatmaker Ln
Yarnell Rd
Grigsby Chapel Rd
Fox Den Country Clu
Andover Pl
Smith Rd
Brochardt Blvd
Palestine
Watt Rd
N Watt Rd
Mayor Bob
40
75
70
1
N
LEGEND
XXX AM PEAK
(XXX) PM PEAK

Figure 7

Table 6
2020 PROJECTED
CAPACITY AND LEVEL OF SERVICE

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	V/C	DELAY	LOS
Everett Road &	STOP	AM	0.10	9.6	A
Yarnell Road	SB	PM	0.18	10.2	B
Everett Road &	STOP	AM	0.00 / 0.30	10.6 / 14.4	B / B
Watt Road	EB/WB	PM	0.03 / 0.58	10.3 / 23.0	B / C
Everett Road &	SIGNAL	AM	0.42	10.7	B
Kingston Pike		PM	0.76	13.0	B
Everett Road &	STOP	AM	0.11 / 0.10	9.5 / 10.5	A / B
SFU/MFU Access Street	NB/SB	PM	0.10 / 0.09	10.2 / 11.7	B / B
Yarnell Road &	STOP	AM	0.04	9.3	A
SFU Access Street	WB	PM	0.03	9.5	A
Yarnell Road &	STOP	AM	0.01	8.9	A
Assisted Living Facility Access	EB	PM	0.02	9.5	A

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

TABLE 7
CAPACITY AND LEVEL OF SERVICE SUMMARY

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	2016 EXISTING V/C	2016 EXISTING DELAY	2016 EXISTING LOS	2020 BACKGROUND V/C	2020 BACKGROUND DELAY	2020 BACKGROUND LOS	2020 PROJECTED V/C	2020 PROJECTED DELAY	2020 PROJECTED LOS
Everett Road &	STOP	AM	0.08	9.2	A	0.07	9.0	A		9.6	A
Yarnell Road	SB	PM	0.12	9.3	A	0.11	9.2	A	0.18	10.2	B
Everett Road &	STOP	AM	0.00 / 0.26	10.3 / 13.6	B / B	0.00 / 0.24	10.6 / 13.6	B / B	0.00 / 0.30	10.6 / 14.4	B / B
Watt Road	EB/WB	PM	0.03 / 0.53	10.3 / 19.9	A / C	0.03 / 0.53	10.2 / 19.9	B / C	0.03 / 0.58	10.3 / 21.6	B / C
Everett Road &	SIGNAL	AM	0.32	10.4	B	0.35	14.4	B	0.42	10.7	B
Kingston Pike		PM	0.71	10.8	B	0.72	10.2	B	0.76	13.0	B
Everett Road &	STOP	AM							0.01 / 0.00	1.2 / 0.8	A / A
SFU/MFU Access Street	NB/SB	PM							0.04 / 0.01	2.6 / 1.2	A / A
Yarnell Road &	STOP	AM							0.04	9.3	A
SFU Access Street	WB	PM							0.03	9.5	A
Yarnell Road &	STOP	AM							0.01	8.9	A
Assisted Living Facility Access	EB	PM							0.02	9.5	A

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

Access Sight Distances

Proposed access to both Everett Road and Yarnell Road are located where the roads are without significant vertical and/or some minimal horizontal curvature thereby permitting lines of sight in excess of 500 feet with clearance of roadside vegetation. The sight distance on Everett Road to the west, towards Yarnell Road is unrestricted and roadside vegetation is restrictive to the east but can be achieved with its proper clearance.

With the posted speed of 40mph on Yarnell Road, the required lines of sight of 400 feet can be achieved with the clearance of the road side vegetation. The sight distance for the assisted living residential access is in excess of 500 feet north and south. Access for the subdivision is more restrictive due to the slight horizontal curve and roadside vegetation, but can be achieved with the proper clearance of the vegetation at the proposed access to Yarnell Road. Access intersections with Everett 7Road and Yarnell Road should be constructed to provide these minimum lines of sight.

RECOMMENDATIONS

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

- Minimize landscaping, using low growing vegetation, and signing at the Hickory Creek Residential Development access to Everett Road to insure that safe sight distance is maintained.
- Develop the site accesses to Yarnell Road with a minimum 400-foot corner sight-distance and 300-foot for Everett Road
- Post STOP signs (R1-1) for the proposed site access approaches to Everett Road and Yarnell 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 1.5-percent annual compounded growth rate until the horizon year 2020. 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 and signalized capacity and level of service analyses were conducted using the **2010 Highway Capacity Manual**. Capacity and levels of service are found to be acceptable for the projected traffic conditions.

With the recommendations of this report, the efficient and safe flow of traffic should be maintained with the development of the proposed Hickory Creek Residential development.

APPENDIX

Trip Generation

Auxiliary Lane Review

Split Rail Farm Trips

ADT History

Synchro Reports

Traffic Count Data

TRIP GENERATION

01-Feb-16

AVERAGE

LAND USE	L.U.C	SIZE	DAILY TRAFFIC	AM PEAK ENTER	AM PEAK EXIT	AM PEAK TOTAL	PM PEAK ENTER	PM PEAK EXIT	PM PEAK TOTAL
SINGLE FAMILY	210	169	1,609	32	95	127	106	63	169
KNOX CO MULTI-FAMILY		224	2,023	27	96	123	89	73	161
ASSISTED LIVING	254	100	274	12	6	18	15	15	29
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
SINGLE FAMILY	210	48	457	9	27	36	30	18	48
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
			4,363	80	224	304	240	167	407

REGRESSION

LAND USE	L.U.C	SIZE	DAILY TRAFFIC	AM PEAK ENTER	AM PEAK EXIT	AM PEAK TOTAL	PM PEAK ENTER	PM PEAK EXIT	PM PEAK TOTAL
SINGLE FAMILY	210	169	1,702	32	96	128	106	62	168
KNOX CO MULTI-FAMILY		224	1,970	25	88	113	88	72	160
ASSISTED LIVING	254	100	293	N/A	N/A	N/A	N/A	N/A	N/A
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
SINGLE FAMILY	210	48	535	11	33	43	34	20	54
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
			4,500	68	216	284	228	154	383

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
SINGLE FAMILY	210	169	1,654	86	73	159	1,458	77	68	145
KNOX CO MULTI-FAMILY		224	1,431	57	59	116	131	59	55	114
ASSISTED LIVING	254	100	220	15	18	33	244	16	22	38
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0
SINGLE FAMILY	210	48	513	28	24	51	414	24	22	46
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
			3,818	186	174	360	2,247	177	166	344

Single-Family Detached Housing
(210)

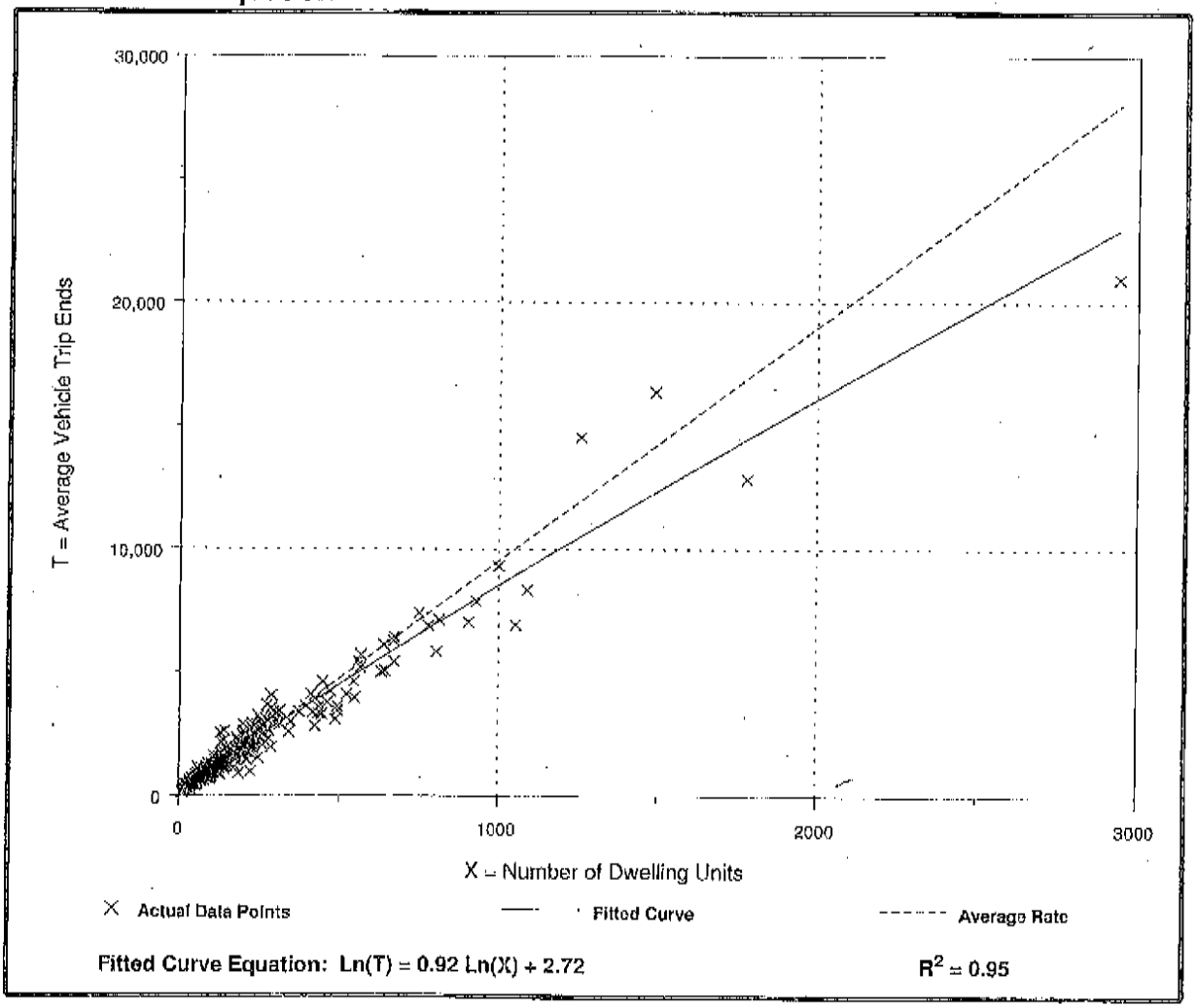
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 355
Avg. Number of Dwelling Units: 198
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.52	4.31 - 21.85	3.70

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.92 Ln(X) + 2.72

R^2 = 0.95

Single-Family Detached Housing
(210)

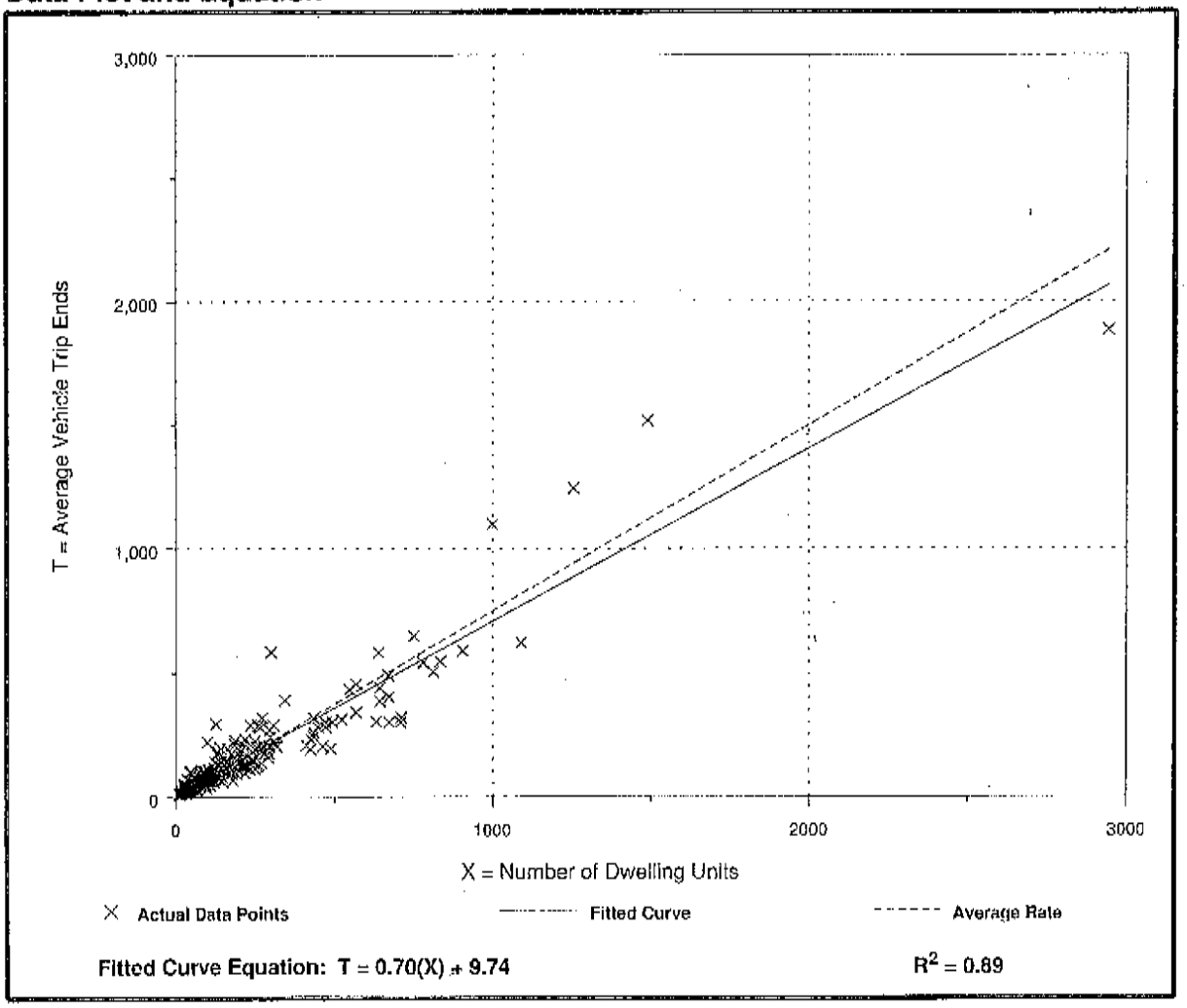
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 292
Avg. Number of Dwelling Units: 194
Directional Distribution: 25% entering, 75% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.75	0.33 - 2.27	0.90

Data Plot and Equation



Fitted Curve Equation: T = 0.70(X) + 9.74

R^2 = 0.89

Single-Family Detached Housing
(210)

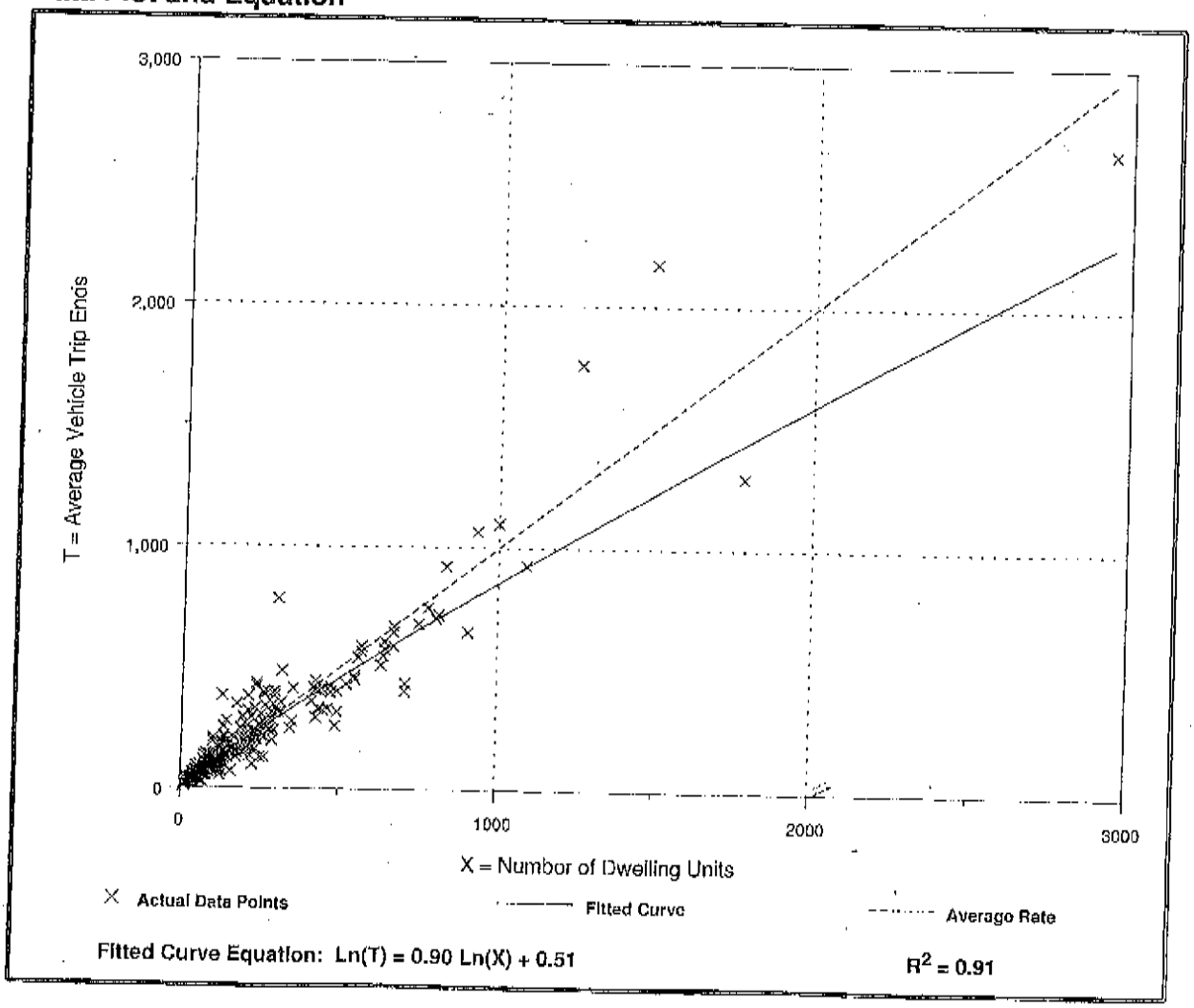
Average Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 321
Avg. Number of Dwelling Units: 207
Directional Distribution: 63% entering, 37% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
1.00	0.42 - 2.98	1.05

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.90 Ln(X) + 0.51

R^2 = 0.91

Assisted Living
(254)

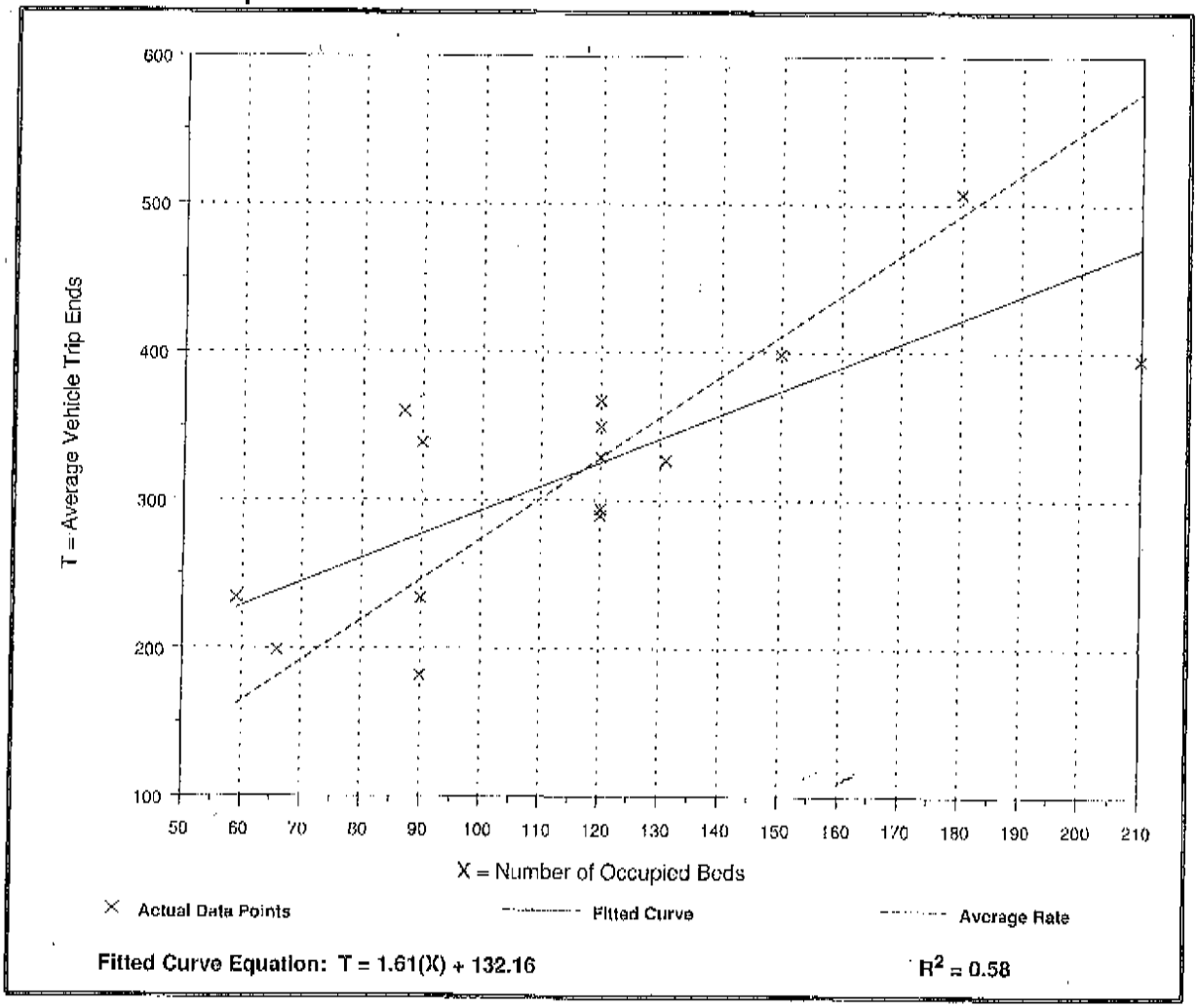
Average Vehicle Trip Ends vs: Occupied Beds
On a: Weekday

Number of Studies: 15
Average Number of Occupied Beds: 117
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Occupied Bed

Average Rate	Range of Rates	Standard Deviation
2.74	1.88 - 4.14	1.75

Data Plot and Equation



Fitted Curve Equation: T = 1.61(X) + 132.16

R^2 = 0.58

Assisted Living
(254)

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

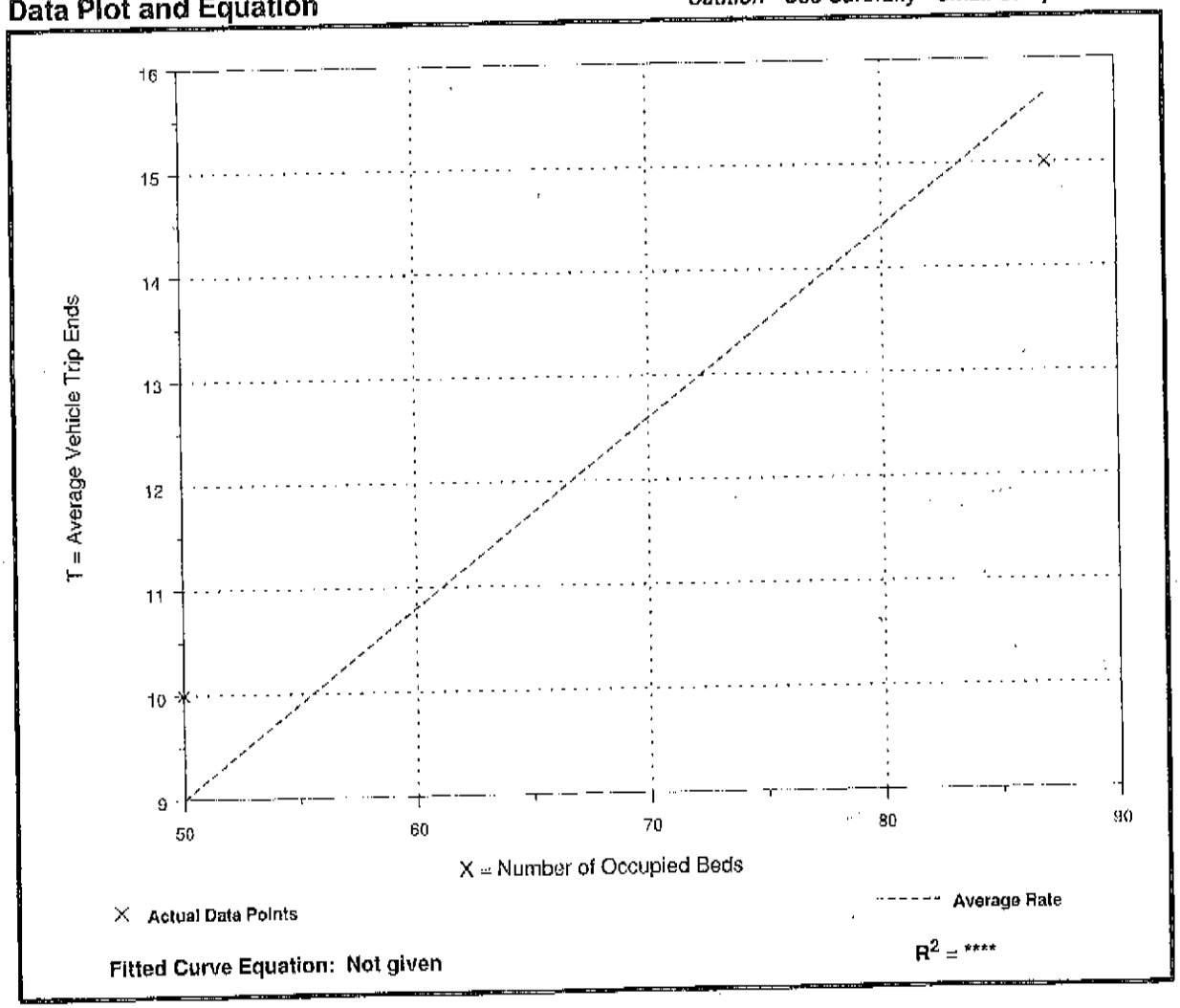
Number of Studies: 2
Average Number of Occupied Beds: 69
Directional Distribution: 68% entering, 32% exiting

Trip Generation per Occupied Bed

Average Rate	Range of Rates	Standard Deviation
0.18	0.17 - 0.20	*

Data Plot and Equation

Caution - Use Carefully - Small Sample Size



Fitted Curve Equation: Not given

R^2 = ****

Assisted Living
(254)

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

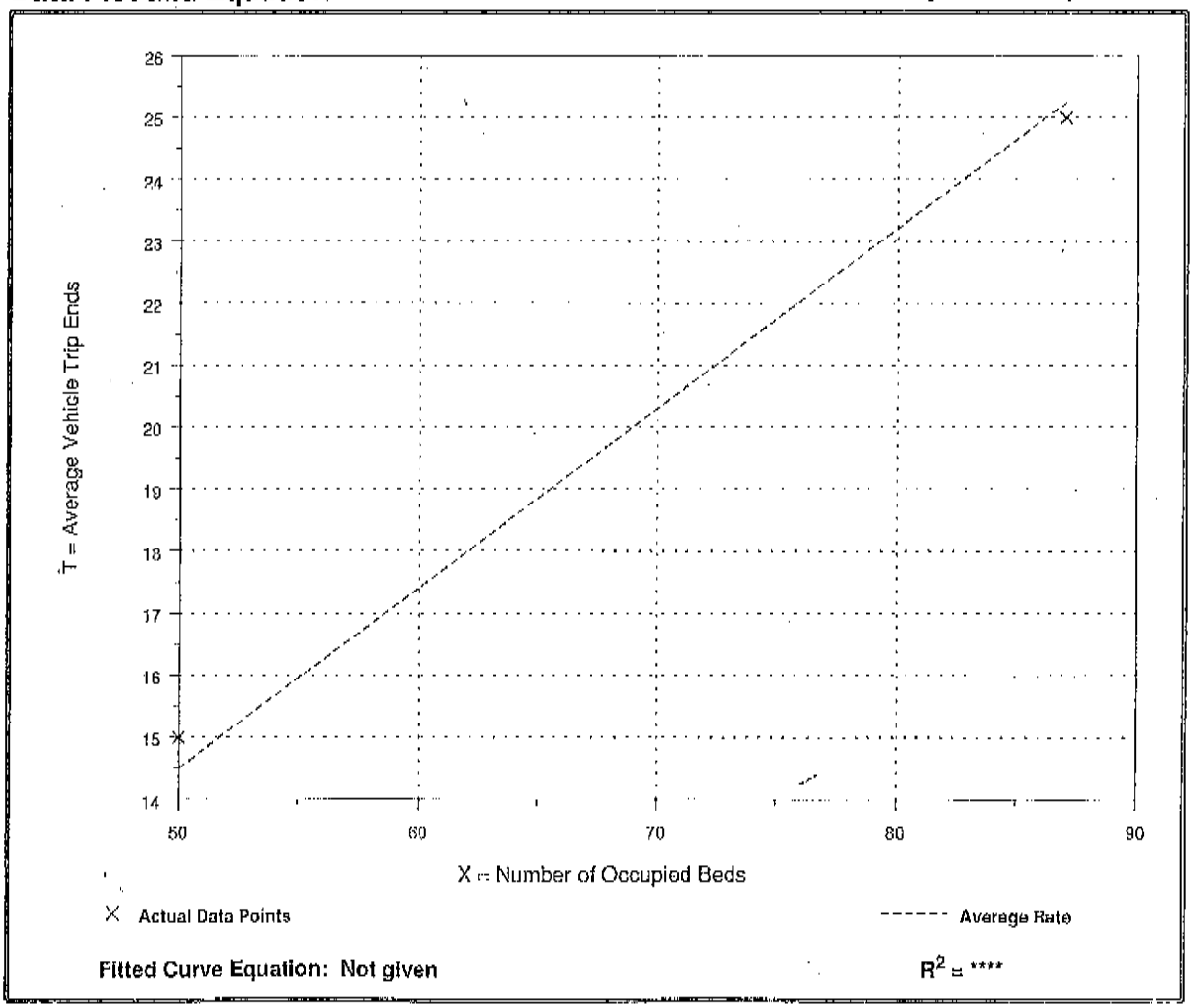
Number of Studies: 2
Average Number of Occupied Beds: 69
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Occupied Bed

Average Rate	Range of Rates	Standard Deviation
0.29	0.29 - 0.30	*

Data Plot and Equation

Caution - Use Carefully - Small Sample Size



Fitted Curve Equation: Not given

R^2 = ****

Everett Road
PM Peak Hour

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	EB 31	WB 58				
100 - 149 150 - 199						
200 - 249 250 - 299						Yes
300 - 349 350 - 399				Yes	Yes Yes	Yes Yes
400 - 449 450 - 499			Yes Yes	Yes Yes	Yes Yes	Yes Yes
500 - 549 550 - 599		Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
600 or More	Yes	Yes	Yes	Yes	Yes	Yes

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 86	150 - 199 117	200 - 249	250 - 299	300 - 349	350 - 399
100 - 149 86 150 - 199 117	300 245 16	245 53 200	185 160	145 130	120 110	100 90
200 - 249 250 - 299	205 175	170 150	140 125	115 105	100 90	80 70
300 - 349 350 - 399	155 135	135 120	110 100	95 85	80 70	65 60
400 - 449 450 - 499	120 105	105 90	90 80	75 70	65 60	55 50
500 - 549 550 - 599	95 85	80 70	70 65	65 60	55 50	50 45
600 - 649 650 - 699	75 70	65 60	60 55	55 50	45 40	40 35
700 - 749 750 or More	65 60	55 50	50 45	45 40	35 35	30 30

Yarnell Road
PM Peak Hour

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 - 199 144/109	200 - 249	250 - 299	300 - 349	350 - 399
Fewer Than 25 4/11 25 - 49 50 - 99		[redacted] Subdivision and Assisted Living				
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

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 - 149 129/114	150 - 199	200 - 249	250 - 299	300 - 349	350 - 399
100 - 149 120 150 - 199 148	26 250 11 200	[redacted] Subdivision and Assisted Living				
200 - 249 250 - 299	160 130	115 100	85 75	75 65	65 60	55 50
300 - 349 350 - 399	110 100	90 80	70 65	60 55	55 50	45 40
400 - 449 450 - 499	90 80	70 65	60 55	50 45	45 40	35 30
500 - 549 550 - 599	70 65	60 55	45 40	35 35	35 30	25 25
600 - 649 650 - 699	60 55	45 35	35 35	30 30	25 25	25 20
700 - 749 750 or More	50 45	35 35	30 25	25 25	20 20	20 20

DISTRIBUTION AND ASSIGNMENT

Split Rail Farm Subdivision

LEGEND

XXX ENTERING TRIP
(XXX) EXITING TRIP

Figure 5

PROJECT
TRIPS
Split Rail Farm Subdivision

LEGEND

XXX ENTERING TRIP
(XXX) EXITING TRIP

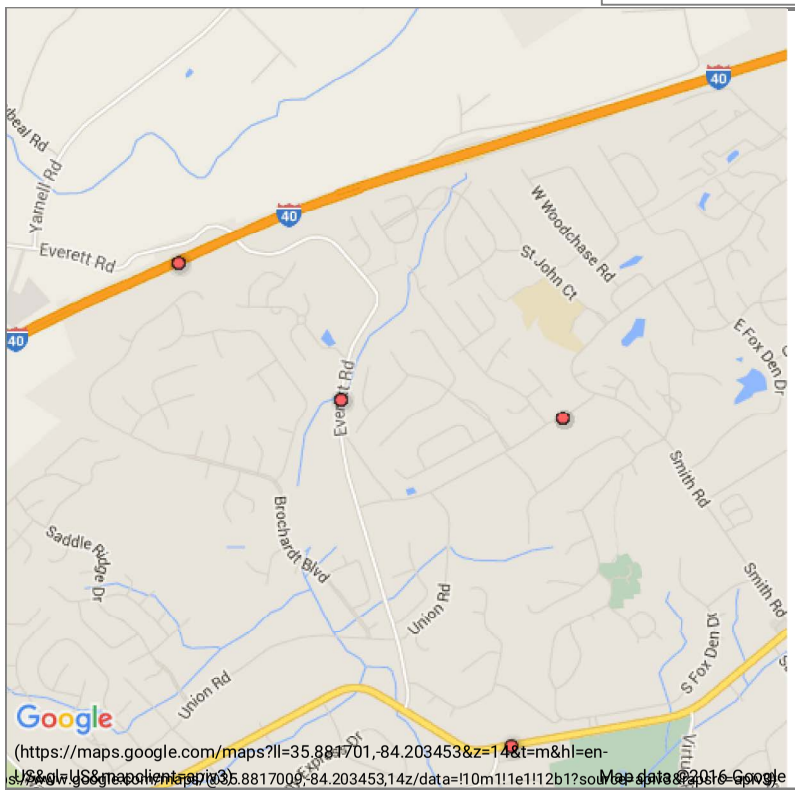
Figure 6

Traffic History

Traffic History reflects the Annual Average Daily Traffic (AADT) count along specific locations on Tennessee's road network

View stations on map: Select a county...

Non-Map Record Search: Anderson Station Number: Search



Station Information	
Station	000136
Route	02420
Location	EVERETTE RD-NEA LOUDON CO LINE
County	Knox
2014	878
2013	764
2012	756
2011	718
2010	676
2009	699
2008	802
2007	734
2006	764
2005	766
2004	815
2003	785
2002	757
2001	751
2000	593
1999	565
1998	559
1997	472

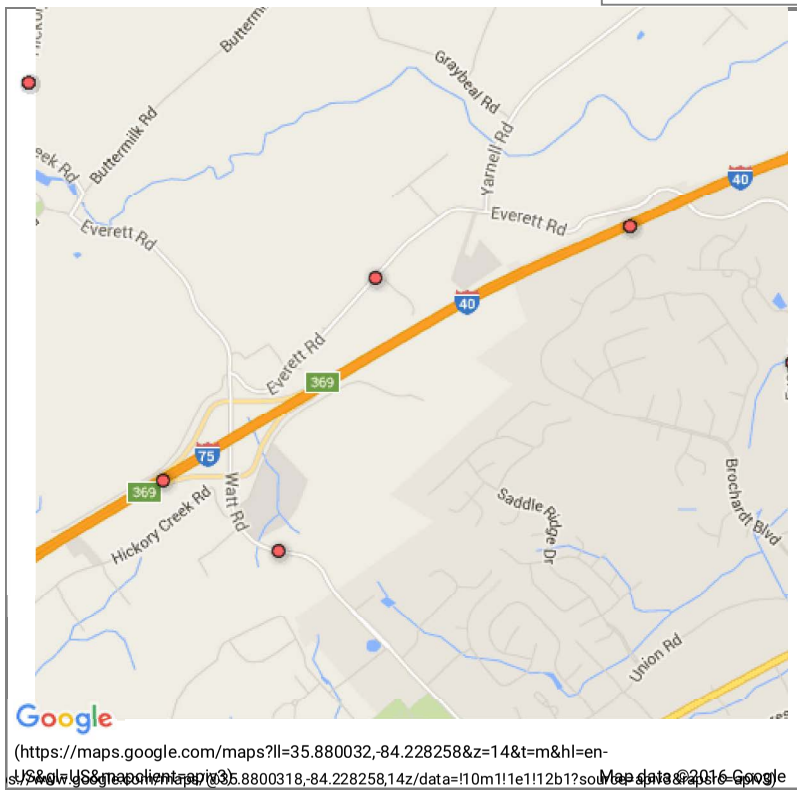
Download File:	KML (/Applications/Files/TrfcHist.kmz)	ESRI Geodatabase (/Applications/Files/TrfcHistFGDB.zip)	ESRI Shapefile (/Applications/Files/TrfcHistSHP.zip)	Database Table (/Applications/Files/TrfcHis
Open With:	Google Earth (https://earth.google.com/)	ArcGIS Explorer (http://www.esri.com/software/arcgis/explorer/index.html)		MS Access or Exc

Traffic History

Traffic History reflects the Annual Average Daily Traffic (AADT) count along specific locations on Tennessee's road network

View stations on map: Select a county...

Non-Map Record Search: Anderson Station Number: Search



(https://maps.google.com/maps?ll=35.880032,-84.228258&z=14&t=m&hl=en-US&gl=US&mapclient=apiv3)

Station Information	
Station	000475
Route	05634
Location	EVERETT RD. - BETWI WATT RD. & YARNELL
County	Knox
2014	2128
2013	1752
2012	1920
2011	1664
2010	1804
2009	NA
2008	NA
2007	NA
2006	NA
2005	NA
2004	NA
2003	NA
2002	NA
2001	NA
2000	NA
1999	NA
1998	NA
1997	NA

Download File:	KML (/Applications/Files/TrfcHist.kmz)	ESRI Geodatabase (/Applications/Files/TrfcHistFGDB.zip)	ESRI Shapefile (/Applications/Files/TrfcHistSHP.zip)	Database Table (/Applications/Files/TrfcHis
Open With:	Google Earth (https://earth.google.com/)	ArcGIS Explorer (http://www.esri.com/software/arcgis/explorer/index.html)		MS Access or Exc

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	3	107	3	9	14	114	157	15	200	0
Future Volume (Veh/h)	0	1	3	107	3	9	14	114	157	15	200	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.75	0.75	0.77	0.77	0.77	0.86	0.86	0.86	0.93	0.93	0.93
Hourly flow rate (vph)	0	1	4	139	4	12	16	133	183	16	215	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			6									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	426	595	215	414	412	133	215			316		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	426	595	215	414	412	133	215			316		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	74	99	99	99			99		
cM capacity (veh/h)	519	407	825	534	517	916	1355			1244		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	5	139	16	149	183	16	215
Volume Left	0	139	0	16	0	16	0
Volume Right	4	0	12	0	183	0	0
cSH	1031	534	768	1355	1700	1244	1700
Volume to Capacity	0.00	0.26	0.02	0.01	0.11	0.01	0.13
Queue Length 95th (ft)	0	26	2	1	0	1	0
Control Delay (s)	10.3	14.1	9.8	0.9	0.0	7.9	0.0
Lane LOS	B	B	A	A		A	
Approach Delay (s)	10.3	13.6		0.4		0.5	
Approach LOS	B	B					

Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	37.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	48	5	15	28	14	40
Future Volume (Veh/h)	48	5	15	28	14	40
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.67	0.67	0.64	0.64	0.71	0.71
Hourly flow rate (vph)	72	7	23	44	20	56
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	67				196	45
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	67				196	45
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				97	95
cM capacity (veh/h)	1535				756	1025

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	79	67	76
Volume Left	72	0	20
Volume Right	0	44	56
cSH	1535	1700	937
Volume to Capacity	0.05	0.04	0.08
Queue Length 95th (ft)	4	0	7
Control Delay (s)	6.8	0.0	9.2
Lane LOS	A		A
Approach Delay (s)	6.8	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	19.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	SBL	SBR	SEL	SET	NWT
Lane Group Flow (vph)	111	47	57	599	506
v/c Ratio	0.63	0.24	0.09	0.22	0.23
Control Delay	44.9	12.3	3.1	3.1	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.9	12.3	3.1	3.1	6.9
Queue Length 50th (ft)	40	0	5	31	47
Queue Length 95th (ft)	#103	26	13	46	74
Internal Link Dist (ft)	3696			5808	1958
Turn Bay Length (ft)		100	100		
Base Capacity (vph)	175	199	656	2689	2238
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.63	0.24	0.09	0.22	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (vph)	102	43	52	551	412	53
Future Volume (vph)	102	43	52	551	412	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3478	
Flt Permitted	0.95	1.00	0.40	1.00	1.00	
Satd. Flow (perm)	1770	1583	748	3539	3478	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	47	57	599	448	58
RTOR Reduction (vph)	0	43	0	0	14	0
Lane Group Flow (vph)	111	4	57	599	492	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Actuated Green, G (s)	4.8	4.8	47.2	47.2	37.6	
Effective Green, g (s)	4.8	4.8	47.2	47.2	37.6	
Actuated g/C Ratio	0.07	0.07	0.74	0.74	0.59	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	132	118	609	2610	2043	
v/s Ratio Prot	c0.06		0.01	c0.17	0.14	
v/s Ratio Perm		0.00	0.06			
v/c Ratio	0.84	0.03	0.09	0.23	0.24	
Uniform Delay, d1	29.2	27.4	2.6	2.7	6.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	35.8	0.1	0.1	0.2	0.3	
Delay (s)	65.0	27.5	2.6	2.9	6.6	
Level of Service	E	C	A	A	A	
Approach Delay (s)	53.8			2.8	6.6	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
2: Watt Road & Everett Road

2/22/2016

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	2	19	209	5	23	7	163	157	20	198	4
Future Volume (Veh/h)	2	2	19	209	5	23	7	163	157	20	198	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.69	0.69	0.69	0.86	0.86	0.86	0.87	0.87	0.87	0.88	0.88	0.88
Hourly flow rate (vph)	3	3	28	243	6	27	8	187	180	23	225	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			6									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	506	656	228	490	479	187	230			367		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	506	656	228	490	479	187	230			367		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	97	47	99	97	99			98		
cM capacity (veh/h)	448	375	812	460	474	855	1338			1192		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	34	243	33	195	180	23	230
Volume Left	3	243	0	8	0	23	0
Volume Right	28	0	27	0	180	0	5
cSH	986	460	746	1338	1700	1192	1700
Volume to Capacity	0.03	0.53	0.04	0.01	0.11	0.02	0.14
Queue Length 95th (ft)	3	75	3	0	0	1	0
Control Delay (s)	10.3	21.2	10.1	0.4	0.0	8.1	0.0
Lane LOS	B	C	B	A		A	
Approach Delay (s)	10.3	19.9		0.2		0.7	
Approach LOS	B	C					

Intersection Summary				
Average Delay	6.5			
Intersection Capacity Utilization	41.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	53	12	17	19	18	66
Future Volume (Veh/h)	53	12	17	19	18	66
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.78	0.78	0.71	0.71	0.71	0.71
Hourly flow rate (vph)	68	15	24	27	25	93
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	51				188	38
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	51				188	38
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				97	91
cM capacity (veh/h)	1555				766	1035

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	83	51	118
Volume Left	68	0	25
Volume Right	0	27	93
cSH	1555	1700	963
Volume to Capacity	0.04	0.03	0.12
Queue Length 95th (ft)	3	0	10
Control Delay (s)	6.1	0.0	9.3
Lane LOS	A		A
Approach Delay (s)	6.1	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	22.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	SBL	SBR	SEL	SET	NWT
Lane Group Flow (vph)	104	93	103	983	1188
v/c Ratio	0.33	0.26	0.28	0.40	0.66
Control Delay	23.1	7.4	6.7	5.9	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.1	7.4	6.7	5.9	16.9
Queue Length 50th (ft)	30	0	11	71	169
Queue Length 95th (ft)	67	31	30	125	#314
Internal Link Dist (ft)	3696			5808	1958
Turn Bay Length (ft)		100	100		
Base Capacity (vph)	572	574	368	2441	1682
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.16	0.28	0.40	0.71

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (vph)	96	86	95	904	970	123
Future Volume (vph)	96	86	95	904	970	123
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3479	
Flt Permitted	0.95	1.00	0.14	1.00	1.00	
Satd. Flow (perm)	1770	1583	258	3539	3479	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	93	103	983	1054	134
RTOR Reduction (vph)	0	81	0	0	15	0
Lane Group Flow (vph)	104	12	103	983	1173	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Actuated Green, G (s)	6.6	6.6	33.2	33.2	22.9	
Effective Green, g (s)	6.6	6.6	33.2	33.2	22.9	
Actuated g/C Ratio	0.13	0.13	0.64	0.64	0.44	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	225	201	290	2268	1538	
v/s Ratio Prot	c0.06		0.03	c0.28	c0.34	
v/s Ratio Perm		0.01	0.20			
v/c Ratio	0.46	0.06	0.36	0.43	0.76	
Uniform Delay, d1	21.0	19.9	6.4	4.6	12.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	0.1	0.8	0.1	2.3	
Delay (s)	22.5	20.0	7.1	4.8	14.5	
Level of Service	C	B	A	A	B	
Approach Delay (s)	21.3			5.0	14.5	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	3	118	3	10	14	121	168	16	212	0
Future Volume (Veh/h)	0	1	3	118	3	10	14	121	168	16	212	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	3	128	3	11	15	132	183	17	230	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			6									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	438	609	230	428	426	132	230			315		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	438	609	230	428	426	132	230			315		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	76	99	99	99			99		
cM capacity (veh/h)	510	400	809	524	508	917	1338			1245		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	4	128	14	147	183	17	230
Volume Left	0	128	0	15	0	17	0
Volume Right	3	0	11	0	183	0	0
cSH	1079	524	782	1338	1700	1245	1700
Volume to Capacity	0.00	0.24	0.02	0.01	0.11	0.01	0.14
Queue Length 95th (ft)	0	24	1	1	0	1	0
Control Delay (s)	10.6	14.1	9.7	0.9	0.0	7.9	0.0
Lane LOS	B	B	A	A		A	
Approach Delay (s)	10.6	13.6		0.4		0.5	
Approach LOS	B	B					

Intersection Summary				
Average Delay	3.1			
Intersection Capacity Utilization	37.9%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	51	7	20	36	17	42
Future Volume (Veh/h)	51	7	20	36	17	42
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)	55	8	22	39	18	46
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	61				160	42
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61				160	42
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				98	96
cM capacity (veh/h)	1542				802	1029

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	63	61	64
Volume Left	55	0	18
Volume Right	0	39	46
cSH	1542	1700	953
Volume to Capacity	0.04	0.04	0.07
Queue Length 95th (ft)	3	0	5
Control Delay (s)	6.5	0.0	9.0
Lane LOS	A		A
Approach Delay (s)	6.5	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	SBL	SBR	SEL	SET	NWT
Lane Group Flow (vph)	130	51	61	636	537
v/c Ratio	0.74	0.25	0.10	0.24	0.24
Control Delay	54.4	12.1	3.2	3.2	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	54.4	12.1	3.2	3.2	7.0
Queue Length 50th (ft)	47	0	5	34	51
Queue Length 95th (ft)	#124	27	13	50	78
Internal Link Dist (ft)	3696			5808	1958
Turn Bay Length (ft)		100	100		
Base Capacity (vph)	175	202	641	2689	2238
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.74	0.25	0.10	0.24	0.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (vph)	120	47	56	585	437	57
Future Volume (vph)	120	47	56	585	437	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3478	
Flt Permitted	0.95	1.00	0.39	1.00	1.00	
Satd. Flow (perm)	1770	1583	726	3539	3478	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	51	61	636	475	62
RTOR Reduction (vph)	0	47	0	0	14	0
Lane Group Flow (vph)	130	4	61	636	523	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Actuated Green, G (s)	4.8	4.8	47.2	47.2	37.6	
Effective Green, g (s)	4.8	4.8	47.2	47.2	37.6	
Actuated g/C Ratio	0.07	0.07	0.74	0.74	0.59	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	132	118	594	2610	2043	
v/s Ratio Prot	c0.07		0.01	c0.18	0.15	
v/s Ratio Perm		0.00	0.07			
v/c Ratio	0.98	0.03	0.10	0.24	0.26	
Uniform Delay, d1	29.6	27.4	2.6	2.7	6.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	73.2	0.1	0.1	0.2	0.3	
Delay (s)	102.7	27.6	2.7	2.9	6.7	
Level of Service	F	C	A	A	A	
Approach Delay (s)	81.5			2.9	6.7	
Approach LOS	F			A	A	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	64.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	2	20	225	6	24	8	173	172	21	210	4
Future Volume (Veh/h)	2	2	20	225	6	24	8	173	172	21	210	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	2	22	245	7	26	9	188	187	23	228	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			6									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	512	669	230	492	484	188	232			375		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	512	669	230	492	484	188	232			375		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	97	47	99	97	99			98		
cM capacity (veh/h)	444	369	809	463	470	854	1336			1183		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	26	245	33	197	187	23	232
Volume Left	2	245	0	9	0	23	0
Volume Right	22	0	26	0	187	0	4
cSH	956	463	728	1336	1700	1183	1700
Volume to Capacity	0.03	0.53	0.05	0.01	0.11	0.02	0.14
Queue Length 95th (ft)	2	76	4	1	0	1	0
Control Delay (s)	10.2	21.2	10.2	0.4	0.0	8.1	0.0
Lane LOS	B	C	B	A		A	
Approach Delay (s)	10.2	19.9		0.2		0.7	
Approach LOS	B	C					

Intersection Summary				
Average Delay	6.4			
Intersection Capacity Utilization	43.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	57	17	21	24	26	70
Future Volume (Veh/h)	57	17	21	24	26	70
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)	62	18	23	26	28	76
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	49				178	36
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	49				178	36
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				96	93
cM capacity (veh/h)	1558				779	1037

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	80	49	104
Volume Left	62	0	28
Volume Right	0	26	76
cSH	1558	1700	952
Volume to Capacity	0.04	0.03	0.11
Queue Length 95th (ft)	3	0	9
Control Delay (s)	5.8	0.0	9.2
Lane LOS	A		A
Approach Delay (s)	5.8	0.0	9.2
Approach LOS			A

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	23.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	SBL	SBR	SEL	SET	NWT
Lane Group Flow (vph)	118	100	112	1042	1267
v/c Ratio	0.47	0.32	0.32	0.40	0.62
Control Delay	32.9	9.7	5.7	4.4	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.9	9.7	5.7	4.4	12.8
Queue Length 50th (ft)	41	0	11	70	176
Queue Length 95th (ft)	#99	36	24	98	248
Internal Link Dist (ft)	3696			5808	1958
Turn Bay Length (ft)		100	100		
Base Capacity (vph)	263	321	350	2678	2079
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.45	0.31	0.32	0.39	0.61

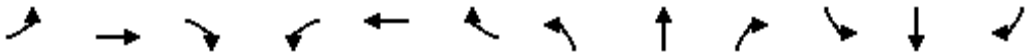
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (vph)	109	92	103	959	1030	135
Future Volume (vph)	109	92	103	959	1030	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3478	
Flt Permitted	0.95	1.00	0.12	1.00	1.00	
Satd. Flow (perm)	1770	1583	220	3539	3478	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	118	100	112	1042	1120	147
RTOR Reduction (vph)	0	91	0	0	16	0
Lane Group Flow (vph)	118	9	112	1042	1251	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Actuated Green, G (s)	5.0	5.0	38.2	38.2	27.9	
Effective Green, g (s)	5.0	5.0	38.2	38.2	27.9	
Actuated g/C Ratio	0.09	0.09	0.69	0.69	0.51	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	160	143	272	2449	1757	
v/s Ratio Prot	c0.07		0.03	c0.29	c0.36	
v/s Ratio Perm		0.01	0.25			
v/c Ratio	0.74	0.06	0.41	0.43	0.71	
Uniform Delay, d1	24.5	23.0	6.0	3.7	10.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.2	0.2	1.0	0.1	1.4	
Delay (s)	40.6	23.1	7.0	3.8	11.9	
Level of Service	D	C	A	A	B	
Approach Delay (s)	32.6			4.1	11.9	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

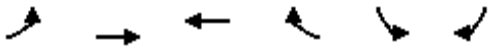
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1	3	147	3	10	14	121	178	15	212	0
Future Volume (Veh/h)	0	1	3	147	3	10	14	121	178	15	212	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1	3	160	3	11	15	132	193	16	230	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			6									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	436	617	230	426	424	132	230			325		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	436	617	230	426	424	132	230			325		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	70	99	99	99			99		
cM capacity (veh/h)	512	396	809	526	509	917	1338			1235		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	4	160	14	147	193	16	230
Volume Left	0	160	0	15	0	16	0
Volume Right	3	0	11	0	193	0	0
cSH	1079	526	783	1338	1700	1235	1700
Volume to Capacity	0.00	0.30	0.02	0.01	0.11	0.01	0.14
Queue Length 95th (ft)	0	32	1	1	0	1	0
Control Delay (s)	10.6	14.8	9.7	0.9	0.0	8.0	0.0
Lane LOS	B	B	A	A		A	
Approach Delay (s)	10.6	14.4		0.4		0.5	
Approach LOS	B	B					

Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	39.6%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	54	14	43	68	31	48
Future Volume (Veh/h)	54	14	43	68	31	48
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)	59	15	47	74	34	52
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	121				217	84
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	121				217	84
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				95	95
cM capacity (veh/h)	1467				740	975

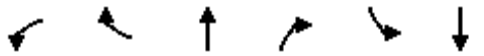
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	74	121	86
Volume Left	59	0	34
Volume Right	0	74	52
cSH	1467	1700	866
Volume to Capacity	0.04	0.07	0.10
Queue Length 95th (ft)	3	0	8
Control Delay (s)	6.1	0.0	9.6
Lane LOS	A		A
Approach Delay (s)	6.1	0.0	9.6
Approach LOS			A

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	5	32	9	15	66	18	31	4	53	53	1	14
Future Volume (Veh/h)	5	32	9	15	66	18	31	4	53	53	1	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	35	10	16	72	20	34	4	58	58	1	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	92			45			180	174	40	224	169	82
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	92			45			180	174	40	224	169	82
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			96	99	94	91	100	98
cM capacity (veh/h)	1503			1563			762	710	1031	680	714	978

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	50	108	96	74
Volume Left	5	16	34	58
Volume Right	10	20	58	15
cSH	1503	1563	901	726
Volume to Capacity	0.00	0.01	0.11	0.10
Queue Length 95th (ft)	0	1	9	8
Control Delay (s)	0.8	1.2	9.5	10.5
Lane LOS	A	A	A	B
Approach Delay (s)	0.8	1.2	9.5	10.5
Approach LOS			A	B

Intersection Summary				
Average Delay	5.6			
Intersection Capacity Utilization	22.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	24	119	3	8	70
Future Volume (Veh/h)	10	24	119	3	8	70
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	26	129	3	9	76
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	224	130			132	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	224	130			132	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	97			99	
cM capacity (veh/h)	759	919			1453	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	37	132	85
Volume Left	11	0	9
Volume Right	26	3	0
cSH	865	1700	1453
Volume to Capacity	0.04	0.08	0.01
Queue Length 95th (ft)	3	0	0
Control Delay (s)	9.3	0.0	0.8
Lane LOS	A		A
Approach Delay (s)	9.3	0.0	0.8
Approach LOS	A		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	SBL	SBR	SEL	SET	NWT
Lane Group Flow (vph)	192	51	64	636	559
v/c Ratio	0.65	0.17	0.12	0.29	0.31
Control Delay	34.0	8.7	5.1	5.5	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	8.7	5.1	5.5	10.0
Queue Length 50th (ft)	64	0	8	48	64
Queue Length 95th (ft)	#126	24	19	70	98
Internal Link Dist (ft)	3696			5808	1958
Turn Bay Length (ft)		100	100		
Base Capacity (vph)	327	334	540	2231	1785
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.59	0.15	0.12	0.29	0.31

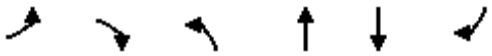
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (vph)	177	47	59	585	437	77
Future Volume (vph)	177	47	59	585	437	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3459	
Flt Permitted	0.95	1.00	0.37	1.00	1.00	
Satd. Flow (perm)	1770	1583	684	3539	3459	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	192	51	64	636	475	84
RTOR Reduction (vph)	0	43	0	0	21	0
Lane Group Flow (vph)	192	8	64	636	538	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Actuated Green, G (s)	10.0	10.0	40.0	40.0	30.4	
Effective Green, g (s)	10.0	10.0	40.0	40.0	30.4	
Actuated g/C Ratio	0.16	0.16	0.65	0.65	0.49	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	285	255	504	2283	1696	
v/s Ratio Prot	c0.11		0.01	c0.18	c0.16	
v/s Ratio Perm		0.01	0.07			
v/c Ratio	0.67	0.03	0.13	0.28	0.32	
Uniform Delay, d1	24.5	21.9	4.4	4.8	9.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.2	0.1	0.1	0.3	0.5	
Delay (s)	30.6	22.0	4.5	5.1	10.0	
Level of Service	C	C	A	A	B	
Approach Delay (s)	28.8			5.0	10.0	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	62.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

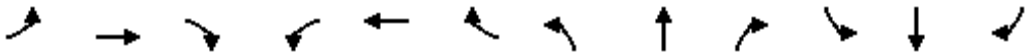
c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	4	9	133	73	3
Future Volume (Veh/h)	1	4	9	133	73	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	4	10	145	79	3
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	246	80	82			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	246	80	82			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	99			
cM capacity (veh/h)	738	980	1515			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	5	155	82
Volume Left	1	10	0
Volume Right	4	0	3
cSH	919	1515	1700
Volume to Capacity	0.01	0.01	0.05
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.9	0.5	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	0.5	0.0
Approach LOS	A		

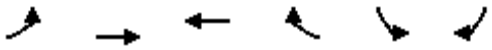
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	2	20	247	6	24	8	173	203	21	210	4
Future Volume (Veh/h)	2	2	20	247	6	24	8	173	203	21	210	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	2	22	268	7	26	9	188	221	23	228	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			6									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	512	703	230	492	484	188	232			409		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	512	703	230	492	484	188	232			409		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	97	42	99	97	99			98		
cM capacity (veh/h)	444	352	809	462	470	854	1336			1150		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	26	268	33	197	221	23	232
Volume Left	2	268	0	9	0	23	0
Volume Right	22	0	26	0	221	0	4
cSH	956	462	728	1336	1700	1150	1700
Volume to Capacity	0.03	0.58	0.05	0.01	0.13	0.02	0.14
Queue Length 95th (ft)	2	90	4	1	0	2	0
Control Delay (s)	10.3	23.0	10.2	0.4	0.0	8.2	0.0
Lane LOS	B	C	B	A		A	
Approach Delay (s)	10.3	21.6		0.2		0.7	
Approach LOS	B	C					

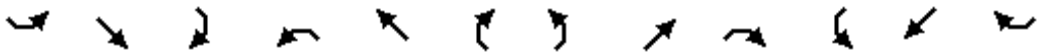
Intersection Summary				
Average Delay	7.0			
Intersection Capacity Utilization	44.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	64	41	38	56	60	76
Future Volume (Veh/h)	64	41	38	56	60	76
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)	70	45	41	61	65	83
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	102				256	72
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	102				256	72
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				91	92
cM capacity (veh/h)	1490				698	991

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	115	102	148
Volume Left	70	0	65
Volume Right	0	61	83
cSH	1490	1700	837
Volume to Capacity	0.05	0.06	0.18
Queue Length 95th (ft)	4	0	16
Control Delay (s)	4.7	0.0	10.2
Lane LOS	A		B
Approach Delay (s)	4.7	0.0	10.2
Approach LOS			B

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	27.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	16	55	31	53	59	58	25	4	43	34	4	9
Future Volume (Veh/h)	16	55	31	53	59	58	25	4	43	34	4	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	60	34	58	64	63	27	4	47	37	4	10
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	127			94			334	354	77	372	340	96
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	127			94			334	354	77	372	340	96
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			95	99	95	93	99	99
cM capacity (veh/h)	1459			1500			586	543	984	533	553	961

Direction, Lane #	SE 1	NW 1	NE 1	SW 1
Volume Total	111	185	78	51
Volume Left	17	58	27	37
Volume Right	34	63	47	10
cSH	1459	1500	771	586
Volume to Capacity	0.01	0.04	0.10	0.09
Queue Length 95th (ft)	1	3	8	7
Control Delay (s)	1.2	2.6	10.2	11.7
Lane LOS	A	A	B	B
Approach Delay (s)	1.2	2.6	10.2	11.7
Approach LOS			B	B

Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	28.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	16	109	11	26	129
Future Volume (Veh/h)	6	16	109	11	26	129
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	17	118	12	28	140
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	320	124			130	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	320	124			130	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			98	
cM capacity (veh/h)	660	927			1455	

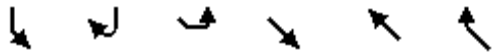
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	24	130	168
Volume Left	7	0	28
Volume Right	17	12	0
cSH	829	1700	1455
Volume to Capacity	0.03	0.08	0.02
Queue Length 95th (ft)	2	0	1
Control Delay (s)	9.5	0.0	1.4
Lane LOS	A		A
Approach Delay (s)	9.5	0.0	1.4
Approach LOS	A		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	SBL	SBR	SEL	SET	NWT
Lane Group Flow (vph)	167	109	123	1039	1335
v/c Ratio	0.72	0.36	0.42	0.44	0.75
Control Delay	45.3	9.8	9.1	5.4	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	45.3	9.8	9.1	5.4	15.9
Queue Length 50th (ft)	59	0	13	75	197
Queue Length 95th (ft)	#141	37	36	106	279
Internal Link Dist (ft)	3696			5808	1958
Turn Bay Length (ft)		100	100		
Base Capacity (vph)	237	306	294	2365	1780
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.70	0.36	0.42	0.44	0.75

Intersection Summary

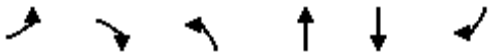
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (vph)	154	100	113	956	1030	198
Future Volume (vph)	154	100	113	956	1030	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	3539	3454	
Flt Permitted	0.95	1.00	0.11	1.00	1.00	
Satd. Flow (perm)	1770	1583	205	3539	3454	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	167	109	123	1039	1120	215
RTOR Reduction (vph)	0	95	0	0	25	0
Lane Group Flow (vph)	167	14	123	1039	1310	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Actuated Green, G (s)	7.8	7.8	41.2	41.2	30.4	
Effective Green, g (s)	7.8	7.8	41.2	41.2	30.4	
Actuated g/C Ratio	0.13	0.13	0.68	0.68	0.50	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	226	202	261	2390	1721	
v/s Ratio Prot	c0.09		0.04	c0.29	c0.38	
v/s Ratio Perm		0.01	0.28			
v/c Ratio	0.74	0.07	0.47	0.43	0.76	
Uniform Delay, d1	25.6	23.4	7.8	4.5	12.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.9	0.1	1.3	0.6	3.2	
Delay (s)	37.5	23.6	9.2	5.1	15.6	
Level of Service	D	C	A	A	B	
Approach Delay (s)	32.0			5.6	15.6	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	61.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	11	11	114	144	4
Future Volume (Veh/h)	4	11	11	114	144	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	12	12	124	157	4
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	307	159	161			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	307	159	161			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	679	886	1418			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	136	161
Volume Left	4	12	0
Volume Right	12	0	4
cSH	824	1418	1700
Volume to Capacity	0.02	0.01	0.09
Queue Length 95th (ft)	1	1	0
Control Delay (s)	9.5	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.5	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

CDM Smith

1100 Marion Street
Knoxville, TN 37921

File Name : Everett at Yarnell 2013
Site Code : 00000006
Start Date : 12/20/2013
Page No : 1

Groups Printed- Unshifted

	EVERETT RD Southbound				YARNELL RD Westbound				EVERETT RD Northbound				YARNELL RD Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:15 AM	4	0	8	12	0	4	6	10	0	0	1	1	15	3	0	18	41
07:30 AM	2	0	9	11	0	6	10	16	0	0	0	0	17	2	0	19	46
07:45 AM	2	0	16	18	0	2	6	8	0	0	0	0	7	0	0	7	33
Total	8	0	33	41	0	12	22	34	0	0	1	1	39	5	0	44	120
08:00 AM	5	0	5	10	0	2	5	7	0	0	0	0	7	0	0	7	24
08:15 AM	3	0	4	7	0	2	3	5	0	0	0	0	10	2	0	12	24
08:30 AM	3	0	9	12	0	4	1	5	0	0	0	0	7	1	0	8	25
08:45 AM	2	0	5	7	0	1	5	6	0	0	0	0	7	0	0	7	20
Total	13	0	23	36	0	9	14	23	0	0	0	0	31	3	0	34	93
*** BREAK ***																	
04:15 PM	3	0	18	21	0	6	6	12	0	0	0	0	17	3	0	20	53
04:30 PM	4	0	18	22	0	4	7	11	0	0	1	1	12	2	0	14	48
04:45 PM	7	0	21	28	0	3	2	5	0	0	0	0	11	4	0	15	48
Total	14	0	57	71	0	13	15	28	0	0	1	1	40	9	0	49	149
05:00 PM	3	0	6	9	0	3	3	6	0	0	0	0	11	2	0	13	28
05:15 PM	6	0	10	16	0	4	5	9	0	0	0	0	10	1	0	11	36
05:30 PM	3	0	11	14	0	4	6	10	0	0	0	0	10	2	0	12	36
05:45 PM	1	0	12	13	0	4	4	8	0	0	0	0	9	3	0	12	33
Total	13	0	39	52	0	15	18	33	0	0	0	0	40	8	0	48	133
Grand Total	48	0	152	200	0	49	69	118	0	0	2	2	150	25	0	175	495
Apprch %	24	0	76		0	41.5	58.5		0	0	100		85.7	14.3	0		
Total %	9.7	0	30.7	40.4	0	9.9	13.9	23.8	0	0	0.4	0.4	30.3	5.1	0	35.4	

	EVERETT RD Southbound				YARNELL RD Westbound				EVERETT RD Northbound				YARNELL RD Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	4	0	8	12	0	4	6	10	0	0	**1**	**1**	15	**3**	0	18	41
07:30 AM	2	0	9	11	0	**6**	**10**	**16**	0	0	0	0	**17**	2	0	**19**	**46**
07:45 AM	2	0	**16**	**18**	0	2	6	8	0	0	0	0	7	0	0	7	33
08:00 AM	**5**	0	5	10	0	2	5	7	0	0	0	0	7	0	0	7	24
Total Volume	13	0	38	51	0	14	27	41	0	0	1	1	46	5	0	51	144
% App. Total	25.5	0	74.5		0	34.1	65.9		0	0	100		90.2	9.8	0		
PHF	.650	.000	.594	.708	.000	.583	.675	.641	.000	.000	.250	.250	.676	.417	.000	.671	.783
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	3	0	18	21	0	**6**	6	**12**	0	0	0	0	**17**	3	0	**20**	**53**
04:30 PM	4	0	18	22	0	4	**7**	11	0	0	**1**	**1**	12	2	0	14	48
04:45 PM	**7**	0	**21**	**28**	0	3	2	5	0	0	0	0	11	**4**	0	15	48
05:00 PM	3	0	6	9	0	3	3	6	0	0	0	0	11	2	0	13	28
Total Volume	17	0	63	80	0	16	18	34	0	0	1	1	51	11	0	62	177
% App. Total	21.2	0	78.8		0	47.1	52.9		0	0	100		82.3	17.7	0		
PHF	.607	.000	.750	.714	.000	.667	.643	.708	.000	.000	.250	.250	.750	.688	.000	.775	.835

CDM Smith

1100 Marion Street
Knoxville, TN 37921

File Name : Everett at Watt 2013
Site Code : 00000000
Start Date : 12/20/2013
Page No : 1

Groups Printed- Unshifted

	WATT RD Southbound				EVERETT RD Westbound				WATT RD Northbound				EVERETT RD Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:15 AM	1	48	0	49	25	0	5	30	3	19	35	57	0	0	0	0	136
07:30 AM	4	51	0	55	35	0	2	37	0	27	41	68	0	0	1	1	161
07:45 AM	6	48	0	54	19	2	0	21	6	34	39	79	0	0	1	1	155
Total	11	147	0	158	79	2	7	88	9	80	115	204	0	0	2	2	452
08:00 AM	3	44	0	47	23	1	2	26	4	29	35	68	0	0	1	1	142
08:15 AM	7	34	0	41	18	0	2	20	3	27	23	53	0	0	2	2	116
08:30 AM	1	34	1	36	26	0	2	28	2	28	38	68	0	0	0	0	132
08:45 AM	2	33	0	35	28	0	6	34	3	25	30	58	1	0	1	2	129
Total	13	145	1	159	95	1	12	108	12	109	126	247	1	0	4	5	519
09:00 AM	4	46	1	51	38	1	2	41	3	31	29	63	1	0	2	3	158
*** BREAK ***																	
Total	4	46	1	51	38	1	2	41	3	31	29	63	1	0	2	3	158
*** BREAK ***																	
04:00 PM	9	49	2	60	54	4	8	66	1	40	40	81	2	1	5	8	215
04:15 PM	7	50	0	57	55	1	8	64	2	39	49	90	0	0	3	3	214
04:30 PM	3	47	2	52	46	0	1	47	3	40	29	72	0	1	7	8	179
04:45 PM	0	43	0	43	45	0	5	50	1	37	32	70	0	0	3	3	166
Total	19	189	4	212	200	5	22	227	7	156	150	313	2	2	18	22	774
05:00 PM	3	37	0	40	56	0	3	59	3	43	31	77	0	2	14	16	192
05:15 PM	0	45	0	45	40	0	4	44	4	41	36	81	0	1	3	4	174
05:30 PM	1	35	0	36	43	2	5	50	2	46	44	92	1	1	4	6	184
05:45 PM	3	31	0	34	37	1	8	46	2	45	31	78	0	0	1	1	159
Total	7	148	0	155	176	3	20	199	11	175	142	328	1	4	22	27	709
Grand Total	54	675	6	735	588	12	63	663	42	551	562	1155	5	6	48	59	2612
Apprch %	7.3	91.8	0.8		88.7	1.8	9.5		3.6	47.7	48.7		8.5	10.2	81.4		
Total %	2.1	25.8	0.2	28.1	22.5	0.5	2.4	25.4	1.6	21.1	21.5	44.2	0.2	0.2	1.8	2.3	

	WATT RD Southbound				EVERETT RD Westbound				WATT RD Northbound				EVERETT RD Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	1	48	0	49	25	0	**5**	30	3	19	35	57	0	0	0	0	136
07:30 AM	4	**51**	0	**55**	**35**	0	2	**37**	0	27	**41**	68	0	0	**1**	**1**	**161**
07:45 AM	**6**	48	0	54	19	**2**	0	21	**6**	**34**	39	**79**	0	0	1	1	155
08:00 AM	3	44	0	47	23	1	2	26	4	29	35	68	0	0	1	1	142
Total Volume	14	191	0	205	102	3	9	114	13	109	150	272	0	0	3	3	594
% App. Total	6.8	93.2	0		89.5	2.6	7.9		4.8	40.1	55.1		0	0	100		
PHF	.583	.936	.000	.932	.729	.375	.450	.770	.542	.801	.915	.861	.000	.000	.750	.750	.922

CDM Smith

1100 Marion Street
Knoxville, TN 37921

File Name : Everett at Watt 2013
Site Code : 00000000
Start Date : 12/20/2013
Page No : 2

	WATT RD Southbound				EVERETT RD Westbound				WATT RD Northbound				EVERETT RD Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**9**	49	**2**	**60**	54	**4**	**8**	**66**	1	**40**	40	81	**2**	**1**	5	**8**	**215**
04:15 PM	7	**50**	0	57	**55**	1	8	64	2	39	**49**	**90**	0	0	3	3	214
04:30 PM	3	47	2	52	46	0	1	47	**3**	40	29	72	0	1	**7**	8	179
04:45 PM	0	43	0	43	45	0	5	50	1	37	32	70	0	0	3	3	166
Total Volume	19	189	4	212	200	5	22	227	7	156	150	313	2	2	18	22	774
% App. Total	9	89.2	1.9		88.1	2.2	9.7		2.2	49.8	47.9		9.1	9.1	81.8		
PHF	.528	.945	.500	.883	.909	.313	.688	.860	.583	.975	.765	.869	.250	.500	.643	.688	.900

CDM SMITH Inc.
1100 Marion Street, Suite 300
Knoxville, TN 37921
(865) 963-4300

File Name : Everett_Kingston Pk AM
Site Code : 00000000
Start Date : 1/27/2016
Page No : 1

Groups Printed- Unshifted

	EVERETT RD Southbound				KINGSTON PIKE Westbound				EVERETT RD Northbound				KINGSTON PIKE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:15 AM	20	0	11	31	0	66	5	71	0	0	0	0	7	109	0	116	218
07:30 AM	25	0	6	31	0	106	10	116	0	0	0	0	14	164	0	178	325
07:45 AM	35	0	14	49	0	129	14	143	0	0	0	0	17	140	0	157	349
Total	80	0	31	111	0	301	29	330	0	0	0	0	38	413	0	451	892
08:00 AM	16	0	11	27	0	111	10	121	0	0	0	0	7	138	0	145	293
Grand Total	96	0	42	138	0	412	39	451	0	0	0	0	45	551	0	596	1185
Apprch %	69.6	0	30.4		0	91.4	8.6		0	0	0		7.6	92.4	0		
Total %	8.1	0	3.5	11.6	0	34.8	3.3	38.1	0	0	0	0	3.8	46.5	0	50.3	

	EVERETT RD Southbound				KINGSTON PIKE Westbound				EVERETT RD Northbound				KINGSTON PIKE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	20	0	11	31	0	66	5	71	0	0	0	0	7	109	0	116	218
07:30 AM	25	0	6	31	0	106	10	116	0	0	0	0	14	**164**	0	**178**	325
07:45 AM	**35**	0	**14**	**49**	0	**129**	**14**	**143**	0	0	0	0	**17**	140	0	157	**349**
08:00 AM	16	0	11	27	0	111	10	121	0	0	0	0	7	138	0	145	293
Total Volume	96	0	42	138	0	412	39	451	0	0	0	0	45	551	0	596	1185
% App. Total	69.6	0	30.4		0	91.4	8.6		0	0	0		7.6	92.4	0		
PHF	.686	.000	.750	.704	.000	.798	.696	.788	.000	.000	.000	.000	.662	.840	.000	.837	.849

CDM SMITH Inc.

1100 Marion Street, Suite 300
Knoxville, TN 37921
(865) 963-4300

File Name : Everett_Kingston Pk PM
Site Code : 00000000
Start Date : 2/19/2016
Page No : 1

Groups Printed- Unshifted

	EVERETT RD Southbound				KINGST0N PIKE Westbound				EVERETT RD Northbound				KINGST0N PIKE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
05:00 PM	15	0	27	42	0	214	31	245	0	0	0	0	30	169	0	199	486
05:15 PM	17	0	17	34	0	217	27	244	0	0	0	0	15	201	0	216	494
05:30 PM	17	0	24	41	0	224	19	243	0	0	0	0	24	165	0	189	473
05:45 PM	19	0	20	39	0	237	37	274	0	0	0	0	18	271	0	289	602
Total	68	0	88	156	0	892	114	1006	0	0	0	0	87	806	0	893	2055
06:00 PM	22	0	23	45	0	262	28	290	0	0	0	0	26	229	0	255	590
06:15 PM	13	0	14	27	0	247	24	271	0	0	0	0	21	239	0	260	558
Grand Total	103	0	125	228	0	1401	166	1567	0	0	0	0	134	1274	0	1408	3203
Apprch %	45.2	0	54.8		0	89.4	10.6		0	0	0		9.5	90.5	0		
Total %	3.2	0	3.9	7.1	0	43.7	5.2	48.9	0	0	0	0	4.2	39.8	0	44	

	EVERETT RD Southbound				KINGST0N PIKE Westbound				EVERETT RD Northbound				KINGST0N PIKE Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 06:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:30 PM																	
05:30 PM	17	0	**24**	41	0	224	19	243	0	0	0	0	24	165	0	189	473
05:45 PM	19	0	20	39	0	237	**37**	274	0	0	0	0	18	**271**	0	**289**	**602**
06:00 PM	**22**	0	23	**45**	0	**262**	28	**290**	0	0	0	0	**26**	229	0	255	590
06:15 PM	13	0	14	27	0	247	24	271	0	0	0	0	21	239	0	260	558
Total Volume	71	0	81	152	0	970	108	1078	0	0	0	0	89	904	0	993	2223
% App. Total	46.7	0	53.3		0	90	10		0	0	0		9	91	0		
PHF	.807	.000	.844	.844	.000	.926	.730	.929	.000	.000	.000	.000	.856	.834	.000	.859	.923


CDM
Smith