

**MASSEY CREEK
SUBDIVISION
KNOX COUNTY, TENNESSEE**

TRAFFIC IMPACT STUDY

Prepared for

**HMH Development, Inc
2926 Swafford Road
Knoxville, TN 37932**



**February 2015
(Revised January 2016)**

Prepared by

**CDM SMITH INC.
1100 Marion Street, Suite 300
Knoxville, Tennessee 37921**

PROJECT NO. 108189

TABLE OF CONTENTS

INTRODUCTION 1

 Project Description 1

 Site Location 1

LOCAL AND REGIONAL ACCESS 4

 Local Access 4

 Regional Access 4

EXISTING TRAFFIC CONDITIONS 5

 Existing Traffic Control 5

 Existing Traffic Volumes 5

 Existing Capacity and Level of Service 5

BACKGROUND TRAFFIC CONDITIONS 8

 Background Traffic Volumes 8

 Background Capacity and Level of Service 8

PROJECT IMPACTS 12

 Trip Generation 12

 Trip Distribution and Assignment 12

 Project Traffic Volumes 12

 Total Projected Traffic Volumes 15

 Projected Capacity and Level of Service 15

 Turn Lane Evaluation 18

 Sight Distance 18

RECOMMENDATIONS 19

CONCLUSION 19

APPENDIX 20

LIST OF FIGURES

Figure 1: Site Plan.....	2
Figure 2: Vicinity Map.....	3
Figure 3: 2015 Existing Traffic.....	6
Figure 4A: 2020 Background Growth.....	9
Figure 4B: Background Trips.....	10
Figure 4C: 2020 Total Background Traffic.....	11
Figure 5: Trip Distribution and Assignment.....	13
Figure 6: Project Trips.....	14
Figure 7: 2020 Projected Traffic.....	16

LIST OF TABLES

Table 1- Level of Service (LOS) Description for Two-Way Stop Intersections.....	7
Table 2- 2015 Traffic Capacity and Level of Service.....	7
Table 3- 2020 Background Capacity and Level of Service.....	8
Table 4- Trip Generation.	12
Table 5- 2020 Projected Traffic Capacity and Level of Service.....	15
Table 6- Capacity and Level of Service Summary.....	17

INTRODUCTION

CDM Smith is pleased to submit this report to address the impact and access of a proposed residential development located on E. Gallaher Ferry Road and Hardin Valley Road in northwest Knox County. This proposed development is another phase of the Covered Bridge development studied in 2006. The basis for this study required the collection of traffic data, generation of anticipated traffic volumes from the proposed site and development of projected traffic volumes from normal growth and from the potential site. Analyses of the resulting traffic projections were conducted to determine the capacity and levels of service for the site accesses and adjacent intersections. This study will develop measures necessary to mitigate traffic impacts including improved roadway geometrics and traffic control devices within the environs of the proposed residential development.

According to the Knoxville-Knox County Metropolitan Planning Commission's Administrative Rules and Procedures, the proposed residential development site is identified for a Level 1 Traffic Impact Study.

Project Description

The proposed development is the final phase of the Covered Bridge development with approximately 100 single family units on approximately 44.5 acres, thereby generating a density of 2.25 units per acre. Current zoning is PR. The proposed development has a proposed residential street to Hardin Valley Road. **Figure 1** shows the proposed site plan.

Site Location

The location of the proposed residential development is east of the E. Gallaher Ferry Road and north of Hardin Valley Road in northwest Knox County, Tennessee, and northwest of the Knoxville central business district (CBD). **Figure 2** illustrates the site location relative to local and regional access.

SITE PLAN
Massey Creek

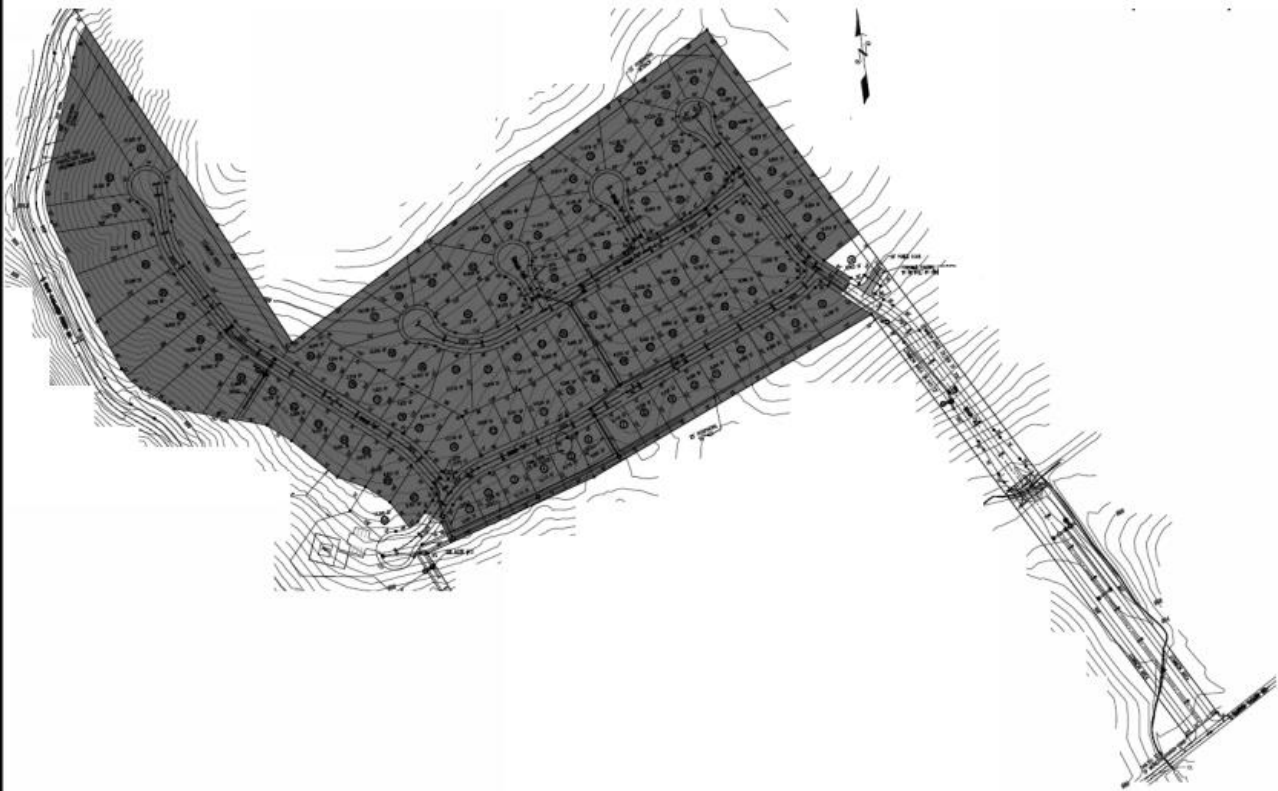


Figure 1

VICINITY MAP Massey Creek



SITE



Figure 2

LOCAL AND REGIONAL ACCESS

Local Access

The proposed development of 100 single family units is located adjacent to Hardin Valley Road to the south and E. Gallaher Ferry Road to the west. Hardin Valley Road and Hickory Creek Road are classified minor arterials. Average daily traffic (ADT) volume on Hardin Valley Road, west of Pellissippi Parkway in 2013, is approximately 15,640, and Hickory Creek Road had an approximate ADT of 1,450 for 2013. Hardin Valley Road and Hickory Creek Road are 2-lane roadways with an approximate width of 22-feet and 1-foot shoulders adjacent to the site. Marietta Church Road is a 2-lane minor collector between Hardin Valley Road and Yarnell Road. Hardin Valley Road, east of Campbell Station and the site is a 3-lane curb and gutter section. E. Gallaher Ferry Road is a local road with an approximate width of 19-feet and has an estimated 2015 ADT of 610. E. Gallaher Ferry Road intersects Hickory Creek Road and Hardin Valley Road to the south.

Regional Access

Regional access to this site is Hardin Valley Road to the east where it intersects Pellissippi Parkway (S.R. 162) which extends northwest to Oak Ridge and southeast to Interstate 40 and 140. Hickory Creek Road provides access to I-40, west of Knoxville, at Watts Road.

Pellissippi Parkway extends northeast to Oak Ridge Highway and had a 2013 ADT of 44,060. Pellissippi Parkway extends south intersecting Interstate 40 and terminating at Alcoa Highway (U.S. 129) near the Knoxville Airport. Pellissippi Parkway had a 2013 ADT of 44,060 north of Hardin Valley Road and 67,710 south of Dutchtown Road. To the east, Hardin Valley Road becomes S.R. 169 (Middlebrook Pike) and intersects S.R. 131 (Lovell Road). Interstate access is also provided from both Campbell Station Road and Lovell Road southeast of the proposed site.

Interstate 40 provides significant east and west regional access through Tennessee. To the east, Interstate 40 connects to Interstate 81, which extends into the Tri-Cities area of Tennessee and Virginia. Westbound Interstate 40 connects to Interstate 75, providing north- and southbound connections into neighboring states such as Kentucky and Georgia, respectively. Interstate 40 provides significant east and west regional access through Tennessee. South of the site, east of Watt Road, I-40/75 has a 2013 ADT of 96,960 and 128,260 east of Lovell Road

EXISTING TRAFFIC CONDITIONS

Existing Traffic Control

Hardin Valley Road, south of the site and south of its intersection with Hickory Creek Road, has a substandard 90-degree horizontal curve with an advisory speed of 20mph posted. The posted speed limit on Hardin Valley Road and Hickory Creek Road is 40mph. The 20mph curve and the Hickory Creek Road STOP controlled approach to the Hardin Valley Road and E. Gallaher Ferry Road intersection represents a discontinuous arterial alignment on the southern boundary of the site.

Existing Traffic Volumes

CDM Smith conducted peak-hour turning movement counts for the intersection of Hardin Valley Road at Marietta Church Road and Hickory Creek Road in February of 2015. The hours counted for Hardin Valley Road at Marietta Church Road were from 7:00-9:00AM and 4:00-6:00PM. The peak hours determined from the Marietta Church Road intersection count were then counted for the of Hardin Valley Road and Hickory Creek Road/E. Gallaher Ferry Road intersection. This count also took place in February 2015. **Figure 3** presents the existing AM and PM peak-hour traffic volumes for the study intersections.

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 may be related to level of service (LOS).

Level of service and capacity are the measurements of an intersection's ability to accommodate traffic volumes. Levels of service for intersections range from A to F. A LOS A is the best, and LOS F is failing. For unsignalized intersections, a LOS 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 **Tables 1**.

2015 EXISTING TRAFFIC Massey Creek



LEGEND
 XXX AM PEAK
 (XXX) PM PEAK



Figure 3

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

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

SOURCE: Highway Capacity Manual, TRB

Analyses were conducted using the Synchro Software, developed by Trafficware. **Table 2** presents the analyses of the study intersections. The analyses indicate that existing traffic conditions for the unsignalized intersections are very good and acceptable.

**TABLE 2. 2015 TRAFFIC
CAPACITY AND LEVEL OF SERVICE**

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	2015 TRAFFIC		
			V/C	DELAY	LOS
E. Gallaher Ferry Road & Hardin Valley/Hickory Creek Road	STOP NB-L (EB- LR)	AM	0.04 (0.18)	6.5 (9.3)	A (A)
		PM	0.10 (0.11)	6.2 (9.1)	A (A)
Hardin Valley Road & Marietta Church Rd	STOP WB-L (NB- LR)	AM	0.01 (0.13)	1.6 (10.0)	A (B)
		PM	0.05 (0.09)	2.5 (9.9)	A (A)

Note : Analysis conducted in Synchro 8.0. 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 developments as well as the continued growth within the surrounding area. This background traffic must be analyzed and evaluated for the purpose of establishing a baseline. The background traffic reflects the historical traffic growth and any planned adjacent development in the study area vicinity.

Background Traffic Volumes

In reviewing the ADT history in the site’s vicinity, traffic growth appears to be approximately 4.0-percent annually over the past 10 years. Therefore, for the purpose of this study, an annual compounded growth rate of 4.0-percent and a horizon year of 2020 are assumed. Therefore, using a 4.0 percent compounded growth rate until 2020, background traffic was determined and is illustrated in **Figure 4A**, reflecting a 21.7-percent growth for Hickory Creek Road movements and the Hardin Valley Road intersection with Marietta Church Road. In addition to the background growth, another phase of Covered Bridge development, including 40 single family units (Trip Generation located in the Appendix) is under construction. **Figure 4B** illustrates these associated trips. Trips associated with this development were added to the background traffic growth to estimate the total background traffic for the study intersections illustrated in **Figure 4C**.

Background Capacity and Level of Service

Analysis was performed with the grown traffic volumes and is presented in **Table 3**. With background conditions, including the Covered Bridge 40 unit phase under construction, the levels of service were measured to be acceptable for the unsignalized study intersections.

TABLE 3. 2020 BACKGROUND TRAFFIC CAPACITY AND LEVEL OF SERVICE

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	2020 BACKGROUND		
			V/C	DELAY	LOS
E. Gallaher Ferry Road & Hardin Valley/Hickory Creek Road	STOP	AM	0.05 (0.22)	6.7 (9.5)	A (A)
	NB-L (EB- LR)	PM	0.12 (0.14)	6.5 (9.3)	A (A)
Hardin Valley Road & Marietta Church Rd	STOP	AM	0.02 (0.18)	1.6 (10.8)	A (B)
	WB-L (NB- LR)	PM	0.06 (0.13)	2.6 (10.9)	A (B)

Note : Analysis conducted in Synchro 8.0. Average vehicle delay estimated in seconds. STOP control analyses presented by total minor approaches.

2020 BACKGROUND GROWTH Massey Creek



LEGEND
 XXX AM PEAK
 (XXX) PM PEAK



Figure 4A

BACKGROUND TRIPS Massey Creek



LEGEND
 XXX AM PEAK
 (XXX) PM PEAK



Figure 4B

2020 TOTAL BACKGROUND TRAFFIC Massey Creek



LEGEND
 XXX AM PEAK
 (XXX) PM PEAK



Figure 4C

PROJECT IMPACTS

Project conditions are developed by generating traffic based on the proposed land uses, 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, 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. The study will generate traffic for 100 single-family units. From the trip generation calculations, the proposed site may generate approximately 1,050 daily trips. **Table 4** presents the trip generation of this proposed site.

TABLE 4. TRIP GENERATION

LAND USE	L.U.C	SIZE	DAILY TRAFFIC	AM PEAK		PM PEAK	
				ENTER	EXIT	ENTER	EXIT
SINGLE FAMILY	210	100	1,050	20	60	66	39

Trip Distribution and Assignment

Using the turning-movement counts for the study intersections, trips were distributed to the adjacent streets with 60-percent to the east along Hardin Valley Road, 20-percent of the generated trips distributed south on Marietta Church Road, and 20-percent west on Hickory Creek Road. **Figure 5** illustrates this distribution and assignment.

Project Traffic Volumes

By multiplying the trips generated by the distribution percentages, the project traffic volumes were determined. **Figure 6** illustrates the resulting project traffic volumes associated with the proposed Massey Creek development.

TRIP DISTRIBUTION AND ASSIGNMENT Massey Creek

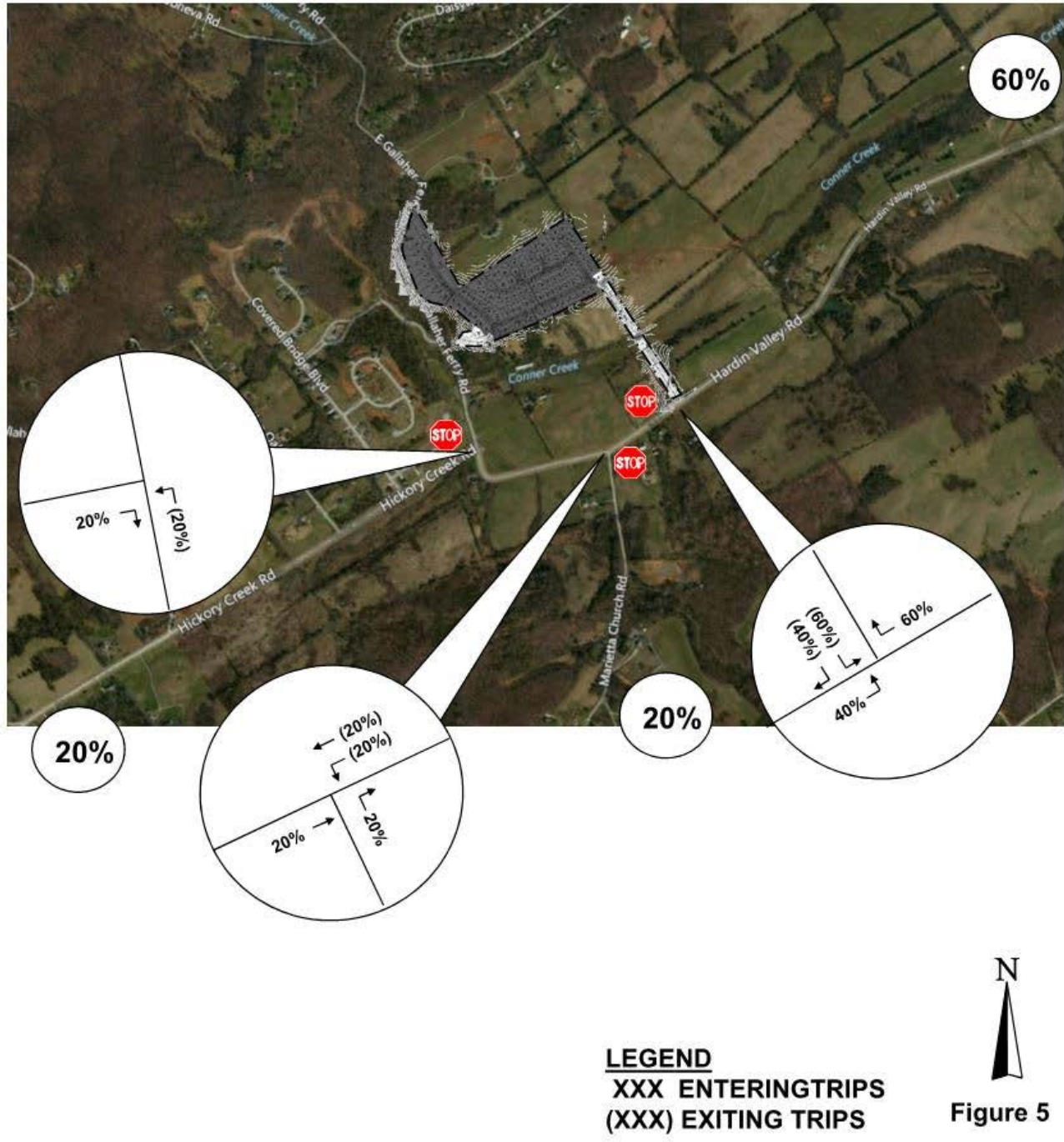


Figure 5

PROJECT TRIPS Massey Creek



LEGEND
 XXX AM PEAK
 (XXX) PM PEAK



Figure 6

Total Projected Traffic Volumes

Background and project traffic volumes were added together to develop post-development traffic volumes for the year 2020. **Figure 7** illustrates this 2020 projection. For 2020 conditions, site traffic represents an approximate 7-, and 10-percent traffic increase to existing traffic on Hardin Valley Road at Hickory Creek Road/E. Gallaher Ferry Road, and Marietta Church Road, respectively. Traffic projected for Hardin Valley Road reflect typical volumes for a minor arterial, and Hickory Creek Road projected traffic reflect volumes typical for a major collector or minor arterial. The projected traffic volumes for E. Gallaher Ferry Road reflect typical volumes for a minor collector roadway. Adjacent roadway capacities are limited by the widths, lack of shoulders, and substandard horizontal and vertical geometry; however, these projected volumes can be found on many collector facilities in Knox County. The minor arterial classifications of Hardin Valley Road and Hickory Creek Road are appropriate for the proposed development.

Projected Capacity and Level of Service

The development of the site has an insignificant impact on the study intersections. The projected 2020 LOS analyses are shown in **Table 5** and summarized in **Table 6**. The results conclude that the study intersections would operate at acceptable level of service for projected traffic volumes and patterns.

TABLE 5. 2020 PROJECTED TRAFFIC CAPACITY AND LEVEL OF SERVICE

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	V/C	DELAY	LOS
E. Gallaher Ferry Road & Hardin Valley/Hickory Creek Road	STOP	AM	0.06 (0.22)	6.8 (9.5)	A (A)
	NB-L (EB- LR)	PM	0.13 (0.15)	6.6 (9.3)	A (A)
Hardin Valley Road & Marietta Church Rd	STOP	AM	0.03 (0.19)	2.1 (10.9)	A (B)
	WB-L (NB-LR)	PM	0.07 (0.16)	2.7 (11.1)	A (B)
Hardin Valley Road & Site Access	STOP	AM	0.01 (0.09)	0.3 (10.5)	A (B)
	EB-L (SB- LR)	PM	0.02 (0.07)	1.4 (11.2)	A (B)

Note : Analysis conducted in Synchro 8.0. Average vehicle delay estimated in seconds. STOP control analyses presented by total minor approaches.

2020 PROJECTED TRAFFIC Massey Creek



Figure 7

**TABLE 6 SUMMARY
CAPACITY AND LEVEL OF SERVICE**

INTERSECTION	TRAFFIC CONTROL	PEAK PERIOD	2015 TRAFFIC			2020 BACKGROUND			2020 PROJECTED		
			V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS
E. Gallaher Ferry Road & Hardin Valley/Hickory Creek Road	STOP	AM	0.04 (0.18)	6.5 (9.3)	A (A)	0.05 (0.22)	6.7 (9.5)	A (A)	0.06 (0.22)	6.8 (9.5)	A (A)
	NB-L (EB- LR)	PM	0.10 (0.11)	6.2 (9.1)	A (A)	0.12 (0.14)	6.5 (9.3)	A (A)	0.13 (0.15)	6.6 (9.3)	A (A)
Hardin Valley Road & Marietta Church Rd	STOP	AM	0.01 (0.13)	1.6 (10.0)	A (B)	0.02 (0.18)	1.6 (10.8)	A (B)	0.03 (0.19)	2.1 (10.9)	A (B)
	WB-L (NB- LR)	PM	0.05 (0.09)	2.5 (9.9)	A (A)	0.06 (0.13)	2.6 (10.9)	A (B)	0.07 (0.16)	2.7 (11.1)	A (B)
Hardin Valley Road & Site Access	STOP	AM	-	-	-	-	-	-	0.01 (0.09)	0.3 (10.5)	A (B)
	EB-L (SB- LR)	PM	-	-	-	-	-	-	0.02 (0.07)	1.4 (11.2)	A (B)

Note : Analysis conducted in Synchro 8.0. Average vehicle delay estimated in seconds. STOP control analyses presented by total minor approaches.

Turn Lane Evaluation

Using Knox County's Access Control and Driveway Design Policy, the review and evaluation of the projected traffic volumes did not determine any requirement of left- or right-turn lanes for the proposed Hardin Valley Road access intersection. Projected traffic was found to be well below the traffic volume thresholds.

Sight Distance

The site is proposed to have access to Hardin Valley Road. Hardin Valley Road has a 40mph posted speed limit requiring 400 feet of corner sight-distance by Knox County. The AASHTO minimum stopping sight distance is 305 feet. The sight distances for the proposed access intersection with Hardin Valley Road can be greater than 400 feet, thereby providing for acceptable line of sight. To the east, there is a fence line with some vegetative growth that may obstruct the necessary line of sight, but some clearing of this growth should be sufficient for acceptable sight-distance.

RECOMMENDATIONS

- Minimize landscaping, using low growing vegetation, and signing at the proposed street accesses to insure that safe sight distance is provided and can be maintained.
- Use a minimum intersection radius of 35-foot for the efficient and safe ingress and egress of the site.
- Post the proposed residential access street with a STOP sign (R1-1) for its approach to Hardin Valley 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 Public Works Department.

CONCLUSION

The study of this proposed residential development evaluated the projected traffic conditions. Background traffic was determined using a 4.0-percent annual compounded growth rate until the 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 capacity and level of service analyses were conducted using the **2010 Highway Capacity Manual**. Unsignalized levels of service were found to be acceptable for the existing traffic conditions, and should continue to be acceptable for background conditions, with and without the proposed development. A minimum LOS B was identified for the study intersections. With the recommendations of this report, the efficient and safe flow of traffic should be achieved.

APPENDIX

Trip Generation

HCS Unsignalized Analyses

Turn Lane Evaluation

Traffic Counts

HCM Unsignalized Intersection Capacity Analysis
 1: Hardin Valley Rd/East Gallaher Ferry Rd & Hickory Creek Rd

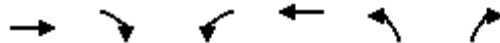
Massey Creek Subdivision TIS
 Existing 2015 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	4	165	57	8	31	7
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	179	62	9	34	8
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	170	38	41			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	170	38	41			
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	83	96			
cM capacity (veh/h)	788	1035	1568			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	184	71	41			
Volume Left	4	62	0			
Volume Right	179	0	8			
cSH	1027	1568	1700			
Volume to Capacity	0.18	0.04	0.02			
Queue Length 95th (ft)	16	3	0			
Control Delay (s)	9.3	6.5	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.3	6.5	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			7.3			
Intersection Capacity Utilization			27.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 2: Marietta Church Rd & Hardin Valley Rd

Massey Creek Subdivision TIS
 Existing 2015 AM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↗
Volume (veh/h)	185	11	18	74	2	100
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)	201	12	20	80	2	109
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			213		327	207
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			213		327	207
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	87
cM capacity (veh/h)			1357		658	833

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	213	100	111
Volume Left	0	20	2
Volume Right	12	0	109
cSH	1700	1357	829
Volume to Capacity	0.13	0.01	0.13
Queue Length 95th (ft)	0	1	12
Control Delay (s)	0.0	1.6	10.0
Lane LOS		A	B
Approach Delay (s)	0.0	1.6	10.0
Approach LOS			B

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		31.6%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis
 1: Hardin Valley Rd/East Gallaher Ferry Rd & Hickory Creek Rd

Massey Creek Subdivision TIS
 Existing 2015 PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	9	93	147	36	17	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)	10	101	160	39	18	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	379	21	23			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	379	21	23			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	90	90			
cM capacity (veh/h)	560	1057	1592			
Direction, Lane #						
	EB 1	NB 1	SB 1			
Volume Total	111	199	23			
Volume Left	10	160	0			
Volume Right	101	0	4			
cSH	980	1592	1700			
Volume to Capacity	0.11	0.10	0.01			
Queue Length 95th (ft)	10	8	0			
Control Delay (s)	9.1	6.2	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.1	6.2	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			6.7			
Intersection Capacity Utilization			29.6%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 2: Marietta Church Rd & Hardin Valley Rd

Massey Creek Subdivision TIS
 Existing 2015 PM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	↶	↷
Volume (veh/h)	110	7	68	163	13	54
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)	120	8	74	177	14	59
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		448	123
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			127		448	123
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	94
cM capacity (veh/h)			1459		539	927

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	127	251	73
Volume Left	0	74	14
Volume Right	8	0	59
cSH	1700	1459	814
Volume to Capacity	0.07	0.05	0.09
Queue Length 95th (ft)	0	4	7
Control Delay (s)	0.0	2.5	9.9
Lane LOS		A	A
Approach Delay (s)	0.0	2.5	9.9
Approach LOS			A

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization	29.7%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 1: Hardin Valley Rd/East Gallaher Ferry Rd & Hickory Creek Rd

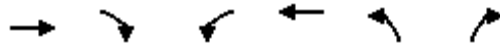
Massey Creek Subdivision TIS
 Background 2020 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	4	203	75	8	31	7
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	221	82	9	34	8
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	209	38	41			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	209	38	41			
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	79	95			
cM capacity (veh/h)	739	1035	1568			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	225	90	41			
Volume Left	4	82	0			
Volume Right	221	0	8			
cSH	1027	1568	1700			
Volume to Capacity	0.22	0.05	0.02			
Queue Length 95th (ft)	21	4	0			
Control Delay (s)	9.5	6.7	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.5	6.7	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			7.7			
Intersection Capacity Utilization			30.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 2: Marietta Church Rd & Hardin Valley Rd

Massey Creek Subdivision TIS
 Background 2020 AM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	←
Volume (veh/h)	242	19	22	96	4	122
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)	263	21	24	104	4	133
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			284		426	273
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			284		426	273
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		99	83
cM capacity (veh/h)			1279		575	765

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	284	128	137
Volume Left	0	24	4
Volume Right	21	0	133
cSH	1700	1279	757
Volume to Capacity	0.17	0.02	0.18
Queue Length 95th (ft)	0	1	16
Control Delay (s)	0.0	1.6	10.8
Lane LOS		A	B
Approach Delay (s)	0.0	1.6	10.8
Approach LOS			B

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

HCM Unsignalized Intersection Capacity Analysis
 1: Hardin Valley Rd/East Gallaher Ferry Rd & Hickory Creek Rd

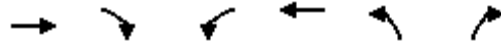
Massey Creek Subdivision TIS
 Background 2020 PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	9	119	182	36	17	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)	10	129	198	39	18	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	455	21	23			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	455	21	23			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	88	88			
cM capacity (veh/h)	493	1057	1592			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	139	237	23			
Volume Left	10	198	0			
Volume Right	129	0	4			
cSH	978	1592	1700			
Volume to Capacity	0.14	0.12	0.01			
Queue Length 95th (ft)	12	11	0			
Control Delay (s)	9.3	6.5	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.3	6.5	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			7.1			
Intersection Capacity Utilization			33.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 2: Marietta Church Rd & Hardin Valley Rd

Massey Creek Subdivision TIS
 Background 2020 PM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↗
Volume (veh/h)	144	12	83	216	22	66
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)	157	13	90	235	24	72
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			170			163
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			170			163
tC, single (s)			4.1			6.2
tC, 2 stage (s)						
tF (s)			2.2			3.3
p0 queue free %			94			92
cM capacity (veh/h)			1408			882

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	170	325	96
Volume Left	0	90	24
Volume Right	13	0	72
cSH	1700	1408	709
Volume to Capacity	0.10	0.06	0.13
Queue Length 95th (ft)	0	5	12
Control Delay (s)	0.0	2.6	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	2.6	10.9
Approach LOS			B

Intersection Summary			
Average Delay			3.2
Intersection Capacity Utilization	39.5%		ICU Level of Service
Analysis Period (min)	15		A

HCM Unsignalized Intersection Capacity Analysis
 1: Hardin Valley Rd/East Gallaher Ferry Rd & Hickory Creek Rd

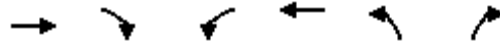
Massey Creek Subdivision TIS
 Buildout 2020 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	205	87	8	31	7
Future Volume (Veh/h)	4	205	87	8	31	7
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	223	95	9	34	8
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	237	38	42			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	237	38	42			
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	78	94			
cM capacity (veh/h)	706	1034	1567			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	227	104	42			
Volume Left	4	95	0			
Volume Right	223	0	8			
cSH	1026	1567	1700			
Volume to Capacity	0.22	0.06	0.02			
Queue Length 95th (ft)	21	5	0			
Control Delay (s)	9.5	6.8	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.5	6.8	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			7.7			
Intersection Capacity Utilization			31.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 2: Marietta Church Rd & Hardin Valley Rd

Massey Creek Subdivision TIS
 Buildout 2020 AM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	↘
Traffic Volume (veh/h)	246	19	34	108	4	126
Future Volume (Veh/h)	246	19	34	108	4	126
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)	267	21	37	117	4	137
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			288			468 278
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			288			468 278
tC, single (s)			4.1			6.4 6.2
tC, 2 stage (s)						
tF (s)			2.2			3.5 3.3
p0 queue free %			97			99 82
cM capacity (veh/h)			1274			537 761
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	288	154	141			
Volume Left	0	37	4			
Volume Right	21	0	137			
cSH	1700	1274	752			
Volume to Capacity	0.17	0.03	0.19			
Queue Length 95th (ft)	0	2	17			
Control Delay (s)	0.0	2.1	10.9			
Lane LOS			A			B
Approach Delay (s)	0.0	2.1	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay			3.2			
Intersection Capacity Utilization			39.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 3: Hardin Valley Rd & Access #1

Massey Creek Subdivision TIS
 Buildout 2020 AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	8	238	92	12	36	24
Future Volume (Veh/h)	8	238	92	12	36	24
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)	9	259	100	13	39	26
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	113				384	106
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	113				384	106
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				94	97
cM capacity (veh/h)	1476				615	948
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	268	113	65			
Volume Left	9	0	39			
Volume Right	0	13	26			
cSH	1476	1700	716			
Volume to Capacity	0.01	0.07	0.09			
Queue Length 95th (ft)	0	0	7			
Control Delay (s)	0.3	0.0	10.5			
Lane LOS	A		B			
Approach Delay (s)	0.3	0.0	10.5			
Approach LOS			B			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization		29.1%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 4: East Gallaher Ferry Rd & Access #2

Massey Creek Subdivision TIS
 Buildout 2020 AM Peak



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	18	0	12	6	0	38
Future Volume (Veh/h)	18	0	12	6	0	38
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)	20	0	13	7	0	41
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	58	16			20	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	58	16			20	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	950	1063			1596	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	20	20	41			
Volume Left	20	0	0			
Volume Right	0	7	0			
cSH	950	1700	1596			
Volume to Capacity	0.02	0.01	0.00			
Queue Length 95th (ft)	2	0	0			
Control Delay (s)	8.9	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.9	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 1: Hardin Valley Rd/East Gallaher Ferry Rd & Hickory Creek Rd

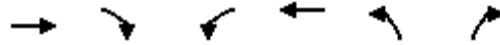
Massey Creek Subdivision TIS
 Buildout 2020 PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	126	190	36	17	4
Future Volume (Veh/h)	9	126	190	36	17	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)	10	137	207	39	18	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	473	20	22			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	473	20	22			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	87	87			
cM capacity (veh/h)	478	1058	1593			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	147	246	22			
Volume Left	10	207	0			
Volume Right	137	0	4			
cSH	977	1593	1700			
Volume to Capacity	0.15	0.13	0.01			
Queue Length 95th (ft)	13	11	0			
Control Delay (s)	9.3	6.6	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.3	6.6	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			7.2			
Intersection Capacity Utilization			34.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 2: Marietta Church Rd & Hardin Valley Rd

Massey Creek Subdivision TIS
 Buildout 2020 PM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	→			←	←	←
Traffic Volume (veh/h)	157	12	91	224	22	79
Future Volume (Veh/h)	157	12	91	224	22	79
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)	171	13	99	243	24	86
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			184			618 178
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			184			618 178
tC, single (s)			4.1			6.4 6.2
tC, 2 stage (s)						
tF (s)			2.2			3.5 3.3
p0 queue free %			93			94 90
cM capacity (veh/h)			1391			420 866
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	184	342	110			
Volume Left	0	99	24			
Volume Right	13	0	86			
cSH	1700	1391	703			
Volume to Capacity	0.11	0.07	0.16			
Queue Length 95th (ft)	0	6	14			
Control Delay (s)	0.0	2.7	11.1			
Lane LOS			A			B
Approach Delay (s)	0.0	2.7	11.1			
Approach LOS			B			
Intersection Summary						
Average Delay			3.4			
Intersection Capacity Utilization			41.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 3: Hardin Valley Rd & Access #1

Massey Creek Subdivision TIS
 Buildout 2020 PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	26	142	214	40	23	16
Future Volume (Veh/h)	26	142	214	40	23	16
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)	28	154	233	43	25	17
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	276				464	254
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	276				464	254
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				95	98
cM capacity (veh/h)	1287				544	784

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	182	276	42
Volume Left	28	0	25
Volume Right	0	43	17
cSH	1287	1700	621
Volume to Capacity	0.02	0.16	0.07
Queue Length 95th (ft)	2	0	5
Control Delay (s)	1.4	0.0	11.2
Lane LOS	A		B
Approach Delay (s)	1.4	0.0	11.2
Approach LOS			B

Intersection Summary			
Average Delay		1.4	
Intersection Capacity Utilization		35.9%	ICU Level of Service
Analysis Period (min)		15	A

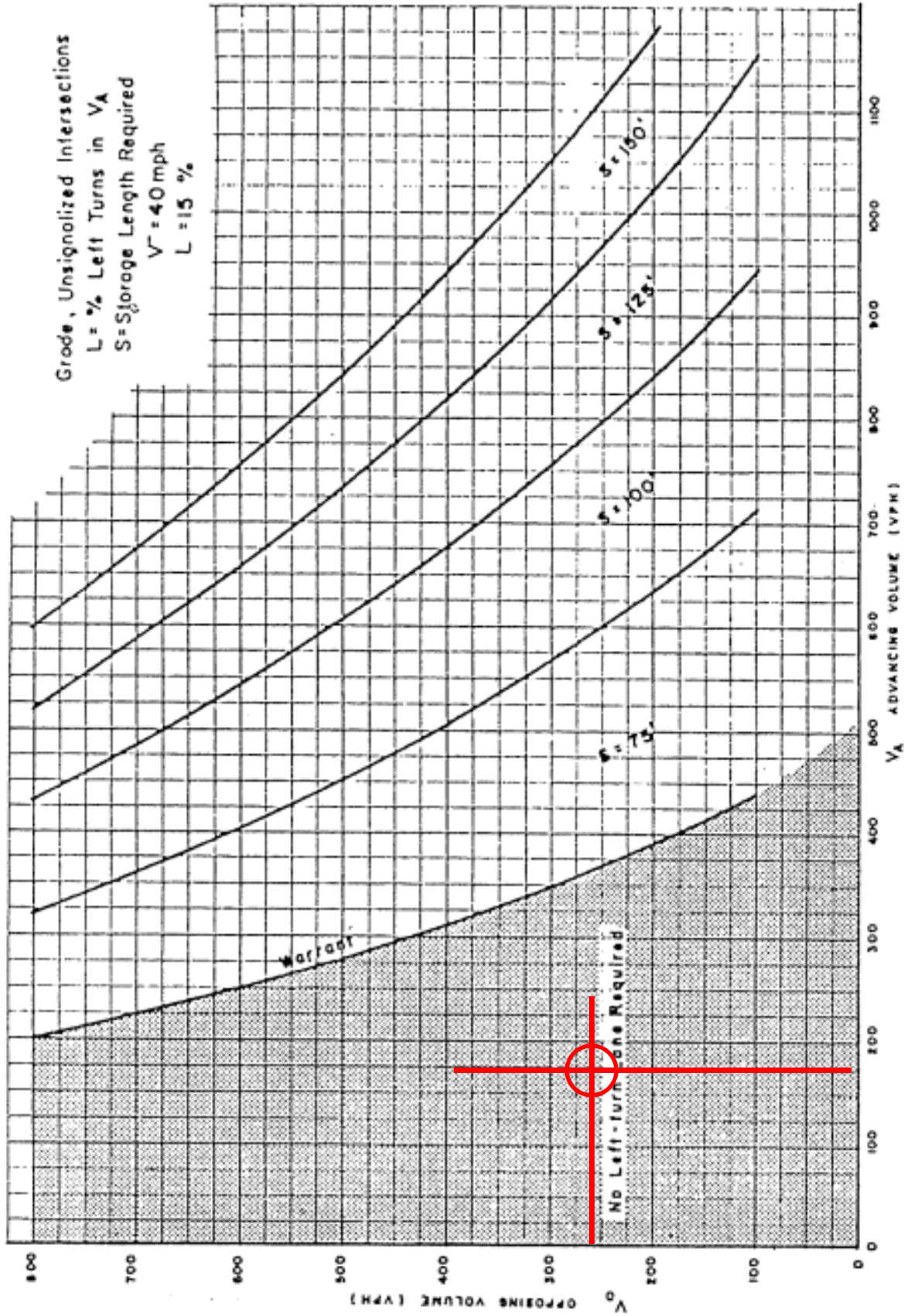
HCM Unsignalized Intersection Capacity Analysis
 4: East Gallaher Ferry Rd & Access #2

Massey Creek Subdivision TIS
 Buildout 2020 PM Peak



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	0	45	20	0	21
Future Volume (Veh/h)	12	0	45	20	0	21
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)	13	0	49	22	0	23
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	83	60			71	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	83	60			71	
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	100			100	
cM capacity (veh/h)	919	1005			1529	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	13	71	23			
Volume Left	13	0	0			
Volume Right	0	22	0			
cSH	919	1700	1529			
Volume to Capacity	0.01	0.04	0.00			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	9.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization		13.6%		ICU Level of Service		A
Analysis Period (min)			15			

PROPOSED HARDIN VALLEY ROAD ACCESS



PROPOSED HARDIN VALLEY ROAD ACCESS

TABLE 5B

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

RIGHT-TURN VOLUME	THROUGH VOLUME PLUS LEFT-TURN VOLUME *					
	<100	100 - 199	200 - 249	250 - 299	300 - 349	350 - 399
Fewer Than 25						
40			214			
25 - 49						
50 - 99						
100 - 149						
150 - 199						
200 - 249					Yes	Yes
250 - 299					Yes	Yes
300 - 349			Yes	Yes	Yes	Yes
350 - 399				Yes	Yes	Yes
400 - 449		Yes	Yes	Yes	Yes	Yes
450 - 499			Yes	Yes	Yes	Yes
500 - 549	Yes	Yes	Yes	Yes	Yes	Yes
550 - 599		Yes	Yes	Yes	Yes	Yes
600 or More	Yes	Yes	Yes	Yes	Yes	Yes

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

Counted by: Allyson Foster

File Name : hvmc_tmc
 Site Code : 00000000
 Start Date : 1/29/2015
 Page No : 1

Groups Printed- Unshifted

Start Time	MARIETTA CHURCH Southbound				HARDIN VALLEY Westbound				MARIETTA CHURCH Northbound				HARDIN VALLEY Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	0	0	2	24	0	26	0	0	20	20	0	31	3	34	80
07:15 AM	0	0	0	0	2	11	0	13	0	0	22	22	0	47	2	49	84
07:30 AM	0	0	0	0	9	12	0	21	1	0	27	28	0	60	3	63	112
07:45 AM	0	0	0	0	5	27	0	32	1	0	31	32	0	47	3	50	114
Total	0	0	0	0	18	74	0	92	2	0	100	102	0	185	11	196	390
08:00 AM	0	0	0	0	4	18	0	22	0	0	17	17	0	28	3	31	70
08:15 AM	0	0	0	0	10	10	0	20	0	0	26	26	0	40	3	43	89
08:30 AM	0	0	0	0	3	16	0	19	1	0	13	14	0	34	0	34	67
08:45 AM	0	0	0	0	6	18	0	24	2	0	31	33	0	41	1	42	99
Total	0	0	0	0	23	62	0	85	3	0	87	90	0	143	7	150	325
*** BREAK ***																	
03:00 PM	0	0	0	0	7	30	0	37	3	0	5	8	0	28	0	28	73
03:15 PM	0	0	0	0	9	22	0	31	3	0	4	7	0	16	4	20	58
03:30 PM	0	0	0	0	22	23	0	45	5	0	6	11	0	18	2	20	76
03:45 PM	0	0	0	0	20	30	0	50	3	0	6	9	0	21	1	22	81
Total	0	0	0	0	58	105	0	163	14	0	21	35	0	83	7	90	288
04:00 PM	0	0	0	0	18	36	0	54	0	0	8	8	0	22	1	23	85
04:15 PM	0	0	0	0	17	31	0	48	4	0	7	11	0	15	2	17	76
04:30 PM	0	0	0	0	12	42	0	54	3	0	9	12	0	30	2	32	98
04:45 PM	0	0	0	0	22	44	0	66	2	0	12	14	0	21	0	21	101
Total	0	0	0	0	69	153	0	222	9	0	36	45	0	88	5	93	360
05:00 PM	0	0	0	0	17	33	0	50	5	0	15	20	0	24	0	24	94
05:15 PM	0	0	0	0	17	44	0	61	3	0	18	21	0	35	5	40	122
05:30 PM	0	0	0	0	12	37	0	49	3	0	14	17	0	21	2	23	89
*** BREAK ***																	
Total	0	0	0	0	46	114	0	160	11	0	47	58	0	80	7	87	305
Grand Total	0	0	0	0	214	508	0	722	39	0	291	330	0	579	37	616	1668
Apprch %	0	0	0	0	29.6	70.4	0	43.3	11.8	0	88.2	19.8	0	94	6	36.9	
Total %	0	0	0	0	12.8	30.5	0	43.3	2.3	0	17.4	19.8	0	34.7	2.2	36.9	

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

Counted by: Allyson Foster

File Name : hvmc_tmc
 Site Code : 00000000
 Start Date : 1/29/2015
 Page No : 2

Start Time	MARIETTA CHURCH Southbound				HARDIN VALLEY Westbound				MARIETTA CHURCH Northbound				HARDIN VALLEY Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	2	24	0	26	0	0	20	20	0	31	3	34	80
07:15 AM	0	0	0	0	2	11	0	13	0	0	22	22	0	47	2	49	84
07:30 AM	0	0	0	0	9	12	0	21	1	0	27	28	0	60	3	63	112
07:45 AM	0	0	0	0	5	27	0	32	1	0	31	32	0	47	3	50	114
Total Volume	0	0	0	0	18	74	0	92	2	0	100	102	0	185	11	196	390
% App. Total	0	0	0	0	19.6	80.4	0		2	0	98		0	94.4	5.6		
PHF	.000	.000	.000	.000	.500	.685	.000	.719	.500	.000	.806	.797	.000	.771	.917	.778	.855

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	12	42	0	54	3	0	9	12	0	30	2	32	98
04:45 PM	0	0	0	0	22	44	0	66	2	0	12	14	0	21	0	21	101
05:00 PM	0	0	0	0	17	33	0	50	5	0	15	20	0	24	0	24	94
05:15 PM	0	0	0	0	17	44	0	61	3	0	18	21	0	35	5	40	122
Total Volume	0	0	0	0	68	163	0	231	13	0	54	67	0	110	7	117	415
% App. Total	0	0	0	0	29.4	70.6	0		19.4	0	80.6		0	94	6		
PHF	.000	.000	.000	.000	.773	.926	.000	.875	.650	.000	.750	.798	.000	.786	.350	.731	.850

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

Counted by: Allyson Foster

File Name : hvmc_tmc
 Site Code : 00000000
 Start Date : 1/29/2015
 Page No : 1

Groups Printed- Unshifted

Start Time	MARIETTA CHURCH Southbound				HARDIN VALLEY Westbound				MARIETTA CHURCH Northbound				HARDIN VALLEY Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	0	0	2	24	0	26	0	0	20	20	0	31	3	34	80
07:15 AM	0	0	0	0	2	11	0	13	0	0	22	22	0	47	2	49	84
07:30 AM	0	0	0	0	9	12	0	21	1	0	27	28	0	60	3	63	112
07:45 AM	0	0	0	0	5	27	0	32	1	0	31	32	0	47	3	50	114
Total	0	0	0	0	18	74	0	92	2	0	100	102	0	185	11	196	390
08:00 AM	0	0	0	0	4	18	0	22	0	0	17	17	0	28	3	31	70
08:15 AM	0	0	0	0	10	10	0	20	0	0	26	26	0	40	3	43	89
08:30 AM	0	0	0	0	3	16	0	19	1	0	13	14	0	34	0	34	67
08:45 AM	0	0	0	0	6	18	0	24	2	0	31	33	0	41	1	42	99
Total	0	0	0	0	23	62	0	85	3	0	87	90	0	143	7	150	325
*** BREAK ***																	
03:00 PM	0	0	0	0	7	30	0	37	3	0	5	8	0	28	0	28	73
03:15 PM	0	0	0	0	9	22	0	31	3	0	4	7	0	16	4	20	58
03:30 PM	0	0	0	0	22	23	0	45	5	0	6	11	0	18	2	20	76
03:45 PM	0	0	0	0	20	30	0	50	3	0	6	9	0	21	1	22	81
Total	0	0	0	0	58	105	0	163	14	0	21	35	0	83	7	90	288
04:00 PM	0	0	0	0	18	36	0	54	0	0	8	8	0	22	1	23	85
04:15 PM	0	0	0	0	17	31	0	48	4	0	7	11	0	15	2	17	76
04:30 PM	0	0	0	0	12	42	0	54	3	0	9	12	0	30	2	32	98
04:45 PM	0	0	0	0	22	44	0	66	2	0	12	14	0	21	0	21	101
Total	0	0	0	0	69	153	0	222	9	0	36	45	0	88	5	93	360
05:00 PM	0	0	0	0	17	33	0	50	5	0	15	20	0	24	0	24	94
05:15 PM	0	0	0	0	17	44	0	61	3	0	18	21	0	35	5	40	122
05:30 PM	0	0	0	0	12	37	0	49	3	0	14	17	0	21	2	23	89
*** BREAK ***																	
Total	0	0	0	0	46	114	0	160	11	0	47	58	0	80	7	87	305
Grand Total	0	0	0	0	214	508	0	722	39	0	291	330	0	579	37	616	1668
Apprch %	0	0	0	0	29.6	70.4	0	43.3	11.8	0	88.2	19.8	0	94	6	36.9	
Total %	0	0	0	0	12.8	30.5	0	43.3	2.3	0	17.4	19.8	0	34.7	2.2	36.9	

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

Counted by: Allyson Foster

File Name : hvmc_tmc
 Site Code : 00000000
 Start Date : 1/29/2015
 Page No : 2

Start Time	MARIETTA CHURCH Southbound				HARDIN VALLEY Westbound				MARIETTA CHURCH Northbound				HARDIN VALLEY Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 09:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	2	24	0	26	0	0	20	20	0	31	3	34	80
07:15 AM	0	0	0	0	2	11	0	13	0	0	22	22	0	47	2	49	84
07:30 AM	0	0	0	0	9	12	0	21	1	0	27	28	0	60	3	63	112
07:45 AM	0	0	0	0	5	27	0	32	1	0	31	32	0	47	3	50	114
Total Volume	0	0	0	0	18	74	0	92	2	0	100	102	0	185	11	196	390
% App. Total	0	0	0	0	19.6	80.4	0		2	0	98		0	94.4	5.6		
PHF	.000	.000	.000	.000	.500	.685	.000	.719	.500	.000	.806	.797	.000	.771	.917	.778	.855
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	12	42	0	54	3	0	9	12	0	30	2	32	98
04:45 PM	0	0	0	0	22	44	0	66	2	0	12	14	0	21	0	21	101
05:00 PM	0	0	0	0	17	33	0	50	5	0	15	20	0	24	0	24	94
05:15 PM	0	0	0	0	17	44	0	61	3	0	18	21	0	35	5	40	122
Total Volume	0	0	0	0	68	163	0	231	13	0	54	67	0	110	7	117	415
% App. Total	0	0	0	0	29.4	70.6	0		19.4	0	80.6		0	94	6		
PHF	.000	.000	.000	.000	.773	.926	.000	.875	.650	.000	.750	.798	.000	.786	.350	.731	.850

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

Counted by: Allyson Foster

File Name : Not Named 3
 Site Code : 00000000
 Start Date : 2/6/2015
 Page No : 1

Groups Printed- Unshifted

Start Time	E GALLAHER FERRY RD Southbound					HICKORY CREEK RD Westbound					HARDIN VALLEY RD Northbound					HICKORY CREEK RD Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	0	8	2	0	10	0	0	0	0	0	16	2	0	0	18	1	0	39	0	40	68
07:15 AM	0	10	3	0	13	0	0	0	0	0	11	2	0	0	13	1	0	44	0	45	71
07:30 AM	0	8	1	0	9	0	0	0	0	0	16	2	0	0	18	1	0	39	0	40	67
07:45 AM	0	5	1	0	6	0	0	0	0	0	14	2	0	0	16	1	0	43	0	44	66
Total	0	31	7	0	38	0	0	0	0	0	57	8	0	0	65	4	0	165	0	169	272

*** BREAK ***

04:30 PM	0	3	1	0	4	0	0	0	0	0	29	12	0	0	41	1	0	14	0	15	60
04:45 PM	0	2	0	0	2	0	0	0	0	0	26	9	0	0	35	3	0	22	0	25	62
Total	0	5	1	0	6	0	0	0	0	0	55	21	0	0	76	4	0	36	0	40	122
05:00 PM	0	5	2	0	7	0	0	0	0	0	43	9	0	0	52	2	0	23	0	25	84
05:15 PM	0	7	1	0	8	0	0	0	0	0	49	6	0	0	55	3	0	34	0	37	100
Grand Total	0	48	11	0	59	0	0	0	0	0	204	44	0	0	248	13	0	258	0	271	578
Apprch %	0	81.4	18.6	0		0	0	0	0	0	82.3	17.7	0	0		4.8	0	95.2	0		
Total %	0	8.3	1.9	0	10.2	0	0	0	0	0	35.3	7.6	0	0	42.9	2.2	0	44.6	0	46.9	

Start Time	E GALLAHER FERRY RD Southbound					HICKORY CREEK RD Westbound					HARDIN VALLEY RD Northbound					HICKORY CREEK RD Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	8	2	0	10	0	0	0	0	0	16	2	0	0	18	1	0	39	0	40	68
07:15 AM	0	10	3	0	13	0	0	0	0	0	11	2	0	0	13	1	0	44	0	45	71
07:30 AM	0	8	1	0	9	0	0	0	0	0	16	2	0	0	18	1	0	39	0	40	67
07:45 AM	0	5	1	0	6	0	0	0	0	0	14	2	0	0	16	1	0	43	0	44	66
Total Volume	0	31	7	0	38	0	0	0	0	0	57	8	0	0	65	4	0	165	0	169	272
% App. Total	0	81.6	18.4	0		0	0	0	0	0	87.7	12.3	0	0		2.4	0	97.6	0		
PHF	.000	.775	.583	.000	.731	.000	.000	.000	.000	.000	.891	1.00	.000	.000	.903	1.00	.000	.938	.000	.939	.958

Peak Hour Analysis From 02:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	3	1	0	4	0	0	0	0	0	29	12									
04:45 PM	0	2	0	0	2	0	0	0	0	0	26	9	0	0	35	3	0	22	0	25	62
05:00 PM	0	5	2	0	7	0	0	0	0	0	43	9	0	0	52	2	0	23	0	25	84
05:15 PM	0	7	1	0	8	0	0	0	0	0	49	6	0	0	55	3	0	34	0	37	100
Total Volume	0	17	4	0	21	0	0	0	0	0	147	36	0	0	183	9	0	93	0	102	306
% App. Total	0	81	19	0		0	0	0	0	0	80.3	19.7	0	0		8.8	0	91.2	0		
PHF	.000	.607	.500	.000	.656	.000	.000	.000	.000	.000	.750	.750	.000	.000	.832	.750	.000	.684	.000	.689	.765

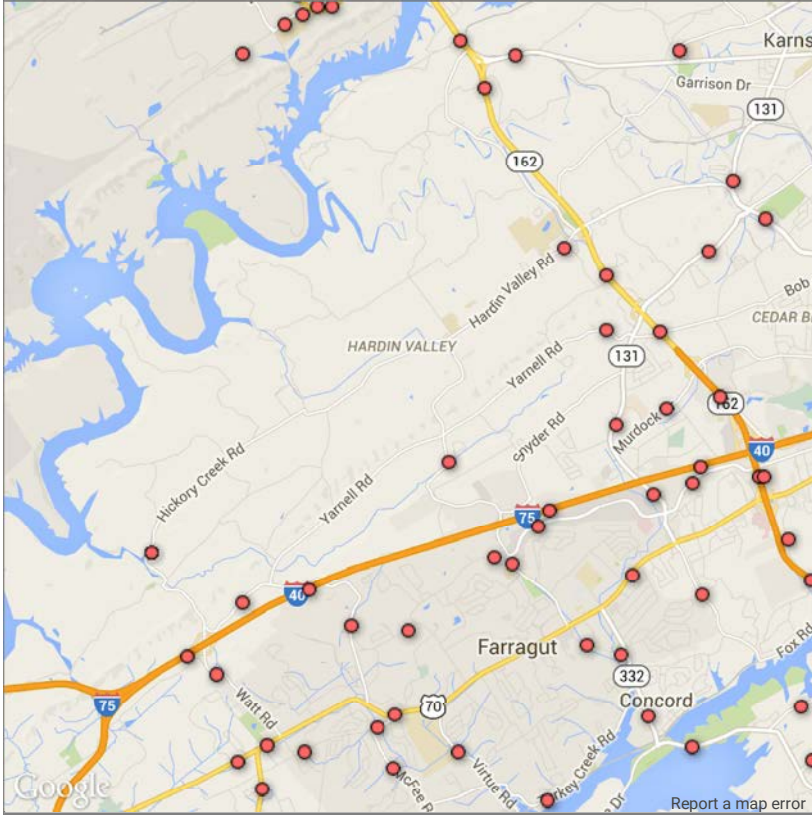


Tennessee Department of Transportation
John Schroer, Commissioner

Home | About the Commissioner | Other State DOTs | FAQ | Online Services | Contact Us

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

View stations on map: Non-Map Record Search: Station Number:



Station Information	
Station	000084
Route	01277
Location	VALLEY RD-NEAR ANDERSON CO LINE
County	Knox
2013	15642
2012	17809
2011	17696
2010	10492
2009	9950
2008	9660
2007	9379
2006	8804
2005	8457
2004	7761
2003	7533
2002	7179
2001	7019
2000	7520
1999	5587
1998	5137
1997	5820
1996	5589
1995	5037
1994	6800
1993	6000

Download File: [KML](#) | [ESRI Geodatabase](#) | [ESRI Shapefile](#) | [Database Table](#)
 Open With: [Google Earth](#) | [ArcGIS Explorer](#) | [MS Access or Excel](#)

[TN.gov Home](#) | [A to Z Directory](#) | [Web Policies](#) | [Survey](#) | [Help](#) | [Site Map](#) | [Contact](#)



Department of Transportation
James K. Polk Building, Suite 700
Nashville, TN 37243-0349
615.741.2848

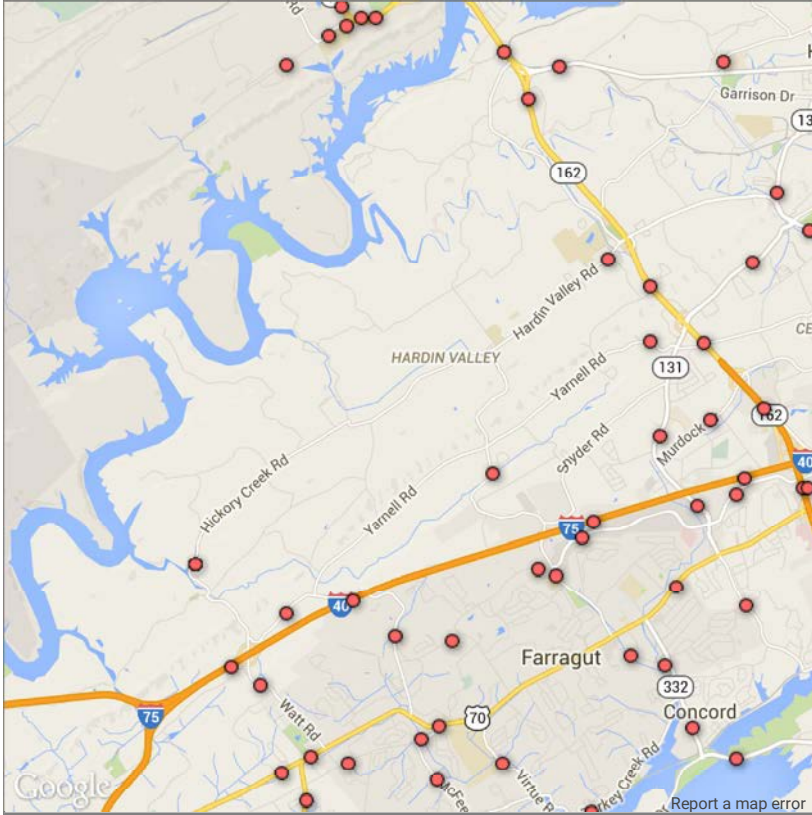


Tennessee Department of Transportation
John Schroer, Commissioner

Home | About the Commissioner | Other State DOTs | FAQ | Online Services | Contact Us

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

View stations on map: Non-Map Record Search: Station Number:



Station Information

Station	000135
Route	02422
Location	HICKORY CR DR-NEAR LOUDON CO LINE
County	Knox
2013	1454
2012	1778
2011	1564
2010	1403
2009	1387
2008	1669
2007	1742
2006	1632
2005	1521
2004	1477
2003	1024
2002	1461
2001	1515
2000	1826
1999	1223
1998	1555
1997	1400
1996	1381
1995	1379
1994	1024
1993	1024

Download File: [KML](#) | [ESRI Geodatabase](#) | [ESRI Shapefile](#) | [Database Table](#)
 Open With: [Google Earth](#) | [ArcGIS Explorer](#) | [MS Access or Excel](#)

[TN.gov Home](#) | [A to Z Directory](#) | [Web Policies](#) | [Survey](#) | [Help](#) | [Site Map](#) | [Contact](#)



Department of Transportation
James K. Polk Building, Suite 700
Nashville, TN 37243-0349
615.741.2848



**CDM
Smith**

