

November 16, 2017

Mr. Michael Zuraf, AICP
Stafford County Planning and Zoning
1300 Courthouse Road
Stafford, Virginia 22554
Phone: (540) 658-8668

Reference: Holly Corner Manor – Traffic Impact Analysis
Stafford County, Virginia

Dear Mr. Zuraf,

Ramey Kemp & Associates, Inc. (RKA) has performed a Traffic Impact Analysis (TIA) for this proposed neighborhood, which consists of up to 130 single-family lots on the south side of Holly Corner Road approximately one mile west of U.S. 17 (Warrenton Road). The proposed access plan includes one new full-movement driveway on Holly Corner Road, and cross access to the intersection of Country Manor Drive at Wild Rose Drive. If approved, the neighborhood is expected to be built-out by 2022. Figure 1 shows the site location and study intersections.

Based on the February 8 scoping meeting with the County and the Virginia Department of Transportation (VDOT), the purpose of this letter report is to provide the following:

- Trip generation calculations
- Evaluation of turn lane warrants for the proposed driveway on Holly Corner Road
- Sight distance evaluation at proposed driveway location
- Capacity analysis of the study intersections

Existing Roadway Conditions

U.S. 17 (Warrenton Road) is a four-lane divided Principal Arterial with an average daily traffic (ADT) volume of approximately 21,500 vehicles per day south of Holly Corner Road, and an ADT volume of approximately 20,500 vehicles per day north of Holly Corner Road. Warrenton Road has a posted speed limit of 45 mph.

Route 655 (Holly Corner Road) is a two-lane Minor Collector with an ADT volume of approximately 2,000 vehicles per day, and a posted speed limit of 35 mph.

Existing Traffic Volumes

The AM peak hour (7:00 to 9:00 AM) and PM peak hour (4:00 to 6:00 PM) turning movement counts were conducted by Technical Traffic Services, LLC at the following intersection during the week of February 13:

- U.S. 17 at Holly Corner Road

Figure 2 shows the existing 2017 traffic volumes and the count data is enclosed. For the analysis, the peak hour factor (PHF) was calculated by approach.

Background Traffic Growth

Based on discussion at the scoping meeting, the existing volumes were grown by an annual rate of 1.5% for five years. Figure 2 shows the projected 2022 peak hour volumes with only growth applied.

Approved Development Traffic

We understand there are three approved developments near the site that are included in this TIA:

- The Westlake neighborhood consists of 700 single family lots and is located west of U.S. 17 between Richards Ferry Road and Cedar Grove Road. Based on discussion at the scoping meeting, it was assumed that 200 of the homes will be occupied by 2022.
- Summerset Ridge South consists of 23 single family homes located on Holly Corner Road west of the site.
- Holly Refuge consists of 7 single family homes located on Holly Corner Road west of the site.

The trip generation potential of the approved developments during a typical weekday, AM peak hour and PM peak hour was estimated using the methodologies published by the Institute of Transportation Engineers (ITE) *Trip Generation Manual – 9th Edition*, and are shown in Table 1.

Table 1
ITE Trip Generation – 9th Edition – Weekday – Approved Developments

Land Use (ITE Land Use Code)	Size	Weekday Daily Traffic (vpd)		AM Peak Hour (vph)		PM Peak Hour (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit
Westlake							
Single Family Detached (210)	200 homes	952	952	38	112	126	74
Summerset Ridge South							
Single Family Detached (210)	23 homes	110	110	4	13	14	9
Holly Refuge							
Single Family Detached (210)	7 homes	34	34	1	4	4	3

Based on discussion with the County and VDOT, all of the approved developments are assumed to have the same traffic distribution. Figure 3 shows the trip assignment for Westlake, Summerset Ridge South, and Holly Refuge. The total approved development trips are shown in Figure 4. The total approved development trips were combined with the background growth to estimate the 2022 no-build traffic volumes, which are shown in Figure 4.

Trip Generation

Table 2 shows the ITE trip generation potential of the proposed Holly Corner Manor neighborhood.

Table 2
ITE Trip Generation – 9th Edition – Weekday – Holly Corner Manor

Land Use (ITE Land Use Code)	Size	Weekday Daily Traffic (vpd)		AM Peak Hour (vph)		PM Peak Hour (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit
Single Family Detached (210)	130 homes	668	668	25	76	84	49

Site Traffic Distribution

The following site traffic distribution was applied based on a review of the existing traffic volumes, the adjacent roadway network, and engineering judgment:

- 85% to / from the south on U.S. 17
- 13% to / from the north on U.S. 17
- 2% to / from the west on Holly Corner Road

Figures 5 and 6 show the site trip distribution and site trip assignment. Figure 7 shows the projected build 2022 AM and PM peak hour traffic volumes.

Intersection Spacing Standards

VDOT requires at least 335 feet of separation between full-movement intersections on two-lane Minor Collector roadways posted 35 mph. The proposed driveway on Holly Corner Road is approximately 850 feet east of Cricket Lane and approximately 1,175 feet west of Country Manor Drive, which exceeds VDOT's minimum intersection spacing standards in both directions.

Traffic Capacity Analysis

Traffic capacity analysis was performed using Synchro 9.1, which is a comprehensive software package that allows the user to model signalized and unsignalized intersections to determine levels-of-service based on the thresholds specified in the 2010 Highway Capacity Manual (HCM).

Table 3 summarizes the capacity analysis results for the unsignalized intersection of U.S. 17 at Holly Corner Road, and all of the Synchro outputs are enclosed for reference.

Table 3
Level-of-Service Summary
U.S. 17 at Holly Corner Road (Unsignalized)

CONDITION	LANE GROUP	AM PEAK HOUR			PM PEAK HOUR		
		Lane LOS	Queue (ft)	Overall LOS (Delay)	Lane LOS	Queue (ft)	Overall LOS (Delay)
Existing 2017 Traffic Conditions	EBL/R ¹	F	138	N/A ³	E	48	N/A ³
	NBL ²	B	10		B	23	
	NBT	-	-		-	-	
	SBT	-	-		-	-	
	SBR	-	-		-	-	
No-Build 2022 Traffic Conditions	EBL/R ¹	F	298	N/A ³	F	175	N/A ³
	NBL ²	B	8		C	35	
	NBT	-	-		-	-	
	SBT	-	-		-	-	
	SBR	-	-		-	-	
Build 2022 Traffic Conditions	EBL/R ¹	F	505	N/A ³	F	413	N/A ³
	NBL ²	B	10		C	60	
	NBT	-	-		-	-	
	SBT	-	-		-	-	
	SBR	-	-		-	-	
Build 2022 Traffic Conditions (With Recommended Improvement)	EBL ¹	F	160	N/A ³	F	98	N/A ³
	EBR ¹	C	65		C	45	
	NBL ²	B	10		C	60	
	NBT	-	-		-	-	
	SBT	-	-		-	-	
	SBR	-	-		-	-	

1. Level of service for minor approach
2. Level of service for major street left-turn movement
3. HCM methodology does not provide lane group or overall LOS, delay, and queue lengths for major street through movements or right turns at unsignalized intersections.

Capacity analysis indicates that the minor street left-turn movement currently operates with long delays (greater than 50 seconds) during the AM peak hour and moderate delays (between 25 and 50 seconds) during the PM peak hour. Under no-build conditions, the minor street left-turn movement is expected to operate with long delays (greater than 50 seconds) during both peak hours. Under build conditions, the minor street left-turn movement is expected to continue to operate with long delays (greater than 50 seconds) during both the AM and PM peak hours. To mitigate queuing on the eastbound Holly Corner Road approach, the following improvement is recommended:

- Construct an eastbound right-turn lane on Holly Corner Road with 150 feet of storage

Long delays are common for minor street left-turn movements at intersections with major thoroughfares, and this intersection is not expected to meet signal warrants.

Note that this analysis is conservative, because the Synchro model does not include the traffic signals on U.S. 17, which create gaps for drivers turning off Holly Corner Road.

Table 4 summarizes the capacity analysis results for the unsignalized intersection of Holly Corner Road at Proposed Site Driveway, and all of the Synchro outputs are enclosed for reference.

Table 4
Level-of-Service Summary
Holly Corner Road at Proposed Site Driveway (Unsignalized)

CONDITION	LANE GROUP	AM PEAK HOUR			PM PEAK HOUR		
		Lane LOS	Queue (ft)	Overall LOS (Delay)	Lane LOS	Queue (ft)	Overall LOS (Delay)
Build 2022 Traffic Conditions	EBT/R	-	-	N/A ³	-	-	N/A ³
	WBL/T ²	A	0		A	5	
	NBL/R ¹	A	8		A	3	

1. Level of service for minor approach
2. Level of service for major street left-turn movement
3. HCM methodology does not provide lane group or overall LOS, delay, and queue lengths for major street through movements or right turns at unsignalized intersections.

The capacity analysis indicates that all movements are projected to operate with short delays (less than 25 seconds) during the AM and PM peak hours at build-out of the neighborhood, and the queue lengths are expected to be one vehicle or less.

VDOT Turn Lane Warrant Analysis

The projected build-out AM and PM peak hour traffic volumes at the proposed driveways were compared to the turn lane warrants in the Virginia Department of Transportation (VDOT) *Access Management Design Standards for Entrances and Intersections*:

- A westbound left-turn lane on Holly Corner Road is not warranted
- An eastbound right-turn lane or taper on Holly Corner Road is not warranted

The turn lane warrant diagrams are enclosed for reference.

Sight Distance Evaluation

The sight distance for drivers exiting the proposed neighborhood driveway were measured in the field. Table 5 summarizes the sight distance requirements for driveways on two-lane roadways according to the VDOT Road Design Manual and according to *A Policy on Geometric Design of Highways and Streets*, which is published by the American Association of State Highway and Transportation Officials (AASHTO).

Table 5
Sight Distance Requirements
(From Exhibits 9-55 and 9-58 in the 2004 AASHTO Green Book)

Design Speed	Turn	VDOT Minimum Sight Distance	AASHTO Minimum Sight Distance	Actual Sight Distance
Holly Corner Road: 40 mph	Left	390 feet	445 feet	625 feet
	Right	390 feet	385 feet	475 feet

At the proposed driveway location on Holly Corner Road, drivers exiting the neighborhood will be able to see approximately 625 feet to the east, and 475 feet to the west, which exceeds sight distance minimums in both directions. Enclosed for reference are photos taken approximately 275 feet east of the proposed driveway location looking in both directions.

Recommendations

Based on the trip generation potential of the proposed neighborhood, the following off-site roadway improvements are recommended:

U.S. 17 at Holly Corner Road:

- Construct one eastbound right turn-lane on Holly Corner Road with 150 feet of storage

Holly Corner Road at Proposed Site Driveway:

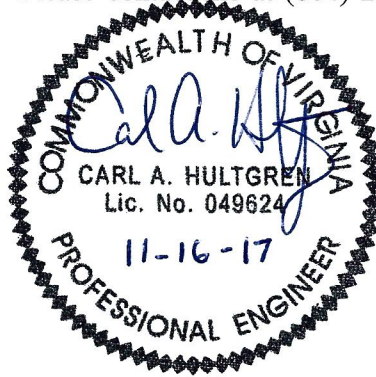
- Provide one ingress lane and at least one egress lane on the proposed site driveway

Figure 7 shows the recommended roadway improvement.

Mr. Michael Zuraf, AICP
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We appreciate your attention to this matter. Please contact me at (804) 217-8560 if you have any questions about this report.

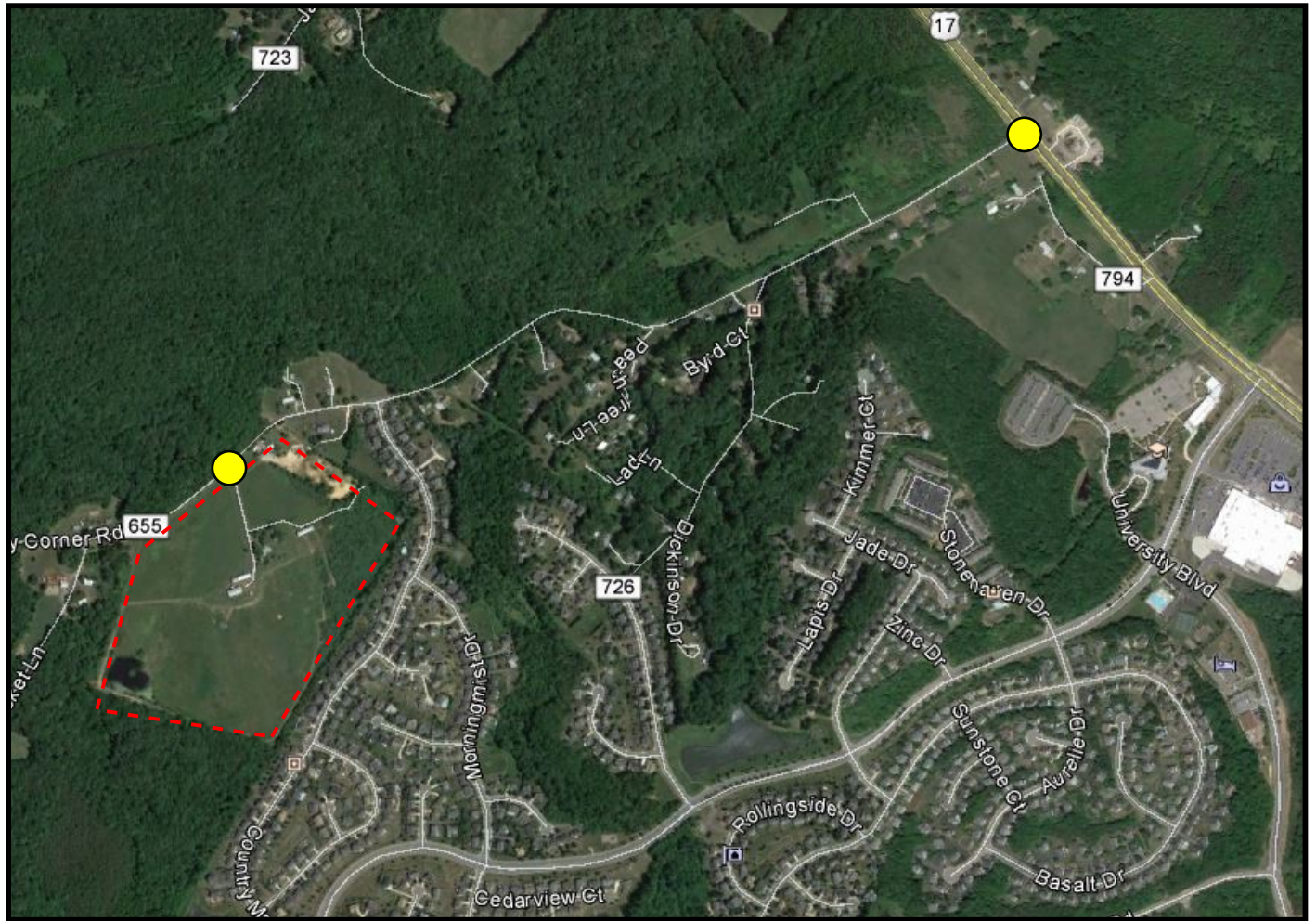
Sincerely yours,
Ramey Kemp & Associates, Inc.



Carl Hultgren, P.E., PTOE
Regional Manager

Enclosures: Figures, Traffic count data, Synchro output, VDOT turn lane warrant diagrams, Sight distance photos

Copy to: Ms. Margaret Niemann, VDOT
Mr. Samer Shalaby, P.E., Development Consulting Services, PLC
Mr. Justin Franklin, P.E., Fairbanks & Franklin





Inset



Overview

LEGEND

-  Study Intersection
-  Site Boundary



Holly Corner Manor
Stafford County, Virginia

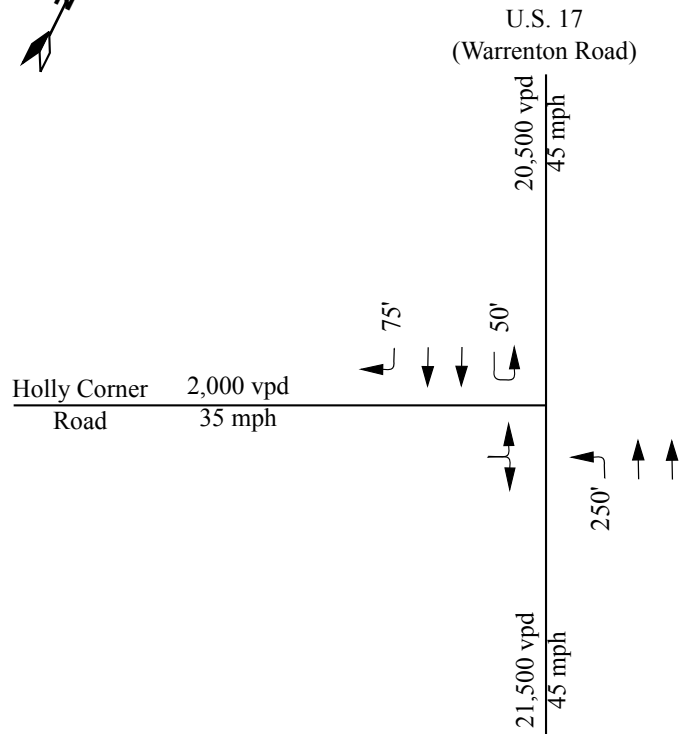
Site Location and Study
Intersections

Scale: Not to Scale

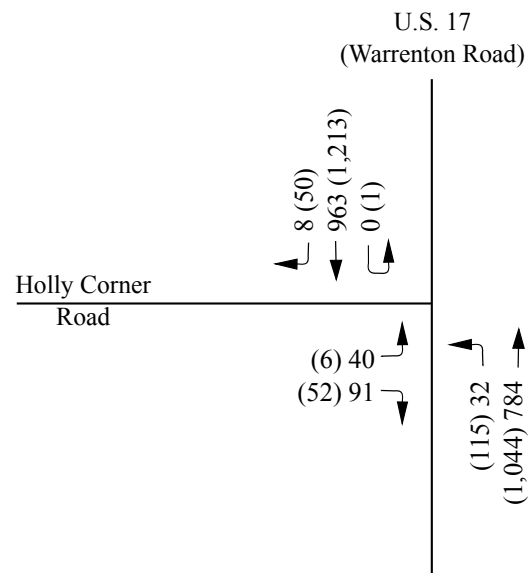
Figure 1



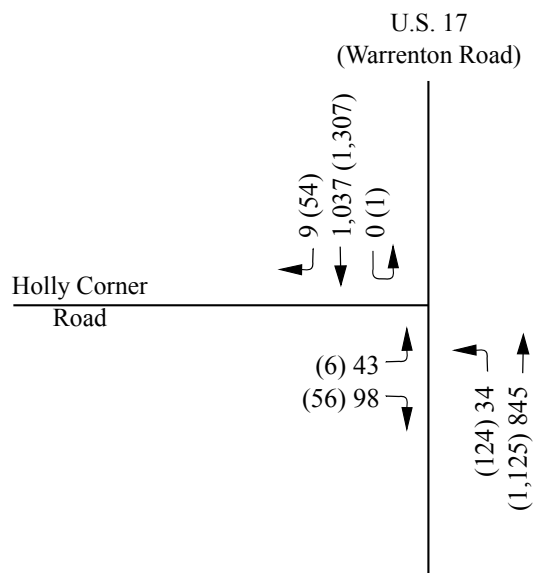
Existing Lane Configuration



Existing (2017) Traffic Volumes



Projected (2022) Traffic Volumes



LEGEND

- Existing Lane
- X' Storage (In Feet)
- X (Y) AM (PM) Peak Hour



Holly Corner Manor
Stafford County, Virginia

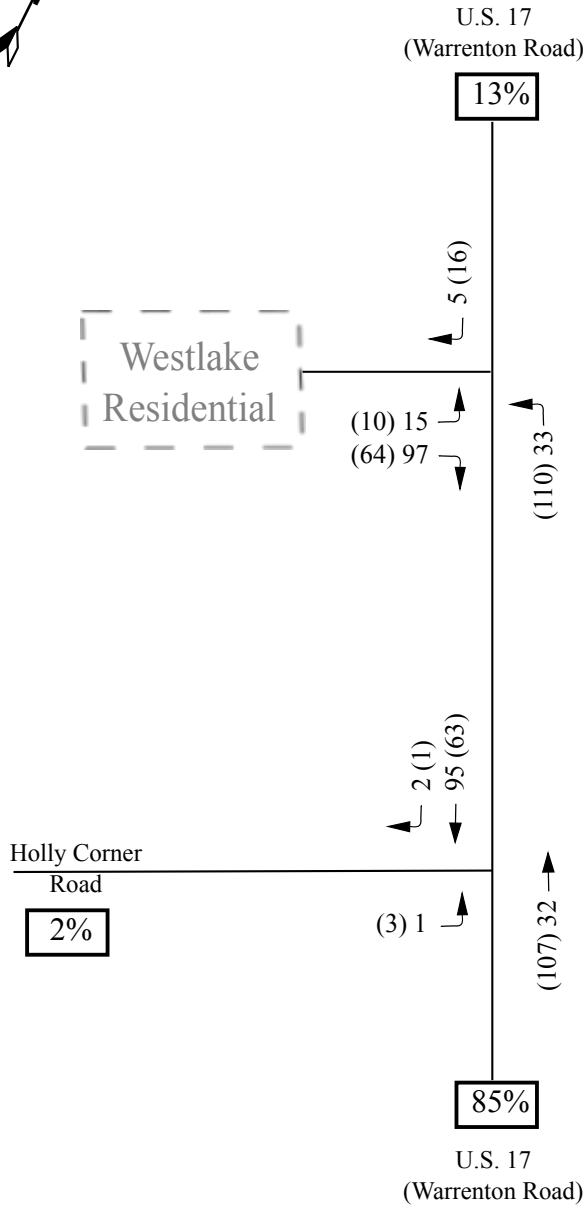
Existing Lane Configuration,
Existing (2017) Traffic Volumes,
Projected (2022) Traffic Volumes

Scale: Not to Scale

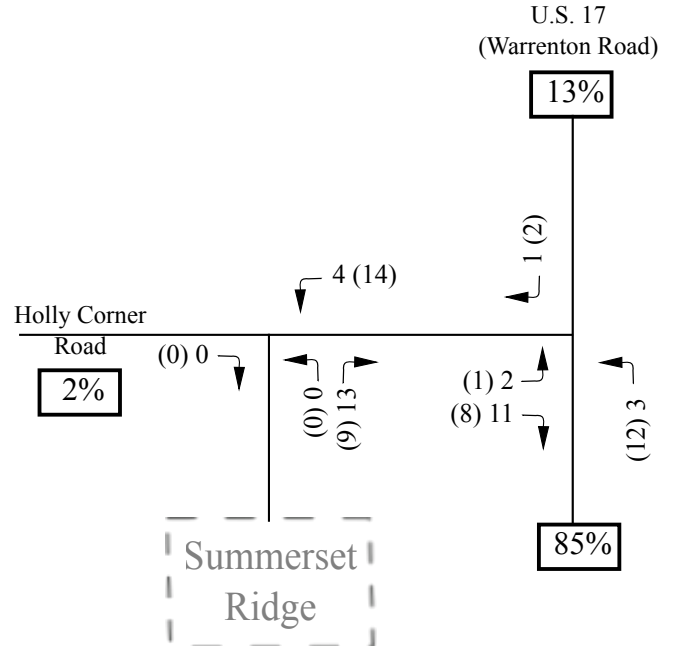
Figure 2



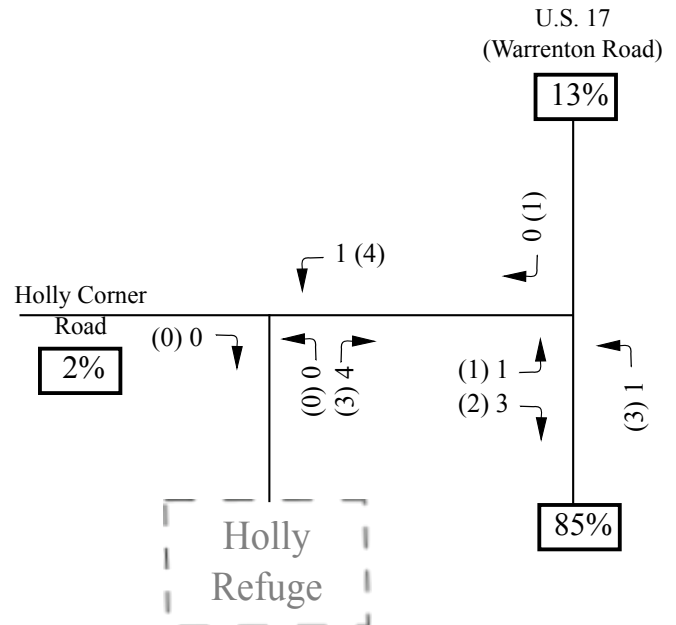
Westlake Residential Trips



Summerset Ridge Trips



Holly Refuge Trips



LEGEND

XX% Regional Trip Distribution

X (Y) AM (PM) Peak Hour



Holly Corner Manor
Stafford County, Virginia

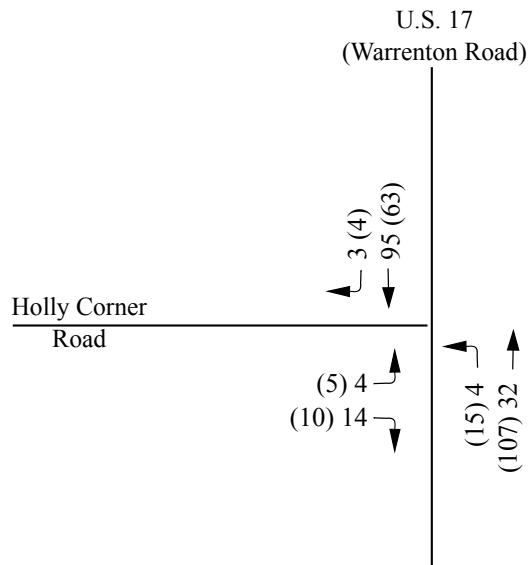
Approved Development
Distributions and Assignments

Scale: Not to Scale

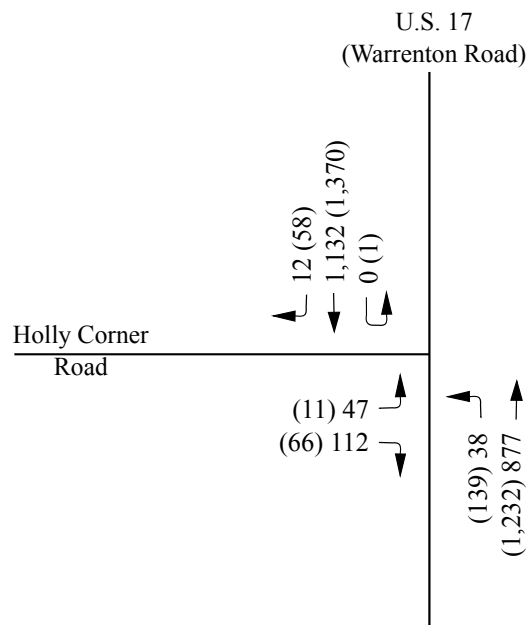
Figure 3



Total Approved Development Trips



No-Build (2022) Traffic Volumes



LEGEND

X (Y) AM (PM) Peak Hour

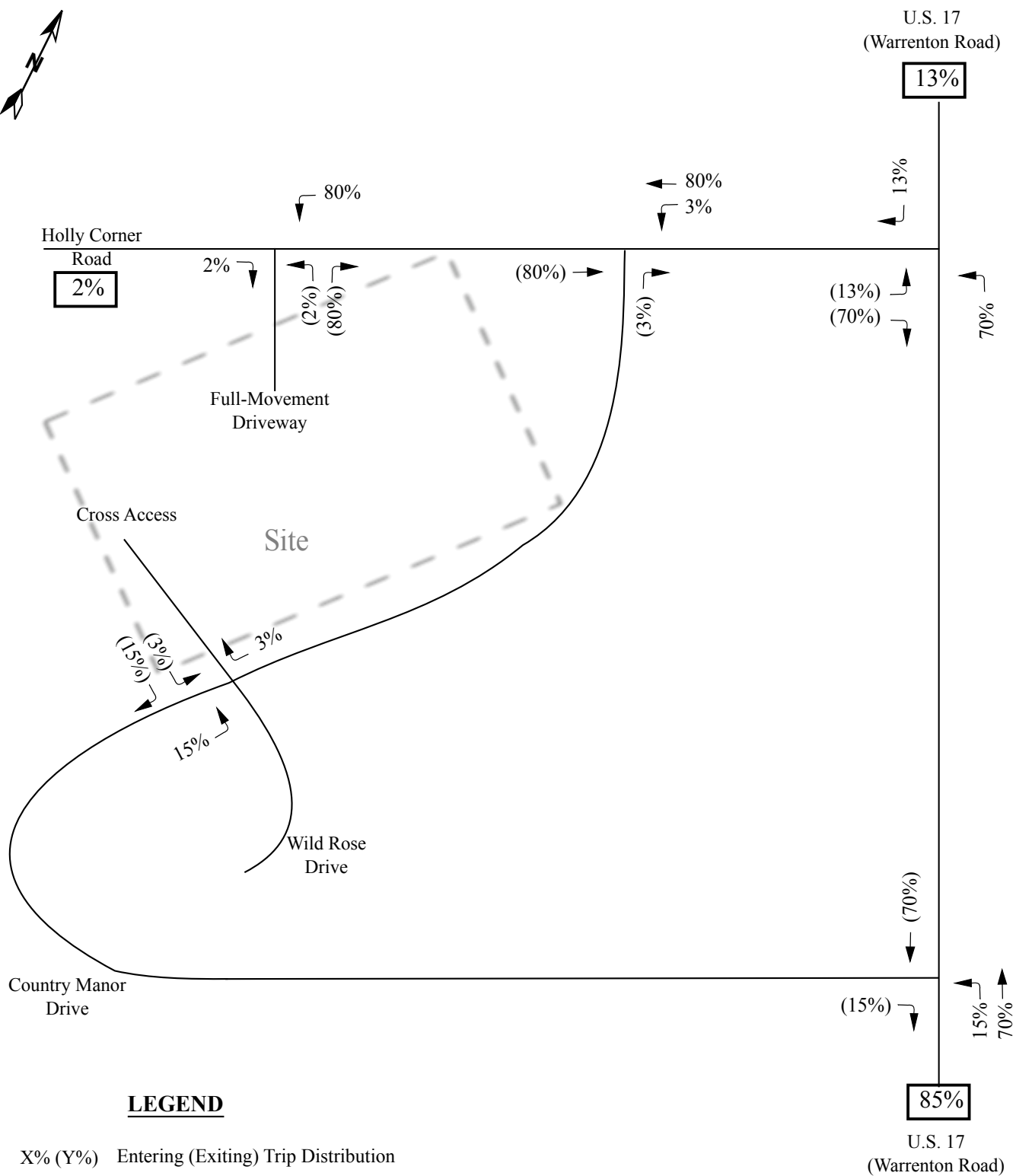


Holly Corner Manor
Stafford County, Virginia

Total Approved Development
Traffic and No-Build (2022)
Peak Hour Traffic Volumes

Scale: Not to Scale

Figure 4



LEGEND

X% (Y%) Entering (Exiting) Trip Distribution

XX% Regional Trip Distribution

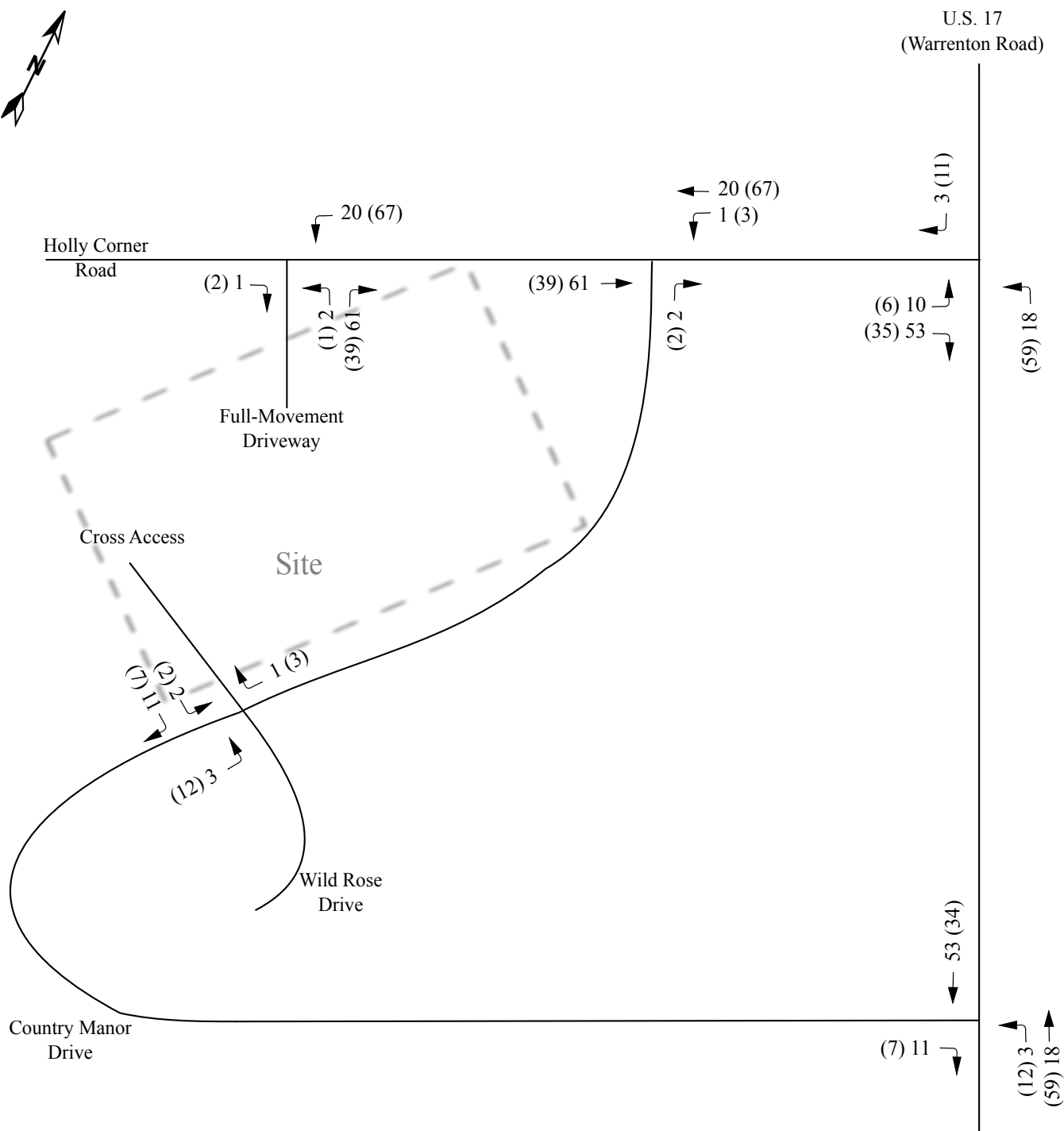


Holly Corner Manor
Stafford County, Virginia

Site Trip
Distribution

Scale: Not to Scale

Figure 5



LEGEND

X (Y) AM (PM) Peak Hour

U.S. 17
(Warrenton Road)



Holly Corner Manor
Stafford County, Virginia

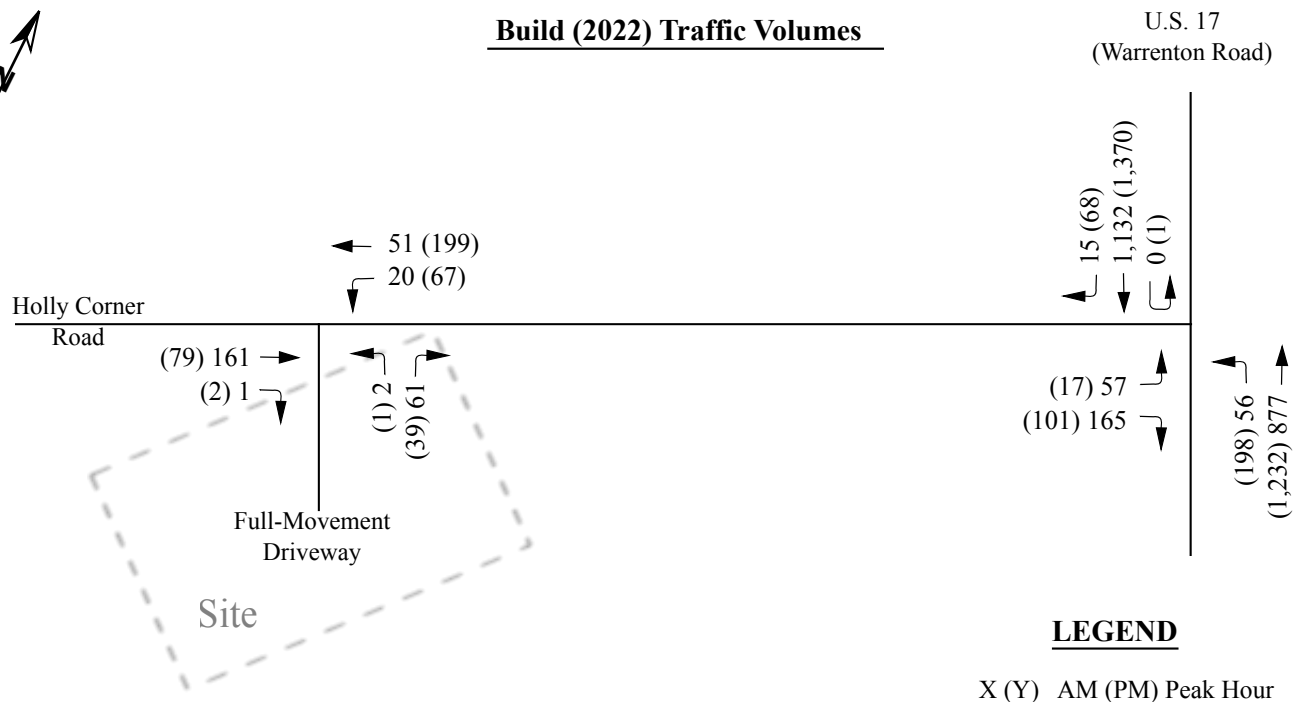
Site Trip
Assignment

Scale: Not to Scale

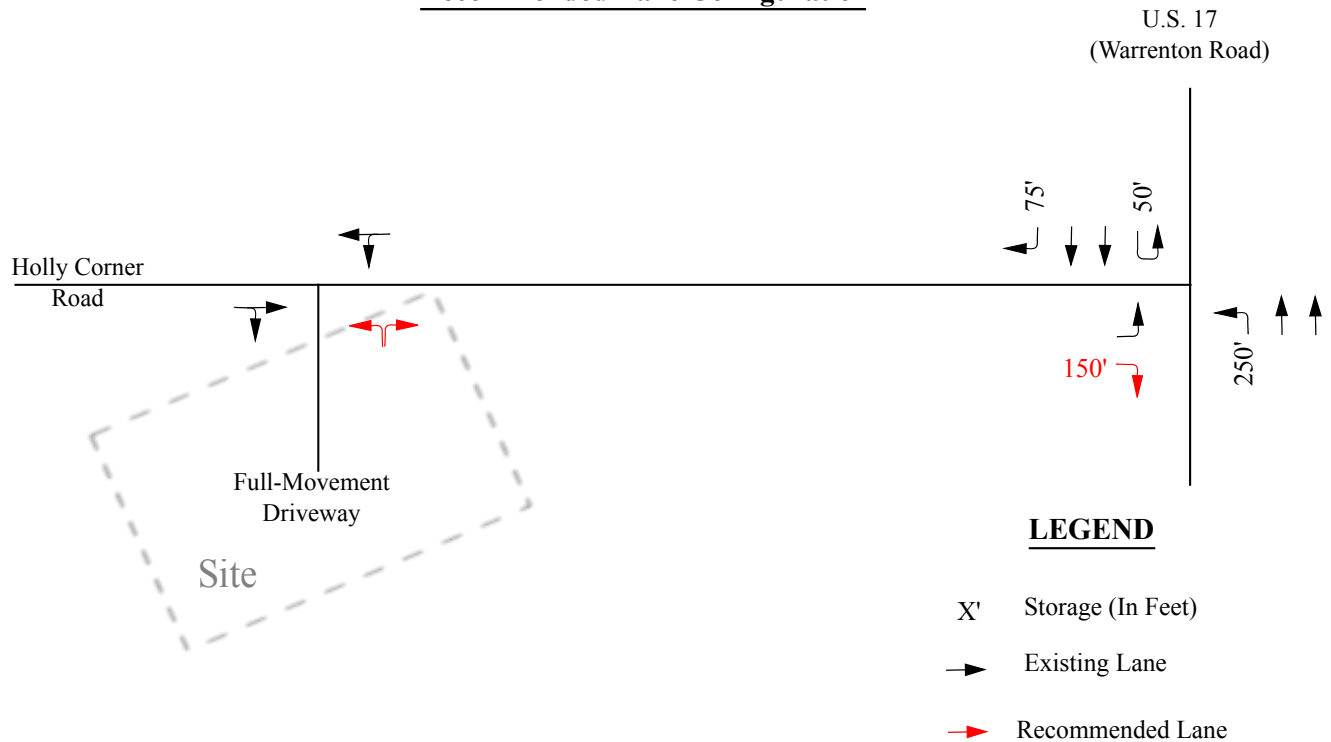
Figure 6



Build (2022) Traffic Volumes



Recommended Lane Configuration



Holly Corner Manor
Stafford County, Virginia

Build (2022) Peak Hour
Traffic Volumes and
Recommended Lane

Scale: Not to Scale

Figure 7

Directional Turning Movement Study (7:00 AM-9:00 AM)

Location: US 17 (Warrenton Rd.) and SR 655 (Holly Corner Rd.)										County/Area: Stafford County							
Date Surveyed: February 14, 2017										Weather: Clear/Sunny							
	US 17				US 17				NA				Holly Corner Rd. (SR 655)				
	From North				From South				From East				From West				
End Time	U-Turn	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Int. Total
7:15	0	187	3	0	8	200		0					23		21	0	442
7:30	0	224	0	0	5	171		0					17		31	0	448
7:45	0	280	4	0	8	179		0					16		23	0	510
8:00	0	245	3	0	5	170		0					5		27	0	455
8:15	0	208	0	0	7	227		0					10		24	0	476
8:30	0	230	1	0	12	208		0					9		17	0	477
8:45	0	244	8	0	12	154		0					10		22	0	450
9:00	0	262	1	0	12	187		0					11		21	0	494
Total		1880	20	0	69	1496		0					101		186	0	3752
% Appr Total		98.9%	1.1%		4.4%	95.6%							35.2%		64.8%		

Directional Turning Movement Study (4:00 PM-6:00 PM)






Location: US 17 (Warrenton Rd.) and SR 655 (Holly Corner Rd.)									County/Area: Stafford County								
Date Surveyed: February 14, 2017									Weather: Clear/Sunny								
	US 17				US 17				NA				Holly Corner Rd. (SR 655)				
	From North				From South				From East				From West				
End Time	U-Turn	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Left	Thru	Right	Ped	Int. Total
16:15	0	285	15	0	19	255		0					11		24	0	609
16:30	0	280	13	0	29	270		0					2		13	0	607
16:45	0	272	11	0	15	287		0					2		9	0	596
17:00	0	287	10	0	27	268		0					2		11	0	605
17:15	1	293	13	0	24	245		0					0		21	0	597
17:30	0	309	10	0	36	288		0					3		12	0	658
17:45	0	298	17	0	26	255		0					1		8	0	605
18:00	0	313	10	0	29	256		0					2		11	0	621
Total	1	2337	99	0	205	2124		0					23		109	0	4898
% Appr Total	0.04%	95.9%	4.1%		8.80%	91.20%							17.4%		82.6%		

Holly Corner - Stafford County, VA
1: U.S. 17 & Holly Corner Road

Existing (2017) Conditions
Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh 5.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	91	32	784	963	8
Future Vol, veh/h	40	91	32	784	963	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	87	87	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	108	37	901	1120	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1644	560	1120	0	-	0
Stage 1	1120	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	90	472	619	-	-	-
Stage 1	274	-	-	-	-	-
Stage 2	559	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	85	472	619	-	-	-
Mov Cap-2 Maneuver	85	-	-	-	-	-
Stage 1	274	-	-	-	-	-
Stage 2	526	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	69.7	0.4	0
HCM LOS	F		






Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	619	-	197	-	-
HCM Lane V/C Ratio	0.059	-	0.792	-	-
HCM Control Delay (s)	11.2	-	69.7	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.2	-	5.5	-	-

Holly Corner - Stafford County, VA
1: U.S. 17 & Holly Corner Road

Existing (2017) Conditions
Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh 1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	52	115	1044	1213	50
Future Vol, veh/h	6	52	115	1044	1213	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	89	89	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	75	129	1173	1238	51

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2083	619	1238	0	-	0
Stage 1	1238	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	46	432	558	-	-	-
Stage 1	237	-	-	-	-	-
Stage 2	382	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	35	432	558	-	-	-
Mov Cap-2 Maneuver	35	-	-	-	-	-
Stage 1	237	-	-	-	-	-
Stage 2	294	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	35.7	1.3	0
HCM LOS	E		






Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	558	-	199	-	-
HCM Lane V/C Ratio	0.232	-	0.422	-	-
HCM Control Delay (s)	13.4	-	35.7	-	-
HCM Lane LOS	B	-	E	-	-
HCM 95th %tile Q(veh)	0.9	-	1.9	-	-

Holly Corner - Stafford County, VA
1: U.S. 17 & Holly Corner Road

No-Build (2022 Conditions)
Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh 18.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	112	38	877	1132	12
Future Vol, veh/h	47	112	38	877	1132	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	87	87	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	56	133	44	1008	1316	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1907	658	1316	0	-	0
Stage 1	1316	-	-	-	-	-
Stage 2	591	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	60	407	521	-	-	-
Stage 1	215	-	-	-	-	-
Stage 2	516	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 55	407	521	-	-	-
Mov Cap-2 Maneuver	~ 55	-	-	-	-	-
Stage 1	215	-	-	-	-	-
Stage 2	472	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	253.7	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	521	-	141	-	-
HCM Lane V/C Ratio	0.084	-	1.342	-	-
HCM Control Delay (s)	12.5	-	253.7	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.3	-	12	-	-

Notes






~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Holly Corner - Stafford County, VA
1: U.S. 17 & Holly Corner Road

No-Build (2022) Conditions
Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh 7.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	66	139	1232	1370	58
Future Vol, veh/h	11	66	139	1232	1370	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	89	89	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	96	156	1384	1398	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2402	699	1398	0	-	0
Stage 1	1398	-	-	-	-	-
Stage 2	1004	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	28	382	485	-	-	-
Stage 1	194	-	-	-	-	-
Stage 2	315	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	19	382	485	-	-	-
Mov Cap-2 Maneuver	19	-	-	-	-	-
Stage 1	194	-	-	-	-	-
Stage 2	214	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	195	1.6	0
HCM LOS	F		






Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	485	-	102	-	-
HCM Lane V/C Ratio	0.322	-	1.094	-	-
HCM Control Delay (s)	15.9	-	195	-	-
HCM Lane LOS	C	-	F	-	-
HCM 95th %tile Q(veh)	1.4	-	7.1	-	-

Holly Corner - Stafford County, VA
1: U.S. 17 & Holly Corner Road

Build (2022) Conditions
Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh 46.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	57	165	56	877	1132	15
Future Vol, veh/h	57	165	56	877	1132	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	87	87	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	196	64	1008	1316	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1949	658	1316	0	-	0
Stage 1	1316	-	-	-	-	-
Stage 2	633	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 56	407	521	-	-	-
Stage 1	215	-	-	-	-	-
Stage 2	491	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 49	407	521	-	-	-
Mov Cap-2 Maneuver	~ 49	-	-	-	-	-
Stage 1	215	-	-	-	-	-
Stage 2	431	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	\$ 466.6	0.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	521	-	142	-	-
HCM Lane V/C Ratio	0.124	-	1.861	-	-
HCM Control Delay (s)	12.9	-	\$ 466.6	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.4	-	20.2	-	-

Notes







~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Holly Corner - Stafford County, VA
1: U.S. 17 & Holly Corner Road

Build (2022) Conditions - Improved
Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh 12

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	57	165	56	877	1132	15
Future Vol, veh/h	57	165	56	877	1132	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	150	250	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	87	87	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	196	64	1008	1316	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1949	658	1316	0	-	0
Stage 1	1316	-	-	-	-	-
Stage 2	633	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 56	407	521	-	-	-
Stage 1	215	-	-	-	-	-
Stage 2	491	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 49	407	521	-	-	-
Mov Cap-2 Maneuver	~ 49	-	-	-	-	-
Stage 1	215	-	-	-	-	-
Stage 2	431	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	117.9	0.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	521	-	49	407	-	-
HCM Lane V/C Ratio	0.124	-	1.385	0.483	-	-
HCM Control Delay (s)	12.9	-\$	395.9	21.8	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	0.4	-	6.4	2.6	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon




Holly Corner - Stafford County, VA
2: Site Driveway & Holly Corner Road

Build (2022) Conditions

Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh 2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	1	20	50	2	61
Future Vol, veh/h	160	1	20	50	2	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	174	1	22	54	2	66

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	175
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	9.5
HCM LOS			A






Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	861	-	-	1401	-
HCM Lane V/C Ratio	0.08	-	-	0.016	-
HCM Control Delay (s)	9.5	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Holly Corner - Stafford County, VA
1: U.S. 17 & Holly Corner Road

Build (2022) Conditions
Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh 42.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	101	198	1232	1370	68
Future Vol, veh/h	17	101	198	1232	1370	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	89	89	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	146	222	1384	1398	69

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2535	699	1398	0	-	0
Stage 1	1398	-	-	-	-	-
Stage 2	1137	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 22	382	485	-	-	-
Stage 1	194	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 12	382	485	-	-	-
Mov Cap-2 Maneuver	~ 12	-	-	-	-	-
Stage 1	194	-	-	-	-	-
Stage 2	145	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	\$ 783.6	2.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	485	-	70	-	-
HCM Lane V/C Ratio	0.459	-	2.443	-	-
HCM Control Delay (s)	18.6	-	\$ 783.6	-	-
HCM Lane LOS	C	-	F	-	-
HCM 95th %tile Q(veh)	2.4	-	16.5	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon







Holly Corner - Stafford County, VA
1: U.S. 17 & Holly Corner Road

Build (2022) Conditions - Improved

Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh 10.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	101	198	1232	1370	68
Future Vol, veh/h	17	101	198	1232	1370	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	150	250	-	-	75
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	69	69	89	89	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	146	222	1384	1398	69

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2535	699	1398	0	-	0
Stage 1	1398	-	-	-	-	-
Stage 2	1137	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 22	382	485	-	-	-
Stage 1	194	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 12	382	485	-	-	-
Mov Cap-2 Maneuver	~ 12	-	-	-	-	-
Stage 1	194	-	-	-	-	-
Stage 2	145	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	178.5	2.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	485	-	12	382	-	-
HCM Lane V/C Ratio	0.459	-	2.053	0.383	-	-
HCM Control Delay (s)	18.6	\$	1119.3	20.2	-	-
HCM Lane LOS	C	-	F	C	-	-
HCM 95th %tile Q(veh)	2.4	-	3.9	1.8	-	-

Notes




~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Holly Corner - Stafford County, VA
2: Site Driveway & Holly Corner Road

Build (2022) Conditions
Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh 2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	77	2	67	197	1	39
Future Vol, veh/h	77	2	67	197	1	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	2	73	214	1	42

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	86	445
Stage 1	-	-	85
Stage 2	-	-	360
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.518
Pot Cap-1 Maneuver	-	1510	571
Stage 1	-	-	938
Stage 2	-	-	706
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1510	540
Mov Cap-2 Maneuver	-	-	540
Stage 1	-	-	938
Stage 2	-	-	667

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	955	-	-	1510	-
HCM Lane V/C Ratio	0.046	-	-	0.048	-
HCM Control Delay (s)	8.9	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

WARRANT FOR LEFT-TURN STORAGE LANES ON TWO-LANE HIGHWAY

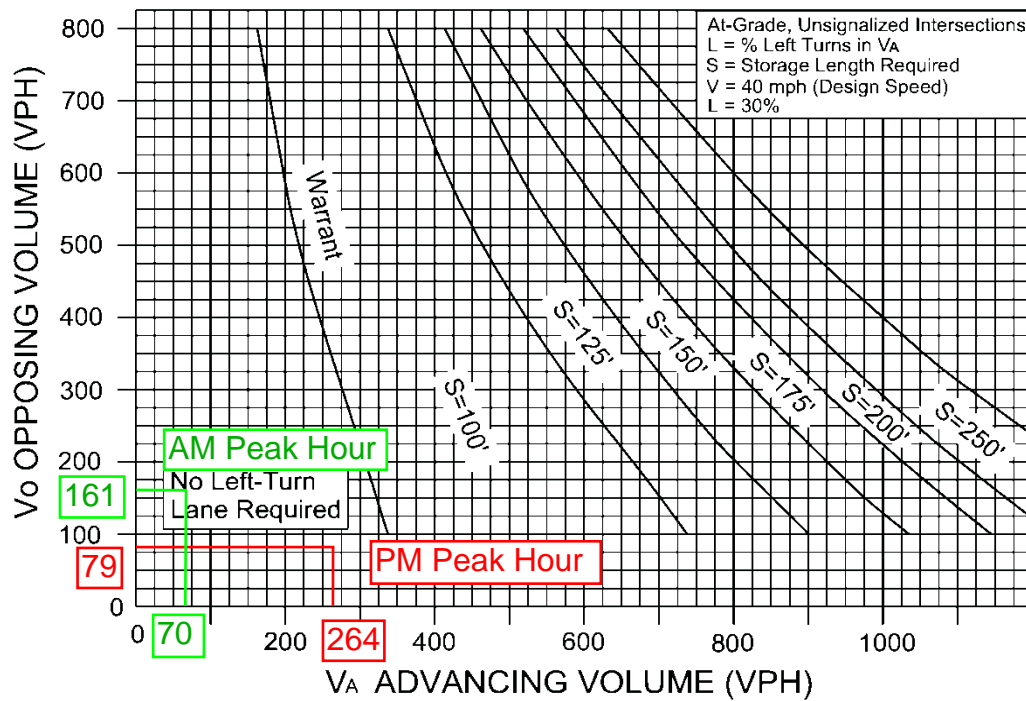


FIGURE 3-9

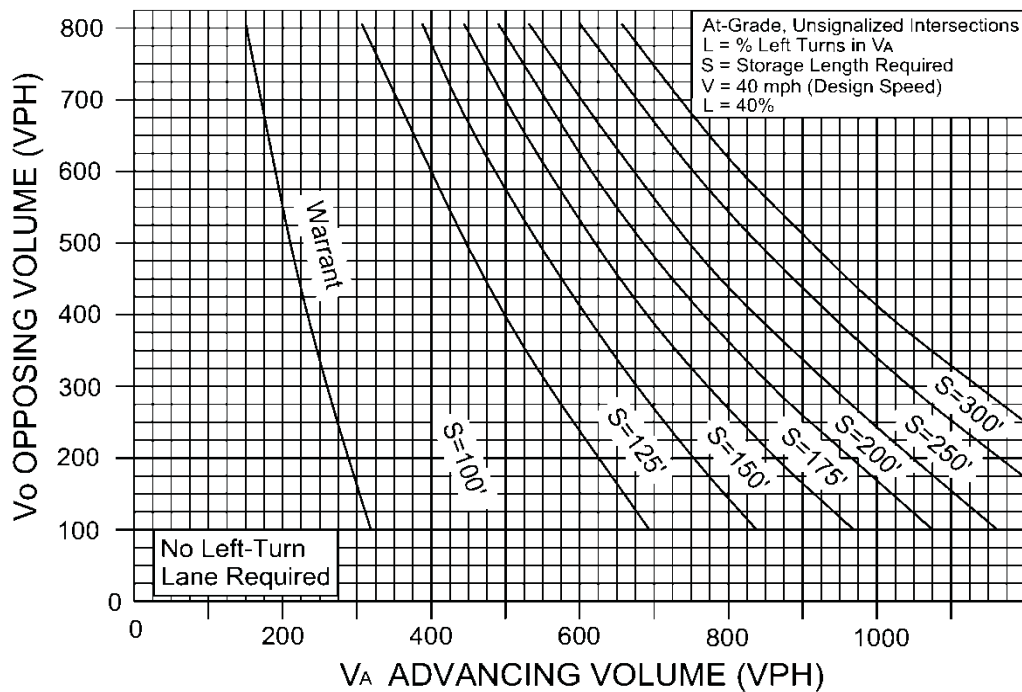
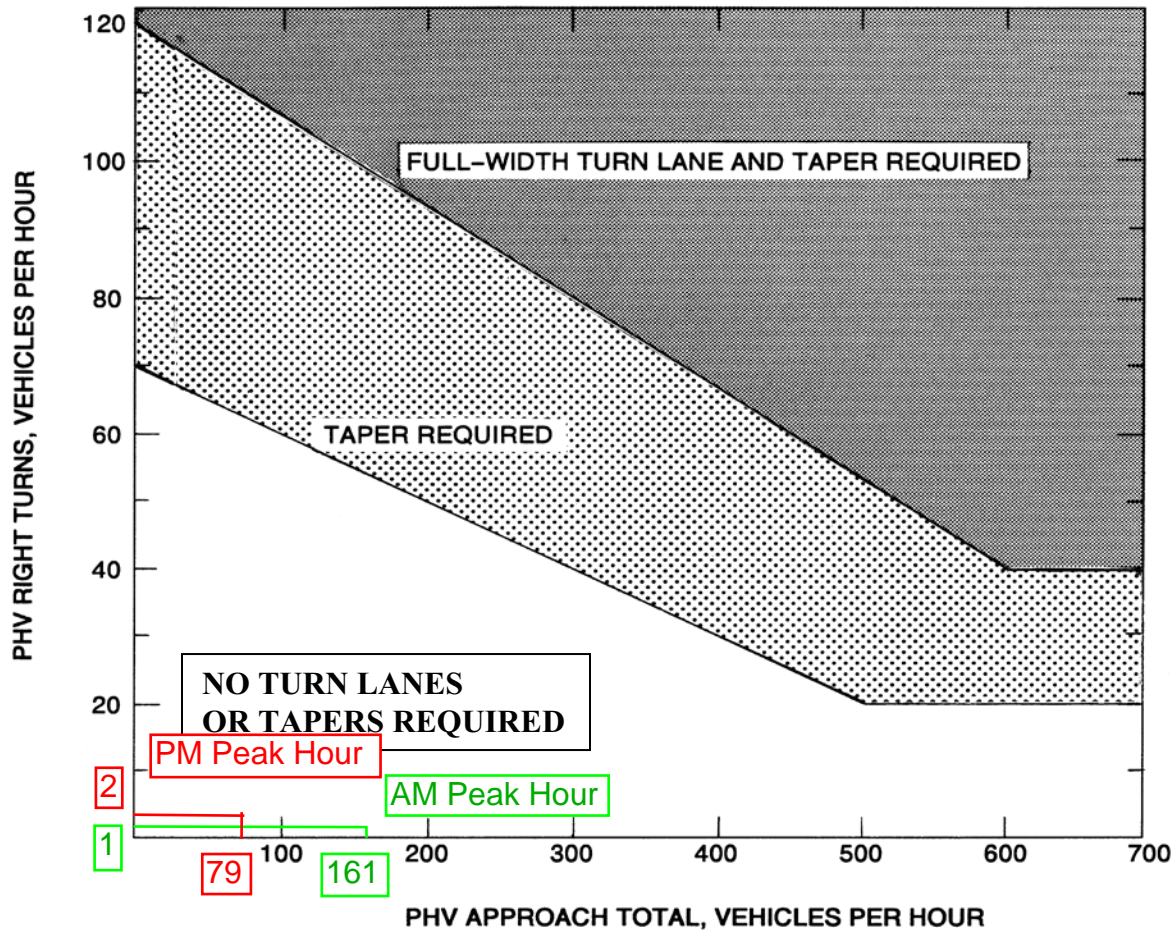


FIGURE 3-10



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

Adjusted right turns = PHV Right Turns - 20

If PHV is not known use formula: $PHV = ADT \times K \times D$

K = the percent of AADT occurring in the peak hour

D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.*

FIGURE 3-26 WARRANTS FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)



Exhibit 1 – Looking west on Holly Corner Road approximately 275 feet east of the proposed driveway location



Exhibit 2 – Looking east on Holly Corner Road approximately 275 feet east of the proposed driveway location

PRE-SCOPE OF WORK MEETING FORM

Information on the Project Traffic Impact Analysis Base Assumptions

The applicant is responsible for entering the relevant information and submitting the form to VDOT and the locality no less than three (3) business days prior to the meeting. If a form is not received by this deadline, the scope of work meeting may be postponed.

Contact Information

Consultant Name:	Ramey Kemp & Associates, Inc. / Carl Hultgren, P.E., PTOE
Tele:	(804) 217-8560
E-mail:	chultgren@rameykemp.com
Developer/Owner Name:	Development Consulting Services, PLC / Samer Shalaby, P.E.
Tele:	(540) 368-1327
E-mail:	sshalaby@dev-consulting.com

Project Information

Project Name:	Holly Corner	Locality/County:	Stafford County
Project Location: (Attach regional and site specific location map)	Refer to Figure 1		
Submission Type	Comp Plan <input type="checkbox"/>	Rezoning <input checked="" type="checkbox"/>	Site Plan <input checked="" type="checkbox"/> Subd Plat <input type="checkbox"/>
Project Description: (Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary)	The property is located on the south side of Holly Corner Road approximately 1 mile west of U.S. 17 (Warrenton Road). The preliminary plan includes up to 130 single-family homes, with one new full-movement driveway on Holly Corner Road, and one cross-access connection to Country Manor Drive in the adjacent neighborhood to the southeast.		
Proposed Use(s): (Check all that apply; attach additional pages as necessary)	Residential <input checked="" type="checkbox"/>	Commercial <input type="checkbox"/>	Mixed Use <input type="checkbox"/> Other <input type="checkbox"/>
	Residential Uses(s) Number of Units: 130 ITE LU Code(s): 210 _____ _____ Commercial Use(s) ITE LU Code(s): _____ _____ _____ Square Ft or Other Variable: _____		_____ _____ _____ Other Use(s) ITE LU Code(s): _____ _____ _____ Independent Variable(s): _____ _____ _____
Total Peak Hour Trip Projection:	Less than 100 <input type="checkbox"/>	100 – 499 <input checked="" type="checkbox"/>	500 – 999 <input type="checkbox"/> 1,000 or more <input type="checkbox"/>

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Traffic Impact Analysis Assumptions

Study Period	Existing Year: 2017	Build-out Year: 2022	Design Year: 2022
Study Area Boundaries (Attach map)	North: See Figure 1	South:	
	East:	West:	
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	Westlake Residential - 700 total lots with 200 lots built out by 2022 Sommerset Ridge South - 23 lots Holly Refuge - 7 lots		
Consistency With Comprehensive Plan (Land use, transportation plan)	Existing zoning is A-1, and the proposed rezoning is R-2. The Comprehensive Plan allows up to 3.0 lots per acre. The proposed site has 128 homes on 48.603 acres, which is approximately 2.6 lots per acre.		
Available Traffic Data (Historical, forecasts)	U.S. 17 (Warrenton Road) - 38,000 vpd in 2012 / 39,000 vpd in 2015 Holly Corner Road - 1,700 vpd in 2012 / 1,700 vpd in 2015		
Trip Distribution (Attach sketch)	Road Name: See Figure 2	Road Name:	
	Road Name:	Road Name:	
Annual Vehicle Trip Growth Rate:	1.5%	Peak Period for Study (check all that apply)	<input checked="" type="checkbox"/> AM <input checked="" type="checkbox"/> PM <input type="checkbox"/> SAT
		Peak Hour of the Generator	
Study Intersections and/or Road Segments (Attach additional sheets as necessary)	1.U.S. 17 (Warrenton Road) at Holly Corner Road	6.	
	2.Holly Corner Road at Proposed Driveway	7.	
	3.	8.	
	4.	9.	
	5.	10.	
Trip Adjustment Factors	Internal allowance: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Reduction: _____% trips	Pass-by allowance: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Reduction: _____% trips	
Software Methodology	<input checked="" type="checkbox"/> Synchro <input type="checkbox"/> HCS (v.2000/+) <input type="checkbox"/> aaSIDRA <input type="checkbox"/> CORSIM <input checked="" type="checkbox"/> Other SimTraffic		
Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	Synchro / SimTraffic 9 will be used to analyze LOS, delay, and queueing at the study intersections.		

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

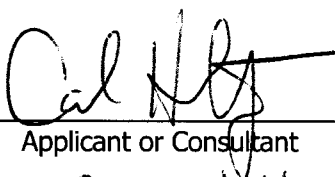
Improvement(s) Assumed or to be Considered	The need for turn lanes and other off-site improvements will be determined based on the results of the TIA.		
Background Traffic Studies Considered	None		
Plan Submission	<input type="checkbox"/> Master Development Plan (MDP) <input type="checkbox"/> Preliminary/Sketch Plan	<input checked="" type="checkbox"/> Generalized Development Plan (GDP) <input type="checkbox"/> Other Plan type (Final Site, Subd. Plan)	
Additional Issues to be Addressed	<input checked="" type="checkbox"/> Queuing analysis <input type="checkbox"/> Merge analysis <input type="checkbox"/> TDM Measures	<input type="checkbox"/> Actuation/Coordination <input checked="" type="checkbox"/> Bike/Ped Accommodations <input type="checkbox"/> Other ____	<input type="checkbox"/> Weaving analysis <input checked="" type="checkbox"/> Intersection(s)

NOTES on ASSUMPTIONS:

The TIA will include three analysis scenarios:

- Existing (2017) Traffic Conditions
- No-Build (2022) Traffic Conditions
- Build (2022) Traffic Conditions

SIGNED: _____



Applicant or Consultant

DATE: 2-13-17

PRINT NAME: _____

Carl Hultgren, P.E., PTOE

Applicant or Consultant

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

SCOPE OF WORK MEETING CONCLUSIONS**ADDITIONS TO THE VDOT REQUIRED ELEMENTS, CHANGES TO THE
METHODOLOGY OR STANDARD ASSUMPTIONS, AND SIGNATURE PAGE**

Any additions to the VDOT Required Elements or changes to the Methodology or Standard Assumptions due to special circumstances that are approved by VDOT:

The applicant will contact VDOT and the locality prior to the preparation of the traffic impact analysis study in the event there are any substantial changes in the existing conditions that will affect the scope of the study.

AGREED: Carl Hultgren DATE: 1-10-18
Applicant or Consultant

PRINT NAME: Carl Hultgren
Applicant or Consultant

SIGNED: David L. Beale DATE: 1/10/18
VDOT Representative

PRINT NAME: DAVID L. BEALE
VDOT Representative

SIGNED: Charles J. Hess DATE: 1/11/18
Local Government Representative

PRINT NAME: Charles J. Hess
Local Government Representative

TIA SCOPING MEETING SIGN-IN SHEET

Project: Holly Corner

Meeting Date: 2-8-17

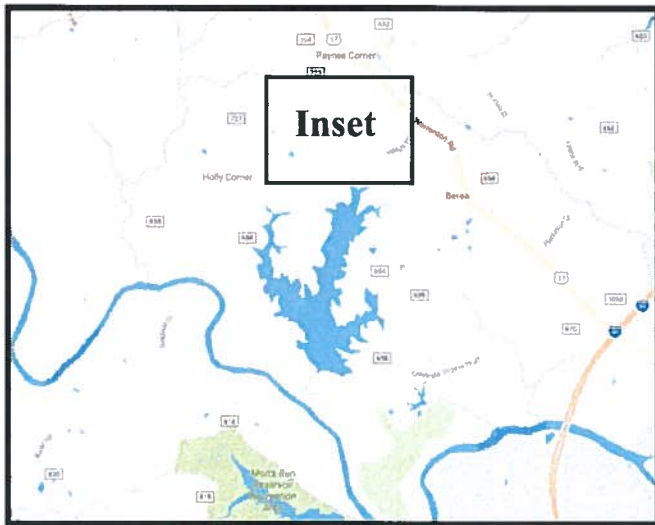
County: Stafford

Place/Room: VDOT

Name (check if present)	Company	Phone	E-Mail
<input checked="" type="checkbox"/> David Beale	VDOT - TLU	540-654-1973	david.beale@vdot.virginia.gov
<input checked="" type="checkbox"/> Stephen Haynes	VDOT - Planning	540-899-4709	stephen.haynes@vdot.virginia.gov
<input type="checkbox"/> Catherine Coffey	VDOT-Location & Design	540-899-4820	Catherine.coffey@vdot.virginia.gov
<input type="checkbox"/> Peter Hedrich	VDOT - Traffic Eng.	540-899-4540	peter.hedrich@vdot.virginia.gov
<input checked="" type="checkbox"/> Margaret Niemann	VDOT - TLU	540-899-4106	margaret.niemann@vdot.virginia.gov
<input type="checkbox"/> Jacob Herrman	VDOT - Planning	540-899-4490	jacob.herrman@vdot.virginia.gov
<input checked="" type="checkbox"/> Ken Thornewell	VDOT- Traffic Eng	540-899-4544	Kenneth.thornewell@vdot.virginia.gov
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<input type="checkbox"/> Joey Hess	Stafford County	540-658-4611	JHess@staffordcountyva.gov
<input checked="" type="checkbox"/> Brian Geouge	Stafford County	<u>540-658-8668</u>	BGeouge@staffordcountyva.gov
- Bob Stein	Rust Assoc	202-262-2735	ROBSTEIN@AOL.COM
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Samer Shalaby	DCS	(540) 840 9925	sshalaby@Dev-consulting.com



Inset



Overview

LEGEND

- Study Intersection
- Site Boundary

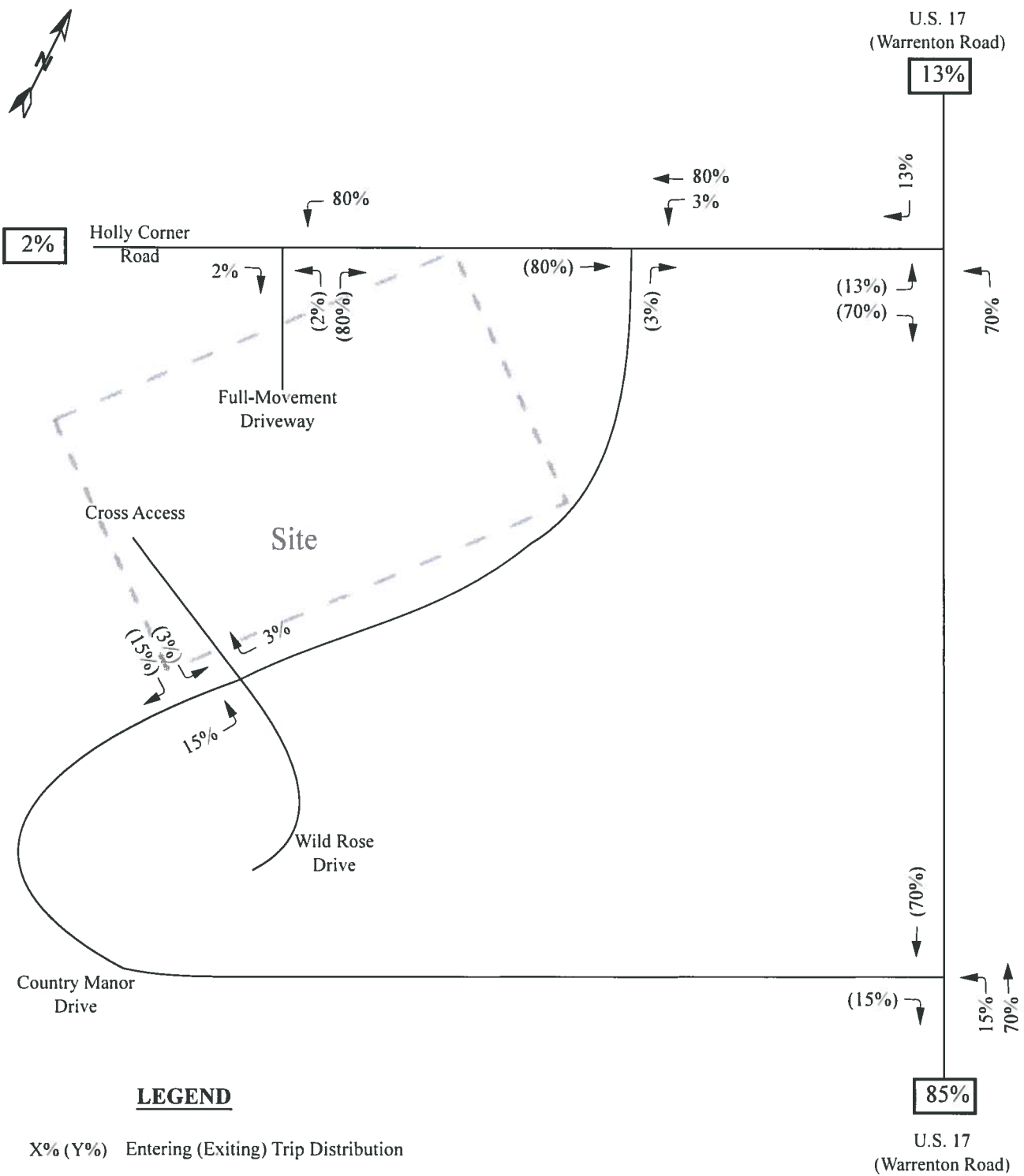


Holly Corner
Stafford, Virginia

Site Location and Study
Intersections

Scale: Not to Scale

Figure 1



Holly Corner
Stafford, Virginia

Site Trip
Distribution

Scale: Not to Scale

Figure 2

**Holly Corner
Stafford County, VA**

ITE Trip Generation – 9th Edition – Weekday

Land Use (ITE Land Use Code)	Size	Weekday Daily Traffic (vpd)		AM Peak Hour (vph)		PM Peak Hour (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit
Single Family Detached (210)	130 homes	668	668	25	76	84	49

January 30, 2017

**Holly Corner Approved Developments
Stafford County, VA**

**Table 1
ITE Trip Generation – 9th Edition – Weekday – Westlake Residential**

Land Use (ITE Land Use Code)	Size	Weekday Daily Traffic (vpd)		AM Peak Hour (vph)		PM Peak Hour (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit
Single Family Detached (210)	200 homes	952	952	38	112	126	74

**Table 2
ITE Trip Generation – 9th Edition – Weekday – Summerset Ridge South**

Land Use (ITE Land Use Code)	Size	Weekday Daily Traffic (vpd)		AM Peak Hour (vph)		PM Peak Hour (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit
Single Family Detached (210)	23 homes	110	110	4	13	14	9

**Table 3
ITE Trip Generation – 9th Edition – Weekday – Holly Refuge**

Land Use (ITE Land Use Code)	Size	Weekday Daily Traffic (vpd)		AM Peak Hour (vph)		PM Peak Hour (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit
Single Family Detached (210)	7 homes	34	34	1	4	4	3

February 9, 2017