

Note:
Project has undergone 2
name changes since the
time of this traffic impact
analysis

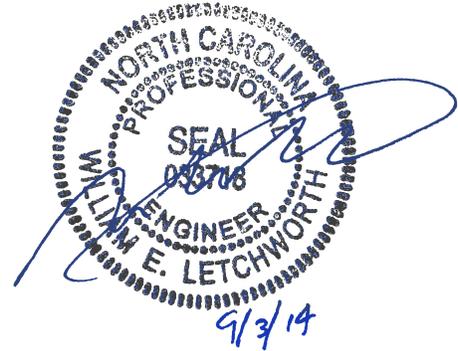
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September 3, 2014

TO: Margaret Hauth, AICP
Planning Director
Town of Hillsborough

FROM: Will Letchworth, PE

SUBJECT: Foxhaven Development Transportation Impact Analysis



Introduction

The Foxhaven Development is proposed to be located at the northeast quadrant of the intersection of Elizabeth Brady Road and US 70A in the town of Hillsborough, North Carolina (see Figure 1 attached). The development is planned to consist of 10 Townhomes, 26 Single Family Detached Dwellings, and 24 Cottages. The proposed development is planned to have one access to US 70A via the site access to the Forest Ridge Subdivision, which is currently under construction.

The purpose of this report is to evaluate the traffic impacts of the proposed development and to determine if transportation improvements are necessary to mitigate congestion that may result from the additional site traffic. This report presents trip generation, trip distribution, traffic analyses and recommendations for transportation improvements needed to meet anticipated traffic demands. This report examines 2014 existing conditions, 2017 no-build conditions and 2017 build-out conditions.

Site Plan

The Foxhaven Development is planned to consist of 10 Townhomes, 26 Single Family Detached Dwellings, and 24 Cottages as shown in Figure 2. The development is proposed to access to US 70A through the Forest Ridge Subdivision via a connection to Maple Glen Drive, a residential street, which will intersect with Quincy Cottage Road, a spine street. The Forest Ridge Subdivision Site Plan, prepared by Withers & Ravanel and provided by the Town of Hillsborough is illustrated on Figure 3 shows how the Foxhaven Development will connect to Maple Glen Drive and Quincy Cottage.

Inventory of Traffic Conditions

Study Area

The Town of Hillsborough requested that the intersection of Eno Haven Apartments Driveway and US 70A be analyzed to determine the associated impacts from the proposed development. The study area shown in Figure 1 (attached) shows the proposed development site and site access. Figure 2 shows the preliminary sketch plan for the proposed Foxhaven Development.

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Foxhaven Development Transportation Impact Analysis

Existing Conditions

The Foxhaven Development is proposed to be located at the northeast quadrant of the intersection of Elizabeth Brady Road and US 70A and will have one access to US 70A via the site access to the Forest Ridge Subdivision, currently planned to be named Quincy Cottage Road, which is currently under construction. A description of transportation facilities in the general vicinity is as follows:

This intersection of US 70 and Quincy Cottage Road is un-signalized and has no stop signs in any direction. Currently there is a westbound left turn lane and an eastbound right turn lane on US 70A for the driveway to the Eno Haven Apartments. The Forest Ridge Subdivision is currently under construction and will have two site accesses on US 70A including the intersection under analysis in this study.

US 70A is two-lane shoulder section roadway with a posted speed limit of 40 miles per hour that runs parallel to I-85. US 70A serves the Orange Charter School, Triangle SportsPlex, and other small businesses and residential development in the area.

Driveway to the Eno Haven Apartments is a two-lane roadway with a sidewalk on the north-bound (eastern) side and a shoulder on the south-bound side. It services the Eno Haven Apartments.

Quincy Cottage Road is currently under construction and will service the Forest Ridge Subdivision. According to the site plan for the subdivision, Quincy Cottage Road will be a two-lane curb and gutter roadway with a left-turn lane at the intersection with US 70A.

The existing lane configurations and traffic control in the study area are shown in Figure 4.

Projected Transportation Improvements

As previously mentioned Quincy Cottage Road is currently under construction as a site access to the Forest Ridge Subdivision. Additionally, an east-bound left turn lane will be added on US 70A as a part of improvements for this site access.

Traffic Generation

The amount of traffic generated by a new development is a function of the size and type of development. Once the proposed land use data for the site are known, the number of trips generated by the development can be estimated.

Trip generation data for this report was determined in accordance with the procedures outlined in the Institute of Transportation Engineers (ITE) report entitled *Trip Generation*¹ and was developed in terms of vehicle trips per average weekday. In addition, it was necessary to consider the trip generation from Forest Ridge Subdivision as there is a site access for it currently under construction at this intersection and access to Foxhaven Development will be via Quincy Cottage Road. A Traffic Impact Analysis was completed by CH Engineering in February of 2009 for the Forest Ridge Subdivision and trip generations from this report were used in this analysis and are attached.

Traffic impact is determined by estimating the total number of daily vehicle trips, as well as the number of peak hour vehicle trips. The table below indicates the proposed Foxhaven Development will generate approximately 674

¹ *Trip Generation*, 9th Edition, Institute of Transportation Engineers, Washington, D.C., 2012.

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Foxhaven Development Transportation Impact Analysis

trips per day. There are projected to be approximately 63 new trips entering and exiting the site during the AM peak hour and 70 new trips entering and exiting the site during the PM peak hour.

Trip Generation Summary									
Land Use Code	Land Use	Number of Dwellings	Daily	AM In	AM Out	AM Total	PM In	PM Out	PM Total
210	Single Family Detached	26	304	7	21	28	20	12	32
210	Cottages	24	283	7	20	27	18	11	29
231	Townhomes	10	87	1	7	8	6	3	9
Total			674	15	48	63	44	26	70

Traffic Distribution

In order to properly determine the impact of the traffic generated by the proposed development, it is necessary to determine the distribution of traffic to and from the development. These percentages are based on a combination of the information from the traffic counts done for this study as well as percentages determined in the Traffic Impact Assessment for the Forest Ridge Subdivision. Project traffic was distributed 55 % in the eastbound direction and 45% in the westbound direction.

Projected Traffic Volumes

Existing Traffic, Historical Traffic Growth and Approved Development Traffic

The 2014 existing AM and PM peak hour traffic volumes were collected and are shown in Figure 5.

The NCDOT Traffic Volume Maps were examined for the study area for 2011, 2012 and 2013 to determine a historical growth rate. This evaluation indicated that traffic volumes are decreasing in the immediate area of the intersection under analysis. However, in order to achieve the most conservative estimate of traffic impacts a 1% growth rate was used to reflect anticipated 2017 background traffic volumes.

Access to the Foxhaven Development will be via an entrance to the Forest Ridge Subdivision which is currently under construction at this intersection. Projected traffic volumes for Forest Ridge were considered in this analysis. These volumes were taken from the TIA prepared by CH Engineering in February of 2009 for the Forest Ridge Subdivision and added to the existing traffic volumes grown by 1% per year to form the No-Build traffic volumes.

No-Build Volumes

The combination of the existing, historical traffic growth and approved development traffic are considered the No-Build Volumes. The projected No-Build traffic volumes for the AM and PM peak hours are shown in Figure 5.

Total Traffic

To obtain total 2017 Build-Out traffic volumes, the projected Foxhaven Development traffic was added to the 2017 No-Build traffic volumes. These volumes are shown in Figure 6.

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Foxhaven Development Transportation Impact Analysis

Traffic Analysis

The study area intersection was analyzed using the methods outlined in the *Highway Capacity Manual*² and *Synchro Version 7.0 Software*. The *Highway Capacity Manual* defines capacity as “the maximum rate of flow at which persons or vehicles can be reasonably expected to traverse a point or uniform section of a lane or roadway during a specified time period under prevailing roadway, traffic, and control conditions, usually expressed as vehicles per hour or persons per hour”.

Level of service (LOS) is a term used to represent different traffic conditions, and is defined as a “qualitative measure describing operational conditions within a traffic stream, and their perception by motorist/or passengers”. Level of Service varies from Level A, representing free flow, to Level F where traffic breakdown conditions are evident. Level B represents good progression with minimal congestion. At Level C, the number of vehicles stopping is significant, although many still pass through the intersection without stopping. Level D represents more congestion, but the overall operations are acceptable. At Level E, freedom to maneuver within the traffic stream is extremely difficult with driver frustration being generally high.

At an un-signalized intersection, the primary traffic on the main roadway is virtually uninterrupted. Therefore, the overall level of service is usually much greater than what is represented by the results of the minor street movements. *Synchro Version 7.0* will calculate an amount of delay for the overall intersection, but will not assign a LOS value for un-signalized intersections. Therefore, the overall intersection delay as well as the amount of delay on the minor street is reported in the summary tables of this report. With the current method of reporting levels of service for un-signalized intersections, it is not uncommon for some of the minor street movements to be operating at a LOS F during the peak hours.

	2014 Existing		2017 No-Build		2017 Build	
	AM	PM	AM	PM	AM	PM
US 70A / Quincy College Road / Eno Haven Apartments Driveway	# (0.3)	# (0.7)	# (2.2)	# (2.7)	# (3.5)	# (3.6)
US 70A East Bound Left Turn	A (0.1)	A (0.2)	A (8.5)	A (8.4)	A (8.5)	A (8.6)
US 70A West Bound Right Turn	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)	A (0.0)
Quincy Cottage Road South Bound Left Turn	C (17.7)	B (14.6)	D (27.0)	C (23.2)	D (33.2)	D (27.9)
Quincy Cottage Road South Bound Right Turn	B (10.5)	B (10.2)	B (11.6)	B (11.0)	B (12.1)	B (11.3)

- No overall LOS given for unsignalized intersections

The subject intersection is currently operating with low overall and minor movement delays in the AM and PM peak hour. In 2017 with the addition of the Forest Ridge Subdivision traffic and related transportation improvements, the intersection continues to operate with low overall delays. As expected, in the AM peak hour the southbound left turn lane does experience elevated delays, but the anticipated queues are fully contained within the planned southbound through-left turn lane. In 2017 with the addition of the Foxhaven Development

² *Highway Capacity Manual*, Special Report 209, Transportation Research Board, National Research Council, Washington, D.C., 1998

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Foxhaven Development Transportation Impact Analysis

the intersection continues to operate with low overall delays. The delay for the southbound movement does increase but is still within reasonable ranges for the minor movement at an unsignalized intersection. All projected future turning movements are contained within the existing and planned turn bays and the southbound traffic on Quincy Cottage Road is not expected to queue back to Maple Glen Drive during the AM and PM peak hours. . No additional improvements are necessary to accommodate the increase in traffic from the proposed Foxhaven Development.

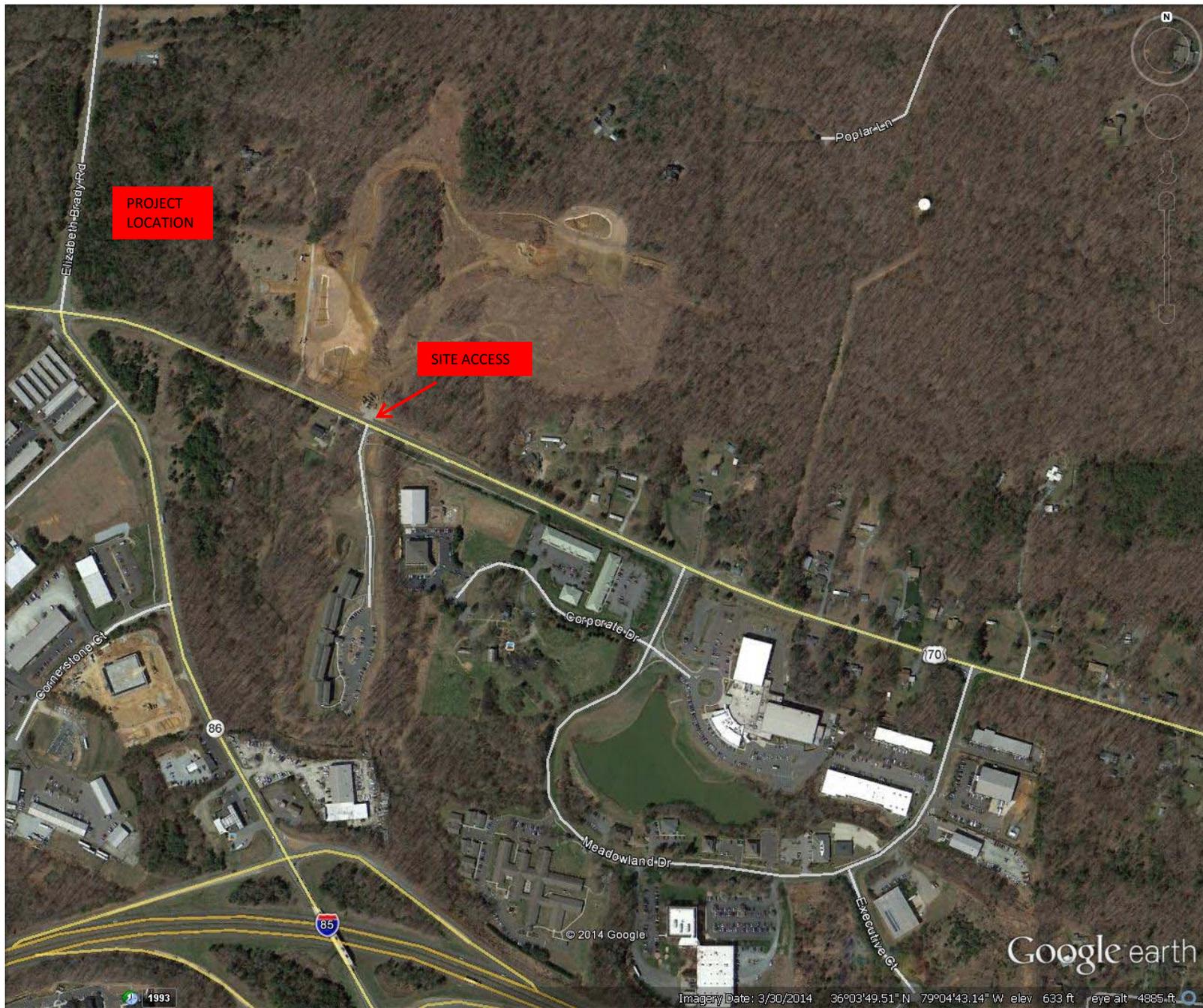
Conclusions

The planned Foxhaven Development is proposed to approximately 63 additional vehicles to the roadway network in the AM peak hour and 70 additional vehicles in the PM peak hour. Based on an analysis of the 2017 traffic volumes with the planned Forest Ridge and Foxhaven Developments in place, the roadway improvements currently planned and under construction for the Forest Ridge Subdivision are more than sufficient to accommodate the increase in traffic from the proposed Foxhaven Subdivision. No additional improvements are necessary to accommodate this increase in traffic.

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FOXHAVEN DEVELOPMENT
TRANSPORTATION IMPACT
ANALYSIS
HILLSBOROUGH, NC

PROJECT LOCATION

FIGURE 1
SCALE: NONE





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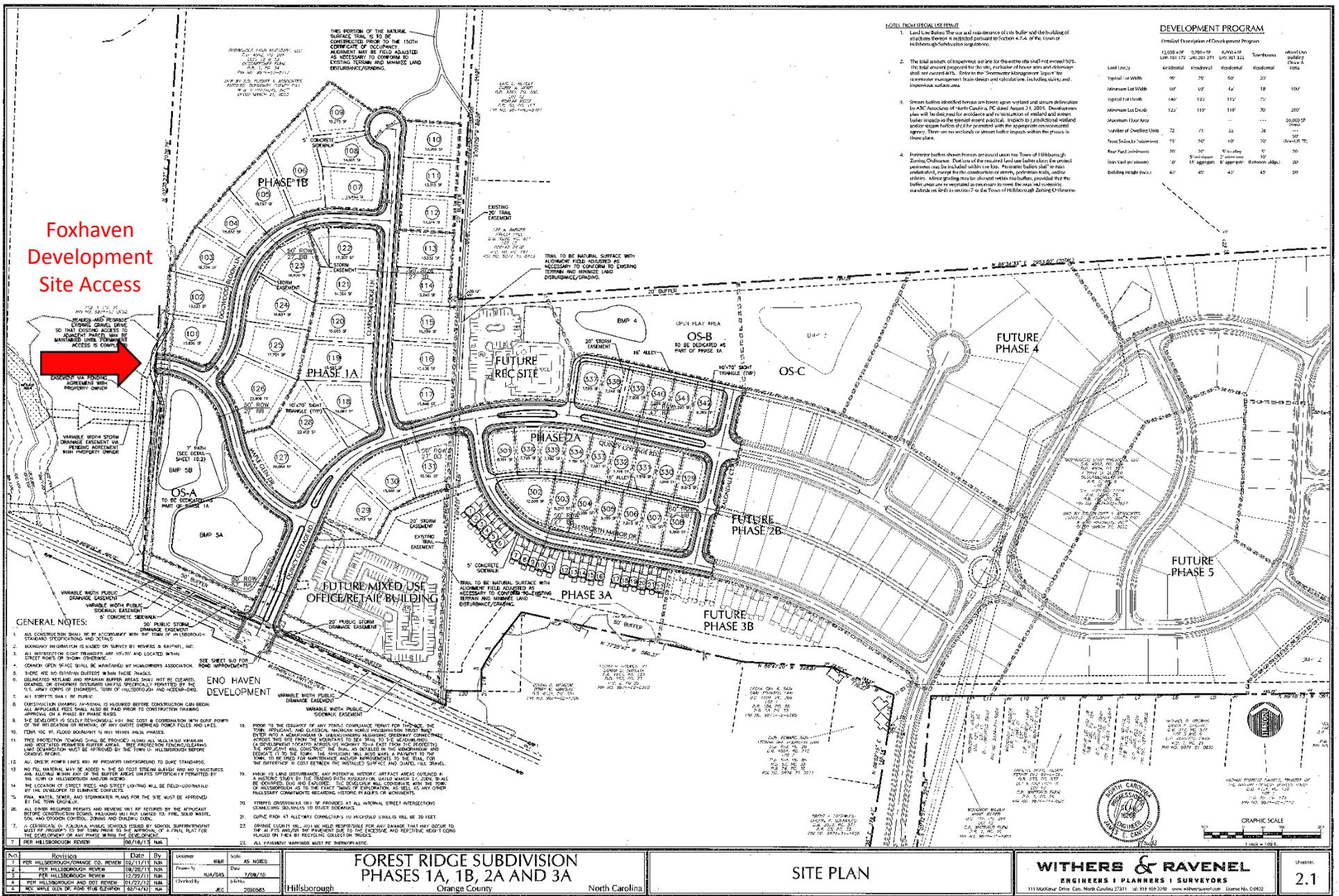
FOXHAVEN DEVELOPMENT
 TRANSPORTATION IMPACT
 ANALYSIS
 HILLSBOROUGH, NC

PRELIMINARY SKETCH
 PLAN

FIGURE 2

SCALE: NONE





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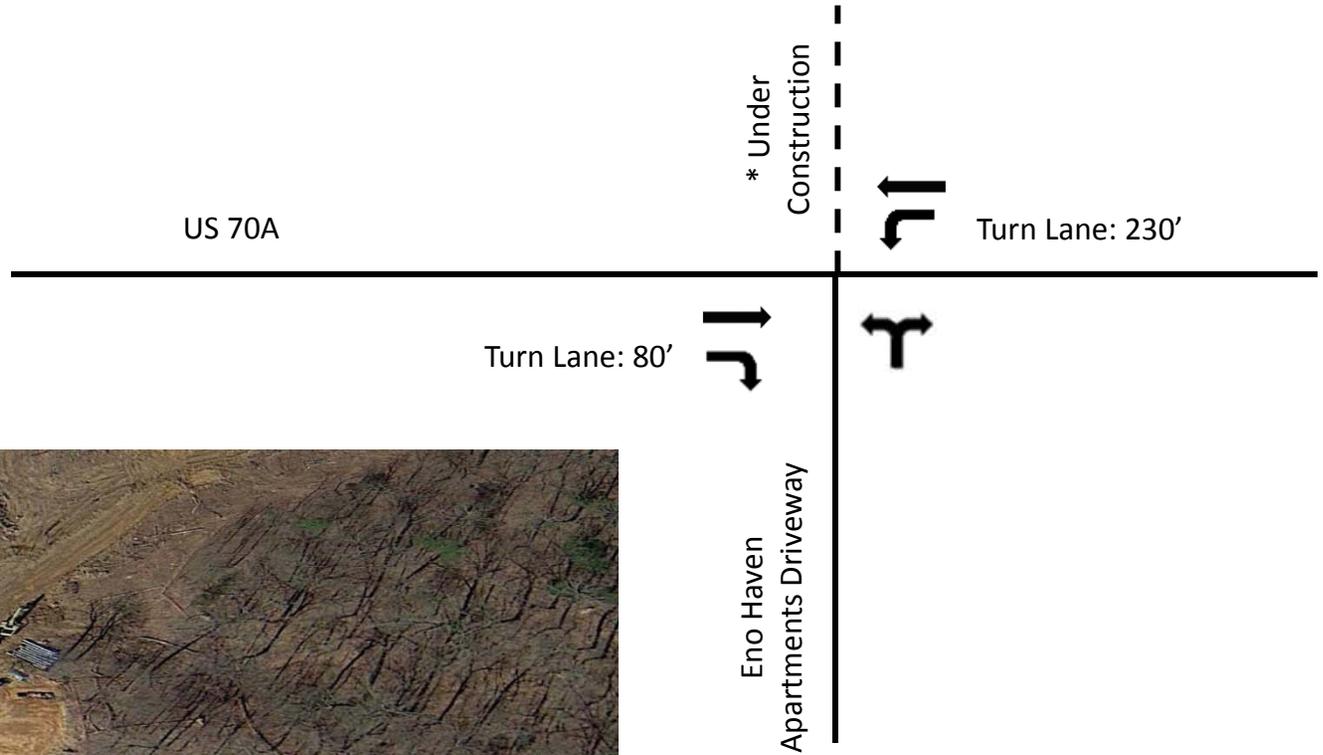
FOXHAVEN DEVELOPMENT
 TRANSPORTATION IMPACT
 ANALYSIS
 HILLSBOROUGH, NC

FOREST RIDGE
 SUBDIVISION SITE PLAN

FIGURE 3
 SCALE: NONE

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Sheet No. **2.1**



* Site Access to Forest Ridge Subdivision

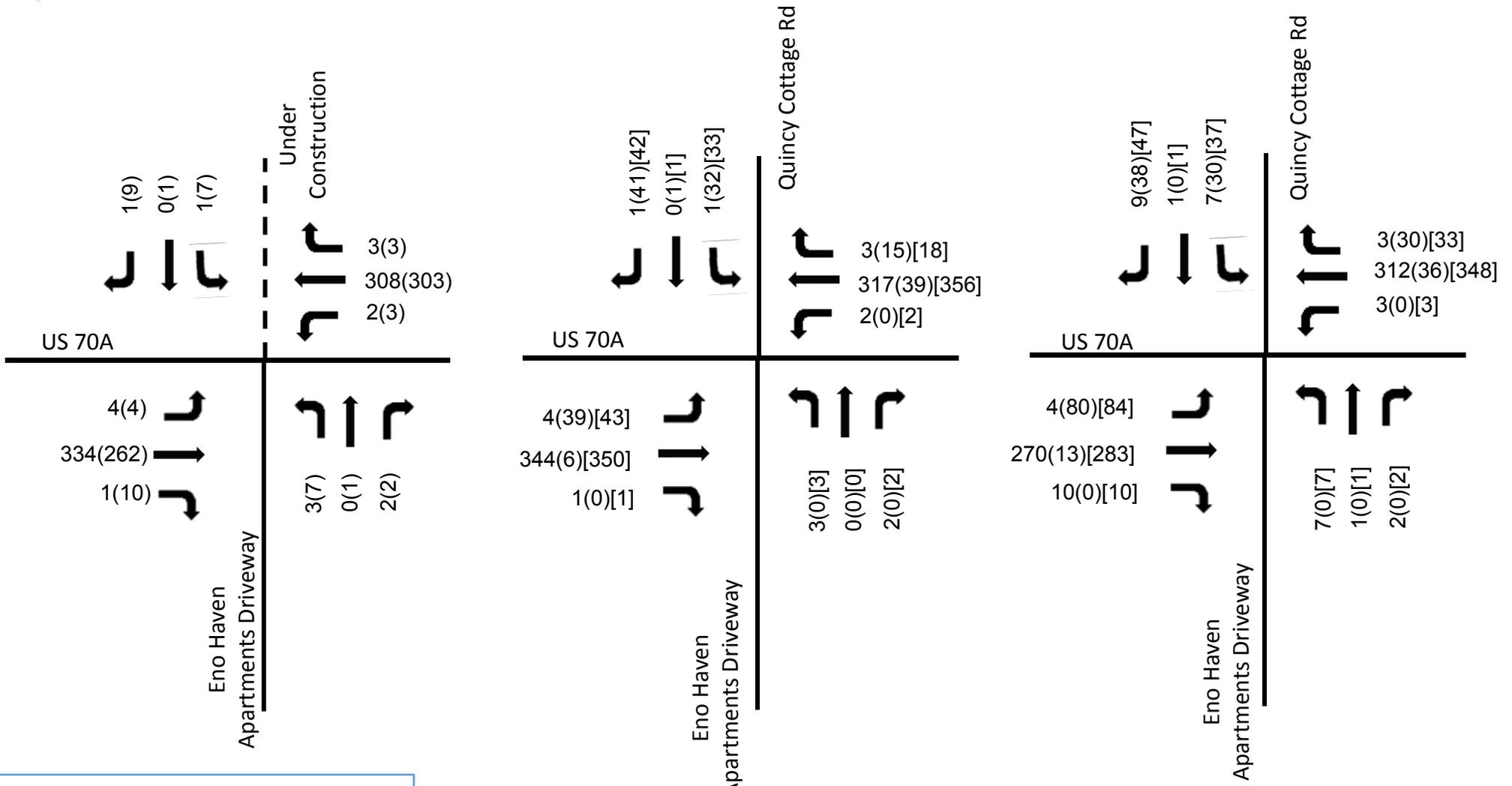
LEGEND	
←	EXISTING TRAVEL LANE
XX'	STORAGE LENGTH



2014 Existing AM(PM)
Peak Hour Traffic

2017 No Build Peak AM Hour Traffic

2017 No Build Peak PM Hour Traffic



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FOXHAVEN DEVELOPMENT
TRANSPORTATION IMPACT
ANALYSIS
HILLSBOROUGH, NC

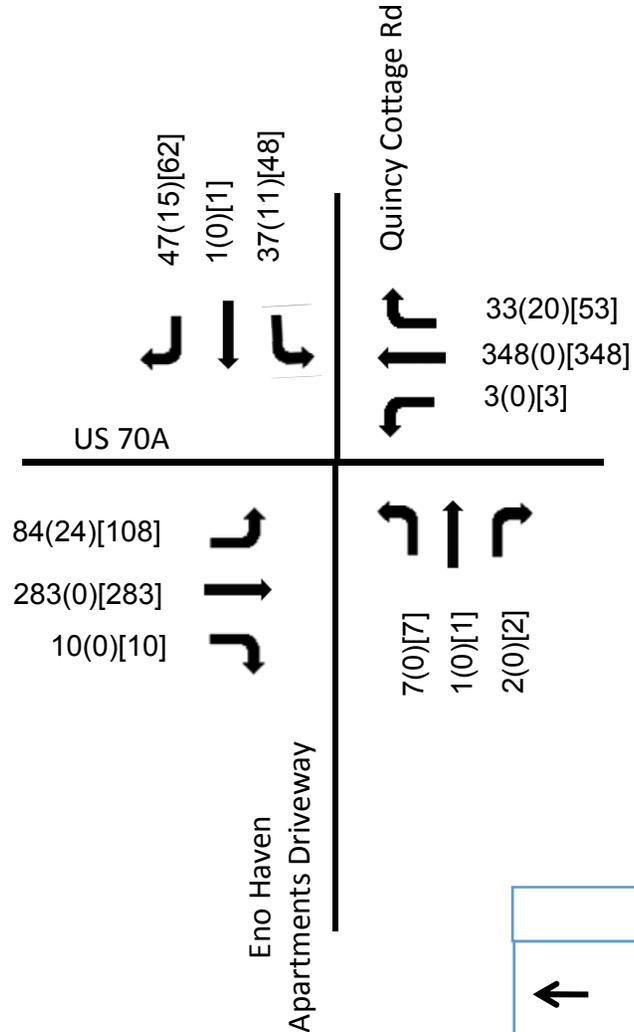
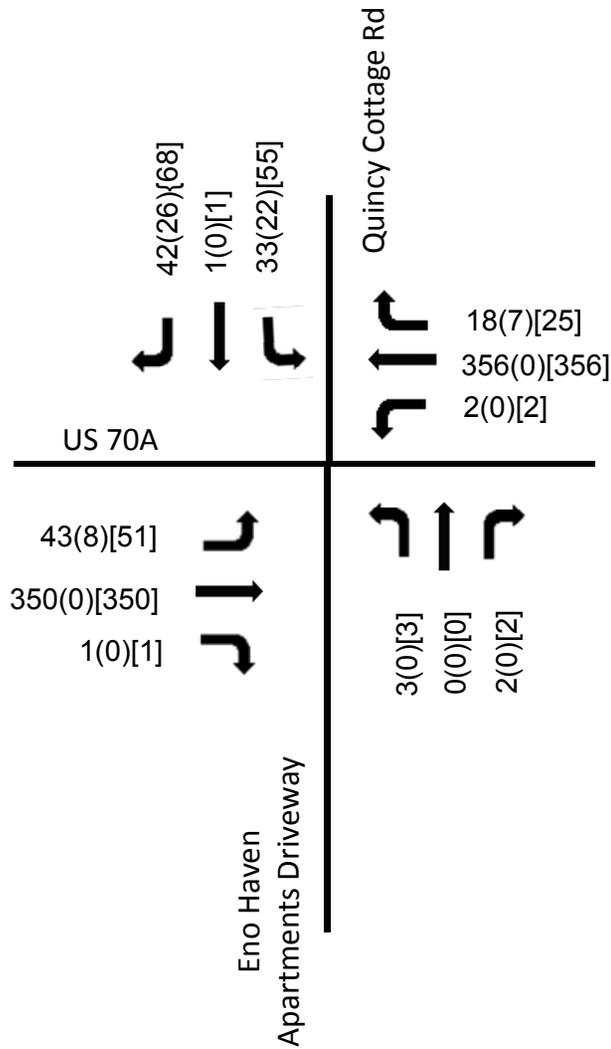
2017 PEAK HOUR
TRAFFIC VOLUMES
(EXISTING AND NO-BUILD)

FIGURE 5
SCALE: NONE



2017 Build Peak AM Hour Traffic

2017 Build Peak PM Hour Traffic



LEGEND	
←	TRAFFIC MOVEMENT
XX	NO-BUILD PEAK HOUR TRAFFIC
(XX)	SITE PEAK HOUR TRAFFIC
[XX]	TOTAL PEAK HOUR TRAFFIC



LAWRENCE RD

20 (0)
 16 (33)
 0 (0)
 0 (0)
 0 (0)
 15 (30)
 20 (19)
 37 (34)
 (0) 0

31 (63)
 2 (3)

SITE ACCESS 2

19 (40)
 13 (27)
 31 (28)
 42 (39)
 52 (63)
 3 (3)

57 (53)
 3 (3)
 8 (17)
 29 (27)
 2 (3)
 2 (3)
 32 (43)
 3 (3)

MEADOWLAND DR

SITE ACCESS 1

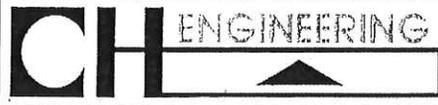
15 (30)
 39 (36)
 32 (30)
 41 (38)
 39 (80)
 6 (13)



ELIZABETH BRADY RD

1 (1)
 30 (32)
 44 (41)
 1 (2)
 0 (0)
 0 (0)
 (0) 0
 20 (42)
 (0) 0

XX = AM PEAK
 (XX) = PM PEAK



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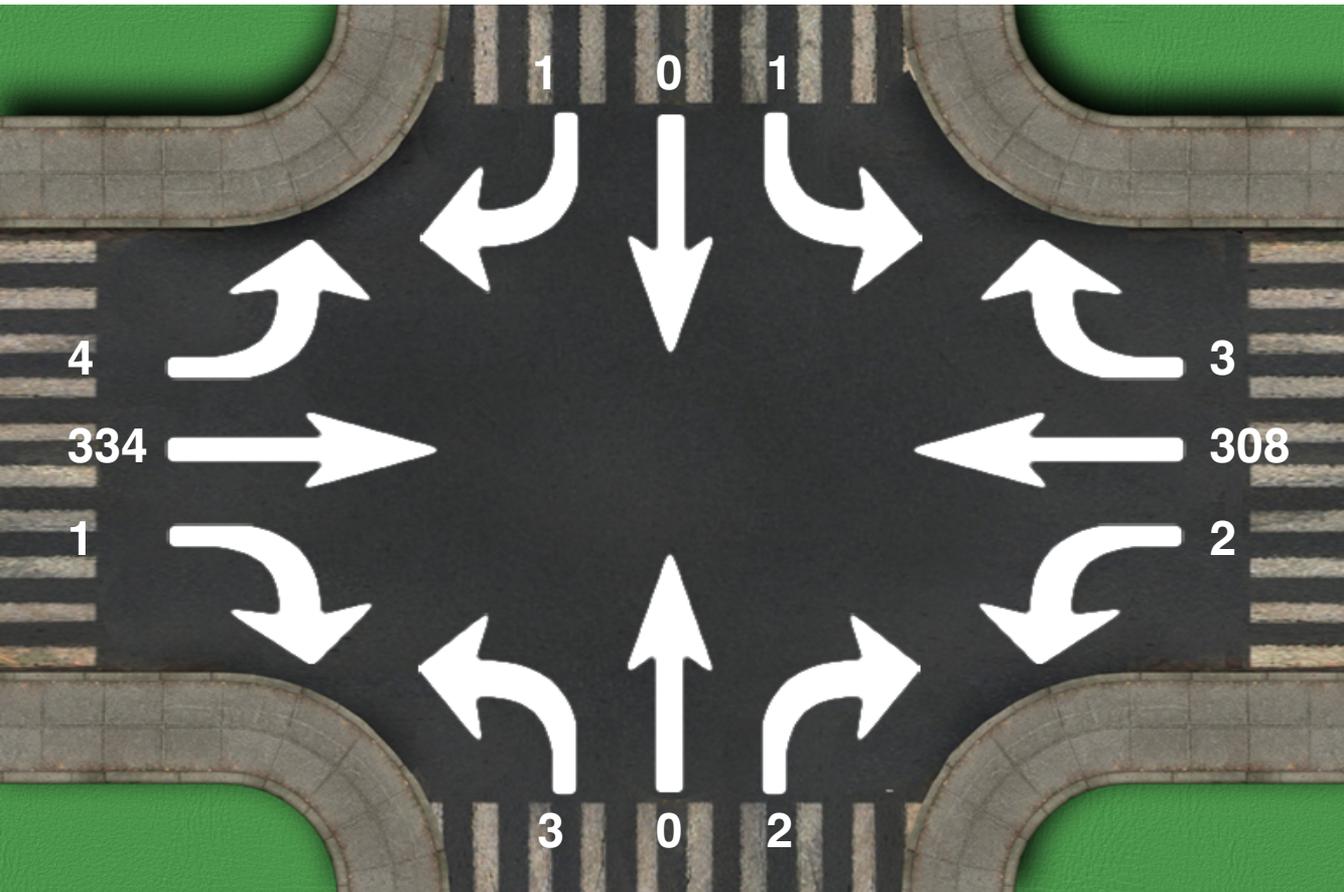
SITE TRIP ASSIGNMENT

FIGURE

6

Intersection Peak Hour

Location: Apartments at us70, hillsborough
GPS Coordinates:
Date: 2014-08-26
Day of week: Tuesday
Weather:
Analyst: wl



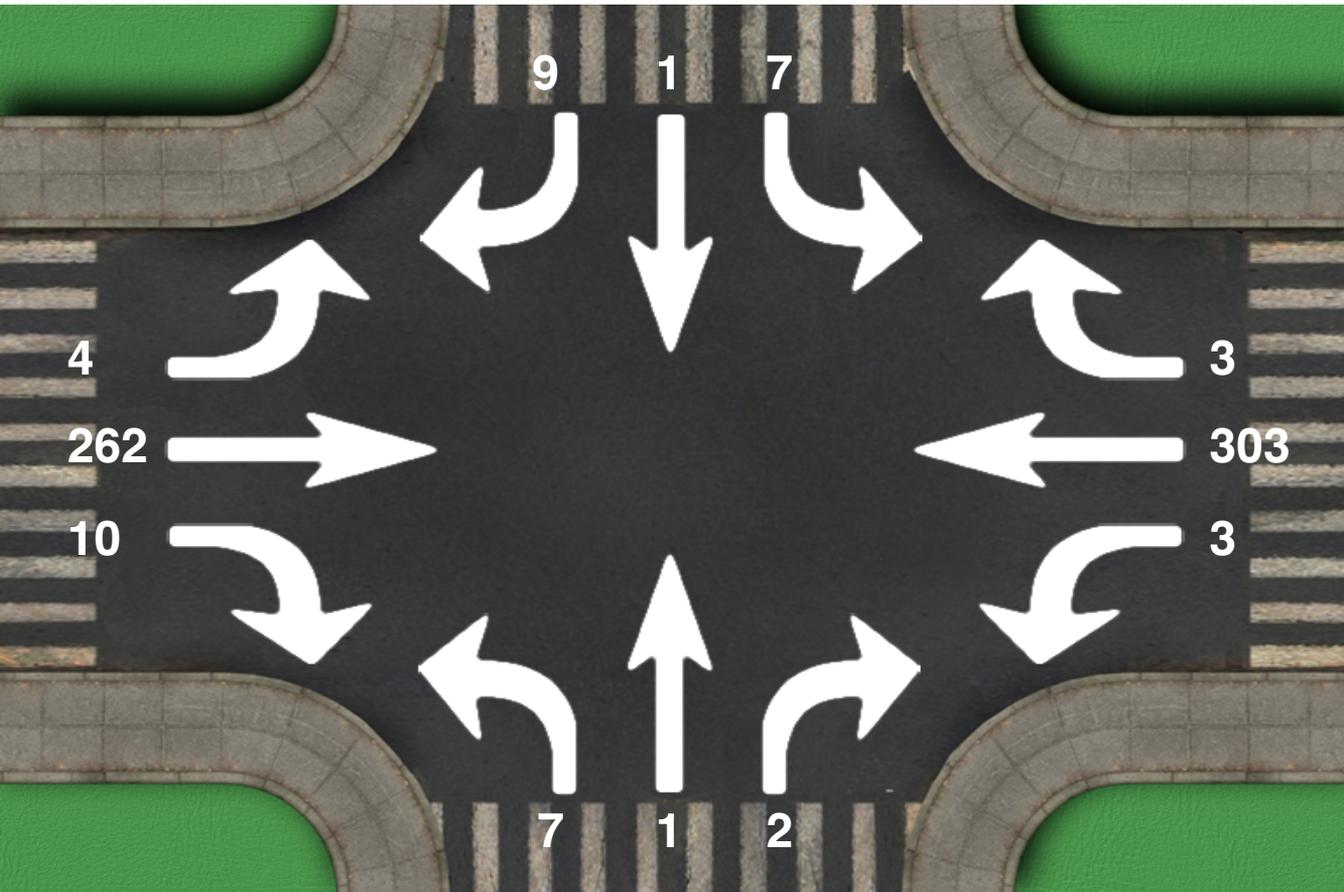
Intersection Peak Hour

07:30 - 08:30

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	1	0	1	2	308	3	3	0	2	4	334	1	659
Factor	0.08	0.00	0.08	0.17	0.61	0.25	0.25	0.00	0.17	0.17	0.66	0.08	0.64
Approach factor	0.17			0.62			0.21			0.66			

Intersection Peak Hour

Location: Apartments at us70, hillsborough
GPS Coordinates:
Date: 2014-08-26
Day of week: Tuesday
Weather:
Analyst: wl



Intersection Peak Hour

16:40 - 17:40

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	7	1	9	3	303	3	7	1	2	4	262	10	612
Factor	0.19	0.08	0.38	0.25	0.65	0.25	0.29	0.08	0.17	0.17	0.84	0.28	0.80
Approach factor	0.35			0.66			0.28			0.82			

HCM Unsignalized Intersection Capacity Analysis
 3: Hwy 70 Bus & Eno Haven

Existing AM
 8/29/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	334	1	2	308	3	3	0	2	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	5	423	1	3	390	4	4	0	3	1	0	1
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	394			424			829	832	423	832	831	392
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	394			424			829	832	423	832	831	392
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	100	100	100
cM capacity (veh/h)	1165			1135			288	303	631	286	303	657
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2					
Volume Total	428	1	3	394	6	1	1					
Volume Left	5	0	3	0	4	1	0					
Volume Right	0	1	0	4	3	0	1					
cSH	1165	1700	1135	1700	368	286	657					
Volume to Capacity	0.00	0.00	0.00	0.23	0.02	0.00	0.00					
Queue Length 95th (ft)	0	0	0	0	1	0	0					
Control Delay (s)	0.1	0.0	8.2	0.0	15.0	17.7	10.5					
Lane LOS	A		A		B	C	B					
Approach Delay (s)	0.1		0.1		15.0	14.1						
Approach LOS					B	B						
Intersection Summary												
Average Delay			0.3									
Intersection Capacity Utilization			33.1%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 3: Hwy 70 Bus & Eno Haven

Existing PM
 8/29/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	V/BR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	262	10	3	303	3	7	1	2	7	1	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	4	288	11	3	333	3	8	1	2	8	1	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	336			299			647	640	288	641	649	335
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	336			299			647	640	288	641	649	335
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			98	100	100	98	100	99
cM capacity (veh/h)	1223			1262			376	391	751	384	386	707
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2					
Volume Total	292	11	3	336	11	9	10					
Volume Left	4	0	3	0	8	8	0					
Volume Right	0	11	0	3	2	0	10					
cSH	1223	1700	1262	1700	420	384	707					
Volume to Capacity	0.00	0.01	0.00	0.20	0.03	0.02	0.01					
Queue Length 95th (ft)	0	0	0	0	2	2	1					
Control Delay (s)	0.2	0.0	7.9	0.0	13.8	14.6	10.2					
Lane LOS	A		A		B	B	B					
Approach Delay (s)	0.1		0.1		13.8	12.2						
Approach LOS					B	B						
Intersection Summary												
Average Delay			0.7									
Intersection Capacity Utilization			32.8%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Hwy 70 Bus & Eno Haven

No Build AM
8/29/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	350	1	2	356	18	3	0	2	33	0	42
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	54	443	1	3	451	23	4	0	3	42	0	53
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			444			1061	1030	443	1022	1020	462
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	473			444			1061	1030	443	1022	1020	462
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
iF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			98	100	100	80	100	91
cM capacity (veh/h)	1089			1116			176	221	615	205	224	600
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1	SB 2				
Volume Total	54	443	1	3	473	6	42	53				
Volume Left	54	0	0	3	0	4	42	0				
Volume Right	0	0	1	0	23	3	0	53				
cSH	1089	1700	1700	1116	1700	247	205	600				
Volume to Capacity	0.05	0.26	0.00	0.00	0.28	0.03	0.20	0.09				
Queue Length 95th (ft)	4	0	0	0	0	2	19	7				
Control Delay (s)	8.5	0.0	0.0	8.2	0.0	20.0	27.0	11.6				
Lane LOS	A			A		C	D	B				
Approach Delay (s)	0.9			0.0		20.0	18.4					
Approach LOS						C	C					
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilization			36.5%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 3: Hwy 70 Bus & Eno Haven

No Build PM
 8/29/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	84	283	10	3	348	33	7	1	2	37	1	47
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	92	311	11	3	382	36	8	1	2	41	1	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	419			322			937	921	311	905	914	401
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	419			322			937	921	311	905	914	401
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			100			96	100	100	83	100	92
cM capacity (veh/h)	1140			1238			210	248	729	239	250	649
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1	SB 2				
Volume Total	92	311	11	3	419	11	42	52				
Volume Left	92	0	0	3	0	8	41	0				
Volume Right	0	0	11	0	36	2	0	52				
cSH	1140	1700	1700	1238	1700	250	240	649				
Volume to Capacity	0.08	0.18	0.01	0.00	0.25	0.04	0.17	0.08				
Queue Length 95th (ft)	7	0	0	0	0	3	15	6				
Control Delay (s)	8.4	0.0	0.0	7.9	0.0	20.1	23.2	11.0				
Lane LOS	A			A		C	C	B				
Approach Delay (s)	1.9			0.1		20.1	16.5					
Approach LOS						C	C					
Intersection Summary												
Average Delay			2.7									
Intersection Capacity Utilization			41.5%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 3: Hwy 70 Bus & Eno Haven

Build AM
 8/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↑			↕			↖	↗
Volume (veh/h)	51	350	1	2	356	25	3	0	2	55	0	68
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	65	443	1	3	451	32	4	0	3	70	0	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	482			444			1114	1059	443	1046	1045	466
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	482			444			1114	1059	443	1046	1045	466
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			100			97	100	100	64	100	86
cM capacity (veh/h)	1080			1116			151	210	615	196	215	596

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	65	443	1	3	482	6	70	86
Volume Left	65	0	0	3	0	4	70	0
Volume Right	0	0	1	0	32	3	0	86
cSH	1080	1700	1700	1116	1700	217	196	596
Volume to Capacity	0.06	0.26	0.00	0.00	0.28	0.03	0.36	0.14
Queue Length 95th (ft)	5	0	0	0	0	2	38	13
Control Delay (s)	8.5	0.0	0.0	8.2	0.0	22.1	33.2	12.1
Lane LOS	A			A		C	D	B
Approach Delay (s)	1.1			0.0		22.1	21.5	
Approach LOS						C	C	

Intersection Summary		
Average Delay		3.5
Intersection Capacity Utilization	38.2%	ICU Level of Service
Analysis Period (min)	15	A

HCM Unsignalized Intersection Capacity Analysis

3: Hwy 70 Bus & Eno Haven

Build PM
8/29/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	108	283	10	3	348	53	7	1	2	50	1	63
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	119	311	11	3	382	58	8	1	2	55	1	69
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	441			322			1007	996	311	969	977	412
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	441			322			1007	996	311	969	977	412
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			100			96	99	100	74	100	89
cM capacity (veh/h)	1119			1238			179	218	729	212	223	640
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1	SB 2				
Volume Total	119	311	11	3	441	11	56	69				
Volume Left	119	0	0	3	0	8	55	0				
Volume Right	0	0	11	0	58	2	0	69				
cSH	1119	1700	1700	1238	1700	215	212	640				
Volume to Capacity	0.11	0.18	0.01	0.00	0.26	0.05	0.26	0.11				
Queue Length 95th (ft)	9	0	0	0	0	4	26	9				
Control Delay (s)	8.6	0.0	0.0	7.9	0.0	22.6	27.9	11.3				
Lane LOS	A			A		C	D	B				
Approach Delay (s)	2.3			0.1		22.6	18.7					
Approach LOS						C	C					
Intersection Summary												
Average Delay			3.6									
Intersection Capacity Utilization			44.0%			ICU Level of Service			A			
Analysis Period (min)			15									