

To: Rich Vetter
The Dover/ Kent MPO

From: Shilpa Mallem, TYLI

Date: 6/14/2017

Re: Garrison Oak Traffic Study – Technical Memorandum

Introduction:

The Dover/ Kent County Metropolitan Organization (Dover/ Kent MPO) has tasked T.Y. Lin International (TYLI) to conduct a traffic study along the roadways and intersections surrounding the Garrison Oak Technology Park (Tech Park) in Dover, DE. The purpose of this Technical Memorandum (Tech Memo) is to document the process and results of the traffic study including the existing and future traffic conditions in the study area in relation to the development of the Tech Park.

Study Area:

The Garrison Oak Tech Park is located just east of SR 1, with its access located along White Oak Road. It is a 389 acre property comprising of 15 lots slated for development. At the time of this study, there are three developed lots in the park, Dover Sun Park (103.4 acres), Garrison Energy Center (86.4 acres) and the Uzin Utz manufacturing facility. One additional lot (Advantech) is expected to be developed during 2017, creating 60 jobs on site. The rest of the lot sizes range between 10 – 14 acres each.

The Tech Park is currently located just north and east of the SR 8 interchange along SR 1. Most of the Tech Park traffic is assumed to use this interchange and the local roads on the west side of SR 1 to access the Tech Park. Traffic accessing the Tech Park is expected to increase in the near future as additional tenants occupy the vacant lots. The State of Delaware owns several parcels of land along the east side of SR 1 that may be used to construct a roadway that would connect the Tech Park with the SR 8 interchange. **Figure 1** shows the location of the study area.

White Oak Road: The section of White Oak Road in the study area is an east-west roadway, located east of US 13 in the City of Dover, DE. According to DelDOT's Vehicle Volume Summary 2015, White Oak Road is classified as an urban local street carrying an Average Annual Daily Traffic (AADT) of 2,374 vehicles per day (vpd). It is a two-lane roadway carrying one 11' travel lane and 8' shoulder in each direction.

Acorn Lane: Acorn Lane is a north-south roadway extending between White Oak Road and North Little Creek Road, east of Dover, DE. It is classified as an urban collector carrying an AADT of 1,149 vpd. It is a two lane road with one 11' travel lane in each direction. There is an existing bike lane along the east side of the roadway that extends about 2000' north of its intersection with North Little Creek Road. Acorn Lane currently acts as an access road for vehicles traveling along northbound (NB) and southbound (SB) State Route (SR) 1 to access the Tech Park through North Little Creek Road and White Oak Road.

North Little Creek Road: North Little Creek Road (Little Creek Rd) in the study area is a part of the SR 8 corridor, east of Dover, DE. It is classified as a rural major collector with an AADT of 4,351 vpd. It is also a two lane roadway with one 11' travel lane and 8' shoulder in each direction.



Figure 1: Study Area

Study Intersections:

White Oak Road at Garrison Oak Drive: White Oak Road intersects Garrison Oak Dr., the access roadway to the Tech Park as a three-legged intersection, just east of SR 1 in Dover. White Oak Road comprises the east and west legs of the intersection, while Garrison Oak Dr. comprises the north leg of the intersection. There are no turn lanes or traffic control devices at this intersection. Field visits showed that the traffic exiting Garrison Oak stops for the traffic traveling through on White Oak Road.

White Oak Road at Acorn Lane: White Oak Road also intersects Acorn Lane as a three-legged intersection, with White Oak Road comprising the east and west legs of the intersection and Acorn Lane comprising the south leg of the intersection. There are no existing turn lanes at this intersection. The traffic along Acorn Lane approaching White Oak Road is controlled by a STOP sign.

Little Creek Rd at Acorn Lane: Little Creek Rd intersects Acorn Lane as a three-legged intersection with Little Creek Rd comprising the east and west legs of the intersection, while Acorn Lane comprises the north leg of the intersection. Westbound (WB) Little Creek Rd has one through lane and one right turn lane, while eastbound (EB) Little Creek Rd has one shared through/left turn lane and one bypass lane. Acorn Lane at this intersection has one shared through/left/ right turn lane, and is controlled by a STOP sign.

Little Creek Rd at SR 1 ramps: Little Creek Rd intersects the SR 1 SB off-ramp as well as SR 1 NB on-ramp as three-legged intersections on either side of the SR 1 overpass over Little Creek Rd (see **Figure 1**).

At both these intersections, Little Creek Rd comprises the east and west legs of the intersections, while the one-way ramps comprise the north legs of the intersections. The SB SR 1 off-ramp comprises of a left turn lane and a right turn lane, and is controlled by a STOP sign. At its intersection with SR 1 NB on-ramp, EB Little Creek Rd has one left turn lane and one through lane, and WB Little Creek Rd has one shared through/right turn lane.

Data Collection:

TYLI collected turning movement counts at the following five intersections in the vicinity of the Tech Park:

1. Tech Park entrance at White Oak Road
2. White Oak Road at Acorn Lane
3. Little Creek Road at Acorn Lane
4. Little Creek Road at SR 1 SB off-ramp
5. Little Creek Road at SR 1 NB on-ramp

The turning movement counts were collected between October 4, 2016 and October 13, 2016 during the AM and PM peak hours on weekdays under clear weather conditions. These counts included car and truck traffic traveling along the study roadways and intersections. No traffic issues or backups were noticed at these intersections, or along the study area roadways during the field observations. **Figure 2** shows the existing turning movement counts at all five study intersections during the AM and PM peak hours.

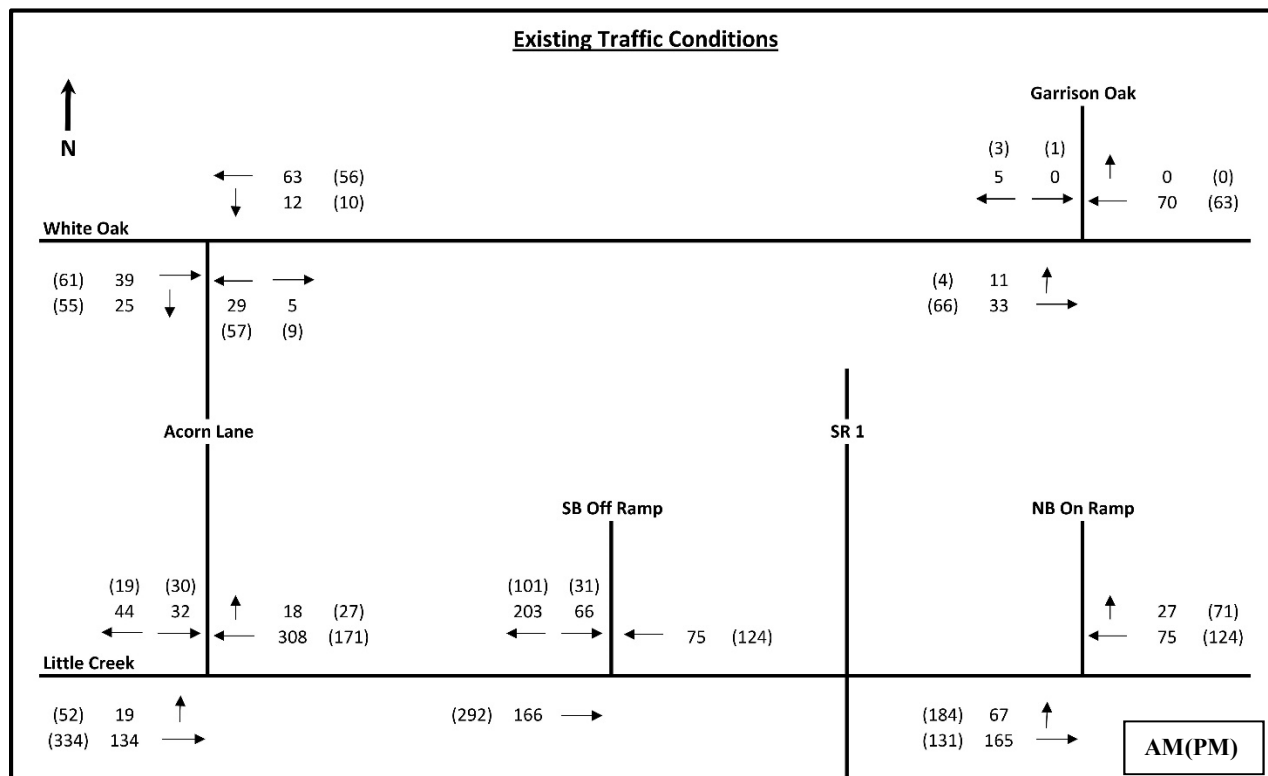


Figure 2: Existing Traffic – Turning Movement Counts

Existing Traffic Conditions:

The Tech Park currently has three developments, the Dover Sun Park, Garrison Oak Energy Company and Uzin Utz facility that are operational and contribute to the existing field traffic counts. According to information received from the City of Dover, an additional development, Advantech is scheduled to be operational in 2017. This development will include office space for 60 employees. According to ITE's Trip

Generation Manual, 9th Edition, the Trip Generation information for a General Office Building (710) with 60 employees is:

Weekday AM Peak Hour:

Average rate of trips: $0.48 * 60 = 29$ trips
 % Entering: $0.88 * 29 = 25$ trips
 % Exiting: $0.12 * 29 = 4$ trips

Weekday PM Peak Hour:

Average rate of trips: $0.46 * 60 = 28$ trips
 % Entering: $0.17 * 28 = 5$ trips
 % Exiting: $0.83 * 25 = 23$ trips

This trip generation information was combined with the existing counts, and distributed proportionately through the study intersections to generate the baseline conditions for the traffic analysis. **Figure 3** shows the baseline traffic conditions, which include all known development in the Tech Park at the time of the study.

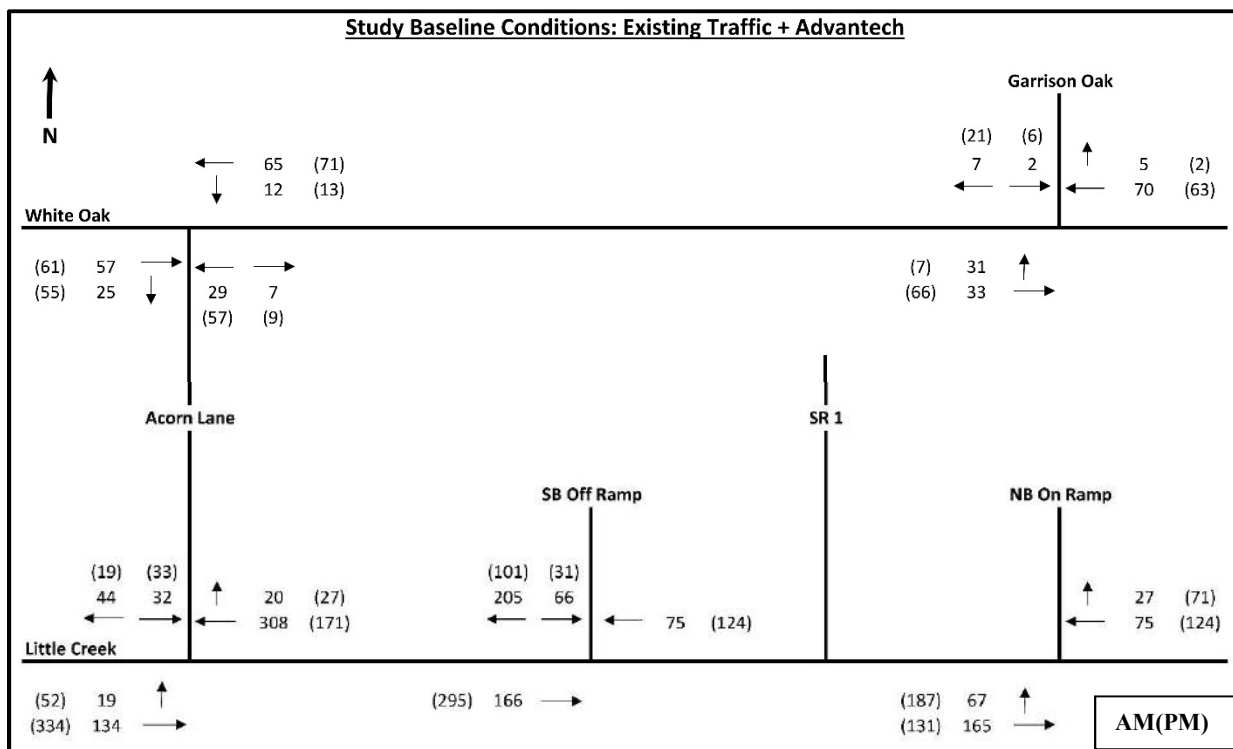


Figure 3: Study Baseline Traffic – Turning Movement Counts

The baseline traffic counts were analyzed using the Highway Capacity Software (HCS) 2010 for unsignalized intersections. **Table 1** shows the Level of Service (LOS) at each of the movements at the five study intersections under baseline conditions.

The HCS analysis and results show that there is no existing traffic congestion at any of the study intersections during both the AM and PM peak hours, validating the field observations. All HCS worksheets are included in **Appendix A**.

Table 1: Baseline Traffic Conditions – AM and PM hour LOS and delay

Intersection Approach		Baseline Conditions	
		AM Delay (LOS)	PM Delay (LOS)
White Oak Road at Garrison Oak Dr			
	Eastbound (Left/Through)	7.6 (A)	7.5 (A)
	Southbound (Left/Right)	9.0 (A)	9.1 (A)
White Oak Road at Acorn Lane			
	Westbound (Left/ Through)	7.4 (A)	7.5 (A)
	Northbound (Left/ Right)	9.8 (A)	10.5 (B)
N Little Creek at Acorn Lane			
	Eastbound (Left/Through)	8.2 (A)	7.9 (A)
	Southbound (Left/Right)	13.2 (B)	15.2 (C)
N Little Creek at SR 1 SB Ramp			
	Southbound (Left/Right)	12.9 (B)	11.3 (B)
N Little Creek at SR 1 NB Ramp			
	Eastbound (Left/Through)	7.7 (A)	8.5 (A)

Proposed Development:

After the development of the Advantech property, the Tech Park is expected to have 11 additional lots that would be available for development in the future. The square footage of the office/ working area for the existing developments show that approximately 3.5% of the total lot area was used as office space. Therefore, for the purpose of this study, it was assumed that 4% of the proposed lot area(s) would be developed into office/ working space.

Applying factors provided by the ITE's Trip Generation Manual, 9th Edition, the Trip Generation information for an Industrial Park (130), the proposed AM and PM peak hour traffic was calculated as shown in **Table 2**.

Proposed Traffic Conditions:

In order to study the traffic impacts throughout the development of the Tech Park, the proposed traffic was analyzed for three future conditions:

1. Traffic impacts when 50% of the proposed lots have been developed (50% Build)
2. Traffic impacts when 75% of the proposed lots have been developed (75% Build)
3. Traffic impacts when all the proposed lots have been developed (100% Build)

The trip generation information for all three future conditions was adjusted accordingly and distributed through the traffic network as shown in **Figures 4, 5 and 6**. The detailed trip distribution for each of the future conditions is included in **Appendix B**.

Table 2: Trip Generation information – Proposed Development

Garrison Oak Tech Park - Proposed Development			
# of proposed lots:		11	
Area of each lot:		~10	acres
Office space in each lot = 4%:	= 0.04 * 43,560*10	17,424	sq. ft.
Total proposed office area	=17,424 * 11	191,664	sq. ft.
<u>Weekday AM Peak Hour:</u>			
Average rate of trips:	0.82 *191.664 =	158	vehicles
% Entering:	0.82*158 =	130	vehicles
% Exiting:	0.18*158=	28	vehicles
<u>Weekday PM Peak Hour:</u>			
Average rate of trips:	0.85*191.664 =	163	vehicles
% Entering:	0.21*163	34	vehicles
% Exiting:	0.79*163	129	vehicles

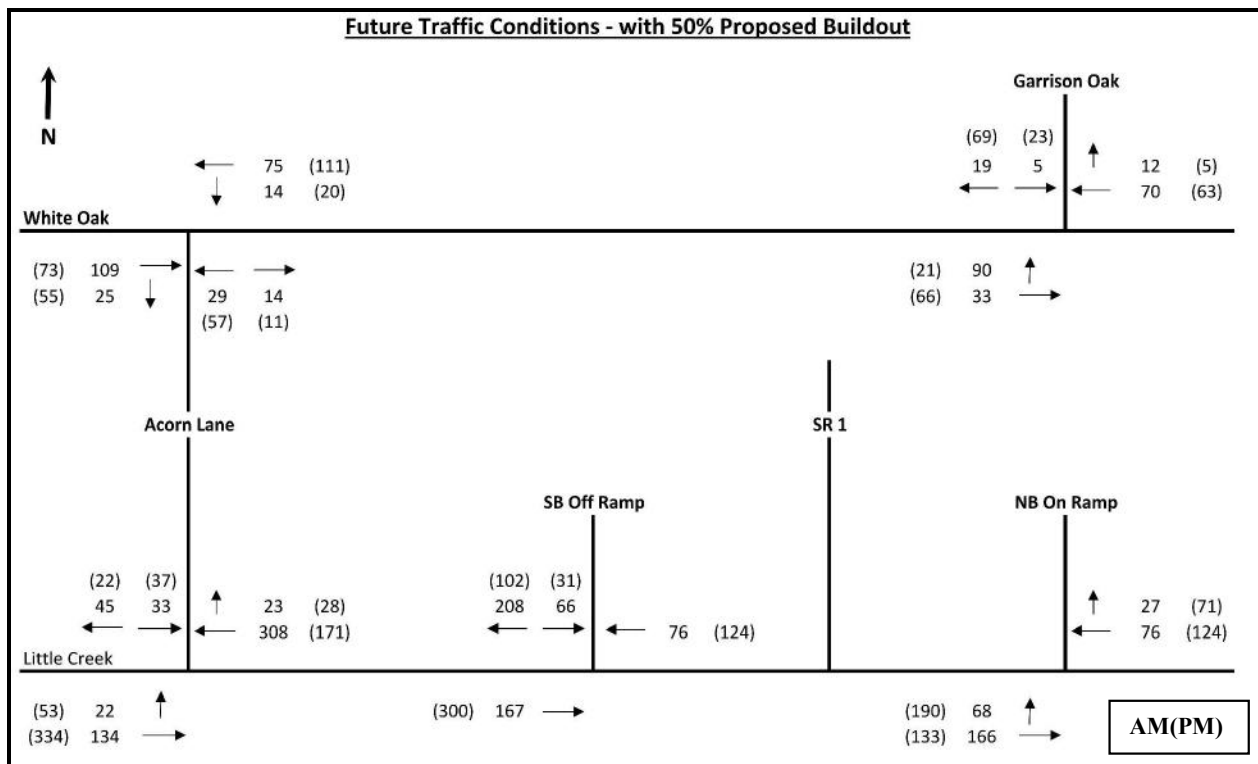


Figure 4: Future traffic conditions with 50% Build

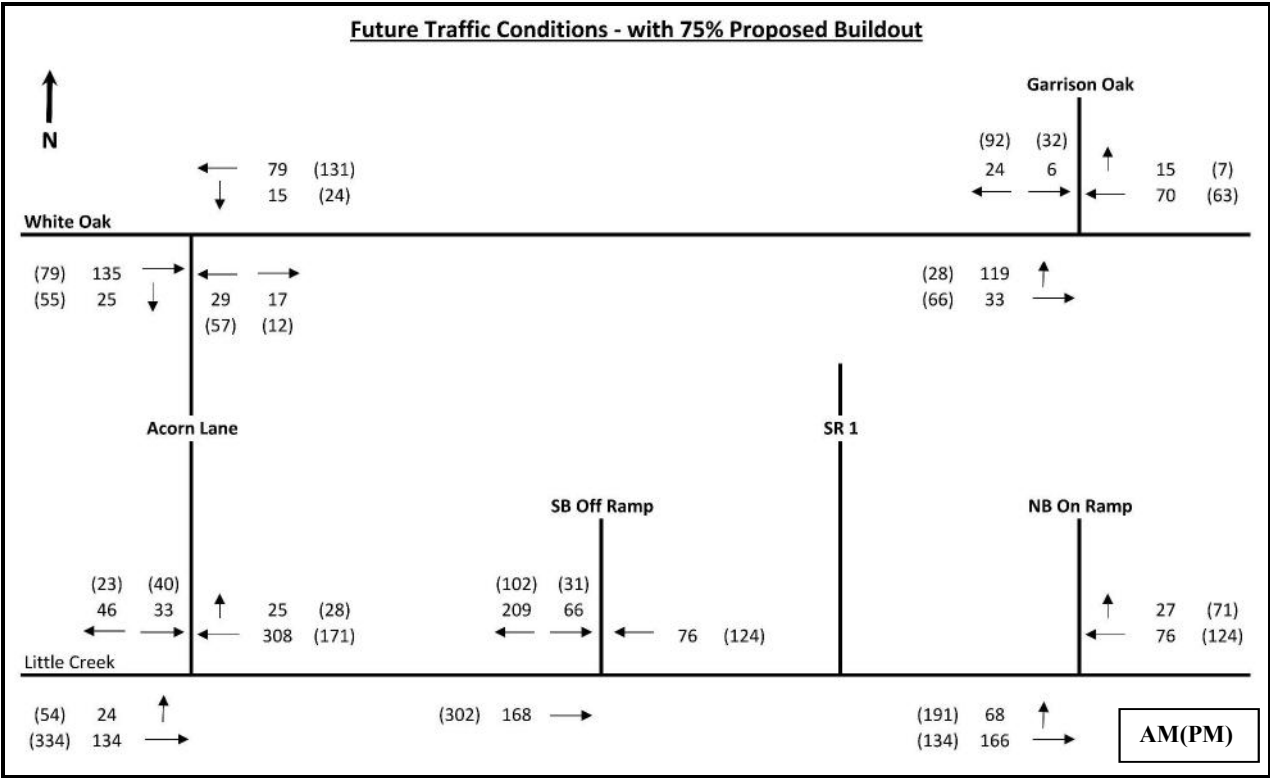


Figure 5: Future traffic conditions with 75% Build

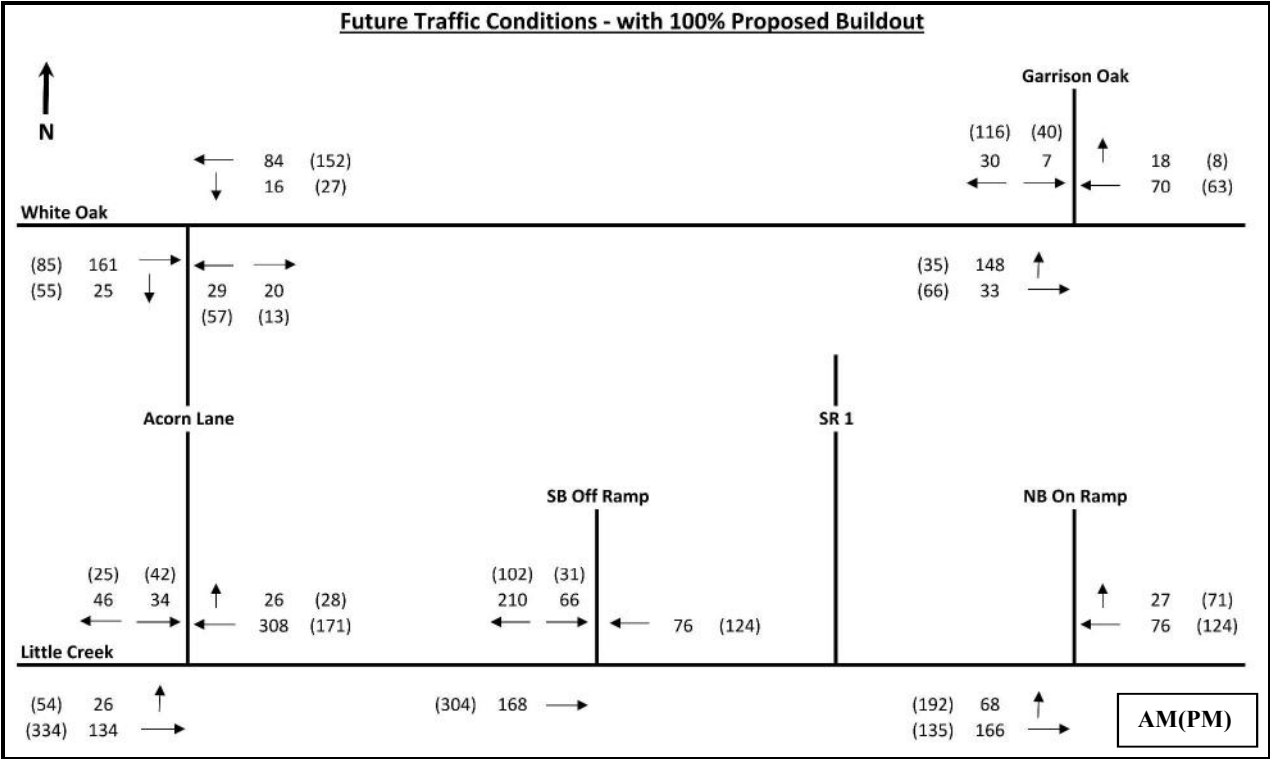


Figure 6: Future traffic conditions with 100% Build

Similar to the study baseline traffic conditions, the three future traffic conditions were analyzed using HCS 2010 to determine the critical movement LOS at each of the study intersections. **Table 3** shows the LOS at the critical movements at each of the study intersections under baseline conditions as well as the three future traffic conditions. All HCS worksheets are included in **Appendix A**.

Table 3: HCS LOS under baseline and future traffic conditions

Intersection	Approach	Baseline Conditions		50% Build		75% Build		100% Build	
		AM Delay (LOS)	PM Delay (LOS)	AM Delay (LOS)	PM Delay (LOS)	AM Delay (LOS)	PM Delay (LOS)	AM Delay (LOS)	PM Delay (LOS)
White Oak Road at Garrison Oak Dr									
	Eastbound (Left/Through)	7.6 (A)	7.5 (A)	7.7 (A)	7.5 (A)	7.8 (A)	7.5 (A)	7.9 (A)	7.6 (A)
	Southbound (Left/Right)	9.0 (A)	9.1 (A)	9.5 (A)	9.6 (A)	9.7 (A)	9.8 (A)	10.0 (A)	10.3 (B)
White Oak Road at Acorn Lane									
	Westbound (Left/ Through)	7.4 (A)	7.5 (A)	7.6 (A)	7.6 (A)	7.7 (A)	7.6 (A)	7.8 (A)	7.6 (A)
	Northbound (Left/ Right)	9.8 (A)	10.5 (B)	10.4 (B)	11.3 (B)	10.8 (B)	11.7 (B)	11.1 (B)	12.2 (B)
N Little Creek at Acorn Lane									
	Eastbound (Left/Through)	8.2 (A)	7.9 (A)	8.2 (A)	7.9 (A)	8.2 (A)	7.9 (A)	8.2 (A)	7.9 (A)
	Southbound (Left/Right)	13.2 (B)	15.2 (C)	13.3 (B)	15.6 (C)	13.4 (B)	15.8 (C)	13.5 (B)	15.9 (C)
N Little Creek at SR 1 SB Ramp									
	Southbound (Left/Right)	12.9 (B)	11.3 (B)	13.0 (B)	11.3 (B)	12.9 (B)	11.3 (B)	12.9 (B)	11.3 (B)
N Little Creek at SR 1 NB Ramp									
	Eastbound (Left/Through)	7.7 (A)	8.5 (A)	7.7 (A)	8.6 (A)	7.7 (A)	8.6 (A)	7.7 (A)	8.6 (A)

The results show that the delay gradually increases with the additional traffic at each stage of development. However, as seen in **Table 3**, the delay would still be under acceptable conditions (below LOS D), provided the rate of the future growth in development is consistent with the current trend.

Area development – L.D. Shank Property:

The City of Dover provided information on a potential development that is expected along White Oak Road, to the east of the Tech Park, Triad Farms, LLC (L.D. Shank). The property is zoned as a residential development and is expected to house approximately 400 equivalent dwelling units (EDU). According to ITE's Trip Generation Manual, 9th Edition, the trip generation information for a Residential Planned Unit Development (270) with 400 EDUs is:

Weekday AM Peak Hour:

Average rate of trips: $0.51 \times 400 = 204$ trips
 % Entering: $0.22 \times 204 = 45$ trips
 % Exiting: $0.78 \times 204 = 159$ trips

Weekday PM Peak Hour:

Average rate of trips: $0.62 \times 400 = 248$ trips
 % Entering: $0.65 \times 248 = 161$ trips
 % Exiting: $0.35 \times 248 = 87$ trips

Since most of this traffic is expected to use White Oak Road and the two study intersections of Garrison Oak and Acorn Lane, these traffic volumes were added to the volumes along White Oak Road during the AM and PM peak hours, and distributed proportionately as shown in **Figure 7** to determine the traffic impacts on the study intersections. **Table 4** shows the LOS at the study intersections for this potential future scenario.

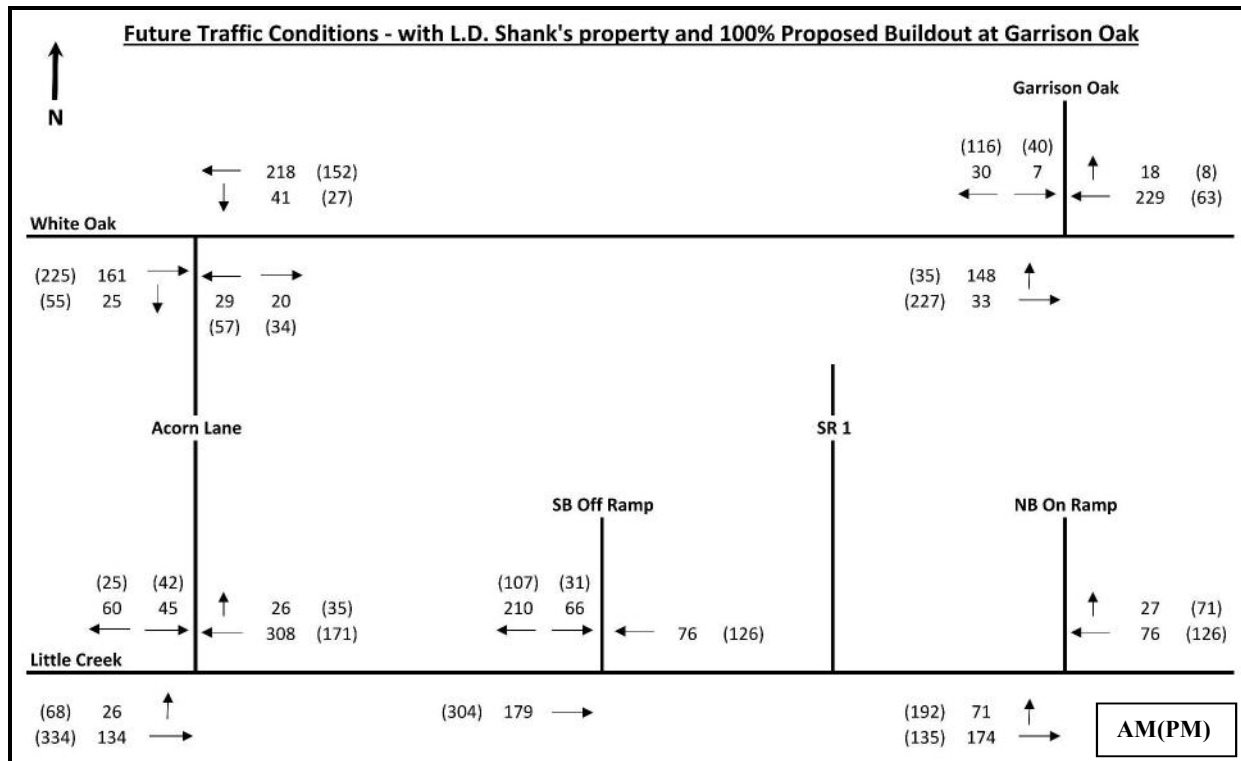


Figure 7: Future Traffic Conditions with L.D. Shank's property

Table 4: HCS LOS under baseline, future 100% build and LD Shank Development

Intersection Approach		Baseline Conditions		100% Build		100%Build + LD Shank Development	
		AM Delay (LOS)	PM Delay (LOS)	AM Delay (LOS)	PM Delay (LOS)	AM Delay (LOS)	PM Delay (LOS)
White Oak Road at Garrison Oak Dr							
	Eastbound (Left/Through)	7.6 (A)	7.5 (A)	7.9 (A)	7.6 (A)	8.6 (A)	7.6 (A)
	Southbound (Left/Right)	9.0 (A)	9.1 (A)	10.0 (A)	10.3 (B)	11.6 (B)	11.7 (B)
White Oak Road at Acorn Lane							
	Westbound (Left/ Through)	7.4 (A)	7.5 (A)	7.8 (A)	7.6 (A)	7.9 (A)	7.9 (A)
	Northbound (Left/ Right)	9.8 (A)	10.5 (B)	11.1 (B)	12.2 (B)	13.3 (B)	14.0 (B)
N Little Creek at Acorn Lane							
	Eastbound (Left/Through)	8.2 (A)	7.9 (A)	8.2 (A)	7.9 (A)	8.2 (A)	8.0 (A)
	Southbound (Left/Right)	13.2 (B)	15.2 (C)	13.5 (B)	15.9 (C)	14.3 (B)	16.8 (C)
N Little Creek at SR 1 SB Ramp							
	Southbound (Left/Right)	12.9 (B)	11.3 (B)	12.9 (B)	11.3 (B)	13.0 (B)	11.4 (B)
N Little Creek at SR 1 NB Ramp							
	Eastbound (Left/Through)	7.7 (A)	8.5 (A)	7.7 (A)	8.6 (A)	7.7 (A)	8.6 (A)

Conclusions and Results:

Traffic analysis shows that assuming the Tech Park grows at the current rate, all study intersections in the vicinity of the Tech Park are expected to operate at acceptable LOS when the Tech Park is completely occupied and operational. However, if any of the proposed developments in the future expect to accommodate a significantly higher number of workers than the current rate, a further traffic study would be necessary to quantify the traffic impacts and mitigation measures. The traffic conditions along Acorn Lane should also be studied at that time to determine the increase in volumes and the effects on the surrounding communities. This study also recommends adding a STOP sign along the SB approach of Garrison Oak Dr. at its intersection with White Oak Road.

While this report recognizes that a new connector road connecting North Little Creek Road to the Garrison Oak Industrial Park is not required at this time based on current knowledge, it recommends that the City of Dover include an alignment study (conducted by DelDOT) as a transportation component of their upcoming Comprehensive Plan update. The report recommends that the study determine the feasibility of constructing the connector roadway, and initiate preliminary design to reserve a corridor so the alignment is in place if the roadway is warranted in the future.

APPENDIX A

HCS WORKSHEETS

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	White Oak at Garrison Oak		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Existing Conditions - AM Peak						
Project Description: <i>Garrison Oak Traffic Study</i>							
East/West Street: <i>Whote Oak Road</i>				North/South Street: <i>Garrison Oak Drive</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	11	33			70	0	
Peak-Hour Factor, PHF	0.69	0.42	0.78	0.60	0.79	1.00	
Hourly Flow Rate, HFR (veh/h)	15	78	0	0	88	0	
Percent Heavy Vehicles	10	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LT					TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				0		5	
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	0.92	
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	5	
Percent Heavy Vehicles	2	0	2	2	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LT						LR
v (veh/h)	15						5
C (m) (veh/h)	1459						976
v/c	0.01						0.01
95% queue length	0.03						0.02
Control Delay (s/veh)	7.5						8.7
LOS	A						A
Approach Delay (s/veh)	--	--				8.7	
Approach LOS	--	--				A	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	White Oak at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Existing Conditions - AM Peak							
Project Description: Garrison Oak Traffic Study								
East/West Street: White Oak Road				North/South Street: Acorn Lane				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		39	25	12	63			
Peak-Hour Factor, PHF	1.00	0.75	0.78	0.60	0.69	1.00		
Hourly Flow Rate, HFR (veh/h)	0	52	32	19	91	0		
Percent Heavy Vehicles	0	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	29		5					
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	48	0	12	0	0	0		
Percent Heavy Vehicles	2	0	2	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		19		60				
C (m) (veh/h)		1513		817				
v/c		0.01		0.07				
95% queue length		0.04		0.24				
Control Delay (s/veh)		7.4		9.8				
LOS		A		A				
Approach Delay (s/veh)	--	--	9.8					
Approach LOS	--	--	A					

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Existing Conditions - AM Peak							
Project Description: Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: Acorn Lane				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	19	134			308	18		
Peak-Hour Factor, PHF	0.79	0.80	0.78	0.60	0.82	0.68		
Hourly Flow Rate, HFR (veh/h)	24	167	0	0	375	26		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				32		44		
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.67	1.00	0.85		
Hourly Flow Rate, HFR (veh/h)	0	0	0	47	0	51		
Percent Heavy Vehicles	2	0	2	2	0	3		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	24						98	
C (m) (veh/h)	1158						540	
v/c	0.02						0.18	
95% queue length	0.06						0.66	
Control Delay (s/veh)	8.2						13.1	
LOS	A						B	
Approach Delay (s/veh)	--	--				13.1		
Approach LOS	--	--				B		

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 NB Ramp		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Existing Conditions - AM Peak						
Project Description <i>Garrison Oak Traffic Study</i>							
East/West Street: <i>N Little Creek</i>				North/South Street: <i>SR1 NB On-Ramp</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	67	165			75	27	
Peak-Hour Factor, PHF	0.62	0.77	0.78	0.60	0.79	0.75	
Hourly Flow Rate, HFR (veh/h)	108	214	0	0	94	36	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LT					TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)							
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59	
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	0	
Percent Heavy Vehicles	2	0	2	2	0	8	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration							
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LT						
v (veh/h)	108						
C (m) (veh/h)	1455						
v/c	0.07						
95% queue length	0.24						
Control Delay (s/veh)	7.7						
LOS	A						
Approach Delay (s/veh)	--	--					
Approach LOS	--	--					

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 SB Ramp		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Existing Conditions - AM Peak						
Project Description <i>Garrison Oak Traffic Study</i>							
East/West Street: <i>N Little Creek</i>				North/South Street: <i>SR1 SB Off-Ramp</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		166			75		
Peak-Hour Factor, PHF	0.79	0.90	0.78	0.60	0.78	0.68	
Hourly Flow Rate, HFR (veh/h)	0	184	0	0	96	0	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		T			T		
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				66		203	
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59	
Hourly Flow Rate, HFR (veh/h)	0	0	0	92	0	344	
Percent Heavy Vehicles	2	0	2	2	0	3	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration							LR
v (veh/h)							436
C (m) (veh/h)							892
v/c							0.49
95% queue length							2.74
Control Delay (s/veh)							12.8
LOS							B
Approach Delay (s/veh)	--	--				12.8	
Approach LOS	--	--				B	

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	White Oak at Garrison Oak		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Existing Conditions - PM Peak						
Project Description <i>Garrison Oak Traffic Study</i>							
East/West Street:				North/South Street: <i>Garrison Oak Drive</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	4	66			63	0	
Peak-Hour Factor, PHF	0.69	0.42	0.78	0.60	0.79	1.00	
Hourly Flow Rate, HFR (veh/h)	5	157	0	0	79	0	
Percent Heavy Vehicles	10	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LT					TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				1		3	
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	0.92	
Hourly Flow Rate, HFR (veh/h)	0	0	0	1	0	3	
Percent Heavy Vehicles	2	0	2	2	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LT						LR
v (veh/h)	5						4
C (m) (veh/h)	1470						911
v/c	0.00						0.00
95% queue length	0.01						0.01
Control Delay (s/veh)	7.5						9.0
LOS	A						A
Approach Delay (s/veh)	--	--				9.0	
Approach LOS	--	--				A	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	White Oak at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Existing - PM Peak							
Project Description <i>Garrison Oak Traffic Study</i>								
East/West Street: <i>White Oak Road</i>				North/South Street: <i>Acorn Lane</i>				
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		61	55	10	56			
Peak-Hour Factor, PHF	1.00	1.00	0.78	0.60	0.69	1.00		
Hourly Flow Rate, HFR (veh/h)	0	61	70	16	81	0		
Percent Heavy Vehicles	0	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	57		9					
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	94	0	22	0	0	0		
Percent Heavy Vehicles	2	0	2	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		16		116				
C (m) (veh/h)		1454		800				
v/c		0.01		0.14				
95% queue length		0.03		0.51				
Control Delay (s/veh)		7.5		10.3				
LOS		A		B				
Approach Delay (s/veh)	--	--	10.3					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at Acorn Lane		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Existing Conditions - PM Peak						
Project Description Garrison Oak Traffic Study							
East/West Street: N Little Creek				North/South Street: Acorn Lane			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	52	334			171	27	
Peak-Hour Factor, PHF	0.79	0.80	0.78	0.60	0.82	0.68	
Hourly Flow Rate, HFR (veh/h)	65	417	0	0	208	39	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LT					TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				30		19	
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.67	1.00	0.85	
Hourly Flow Rate, HFR (veh/h)	0	0	0	44	0	22	
Percent Heavy Vehicles	2	0	2	2	0	3	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11 12
Lane Configuration	LT						LR
v (veh/h)	65						66
C (m) (veh/h)	1319						430
v/c	0.05						0.15
95% queue length	0.16						0.54
Control Delay (s/veh)	7.9						14.9
LOS	A						B
Approach Delay (s/veh)	--	--				14.9	
Approach LOS	--	--				B	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 NB Ramp			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Existing Conditions - PM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: SR1 NB On-Ramp				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	184	131			124	71		
Peak-Hour Factor, PHF	0.62	0.77	0.78	0.60	0.79	0.75		
Hourly Flow Rate, HFR (veh/h)	296	170	0	0	156	94		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)								
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59		
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	0		
Percent Heavy Vehicles	2	0	2	2	0	8		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration								
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT							
v (veh/h)	296							
C (m) (veh/h)	1316							
v/c	0.22							
95% queue length	0.86							
Control Delay (s/veh)	8.5							
LOS	A							
Approach Delay (s/veh)	--	--						
Approach LOS	--	--						

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 SB Ramp		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Existing Conditions - PM Peak						
Project Description <i>Garrison Oak Traffic Study</i>							
East/West Street: <i>N Little Creek</i>				North/South Street: <i>SR1 SB Off-Ramp</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		292			124		
Peak-Hour Factor, PHF	0.79	0.90	0.78	0.60	0.78	0.68	
Hourly Flow Rate, HFR (veh/h)	0	324	0	0	158	0	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		T			T		
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				31		101	
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59	
Hourly Flow Rate, HFR (veh/h)	0	0	0	43	0	171	
Percent Heavy Vehicles	2	0	2	2	0	3	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration							LR
v (veh/h)							214
C (m) (veh/h)							786
v/c							0.27
95% queue length							1.11
Control Delay (s/veh)							11.3
LOS							B
Approach Delay (s/veh)	--	--				11.3	
Approach LOS	--	--				B	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	White Oak at Garrison Oak			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Proposed - 50% Build - AM Peak							
Project Description: Garrison Oak Traffic Study								
East/West Street: Whote Oak Road				North/South Street: Garrison Oak Drive				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	79	33			70	9		
Peak-Hour Factor, PHF	0.69	0.42	0.78	0.60	0.79	1.00		
Hourly Flow Rate, HFR (veh/h)	114	78	0	0	88	9		
Percent Heavy Vehicles	10	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				4		18		
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	0.92		
Hourly Flow Rate, HFR (veh/h)	0	0	0	4	0	19		
Percent Heavy Vehicles	2	0	2	2	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	114						23	
C (m) (veh/h)	1448						861	
v/c	0.08						0.03	
95% queue length	0.26						0.08	
Control Delay (s/veh)	7.7						9.3	
LOS	A						A	
Approach Delay (s/veh)	--	--				9.3		
Approach LOS	--	--				A		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	White Oak at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Proposed - 50% Build - AM Peak							
Project Description: Garrison Oak Traffic Study								
East/West Street: White Oak Road				North/South Street: Acorn Lane				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		91	25	14	73			
Peak-Hour Factor, PHF	1.00	0.75	0.78	0.60	0.69	1.00		
Hourly Flow Rate, HFR (veh/h)	0	121	32	23	105	0		
Percent Heavy Vehicles	0	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	29		12					
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	48	0	29	0	0	0		
Percent Heavy Vehicles	2	0	2	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		23		77				
C (m) (veh/h)		1428		760				
v/c		0.02		0.10				
95% queue length		0.05		0.34				
Control Delay (s/veh)		7.6		10.3				
LOS		A		B				
Approach Delay (s/veh)	--	--	10.3					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at Acorn Lane		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed - 50% Build - AM Peak						
Project Description <i>Garrison Oak Traffic Study</i>							
East/West Street: <i>N Little Creek</i>				North/South Street: <i>Acorn Lane</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	22	134			308	21	
Peak-Hour Factor, PHF	0.79	0.80	0.78	0.60	0.82	0.68	
Hourly Flow Rate, HFR (veh/h)	27	167	0	0	375	30	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LT					TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				33		45	
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.67	1.00	0.85	
Hourly Flow Rate, HFR (veh/h)	0	0	0	49	0	52	
Percent Heavy Vehicles	2	0	2	2	0	3	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11 12
Lane Configuration	LT						LR
v (veh/h)	27						101
C (m) (veh/h)	1154						534
v/c	0.02						0.19
95% queue length	0.07						0.69
Control Delay (s/veh)	8.2						13.3
LOS	A						B
Approach Delay (s/veh)	--	--				13.3	
Approach LOS	--	--				B	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 NB Ramp			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Proposed - 50% Build - AM Peak							
Project Description: Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: SR1 NB On-Ramp				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	68	166			76	27		
Peak-Hour Factor, PHF	0.62	0.77	0.78	0.60	0.79	0.75		
Hourly Flow Rate, HFR (veh/h)	109	215	0	0	96	36		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)								
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59		
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	0		
Percent Heavy Vehicles	2	0	2	2	0	8		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration								
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT							
v (veh/h)	109							
C (m) (veh/h)	1453							
v/c	0.08							
95% queue length	0.24							
Control Delay (s/veh)	7.7							
LOS	A							
Approach Delay (s/veh)	--	--						
Approach LOS	--	--						

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 SB Ramp		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed - 50% Build - AM Peak						
Project Description Garrison Oak Traffic Study							
East/West Street: N Little Creek				North/South Street: SR1 SB Off-Ramp			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		167			76		
Peak-Hour Factor, PHF	0.79	0.90	0.78	0.60	0.78	0.68	
Hourly Flow Rate, HFR (veh/h)	0	185	0	0	97	0	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		T			T		
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				66		206	
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59	
Hourly Flow Rate, HFR (veh/h)	0	0	0	92	0	349	
Percent Heavy Vehicles	2	0	2	2	0	3	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration							LR
v (veh/h)							441
C (m) (veh/h)							891
v/c							0.49
95% queue length							2.80
Control Delay (s/veh)							12.9
LOS							B
Approach Delay (s/veh)	--	--				12.9	
Approach LOS	--	--				B	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	White Oak at Garrison Oak			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Proposed - 50% Build - PM Peak							
Project Description <i>Garrison Oak Traffic Study</i>								
East/West Street: <i>White Oak Road</i>				North/South Street: <i>Garrison Oak Drive</i>				
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	20	66			63	4		
Peak-Hour Factor, PHF	0.69	0.42	0.78	0.60	0.79	1.00		
Hourly Flow Rate, HFR (veh/h)	28	157	0	0	79	4		
Percent Heavy Vehicles	10	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				21		59		
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	0.92		
Hourly Flow Rate, HFR (veh/h)	0	0	0	21	0	64		
Percent Heavy Vehicles	2	0	2	2	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	28						85	
C (m) (veh/h)	1465						888	
v/c	0.02						0.10	
95% queue length	0.06						0.32	
Control Delay (s/veh)	7.5						9.5	
LOS	A						A	
Approach Delay (s/veh)	--	--				9.5		
Approach LOS	--	--				A		

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	White Oak at Acorn Lane		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed - 50% Build - PM Peak						
Project Description <i>Garrison Oak Traffic Study</i>							
East/West Street: <i>White Oak Road</i>				North/South Street: <i>Acorn Lane</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		73	55	17	96		
Peak-Hour Factor, PHF	1.00	1.00	0.78	0.60	0.69	1.00	
Hourly Flow Rate, HFR (veh/h)	0	73	70	28	139	0	
Percent Heavy Vehicles	0	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration			TR	LT			
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	57		11				
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	94	0	27	0	0	0	
Percent Heavy Vehicles	2	0	2	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration		LR					
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound		Southbound		
Movement	1	4	7	8	9	10	11
Lane Configuration		LT		LR			
v (veh/h)		28		121			
C (m) (veh/h)		1440		722			
v/c		0.02		0.17			
95% queue length		0.06		0.60			
Control Delay (s/veh)		7.5		11.0			
LOS		A		B			
Approach Delay (s/veh)	--	--	11.0				
Approach LOS	--	--	B				

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Proposed - 50% Build - PM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: Acorn Lane				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	53	334			171	28		
Peak-Hour Factor, PHF	0.79	0.80	0.78	0.60	0.82	0.68		
Hourly Flow Rate, HFR (veh/h)	67	417	0	0	208	41		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				34		22		
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.67	1.00	0.85		
Hourly Flow Rate, HFR (veh/h)	0	0	0	50	0	25		
Percent Heavy Vehicles	2	0	2	2	0	3		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	67						75	
C (m) (veh/h)	1317						427	
v/c	0.05						0.18	
95% queue length	0.16						0.63	
Control Delay (s/veh)	7.9						15.2	
LOS	A						C	
Approach Delay (s/veh)	--	--				15.2		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 NB Ramp		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed - 50% Build - PM Peak						
Project Description: Garrison Oak Traffic Study							
East/West Street: N Little Creek				North/South Street: SR1 NB On-Ramp			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	187	133			124	71	
Peak-Hour Factor, PHF	0.62	0.77	0.78	0.60	0.79	0.75	
Hourly Flow Rate, HFR (veh/h)	301	172	0	0	156	94	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LT					TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)							
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59	
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	0	
Percent Heavy Vehicles	2	0	2	2	0	8	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration							
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LT						
v (veh/h)	301						
C (m) (veh/h)	1316						
v/c	0.23						
95% queue length	0.88						
Control Delay (s/veh)	8.5						
LOS	A						
Approach Delay (s/veh)	--	--					
Approach LOS	--	--					

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 SB Ramp		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed - 50% Build - PM Peak						
Project Description Garrison Oak Traffic Study							
East/West Street: N Little Creek				North/South Street: SR1 SB Off-Ramp			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		297			124		
Peak-Hour Factor, PHF	0.79	0.90	0.78	0.60	0.78	0.68	
Hourly Flow Rate, HFR (veh/h)	0	330	0	0	158	0	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		T			T		
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				31		102	
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59	
Hourly Flow Rate, HFR (veh/h)	0	0	0	43	0	172	
Percent Heavy Vehicles	2	0	2	2	0	3	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration							LR
v (veh/h)							215
C (m) (veh/h)							784
v/c							0.27
95% queue length							1.12
Control Delay (s/veh)							11.3
LOS							B
Approach Delay (s/veh)	--	--				11.3	
Approach LOS	--	--				B	

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	White Oak at Garrison Oak		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed - 75% Build - AM Peak						
Project Description: Garrison Oak Traffic Study							
East/West Street: Whote Oak Road				North/South Street: Garrison Oak Drive			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	108	33			70	12	
Peak-Hour Factor, PHF	0.69	0.42	0.78	0.60	0.79	1.00	
Hourly Flow Rate, HFR (veh/h)	156	78	0	0	88	12	
Percent Heavy Vehicles	10	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LT					TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				5		23	
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	0.92	
Hourly Flow Rate, HFR (veh/h)	0	0	0	5	0	24	
Percent Heavy Vehicles	2	0	2	2	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LT						LR
v (veh/h)	156						29
C (m) (veh/h)	1444						825
v/c	0.11						0.04
95% queue length	0.36						0.11
Control Delay (s/veh)	7.8						9.5
LOS	A						A
Approach Delay (s/veh)	--	--				9.5	
Approach LOS	--	--				A	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	White Oak at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Proposed - 75% Build - AM Peak							
Project Description <i>Garrison Oak Traffic Study</i>								
East/West Street: <i>White Oak Road</i>				North/South Street: <i>Acorn Lane</i>				
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		117	25	15	77			
Peak-Hour Factor, PHF	1.00	0.75	0.78	0.60	0.69	1.00		
Hourly Flow Rate, HFR (veh/h)	0	156	32	24	111	0		
Percent Heavy Vehicles	0	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	29		15					
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	48	0	37	0	0	0		
Percent Heavy Vehicles	2	0	2	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		24		85				
C (m) (veh/h)		1386		733				
v/c		0.02		0.12				
95% queue length		0.05		0.39				
Control Delay (s/veh)		7.6		10.6				
LOS		A		B				
Approach Delay (s/veh)	--	--	10.6					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at Acorn Lane		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed - 75% Build - AM Peak						
Project Description Garrison Oak Traffic Study							
East/West Street: N Little Creek				North/South Street: Acorn Lane			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	24	134			308	23	
Peak-Hour Factor, PHF	0.79	0.80	0.78	0.60	0.82	0.68	
Hourly Flow Rate, HFR (veh/h)	30	167	0	0	375	33	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LT					TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				33		46	
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.67	1.00	0.85	
Hourly Flow Rate, HFR (veh/h)	0	0	0	49	0	54	
Percent Heavy Vehicles	2	0	2	2	0	3	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11 12
Lane Configuration	LT						LR
v (veh/h)	30						103
C (m) (veh/h)	1151						531
v/c	0.03						0.19
95% queue length	0.08						0.71
Control Delay (s/veh)	8.2						13.4
LOS	A						B
Approach Delay (s/veh)	--	--				13.4	
Approach LOS	--	--				B	

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 NB Ramp		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed - 75% Build - AM Peak						
Project Description <i>Garrison Oak Traffic Study</i>							
East/West Street: <i>N Little Creek</i>				North/South Street: <i>SR1 NB On-Ramp</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	68	166			76	27	
Peak-Hour Factor, PHF	0.62	0.77	0.78	0.60	0.79	0.75	
Hourly Flow Rate, HFR (veh/h)	109	215	0	0	96	36	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LT					TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)							
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59	
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	0	
Percent Heavy Vehicles	2	0	2	2	0	8	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration							
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LT						
v (veh/h)	109						
C (m) (veh/h)	1453						
v/c	0.08						
95% queue length	0.24						
Control Delay (s/veh)	7.7						
LOS	A						
Approach Delay (s/veh)	--	--					
Approach LOS	--	--					

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 SB Ramp		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed - 75% Build - AM Peak						
Project Description: Garrison Oak Traffic Study							
East/West Street: N Little Creek				North/South Street: SR1 SB Off-Ramp			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		168			76		
Peak-Hour Factor, PHF	0.79	0.90	0.78	0.60	0.78	0.68	
Hourly Flow Rate, HFR (veh/h)	0	186	0	0	97	0	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Raised curb						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		T			T		
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				66		207	
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59	
Hourly Flow Rate, HFR (veh/h)	0	0	0	92	0	350	
Percent Heavy Vehicles	2	0	2	2	0	3	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration							LR
v (veh/h)							442
C (m) (veh/h)							896
v/c							0.49
95% queue length							2.78
Control Delay (s/veh)							12.9
LOS							B
Approach Delay (s/veh)	--	--				12.9	
Approach LOS	--	--				B	

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	White Oak at Garrison Oak		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed - 75% Build - PM Peak						
Project Description: Garrison Oak Traffic Study							
East/West Street: White Oak Road				North/South Street: Garrison Oak Drive			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	27	66			63	6	
Peak-Hour Factor, PHF	0.69	0.42	0.78	0.60	0.79	1.00	
Hourly Flow Rate, HFR (veh/h)	39	157	0	0	79	6	
Percent Heavy Vehicles	10	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LT					TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				30		82	
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	0.92	
Hourly Flow Rate, HFR (veh/h)	0	0	0	30	0	89	
Percent Heavy Vehicles	2	0	2	2	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LT						LR
v (veh/h)	39						119
C (m) (veh/h)	1462						874
v/c	0.03						0.14
95% queue length	0.08						0.47
Control Delay (s/veh)	7.5						9.8
LOS	A						A
Approach Delay (s/veh)	--	--				9.8	
Approach LOS	--	--				A	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	White Oak at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Proposed - 75% Build - PM Peak							
Project Description <i>Garrison Oak Traffic Study</i>								
East/West Street: <i>White Oak Road</i>				North/South Street: <i>Acorn Lane</i>				
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		79	55	21	116			
Peak-Hour Factor, PHF	1.00	1.00	0.78	0.60	0.69	1.00		
Hourly Flow Rate, HFR (veh/h)	0	79	70	34	168	0		
Percent Heavy Vehicles	0	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	57		12					
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	94	0	29	0	0	0		
Percent Heavy Vehicles	2	0	2	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		34		123				
C (m) (veh/h)		1432		685				
v/c		0.02		0.18				
95% queue length		0.07		0.65				
Control Delay (s/veh)		7.6		11.4				
LOS		A		B				
Approach Delay (s/veh)	--	--	11.4					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Proposed - 75% Build - PM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: Acorn Lane				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	54	334			171	28		
Peak-Hour Factor, PHF	0.79	0.80	0.78	0.60	0.82	0.68		
Hourly Flow Rate, HFR (veh/h)	68	417	0	0	208	41		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				37		23		
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.67	1.00	0.85		
Hourly Flow Rate, HFR (veh/h)	0	0	0	55	0	27		
Percent Heavy Vehicles	2	0	2	2	0	3		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	68						82	
C (m) (veh/h)	1317						424	
v/c	0.05						0.19	
95% queue length	0.16						0.71	
Control Delay (s/veh)	7.9						15.5	
LOS	A						C	
Approach Delay (s/veh)	--	--				15.5		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 NB Ramp		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed - 75% Build - PM Peak						
Project Description: Garrison Oak Traffic Study							
East/West Street: N Little Creek				North/South Street: SR1 NB On-Ramp			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	188	134			124	71	
Peak-Hour Factor, PHF	0.62	0.77	0.78	0.60	0.79	0.75	
Hourly Flow Rate, HFR (veh/h)	303	174	0	0	156	94	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LT					TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)							
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59	
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	0	
Percent Heavy Vehicles	2	0	2	2	0	8	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration							
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LT						
v (veh/h)	303						
C (m) (veh/h)	1316						
v/c	0.23						
95% queue length	0.89						
Control Delay (s/veh)	8.6						
LOS	A						
Approach Delay (s/veh)	--	--					
Approach LOS	--	--					

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 SB Ramp		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed - 75% Build - PM Peak						
Project Description: Garrison Oak Traffic Study							
East/West Street: N Little Creek				North/South Street: SR1 SB Off-Ramp			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		299			124		
Peak-Hour Factor, PHF	0.79	0.90	0.78	0.60	0.78	0.68	
Hourly Flow Rate, HFR (veh/h)	0	332	0	0	158	0	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		T			T		
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				31		102	
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59	
Hourly Flow Rate, HFR (veh/h)	0	0	0	43	0	172	
Percent Heavy Vehicles	2	0	2	2	0	3	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration							LR
v (veh/h)							215
C (m) (veh/h)							783
v/c							0.27
95% queue length							1.12
Control Delay (s/veh)							11.3
LOS							B
Approach Delay (s/veh)	--	--				11.3	
Approach LOS	--	--				B	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	White Oak at Garrison Oak			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Proposed -100% Build - AM Peak							
Project Description: Garrison Oak Traffic Study								
East/West Street: Whote Oak Road				North/South Street: Garrison Oak Drive				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	137	33			70	15		
Peak-Hour Factor, PHF	0.69	0.42	0.78	0.60	0.79	1.00		
Hourly Flow Rate, HFR (veh/h)	198	78	0	0	88	15		
Percent Heavy Vehicles	10	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				6		29		
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	0.92		
Hourly Flow Rate, HFR (veh/h)	0	0	0	6	0	31		
Percent Heavy Vehicles	2	0	2	2	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	198						37	
C (m) (veh/h)	1440						796	
v/c	0.14						0.05	
95% queue length	0.48						0.15	
Control Delay (s/veh)	7.9						9.7	
LOS	A						A	
Approach Delay (s/veh)	--	--				9.7		
Approach LOS	--	--				A		

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	White Oak at Acorn Lane		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed -100% Build - AM Peak						
Project Description Garrison Oak Traffic Study							
East/West Street: White Oak Road				North/South Street: Acorn Lane			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		143	25	16	82		
Peak-Hour Factor, PHF	1.00	0.75	0.78	0.60	0.69	1.00	
Hourly Flow Rate, HFR (veh/h)	0	190	32	26	118	0	
Percent Heavy Vehicles	0	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration			TR	LT			
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	29		18				
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	48	0	44	0	0	0	
Percent Heavy Vehicles	2	0	2	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration		LR					
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound		Southbound		
Movement	1	4	7	8	9	10	11
Lane Configuration		LT		LR			
v (veh/h)		26		92			
C (m) (veh/h)		1347		702			
v/c		0.02		0.13			
95% queue length		0.06		0.45			
Control Delay (s/veh)		7.7		10.9			
LOS		A		B			
Approach Delay (s/veh)	--	--	10.9				
Approach LOS	--	--	B				

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Proposed -100% Build - AM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: Acorn Lane				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	26	134			308	24		
Peak-Hour Factor, PHF	0.79	0.80	0.78	0.60	0.82	0.68		
Hourly Flow Rate, HFR (veh/h)	32	167	0	0	375	35		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				34		46		
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.67	1.00	0.85		
Hourly Flow Rate, HFR (veh/h)	0	0	0	50	0	54		
Percent Heavy Vehicles	2	0	2	2	0	3		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	32						104	
C (m) (veh/h)	1149						528	
v/c	0.03						0.20	
95% queue length	0.09						0.73	
Control Delay (s/veh)	8.2						13.5	
LOS	A						B	
Approach Delay (s/veh)	--	--				13.5		
Approach LOS	--	--				B		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 NB Ramp			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Proposed -100% Build - AM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: SR1 NB On-Ramp				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	68	166			76	27		
Peak-Hour Factor, PHF	0.62	0.77	0.78	0.60	0.79	0.75		
Hourly Flow Rate, HFR (veh/h)	109	215	0	0	96	36		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)								
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59		
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	0		
Percent Heavy Vehicles	2	0	2	2	0	8		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration								
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT							
v (veh/h)	109							
C (m) (veh/h)	1453							
v/c	0.08							
95% queue length	0.24							
Control Delay (s/veh)	7.7							
LOS	A							
Approach Delay (s/veh)	--	--						
Approach LOS	--	--						

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 SB Ramp		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed -100% Build - AM Peak						
Project Description Garrison Oak Traffic Study							
East/West Street: N Little Creek				North/South Street: SR1 SB Off-Ramp			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		168			76		
Peak-Hour Factor, PHF	0.79	0.90	0.78	0.60	0.78	0.68	
Hourly Flow Rate, HFR (veh/h)	0	186	0	0	97	0	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Raised curb						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		T			T		
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				66		208	
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59	
Hourly Flow Rate, HFR (veh/h)	0	0	0	92	0	352	
Percent Heavy Vehicles	2	0	2	2	0	3	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11 12
Lane Configuration							LR
v (veh/h)							444
C (m) (veh/h)							896
v/c							0.50
95% queue length							2.81
Control Delay (s/veh)							12.9
LOS							B
Approach Delay (s/veh)	--	--				12.9	
Approach LOS	--	--				B	

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	White Oak at Garrison Oak		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed -100% Build - PM Peak						
Project Description <i>Garrison Oak Traffic Study</i>							
East/West Street: <i>White Oak Road</i>				North/South Street: <i>Garrison Oak Drive</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	34	66			63	7	
Peak-Hour Factor, PHF	0.69	0.42	0.78	0.60	0.79	1.00	
Hourly Flow Rate, HFR (veh/h)	49	157	0	0	79	7	
Percent Heavy Vehicles	10	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LT					TR	
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				38		106	
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	0.92	
Hourly Flow Rate, HFR (veh/h)	0	0	0	38	0	115	
Percent Heavy Vehicles	2	0	2	2	0	10	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	LT						LR
v (veh/h)	49						153
C (m) (veh/h)	1461						850
v/c	0.03						0.18
95% queue length	0.10						0.65
Control Delay (s/veh)	7.5						10.2
LOS	A						B
Approach Delay (s/veh)	--	--				10.2	
Approach LOS	--	--				B	

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	White Oak at Acorn Lane		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed -100% Build - PM Peak						
Project Description <i>Garrison Oak Traffic Study</i>							
East/West Street: <i>White Oak Road</i>				North/South Street: <i>Acorn Lane</i>			
Intersection Orientation: <i>East-West</i>				Study Period (hrs): <i>0.25</i>			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		85	55	24	137		
Peak-Hour Factor, PHF	1.00	1.00	0.78	0.60	0.69	1.00	
Hourly Flow Rate, HFR (veh/h)	0	85	70	39	198	0	
Percent Heavy Vehicles	0	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration			TR	LT			
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	57		13				
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	94	0	32	0	0	0	
Percent Heavy Vehicles	2	0	2	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration		LR					
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound		Southbound		
Movement	1	4	7	8	9	10	11
Lane Configuration		LT		LR			
v (veh/h)		39		126			
C (m) (veh/h)		1425		652			
v/c		0.03		0.19			
95% queue length		0.08		0.71			
Control Delay (s/veh)		7.6		11.8			
LOS		A		B			
Approach Delay (s/veh)	--	--	11.8				
Approach LOS	--	--	B				

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Proposed -100% Build - PM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: Acorn Lane				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	54	334			171	28		
Peak-Hour Factor, PHF	0.79	0.80	0.78	0.60	0.82	0.68		
Hourly Flow Rate, HFR (veh/h)	68	417	0	0	208	41		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				39		25		
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.67	1.00	0.85		
Hourly Flow Rate, HFR (veh/h)	0	0	0	58	0	29		
Percent Heavy Vehicles	2	0	2	2	0	3		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	68						87	
C (m) (veh/h)	1317						426	
v/c	0.05						0.20	
95% queue length	0.16						0.76	
Control Delay (s/veh)	7.9						15.6	
LOS	A						C	
Approach Delay (s/veh)	--	--				15.6		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 NB Ramp			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Proposed -100% Build - PM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: SR1 NB On-Ramp				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	189	135			124	71		
Peak-Hour Factor, PHF	0.62	0.77	0.78	0.60	0.79	0.75		
Hourly Flow Rate, HFR (veh/h)	304	175	0	0	156	94		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)								
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59		
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	0		
Percent Heavy Vehicles	2	0	2	2	0	8		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration								
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT							
v (veh/h)	304							
C (m) (veh/h)	1316							
v/c	0.23							
95% queue length	0.89							
Control Delay (s/veh)	8.6							
LOS	A							
Approach Delay (s/veh)	--	--						
Approach LOS	--	--						

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 SB Ramp		
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE		
Date Performed	12/27/2016			Analysis Year	2016		
Analysis Time Period	Proposed -100% Build - PM Peak						
Project Description Garrison Oak Traffic Study							
East/West Street: N Little Creek				North/South Street: SR1 SB Off-Ramp			
Intersection Orientation: East-West				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Eastbound			Westbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)		301			124		
Peak-Hour Factor, PHF	0.79	0.90	0.78	0.60	0.78	0.68	
Hourly Flow Rate, HFR (veh/h)	0	334	0	0	158	0	
Percent Heavy Vehicles	2	--	--	2	--	--	
Median Type	Undivided						
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration		T			T		
Upstream Signal		0			0		
Minor Street	Northbound			Southbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)				31		102	
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59	
Hourly Flow Rate, HFR (veh/h)	0	0	0	43	0	172	
Percent Heavy Vehicles	2	0	2	2	0	3	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration					LR		
Delay, Queue Length, and Level of Service							
Approach	Eastbound	Westbound	Northbound			Southbound	
Movement	1	4	7	8	9	10	11
Lane Configuration							LR
v (veh/h)							215
C (m) (veh/h)							783
v/c							0.27
95% queue length							1.12
Control Delay (s/veh)							11.3
LOS							B
Approach Delay (s/veh)	--	--				11.3	
Approach LOS	--	--				B	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	White Oak at Garrison Oak			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Prop_100% Build_LDS_AM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: Whote Oak Road				North/South Street: Garrison Oak Drive				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	148	33			229	18		
Peak-Hour Factor, PHF	0.69	0.42	0.78	0.60	0.79	1.00		
Hourly Flow Rate, HFR (veh/h)	214	78	0	0	289	18		
Percent Heavy Vehicles	10	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				7		30		
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	0.92		
Hourly Flow Rate, HFR (veh/h)	0	0	0	7	0	32		
Percent Heavy Vehicles	2	0	2	2	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	214						39	
C (m) (veh/h)	1210						582	
v/c	0.18						0.07	
95% queue length	0.64						0.21	
Control Delay (s/veh)	8.6						11.6	
LOS	A						B	
Approach Delay (s/veh)	--	--				11.6		
Approach LOS	--	--				B		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	White Oak at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Prop_100% Build_LDS_ AM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: White Oak Road				North/South Street: Acorn Lane				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		161	25	41	218			
Peak-Hour Factor, PHF	1.00	0.75	0.78	0.60	0.69	1.00		
Hourly Flow Rate, HFR (veh/h)	0	214	32	68	315	0		
Percent Heavy Vehicles	0	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	29		20					
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	48	0	49	0	0	0		
Percent Heavy Vehicles	2	0	2	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		68		97				
C (m) (veh/h)		1320		533				
v/c		0.05		0.18				
95% queue length		0.16		0.66				
Control Delay (s/veh)		7.9		13.3				
LOS		A		B				
Approach Delay (s/veh)	--	--	13.3					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Prop_100% Build_LDS_AM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: Acorn Lane				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	26	134			308	26		
Peak-Hour Factor, PHF	0.79	0.80	0.78	0.60	0.82	0.68		
Hourly Flow Rate, HFR (veh/h)	32	167	0	0	375	38		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				45		60		
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.67	1.00	0.85		
Hourly Flow Rate, HFR (veh/h)	0	0	0	67	0	70		
Percent Heavy Vehicles	2	0	2	2	0	3		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	32						137	
C (m) (veh/h)	1146						525	
v/c	0.03						0.26	
95% queue length	0.09						1.04	
Control Delay (s/veh)	8.2						14.3	
LOS	A						B	
Approach Delay (s/veh)	--	--				14.3		
Approach LOS	--	--				B		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 NB Ramp			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Prop_100% Build_LDS_AM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: SR1 NB On-Ramp				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	71	174			76	27		
Peak-Hour Factor, PHF	0.62	0.77	0.78	0.60	0.79	0.75		
Hourly Flow Rate, HFR (veh/h)	114	225	0	0	96	36		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)								
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59		
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	0		
Percent Heavy Vehicles	2	0	2	2	0	8		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration								
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT							
v (veh/h)	114							
C (m) (veh/h)	1453							
v/c	0.08							
95% queue length	0.26							
Control Delay (s/veh)	7.7							
LOS	A							
Approach Delay (s/veh)	--	--						
Approach LOS	--	--						

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 SB Ramp			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Prop_100% Build_LDS_AM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: SR1 SB Off-Ramp				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		179			76			
Peak-Hour Factor, PHF	0.79	0.90	0.78	0.60	0.78	0.68		
Hourly Flow Rate, HFR (veh/h)	0	198	0	0	97	0		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Raised curb							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration		T			T			
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				66		210		
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59		
Hourly Flow Rate, HFR (veh/h)	0	0	0	92	0	355		
Percent Heavy Vehicles	2	0	2	2	0	3		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration							LR	
v (veh/h)							447	
C (m) (veh/h)							894	
v/c							0.50	
95% queue length							2.85	
Control Delay (s/veh)							13.0	
LOS							B	
Approach Delay (s/veh)	--	--				13.0		
Approach LOS	--	--				B		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	White Oak at Garrison Oak			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Prop_100% Build_LDS_PM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: White Oak Road				North/South Street: Garrison Oak Drive				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	35	227			63	8		
Peak-Hour Factor, PHF	0.69	0.42	0.78	0.60	0.79	1.00		
Hourly Flow Rate, HFR (veh/h)	50	540	0	0	79	8		
Percent Heavy Vehicles	10	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				40		116		
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	0.92		
Hourly Flow Rate, HFR (veh/h)	0	0	0	40	0	126		
Percent Heavy Vehicles	2	0	2	2	0	10		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	50						166	
C (m) (veh/h)	1460						700	
v/c	0.03						0.24	
95% queue length	0.11						0.92	
Control Delay (s/veh)	7.6						11.7	
LOS	A						B	
Approach Delay (s/veh)	--	--				11.7		
Approach LOS	--	--				B		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	White Oak at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Prop_100% Build_LDSPM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: White Oak Road				North/South Street: Acorn Lane				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		225	55	27	152			
Peak-Hour Factor, PHF	1.00	1.00	0.78	0.60	0.69	1.00		
Hourly Flow Rate, HFR (veh/h)	0	225	70	44	220	0		
Percent Heavy Vehicles	0	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	57		34					
Peak-Hour Factor, PHF	0.60	1.00	0.40	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	94	0	84	0	0	0		
Percent Heavy Vehicles	2	0	2	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration		LR						
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (veh/h)		44		178				
C (m) (veh/h)		1266		576				
v/c		0.03		0.31				
95% queue length		0.11		1.31				
Control Delay (s/veh)		7.9		14.0				
LOS		A		B				
Approach Delay (s/veh)	--	--	14.0					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at Acorn Lane			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Prop_100% Build_LDS_PM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: Acorn Lane				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	68	334			171	35		
Peak-Hour Factor, PHF	0.79	0.80	0.78	0.60	0.82	0.68		
Hourly Flow Rate, HFR (veh/h)	86	417	0	0	208	51		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				42		25		
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.67	1.00	0.85		
Hourly Flow Rate, HFR (veh/h)	0	0	0	62	0	29		
Percent Heavy Vehicles	2	0	2	2	0	3		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
v (veh/h)	86						91	
C (m) (veh/h)	1306						396	
v/c	0.07						0.23	
95% queue length	0.21						0.88	
Control Delay (s/veh)	8.0						16.8	
LOS	A						C	
Approach Delay (s/veh)	--	--				16.8		
Approach LOS	--	--				C		

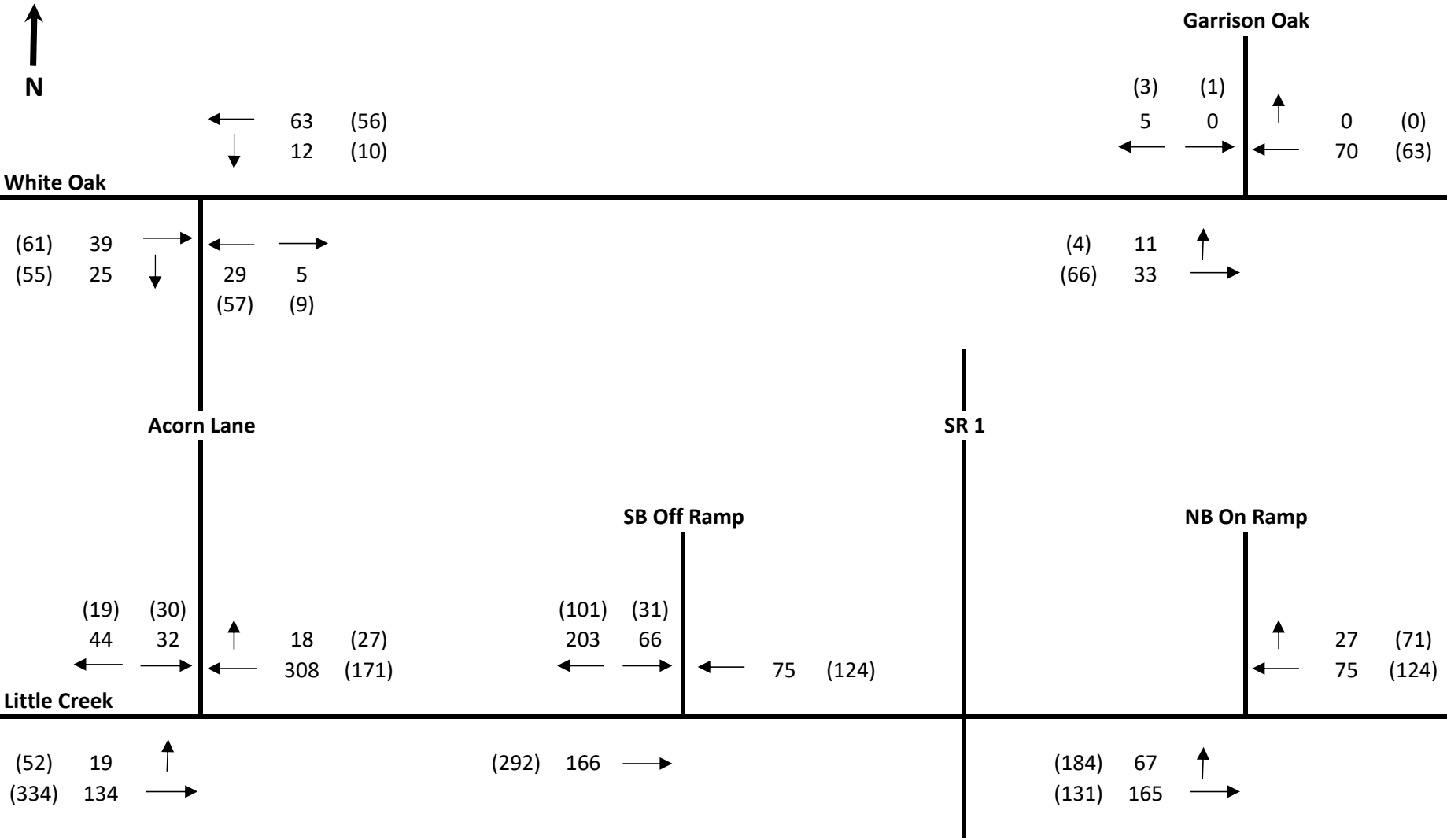
TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 NB Ramp			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Prop_100% Build_LDS_PM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: SR1 NB On-Ramp				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	192	135			126	71		
Peak-Hour Factor, PHF	0.62	0.77	0.78	0.60	0.79	0.75		
Hourly Flow Rate, HFR (veh/h)	309	175	0	0	159	94		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration	LT					TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)								
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59		
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	0		
Percent Heavy Vehicles	2	0	2	2	0	8		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration								
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT							
v (veh/h)	309							
C (m) (veh/h)	1312							
v/c	0.24							
95% queue length	0.92							
Control Delay (s/veh)	8.6							
LOS	A							
Approach Delay (s/veh)	--	--						
Approach LOS	--	--						

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	Shilpa Mallem			Intersection	N Little Creek at SR 1 SB Ramp			
Agency/Co.	T.Y. Lin International			Jurisdiction	City of Dover, DE			
Date Performed	12/27/2016			Analysis Year	2016			
Analysis Time Period	Prop_100% Build_LDS_PM Peak							
Project Description Garrison Oak Traffic Study								
East/West Street: N Little Creek				North/South Street: SR1 SB Off-Ramp				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		304			126			
Peak-Hour Factor, PHF	0.79	0.90	0.78	0.60	0.78	0.68		
Hourly Flow Rate, HFR (veh/h)	0	337	0	0	161	0		
Percent Heavy Vehicles	2	--	--	2	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration		T			T			
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				31		107		
Peak-Hour Factor, PHF	0.60	1.00	0.40	0.71	1.00	0.59		
Hourly Flow Rate, HFR (veh/h)	0	0	0	43	0	181		
Percent Heavy Vehicles	2	0	2	2	0	3		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration							LR	
v (veh/h)							224	
C (m) (veh/h)							782	
v/c							0.29	
95% queue length							1.18	
Control Delay (s/veh)							11.4	
LOS							B	
Approach Delay (s/veh)	--	--				11.4		
Approach LOS	--	--				B		

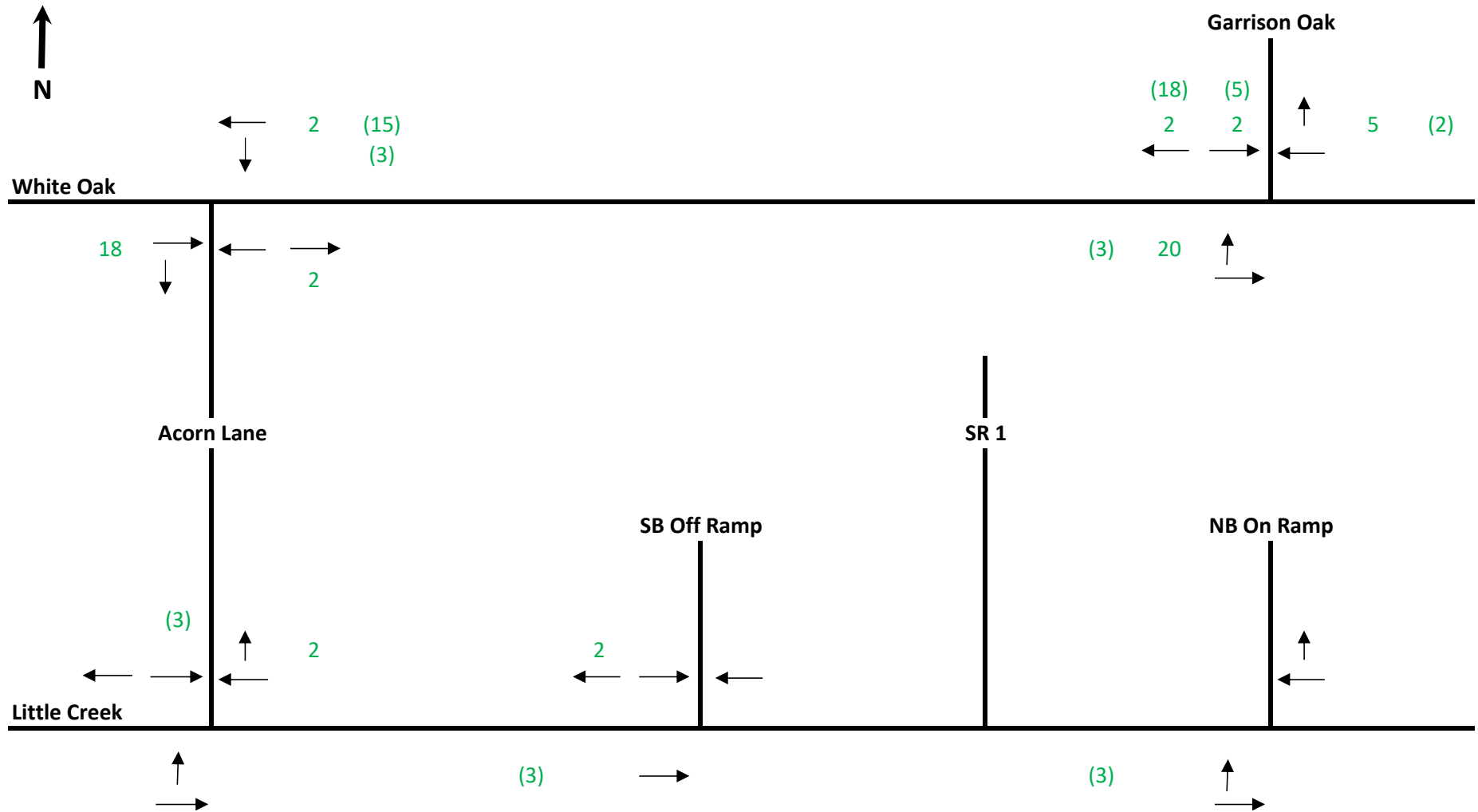
APPENDIX B

TRIP DISTRIBUTION

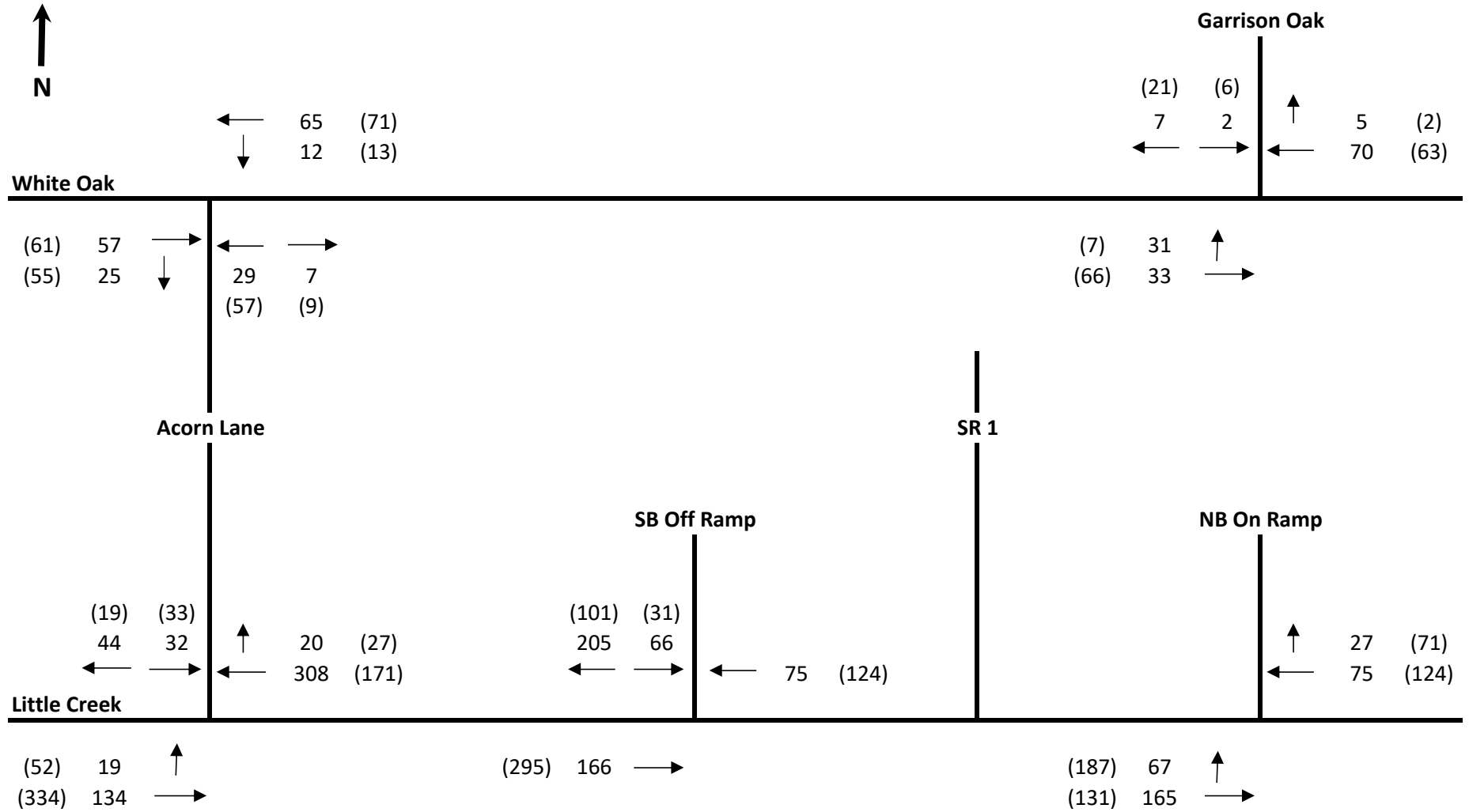
Existing Traffic Conditions



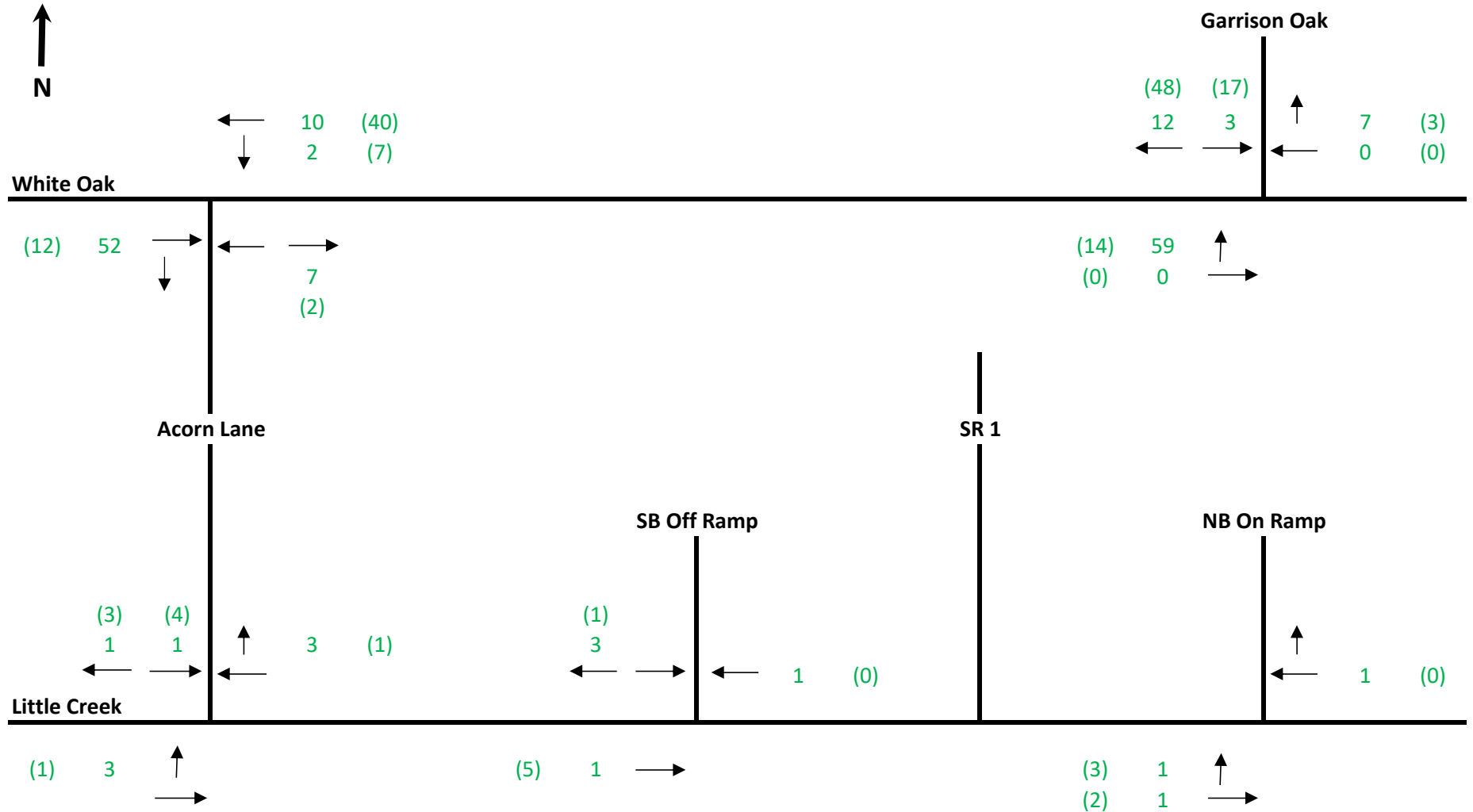
Proposed Development: Advantech



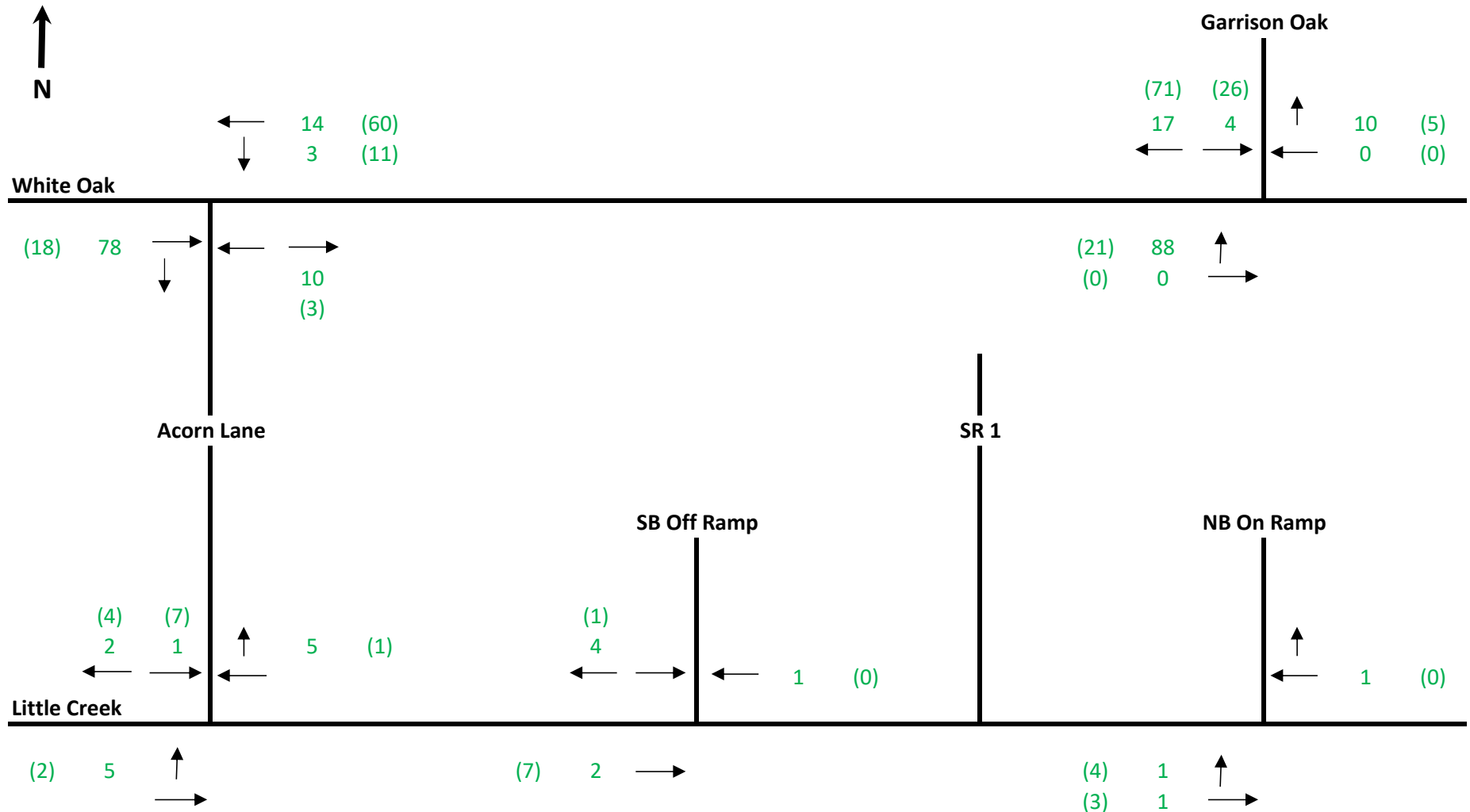
Study Baseline Conditions: Existing Traffic + Advantech



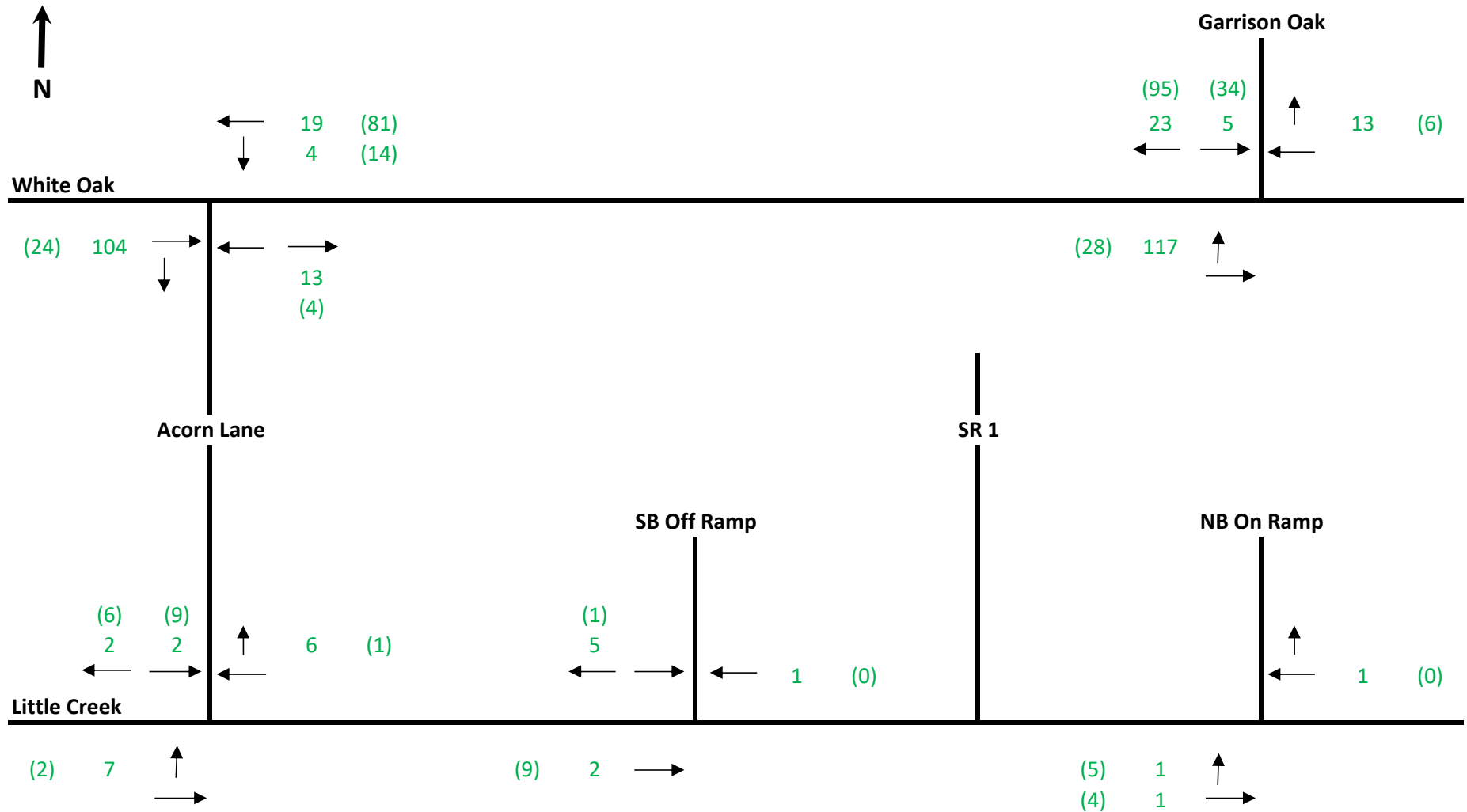
Garrison Oak Trip Generation and Distribution: 50% Build Out



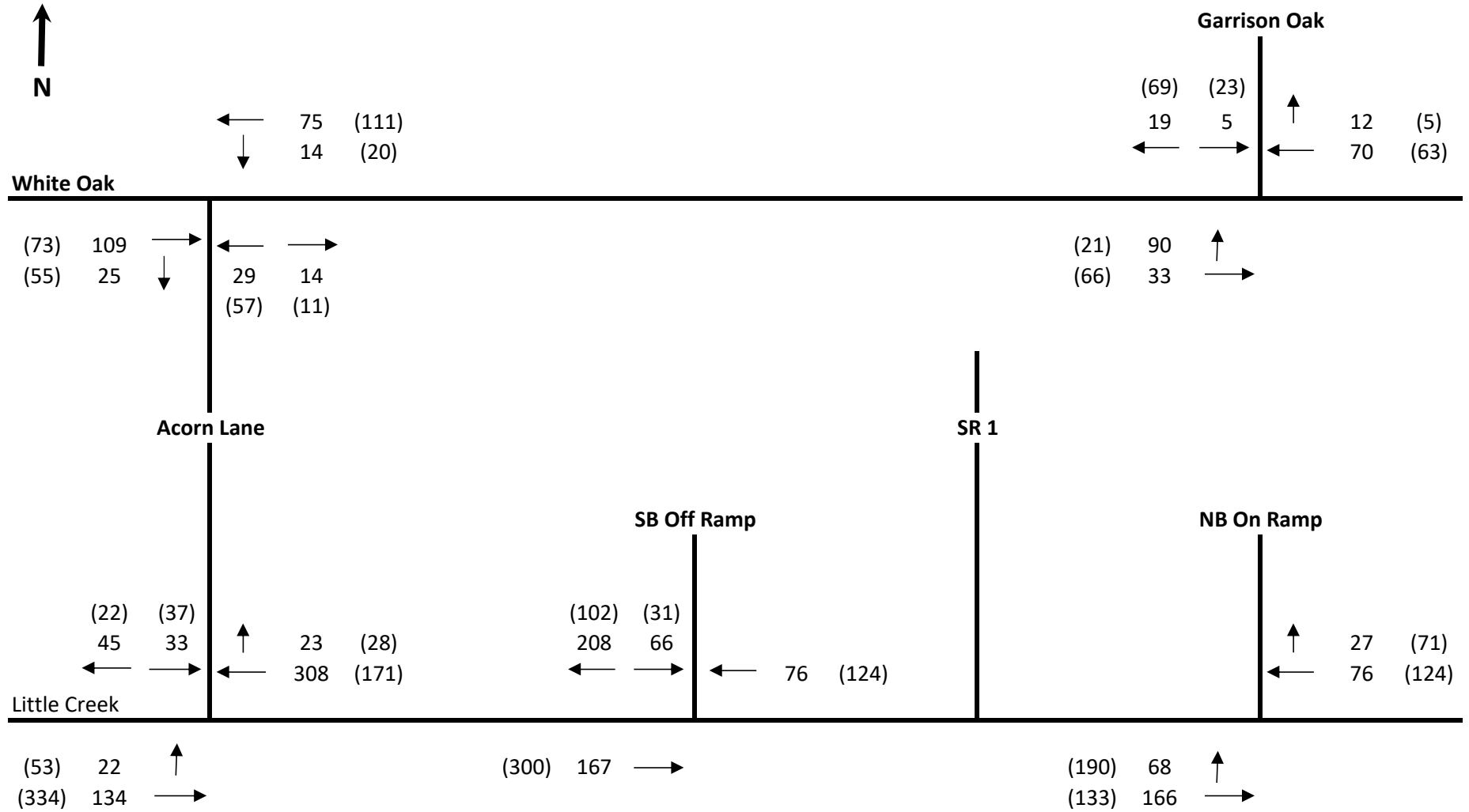
Garrison Oak Trip Generation and Distribution: 75% Build Out



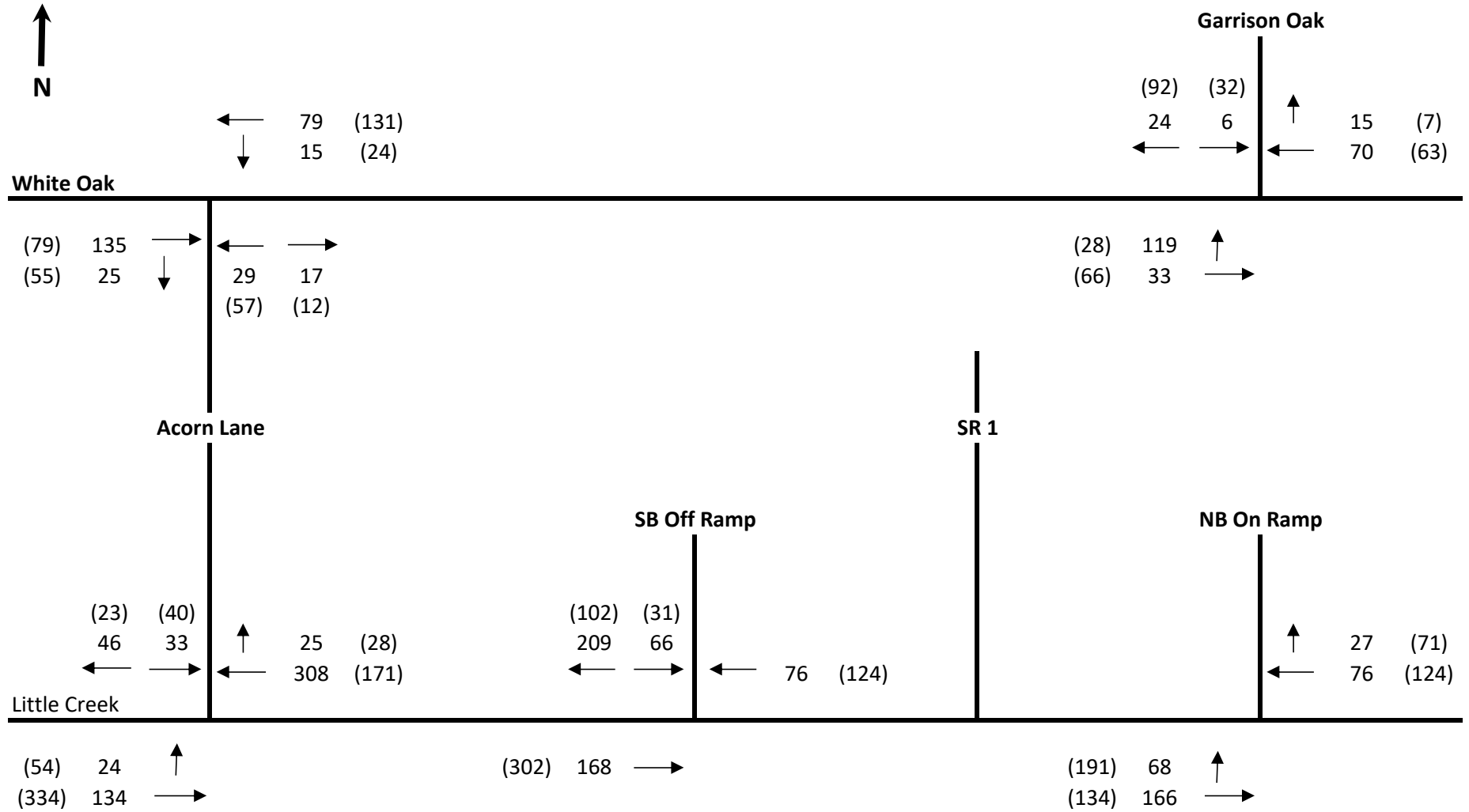
Garrison Oak Trip Generation and Distribution: 100% Build Out



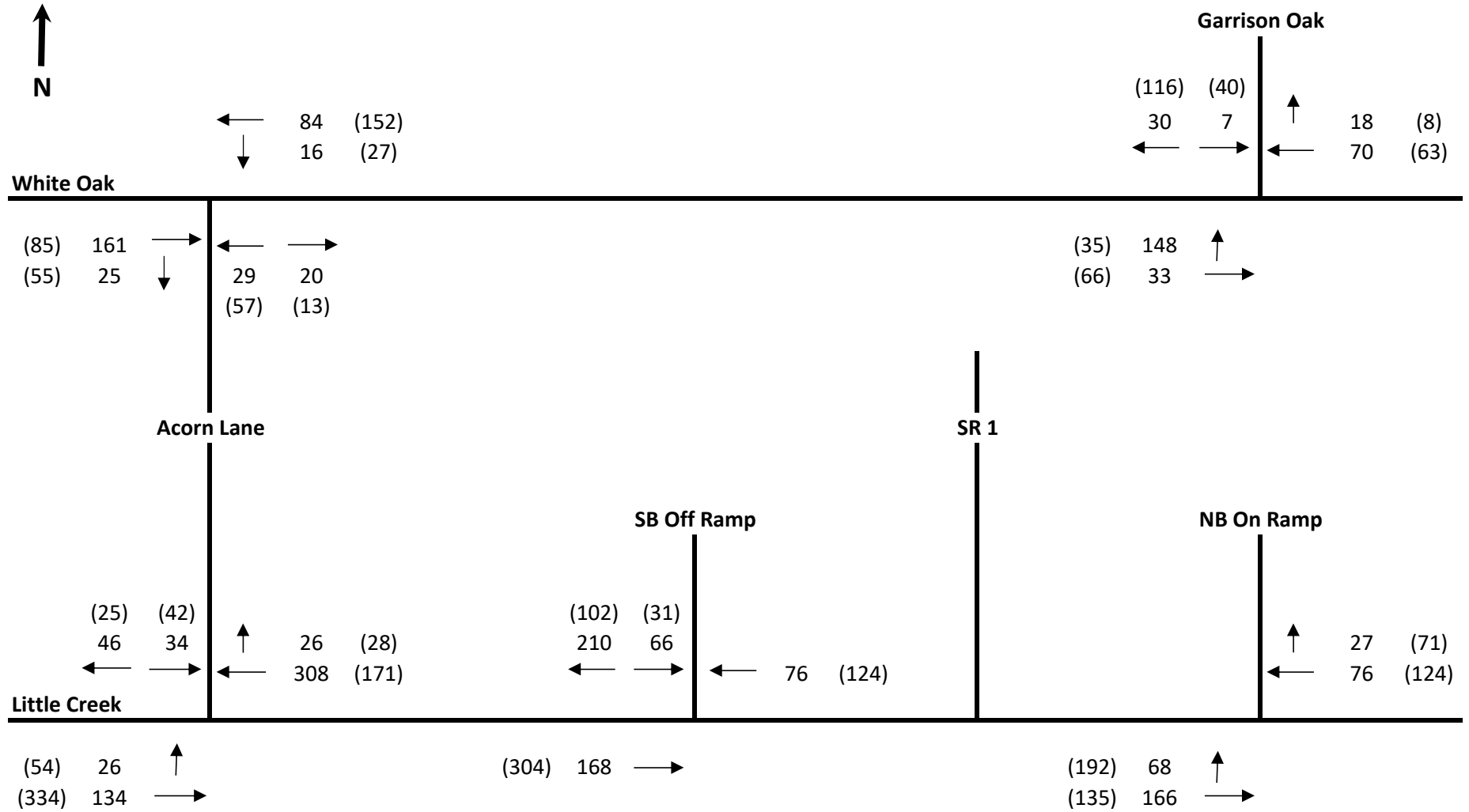
Future Traffic Conditions - with 50% Proposed Buildout



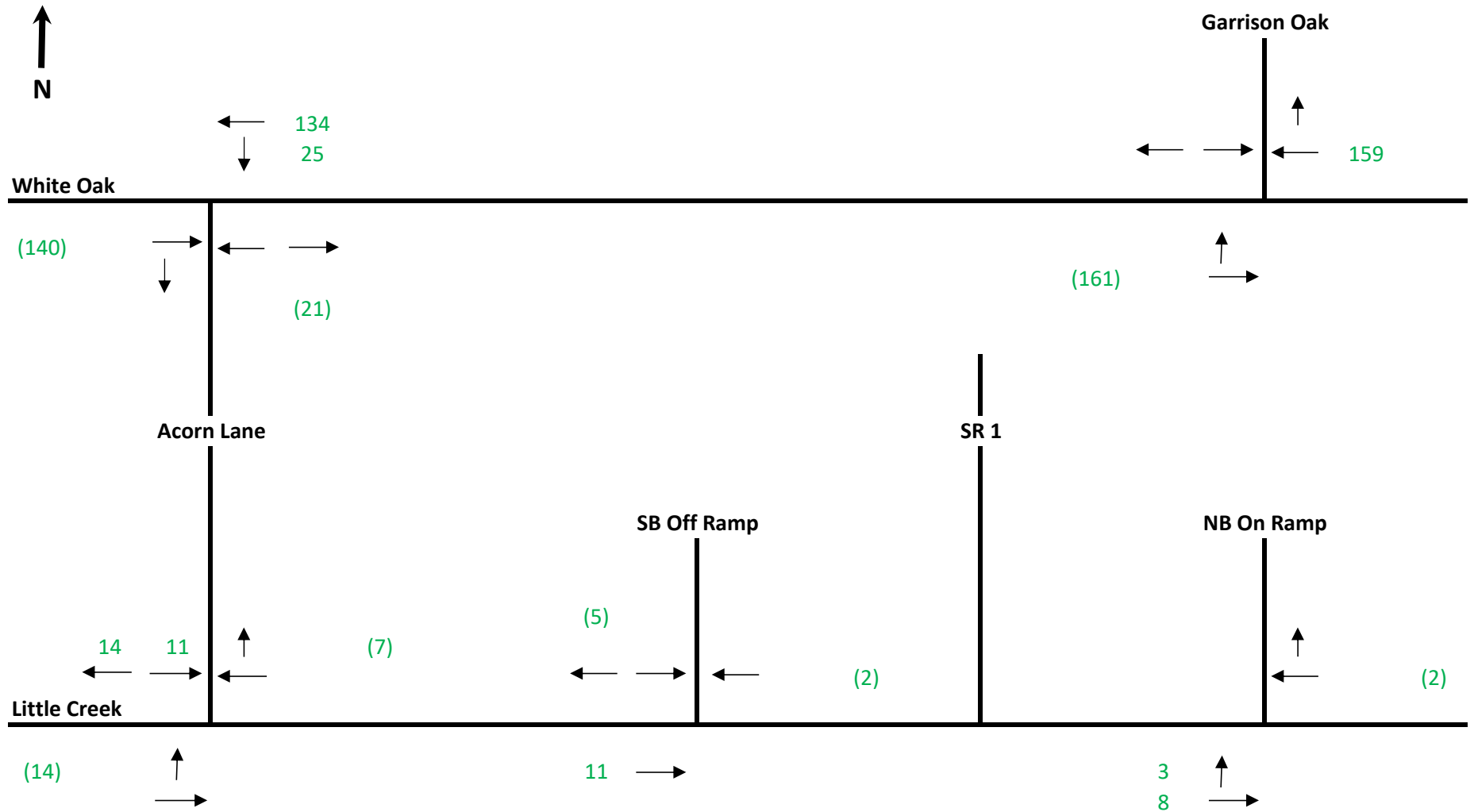
Future Traffic Conditions - with 75% Proposed Buildout



Future Traffic Conditions - with 100% Proposed Buildout



Trip Generation and Distribution: L.D. Shank Property



Future Traffic Conditions - with L.D. Shank's property and 100% Proposed Buildout at Garrison Oak

