TECHNICAL APPENDIX

APPENDIX A

SCOPING INFORMATION

From:	Jessica McClure
Sent:	Tuesday, January 16, 2018 5:45 PM
To:	Keravuori, Eric; Currin, Jennifer; mwheeler@ncdot.gov
Cc:	spbrennan@ncdot.gov; Samantha Holtzscheiter
Subject:	RE: Sportsplex - Star Rd at US 1 - trip gen estimate for TIA
Attachments:	Trip Gen Table (1.16.2018).pdf; Star Rd Site Plan (Jan 2018).pdf; Regional Trip Dist.pdf; Existing Traffic.pdf

Hi everyone! I am circling back on this project as the site plan has been modified and the trip generation has been adjusted to match. Attached is the site plan we are using for the TIA, as well as the trip generation summary. Overall, the trip generation is similar to what had previously been proposed; however, do note that the building square footage (~200+ ksf) includes two indoor soccer fields. We removed the square footage for these fields (~103,500 s.f.) from the 'athletic club' land use as they are considered under the 'soccer complex' use. ITE does not provide pass-by information for Athletic Club/Daycare uses, but I think the trips shown are a bit conservative as many people use gyms/daycares that are on their typical commute.

There are now two drives on Star Road – one in the original location and one to the south near the track. No access is proposed using Via Fortunata Plaza.

Also attached is a proposed regional trip distribution and the existing traffic in the study area for your review and comment.

Please provide the TIA for the La Scala apartments (adjacent development). If easier, we can come to the Town office and scan the document if necessary.

Please review and let us know if there are any questions or if you concur with the information presented. Barring additional changes to the site plan, the team is trying to submit February 1st.

Thank you!
Jessica

Jessica McClure, PE
Transportation Engineer

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

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From: Keravuori, Eric [mailto:ekeravuori@wakeforestnc.gov]
Sent: Wednesday, November 1, 2017 2:55 PM
To: Jessica McClure <JMCClure@rameykemp.com>; Currin, Jennifer <jcurrin@wakeforestnc.gov>; mwheeler@ncdot.gov

Cc: spbrennan@ncdot.gov; Samantha Holtzscheiter <SHoltzscheiter@rameykemp.com>; Michael Karpinski <MKarpinski@rameykemp.com>
Subject: RE: Sportsplex - Star Rd at US 1 - trip gen estimate for TIA

That sounds reasonable to me.
Eric

TOWN of WAKE FOREST
ENGINEERING

Eric Keravuori, P.E., AICP
Director of Engineering

301 S. Brooks Street
Wake Forest, NC 27587
(919) 435-9441
www.wakeforestnc.gov

*Please take a moment to complete our Customer Service Survey

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From: Jessica McClure [mailto:JMCClure@rameykemp.com]
Sent: Wednesday, November 01, 2017 2:18 PM
To: Currin, Jennifer <jcurrin@wakeforestnc.gov>; Keravuori, Eric <ekeravuori@wakeforestnc.gov>; mwheeler@ncdot.gov
Cc: spbrennan@ncdot.gov; Samantha Holtzscheiter <SHoltzscheiter@rameykemp.com>; Michael Karpinski <MKarpinski@rameykemp.com>
Subject: RE: Sportsplex - Star Rd at US 1 - trip gen estimate for TIA

Jennifer / Eric – to keep you all in the loop, Scott and I discussed the trip generation information for the Sportsplex and NCDOT is OK with studying PM and Saturday peak periods. Does the Town agree with this? If so, we'd like to start getting counts.

Thanks!

Jessica McClure, PE
Transportation Engineer

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From: Jessica McClure
Sent: Thursday, October 26, 2017 5:56 PM

Trip Generation for Capital Sports Complex (January 16, 2018)

Table 1: Site Trip Generation

Land Use (ITE Code)	Size	Daily Traffic (vpd)	AM Peak Hour Trips (vph)		PM Peak Hour Trips (vph)		Saturday Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit	Enter	Exit
Soccer Complex (488)	12 fields	900[1]	13[1]	12[1]	92[1]	128[1]	175[1]	189[1]
Athletic Club (493)	96,300 s.f.	4,200[1]	178[1]	129[1]	354[1]	208[1]	315[1]	327[1]
Day Care Center (565)	170 kids	700	72	64	65	73	--	--
Medical/Dental Office (720)	3,200 s.f.	100[1]	7[1]	4[1]	5[1]	9[1]	7[1]	5[1]
Total Primary Site Trips		**5,900**	**270**	**209**	**516**	**418**	**497**	**521**

1. Due to limitations in the *ITE Trip Generation Manual*, rates were used instead of local data.

To provide a reasonable estimation of trip generation for the sports complex, the following land uses were utilized.

Outdoor Facilities:

Soccer Complex (488):

- (5) Soccer Fields
- (4) Baseball Fields = (4) Soccer Fields
- (8) Sand Volleyball Courts = (2) Soccer Fields
    - A conservative ratio of 4 sand volleyball courts to one soccer field was utilized.
- (1) 400m Outdoor Track = (1) Soccer Field

Indoor Facilities (213,000 s.f.):

Athletic Club (493):

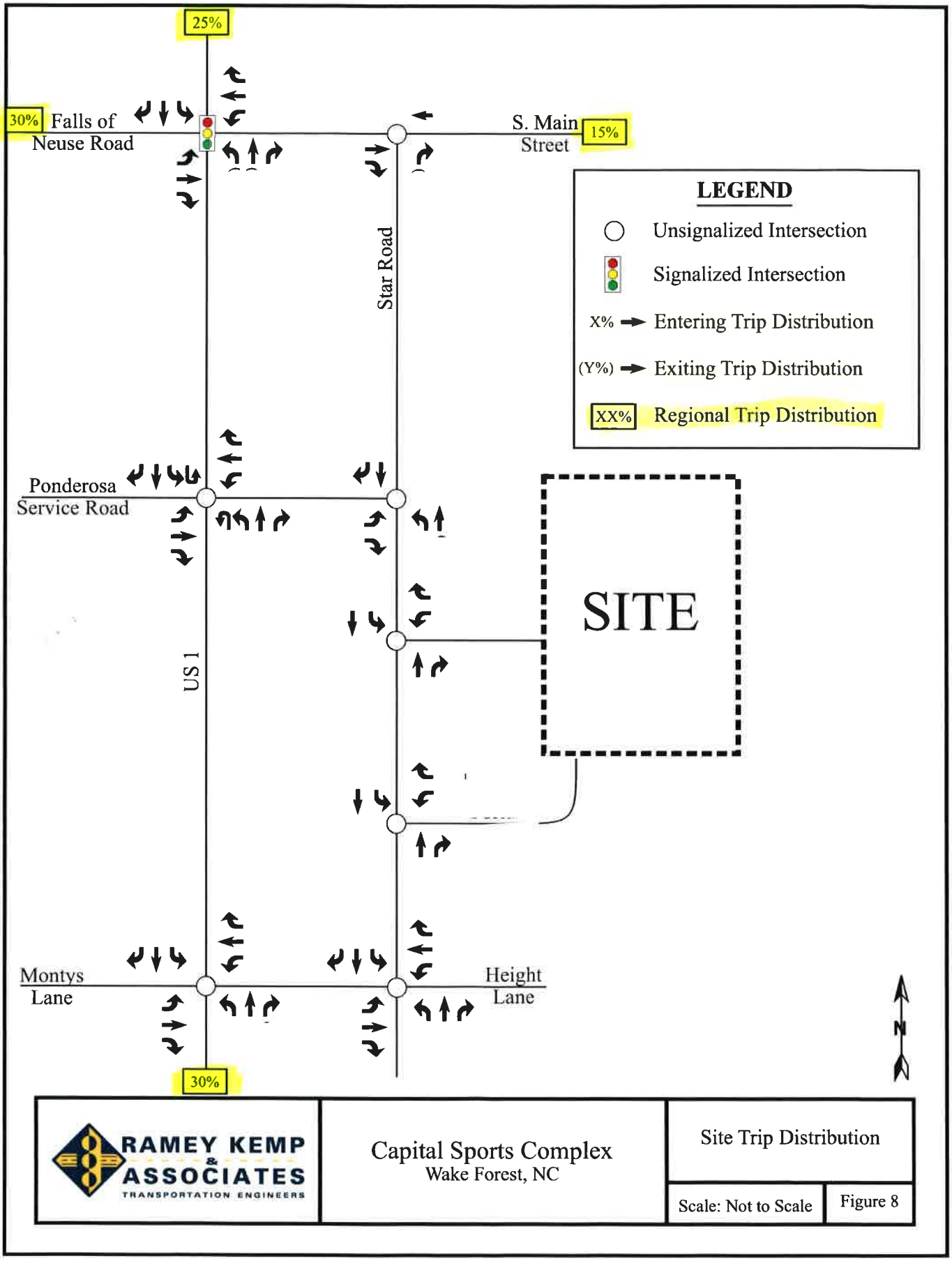
- (199,800 s.f.) Sportsplex Building
    - The day care center and the physical therapy office are not included in this square footage.
    - Two Soccer Fields are indoors and included in this square footage. An assumption of 80m x 120m was made for each field and the total square footage was removed from the overall, leaving approximately **96,300 s.f. of 'athletic club'**.

Day Care Center (565):

- (170 kids) Daycare
    - Only operates on weekdays
    - 10,000 s.f.

Medical/Dental Office (720):

- (3,200 s.f.) Physical Therapy



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TRANSPORTATION ENGINEERS

Capital Sports Complex
Wake Forest, NC

Site Trip Distribution

Scale: Not to Scale | Figure 8

APPENDIX B

TRAFFIC COUNTS

RAMEY KEMP & ASSOCIATES
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5808 Faringdon Place, Suite 100
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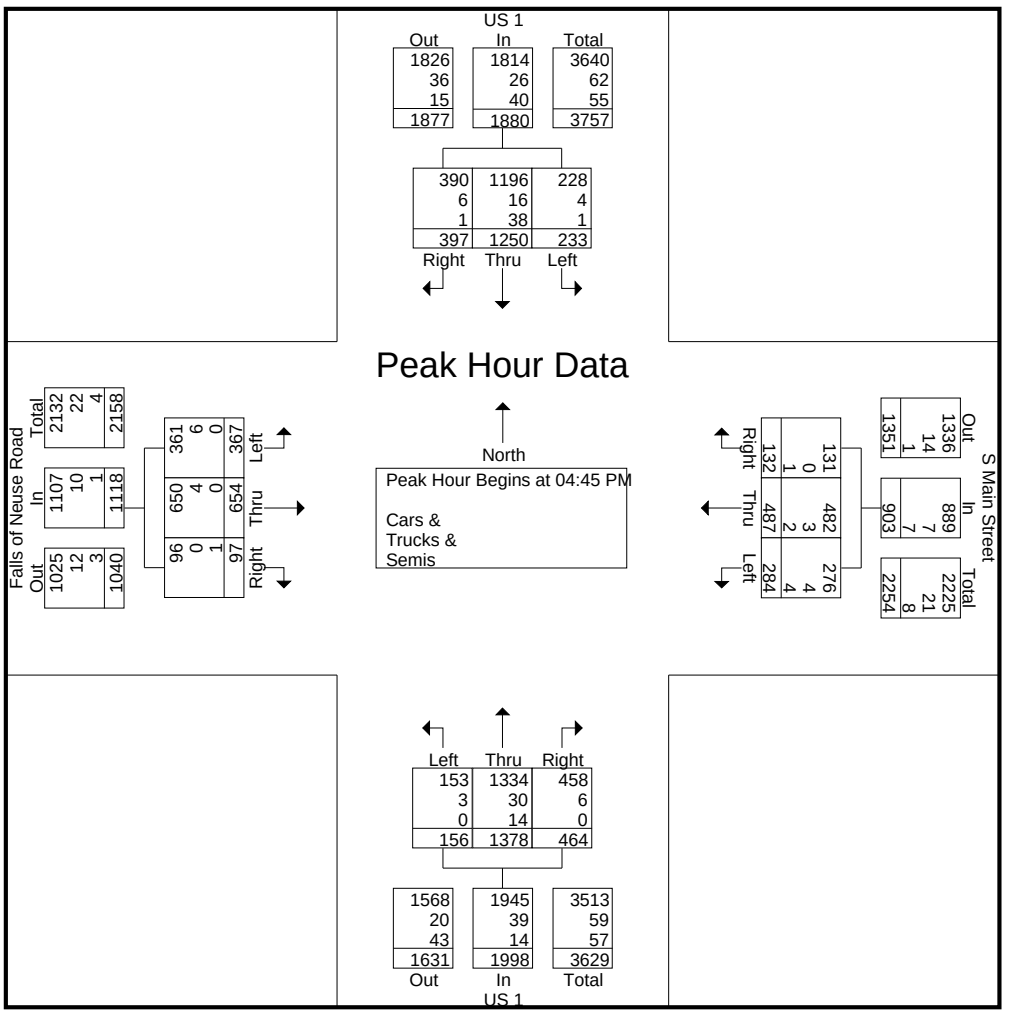
PH: 919 872-5115

File Name : US 1 and Falls of Neuse Rd - S Main St -- Weekday PM
Site Code : 00000001
Start Date : 11/8/2017

	US 1 From North				S Main Street From East				US 1 From South				Falls of Neuse Road From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	87	278	45	410	28	117	76	221	168	290	28	486	25	158	91	274	1391
05:00 PM	108	308	46	462	40	132	80	252	97	356	49	502	24	204	113	341	1557
05:15 PM	106	379	46	531	32	108	62	202	107	380	40	527	26	140	60	226	1486
05:30 PM	96	285	96	477	32	130	66	228	92	352	39	483	22	152	103	277	1465
Total Volume	397	1250	233	1880	132	487	284	903	464	1378	156	1998	97	654	367	1118	5899
% App. Total	21.1	66.5	12.4		14.6	53.9	31.5		23.2	69	7.8		8.7	58.5	32.8		
PHF	.919	.825	.607	.885	.825	.922	.888	.896	.690	.907	.796	.948	.933	.801	.812	.820	.947
Cars &	390	1196	228	1814	131	482	276	889	458	1334	153	1945	96	650	361	1107	5755
% Cars &	98.2	95.7	97.9	96.5	99.2	99.0	97.2	98.4	98.7	96.8	98.1	97.3	99.0	99.4	98.4	99.0	97.6
Trucks &	6	16	4	26	0	3	4	7	6	30	3	39	0	4	6	10	82
% Trucks &	1.5	1.3	1.7	1.4	0	0.6	1.4	0.8	1.3	2.2	1.9	2.0	0	0.6	1.6	0.9	1.4
Semis	1	38	1	40	1	2	4	7	0	14	0	14	1	0	0	1	62
% Semis	0.3	3.0	0.4	2.1	0.8	0.4	1.4	0.8	0	1.0	0	0.7	1.0	0	0	0.1	1.1



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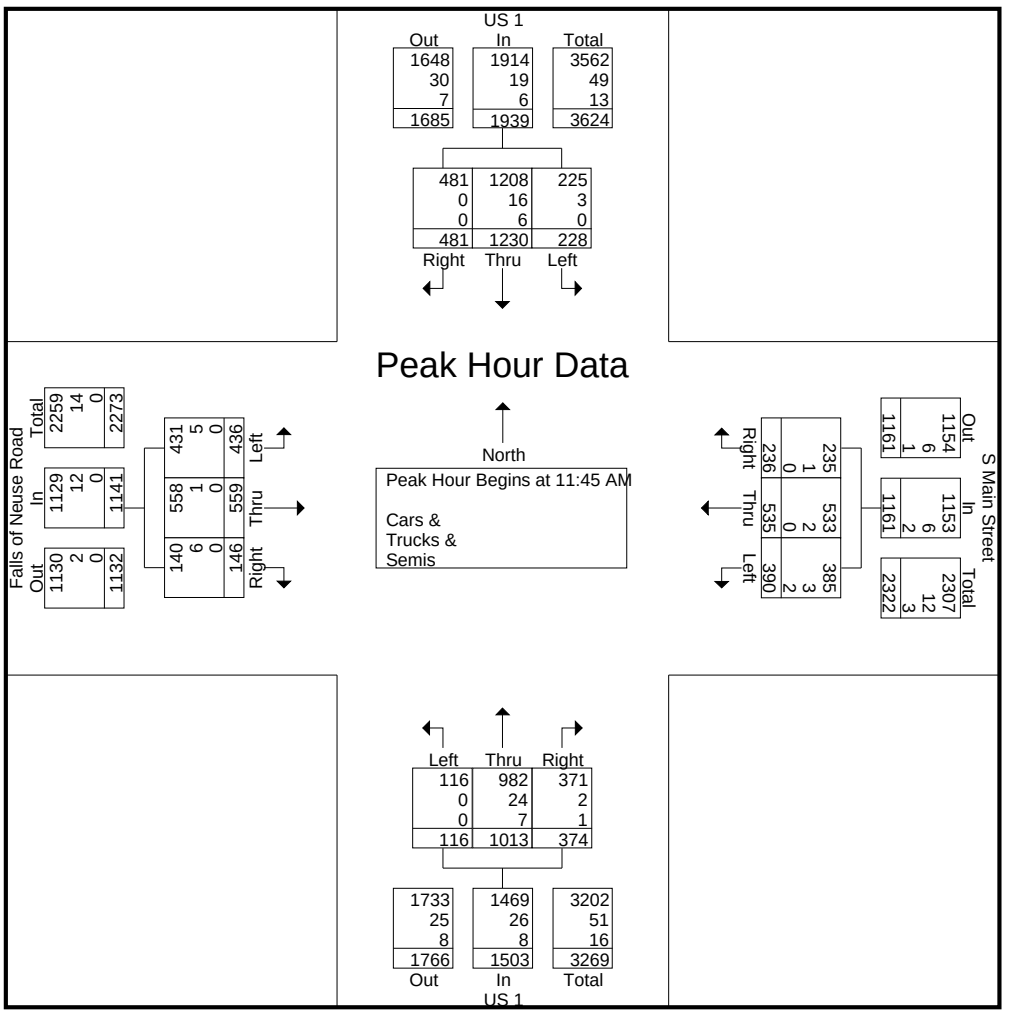
PH: 919 872-5115

File Name : US 1 and Falls of Neuse Rd - S Main St -- Saturday
Site Code : 00000001
Start Date : 11/4/2017

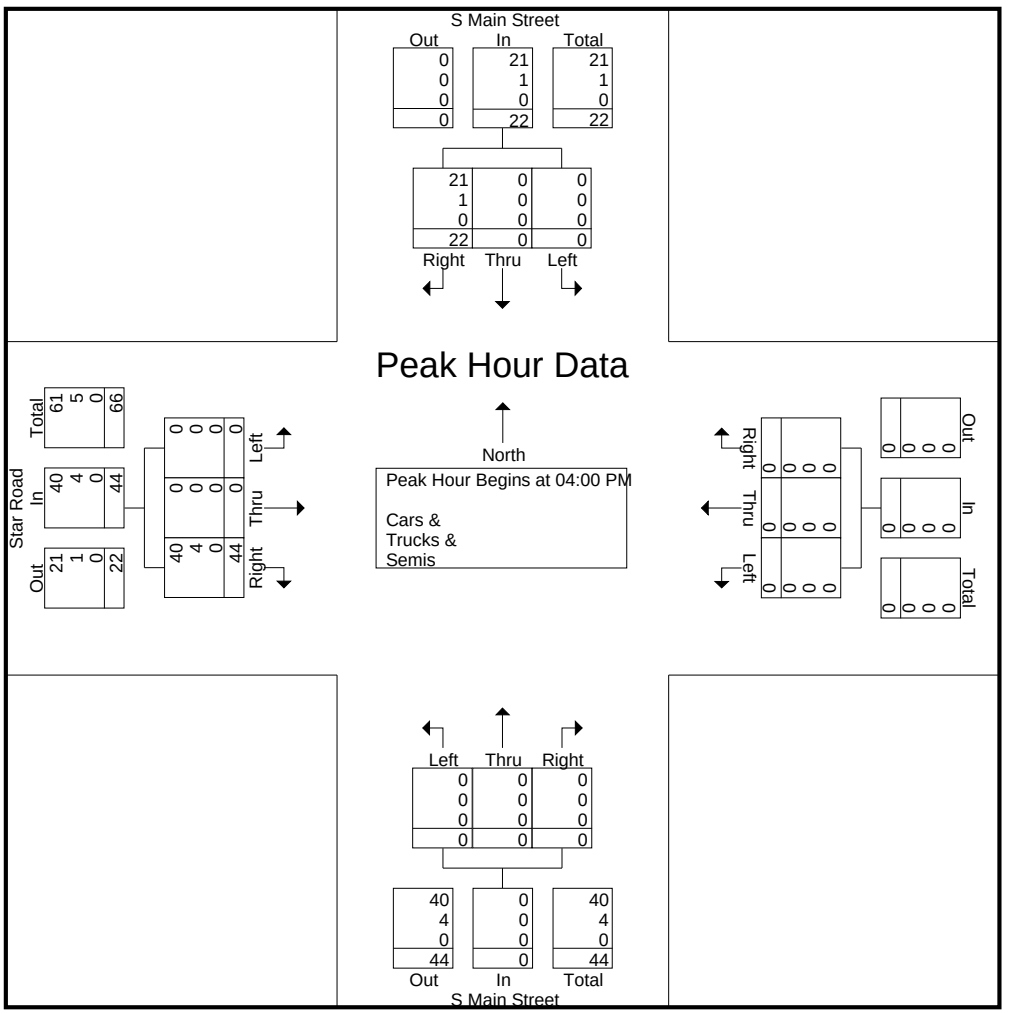
	US 1 From North				S Main Street From East				US 1 From South				Falls of Neuse Road From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	122	334	63	519	51	147	110	308	90	268	35	393	37	120	90	247	1467
12:00 PM	91	305	46	442	48	118	86	252	89	267	18	374	46	149	108	303	1371
12:15 PM	124	293	53	470	70	147	107	324	101	208	18	327	31	166	140	337	1458
12:30 PM	144	298	66	508	67	123	87	277	94	270	45	409	32	124	98	254	1448
Total Volume	481	1230	228	1939	236	535	390	1161	374	1013	116	1503	146	559	436	1141	5744
% App. Total	24.8	63.4	11.8		20.3	46.1	33.6		24.9	67.4	7.7		12.8	49	38.2		
PHF	.835	.921	.864	.934	.843	.910	.886	.896	.926	.938	.644	.919	.793	.842	.779	.846	.979
Cars &	481	1208	225	1914	235	533	385	1153	371	982	116	1469	140	558	431	1129	5665
% Cars &	100	98.2	98.7	98.7	99.6	99.6	98.7	99.3	99.2	96.9	100	97.7	95.9	99.8	98.9	98.9	98.6
Trucks &	0	16	3	19	1	2	3	6	2	24	0	26	6	1	5	12	63
% Trucks &	0	1.3	1.3	1.0	0.4	0.4	0.8	0.5	0.5	2.4	0	1.7	4.1	0.2	1.1	1.1	1.1
Semis	0	6	0	6	0	0	2	2	1	7	0	8	0	0	0	0	16
% Semis	0	0.5	0	0.3	0	0	0.5	0.2	0.3	0.7	0	0.5	0	0	0	0	0.3



RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
PH: 919 872-5115

File Name : S Main Street and Star Road - Weekday
Site Code : 00000004
Start Date : 11/8/2017
Page No : 2

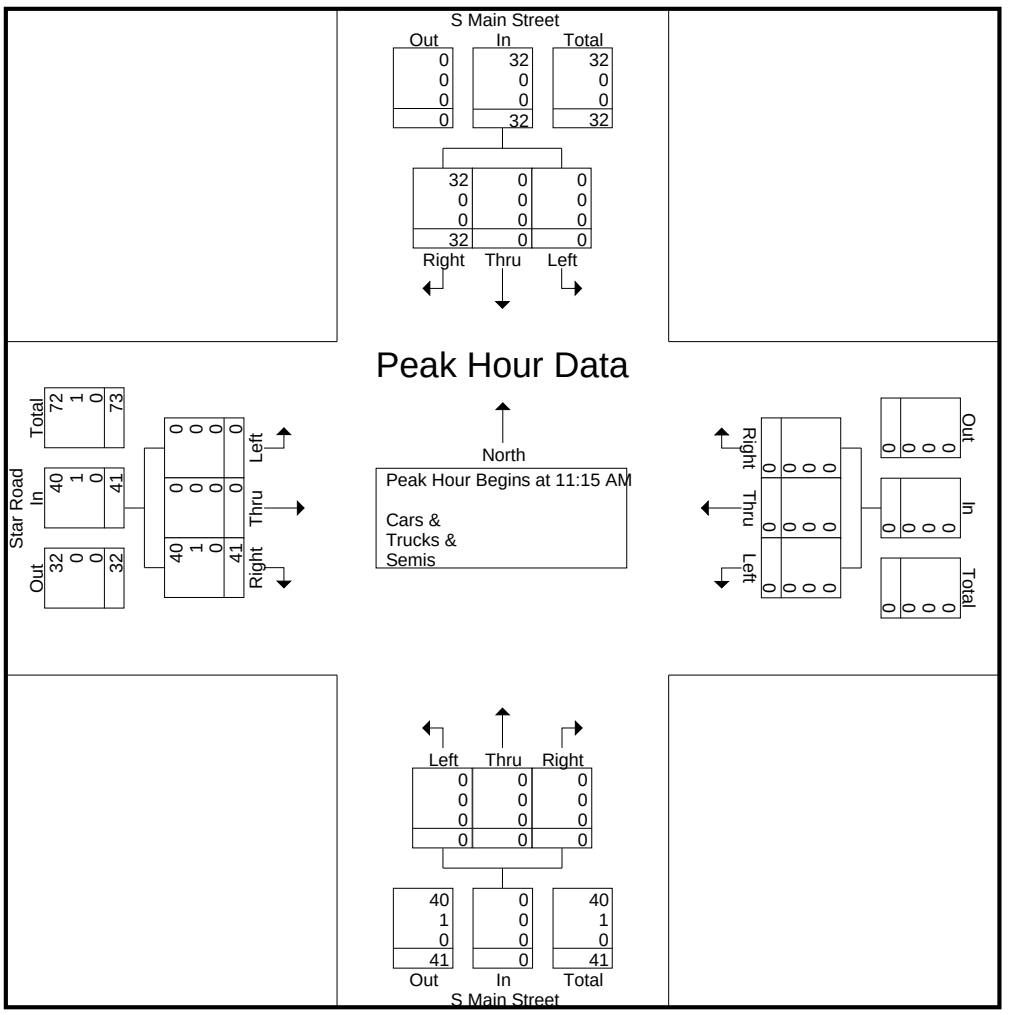
	S Main Street From North				From East				S Main Street From South				Star Road From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	8	0	0	8	0	0	0	0	0	0	0	0	12	0	0	12	20
04:15 PM	4	0	0	4	0	0	0	0	0	0	0	0	15	0	0	15	19
04:30 PM	7	0	0	7	0	0	0	0	0	0	0	0	7	0	0	7	14
04:45 PM	3	0	0	3	0	0	0	0	0	0	0	0	10	0	0	10	13
Total Volume	22	0	0	22	0	0	0	0	0	0	0	0	44	0	0	44	66
% App. Total	100	0	0		0	0	0		0	0	0		100	0	0		
PHF	.688	.000	.000	.688	.000	.000	.000	.000	.000	.000	.000	.000	.733	.000	.000	.733	.825
Cars &	21	0	0	21	0	0	0	0	0	0	0	0	40	0	0	40	61
% Cars &	95.5	0	0	95.5	0	0	0	0	0	0	0	0	90.9	0	0	90.9	92.4
Trucks &	1	0	0	1	0	0	0	0	0	0	0	0	4	0	0	4	5
% Trucks &	4.5	0	0	4.5	0	0	0	0	0	0	0	0	9.1	0	0	9.1	7.6
Semis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Semis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
PH: 919 872-5115

File Name : S Main Street and Star Road - Saturday
Site Code : 00000004
Start Date : 11/4/2017
Page No : 2

	S Main Street From North				From East				S Main Street From South				Star Road From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	6	0	0	6	0	0	0	0	0	0	0	0	11	0	0	11	17
11:30 AM	8	0	0	8	0	0	0	0	0	0	0	0	15	0	0	15	23
11:45 AM	7	0	0	7	0	0	0	0	0	0	0	0	4	0	0	4	11
12:00 PM	11	0	0	11	0	0	0	0	0	0	0	0	11	0	0	11	22
Total Volume	32	0	0	32	0	0	0	0	0	0	0	0	41	0	0	41	73
% App. Total	100	0	0		0	0	0		0	0	0		100	0	0		
PHF	.727	.000	.000	.727	.000	.000	.000	.000	.000	.000	.000	.000	.683	.000	.000	.683	.793
Cars &	32	0	0	32	0	0	0	0	0	0	0	0	40	0	0	40	72
% Cars &	100	0	0	100	0	0	0	0	0	0	0	0	97.6	0	0	97.6	98.6
Trucks &	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Trucks &	0	0	0	0	0	0	0	0	0	0	0	0	2.4	0	0	2.4	1.4
Semis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Semis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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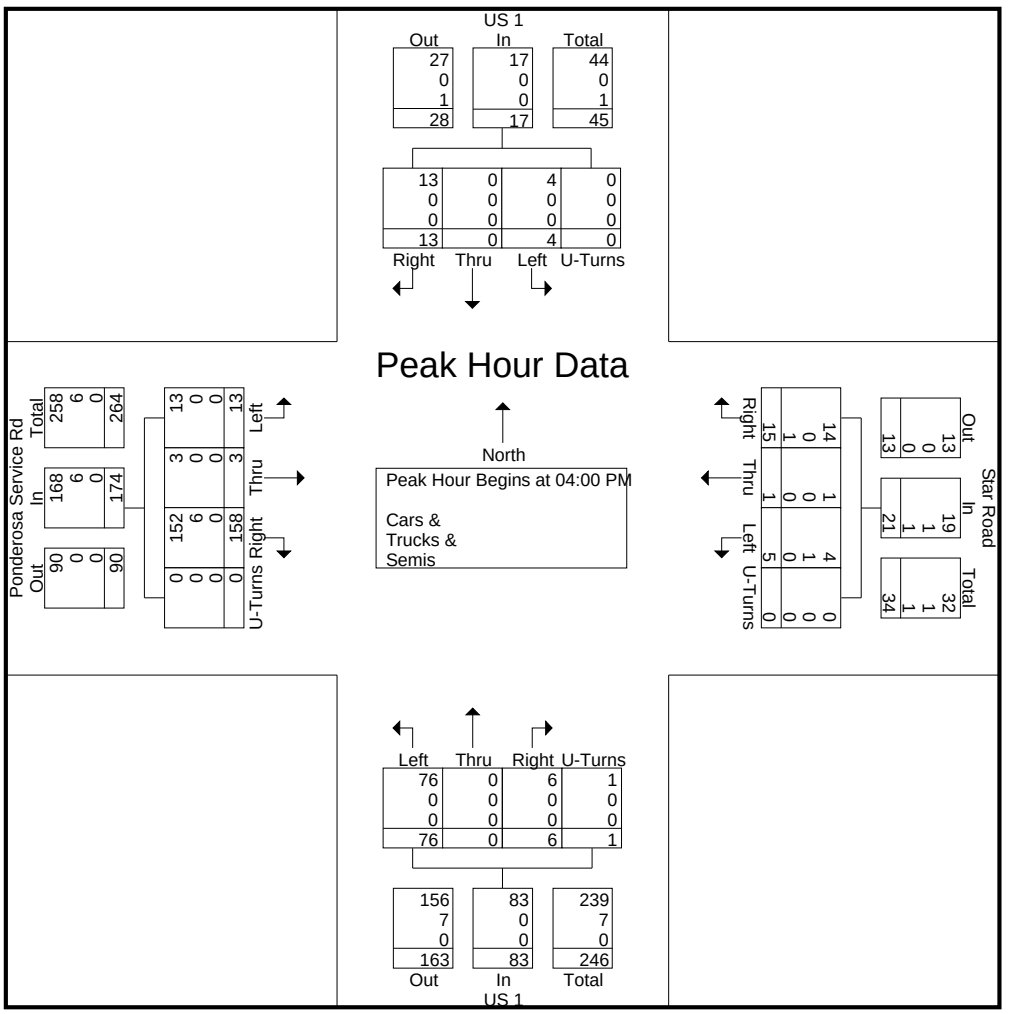
File Name : WF 2 8 NOV
Site Code : 00000002
Start Date : 11/8/2017
Page No : 2

	US 1 From North					Star Road From East					US 1 From South					Ponderosa Service Rd From West					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	4	0	0	0	4	3	1	1	0	5	1	0	22	0	23	45	1	4	0	50	82
04:15 PM	4	0	2	0	6	3	0	1	0	4	2	0	19	1	22	46	1	3	0	50	82
04:30 PM	2	0	2	0	4	7	0	2	0	9	1	0	14	0	15	36	0	4	0	40	68
04:45 PM	3	0	0	0	3	2	0	1	0	3	2	0	21	0	23	31	1	2	0	34	63
Total Volume	13	0	4	0	17	15	1	5	0	21	6	0	76	1	83	158	3	13	0	174	295
% App. Total	76.5	0	23.5	0		71.4	4.8	23.8	0		7.2	0	91.6	1.2		90.8	1.7	7.5	0		
PHF	.813	.000	.500	.000	.708	.536	.250	.625	.000	.583	.750	.000	.864	.250	.902	.859	.750	.813	.000	.870	.899
Cars &	13	0	4	0	17	14	1	4	0	19	6	0	76	1	83	152	3	13	0	168	287
% Cars &	100	0	100	0	100	93.3	100	80.0	0	90.5	100	0	100	100	100	96.2	100	100	0	96.6	97.3
Trucks &	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	6	0	0	0	6	7
% Trucks &	0	0	0	0	0	0	0	20.0	0	4.8	0	0	0	0	0	3.8	0	0	0	3.4	2.4
Semis	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Semis	0	0	0	0	0	6.7	0	0	0	4.8	0	0	0	0	0	0	0	0	0	0	0.3



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5808 Faringdon Place, Suite 100
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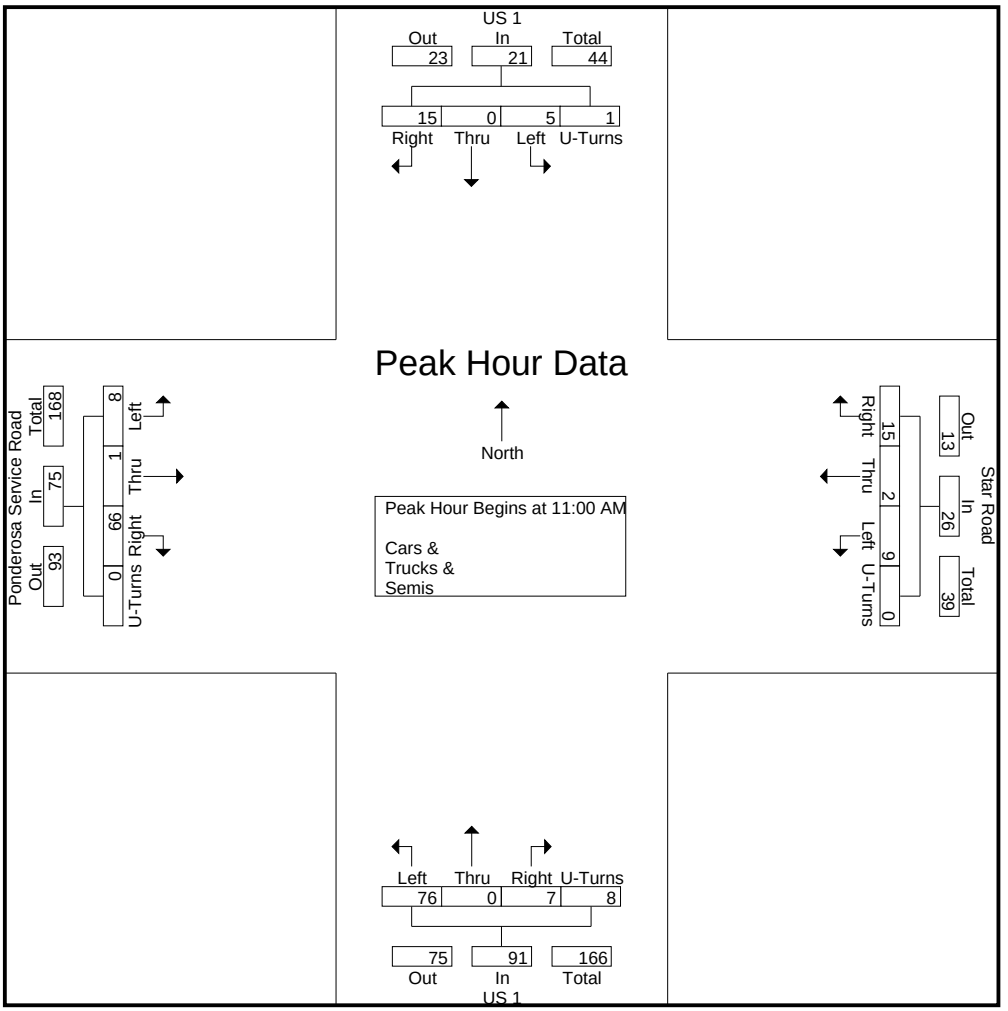
File Name : 2 CAPITAL BLVD & PONDEROSA SERVICE RD 11-4-17
Site Code : 00000002
Start Date : 11/4/2017
Page No : 2

	US 1 From North					Star Road From East					US 1 From South					Ponderosa Service Road From West					
Start Time	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Right	Thru	Left	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:00 AM																					
11:00 AM	3	0	4	0	7	7	1	4	0	12	1	0	16	2	19	15	0	4	0	19	57
11:15 AM	3	0	1	1	5	2	0	0	0	2	1	0	16	1	18	19	1	0	0	20	45
11:30 AM	5	0	0	0	5	5	1	3	0	9	2	0	16	1	19	15	0	3	0	18	51
11:45 AM	4	0	0	0	4	1	0	2	0	3	3	0	28	4	35	17	0	1	0	18	60
Total Volume	15	0	5	1	21	15	2	9	0	26	7	0	76	8	91	66	1	8	0	75	213
% App. Total	71.4	0	23.8	4.8		57.7	7.7	34.6	0		7.7	0	83.5	8.8		88	1.3	10.7	0		
PHF	.750	.000	.313	.250	.750	.536	.500	.563	.000	.542	.583	.000	.679	.500	.650	.868	.250	.500	.000	.938	.888



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5808 Faringdon Place, Suite 100
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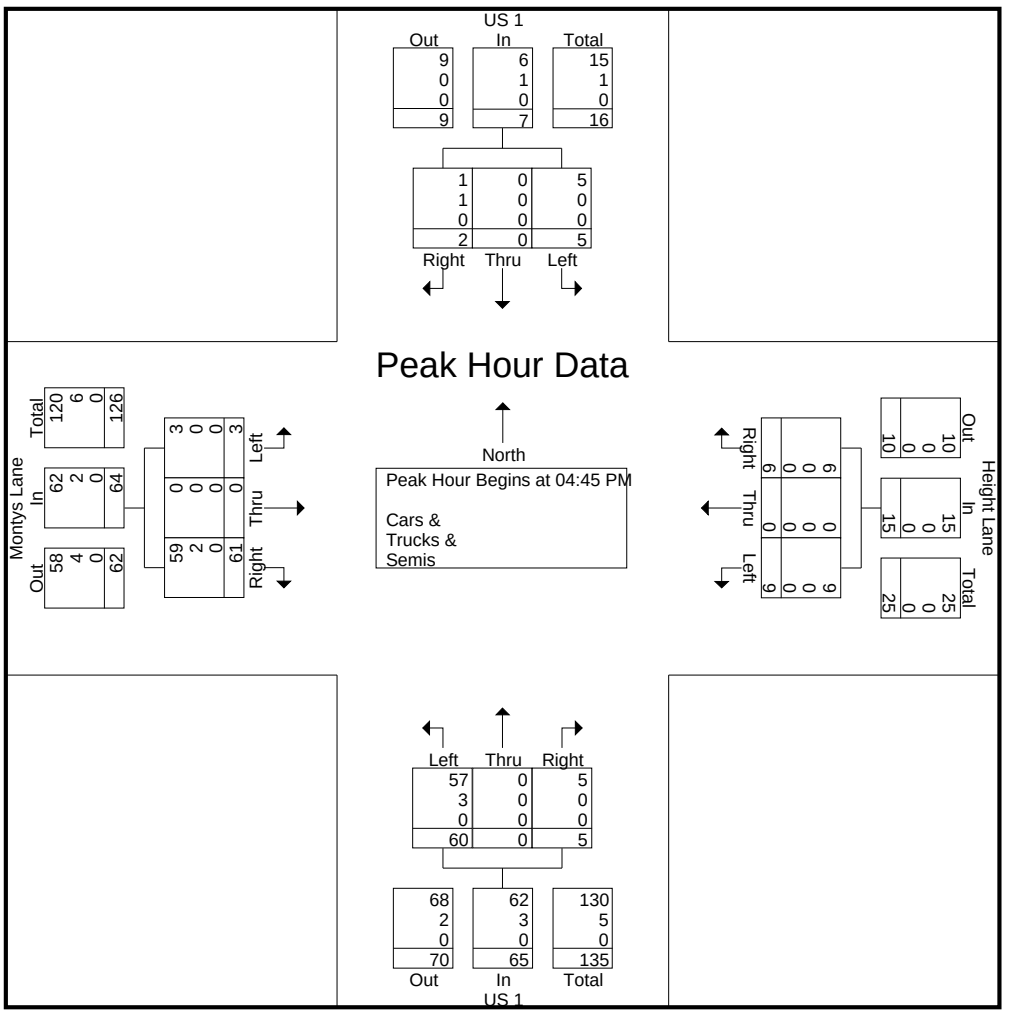
File Name : US 1 and Height Lane - Montys Lane - Weekday
Site Code : 00000003
Start Date : 11/8/2017
Page No : 2

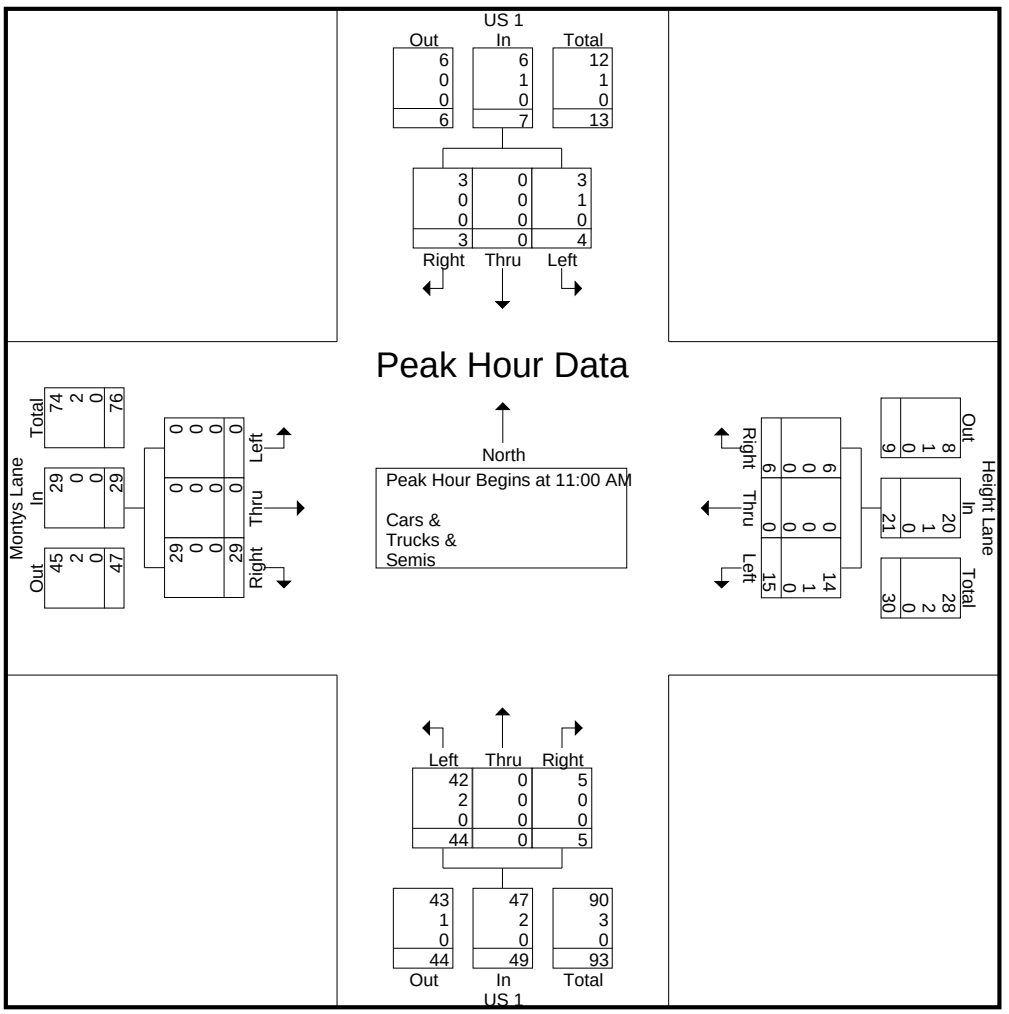
	US 1 From North				Height Lane From East				US 1 From South				Montys Lane From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	1	0	2	3	2	0	1	3	4	0	12	16	12	0	3	15	37
05:00 PM	1	0	1	2	0	0	2	2	1	0	13	14	20	0	0	20	38
05:15 PM	0	0	1	1	1	0	4	5	0	0	13	13	15	0	0	15	34
05:30 PM	0	0	1	1	3	0	2	5	0	0	22	22	14	0	0	14	42
Total Volume	2	0	5	7	6	0	9	15	5	0	60	65	61	0	3	64	151
% App. Total	28.6	0	71.4		40	0	60		7.7	0	92.3		95.3	0	4.7		
PHF	.500	.000	.625	.583	.500	.000	.563	.750	.313	.000	.682	.739	.763	.000	.250	.800	.899
Cars &	1	0	5	6	6	0	9	15	5	0	57	62	59	0	3	62	145
% Cars &	50.0	0	100	85.7	100	0	100	100	100	0	95.0	95.4	96.7	0	100	96.9	96.0
Trucks &	1	0	0	1	0	0	0	0	0	0	3	3	2	0	0	2	6
% Trucks &	50.0	0	0	14.3	0	0	0	0	0	0	5.0	4.6	3.3	0	0	3.1	4.0
Semis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Semis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
PH: 919 872-5115

File Name : US 1 and Height Lane - Montys Lane - Saturday
Site Code : 00000003
Start Date : 11/4/2017

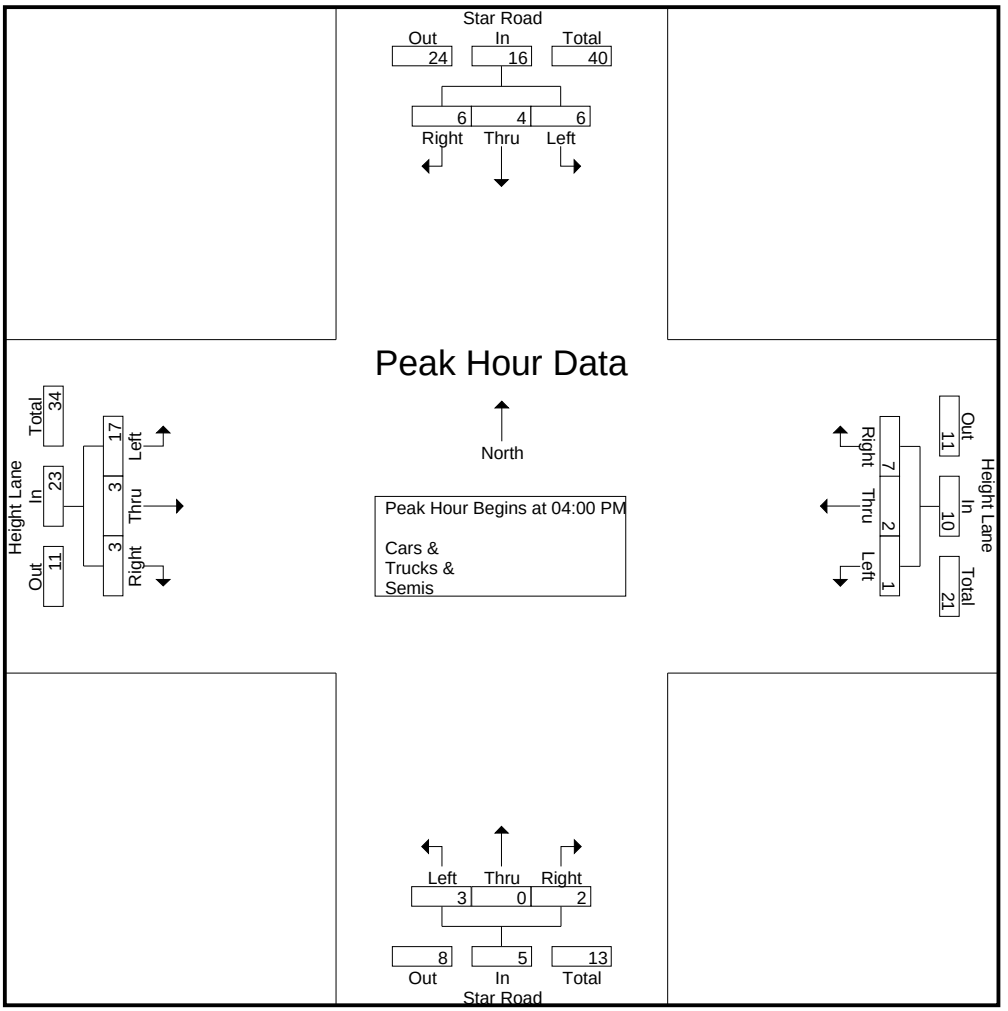
	US 1 From North				Height Lane From East				US 1 From South				Montys Lane From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	0	0	1	1	3	0	5	8	1	0	14	15	10	0	0	10	34
11:15 AM	0	0	0	0	1	0	1	2	1	0	13	14	9	0	0	9	25
11:30 AM	1	0	2	3	1	0	9	10	1	0	10	11	7	0	0	7	31
11:45 AM	2	0	1	3	1	0	0	1	2	0	7	9	3	0	0	3	16
Total Volume	3	0	4	7	6	0	15	21	5	0	44	49	29	0	0	29	106
% App. Total	42.9	0	57.1		28.6	0	71.4		10.2	0	89.8		100	0	0		
PHF	.375	.000	.500	.583	.500	.000	.417	.525	.625	.000	.786	.817	.725	.000	.000	.725	.779
Cars &	3	0	3	6	6	0	14	20	5	0	42	47	29	0	0	29	102
% Cars &	100	0	75.0	85.7	100	0	93.3	95.2	100	0	95.5	95.9	100	0	0	100	96.2
Trucks &	0	0	1	1	0	0	1	1	0	0	2	2	0	0	0	0	4
% Trucks &	0	0	25.0	14.3	0	0	6.7	4.8	0	0	4.5	4.1	0	0	0	0	3.8
Semis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Semis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
PH: 919 872-5115

File Name : 5 STAR RD & HEIGHT LN 11-8-17 77A
Site Code : 00000005
Start Date : 11/8/2017
Page No : 2

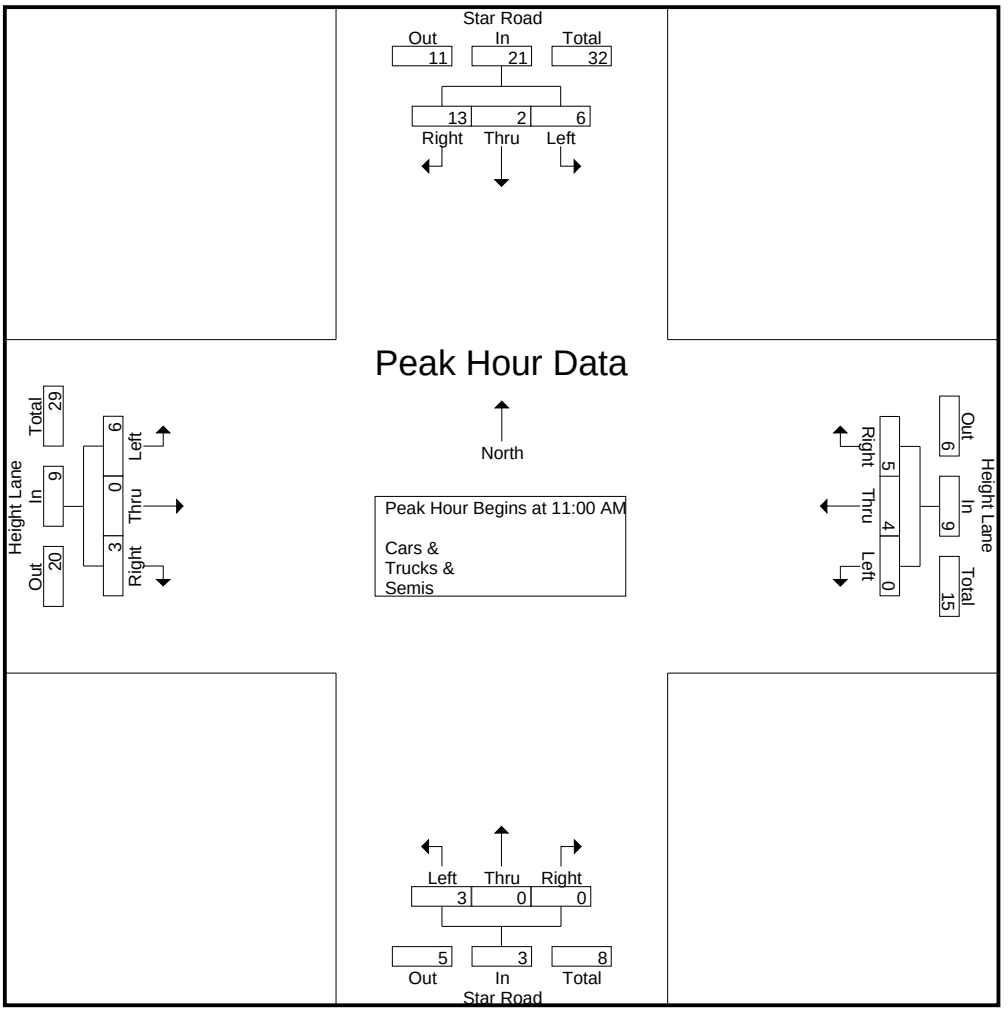
	Star Road From North				Height Lane From East				Star Road From South				Height Lane From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	2	1	1	4	1	0	0	1	0	0	0	0	0	0	4	4	9
04:15 PM	1	1	1	3	2	1	0	3	1	0	0	1	0	1	4	5	12
04:30 PM	2	2	4	8	4	1	1	6	1	0	1	2	2	0	4	6	22
04:45 PM	1	0	0	1	0	0	0	0	0	0	2	2	1	2	5	8	11
Total Volume	6	4	6	16	7	2	1	10	2	0	3	5	3	3	17	23	54
% App. Total	37.5	25	37.5		70	20	10		40	0	60		13	13	73.9		
PHF	.750	.500	.375	.500	.438	.500	.250	.417	.500	.000	.375	.625	.375	.375	.850	.719	.614



RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
PH: 919 872-5115

File Name : Height Lane and Star Road - Saturday
Site Code : 00000005
Start Date : 11/4/2017
Page No : 2

	Star Road From North				Height Lane From East				Star Road From South				Height Lane From West				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	5	1	1	7	2	1	0	3	0	0	1	1	0	0	2	2	13
11:15 AM	1	1	3	5	2	1	0	3	0	0	1	1	1	0	1	2	11
11:30 AM	7	0	1	8	1	2	0	3	0	0	0	0	1	0	1	2	13
11:45 AM	0	0	1	1	0	0	0	0	0	0	1	1	1	0	2	3	5
Total Volume	13	2	6	21	5	4	0	9	0	0	3	3	3	0	6	9	42
% App. Total	61.9	9.5	28.6		55.6	44.4	0		0	0	100		33.3	0	66.7		
PHF	.464	.500	.500	.656	.625	.500	.000	.750	.000	.000	.750	.750	.750	.000	.750	.750	.808

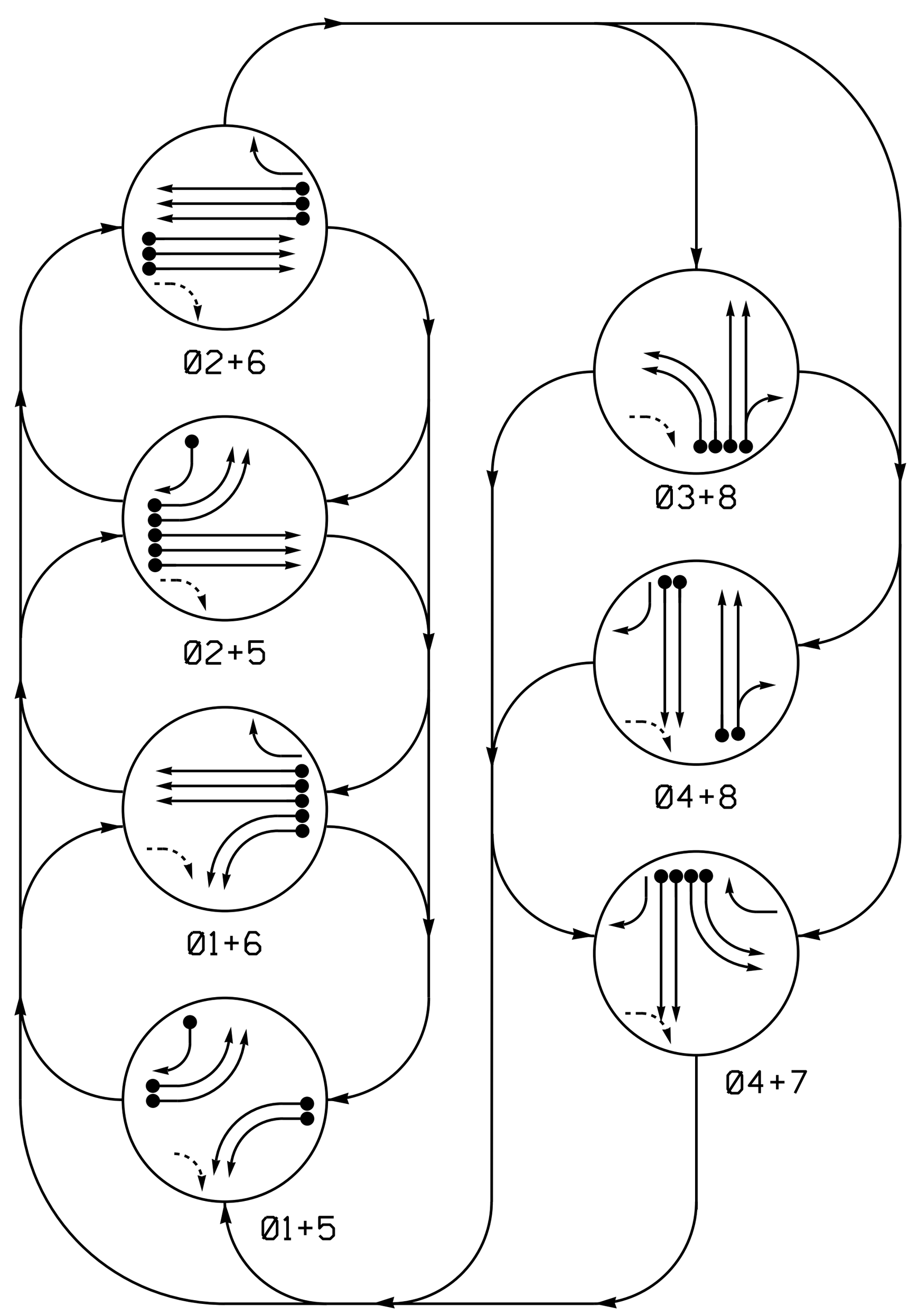


APPENDIX C

SIGNAL PLANS

PROJECT REFERENCE NO.	SHEET NO.
SS-4905CD	Sig. 1

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

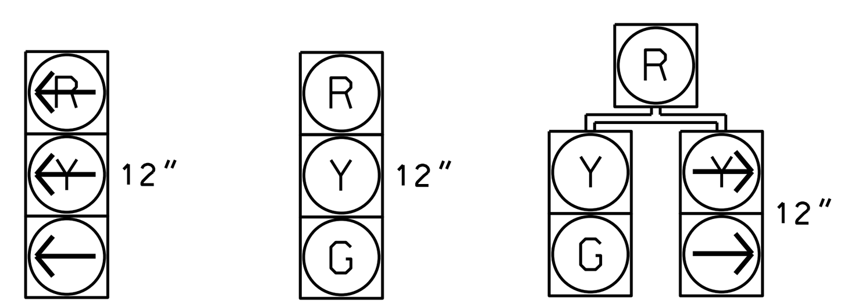
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3+8	Ø4+7	Ø4+8	FLASH
11, 12	←	←	←R	←R	←R	←R	←R	←R
21, 22, 23	R	R	G	G	R	R	R	Y
31, 32	←R	←R	←R	←R	←	←R	←R	←R
41	R	R	R	R	R	G	G	R
42	R/→	R	R/→	R	R	G	G	R
51, 52	←	←R	←	←R	←R	←R	←R	←R
61, 62	R	G	R	G	R	R	R	Y
63	R	G	R	G	R	R/→	R	Y
71, 72	←R	←R	←R	←R	←R	←	←R	←R
81, 82	R	R	R	R	G	R	G	R

SIGNAL FACE I.D.

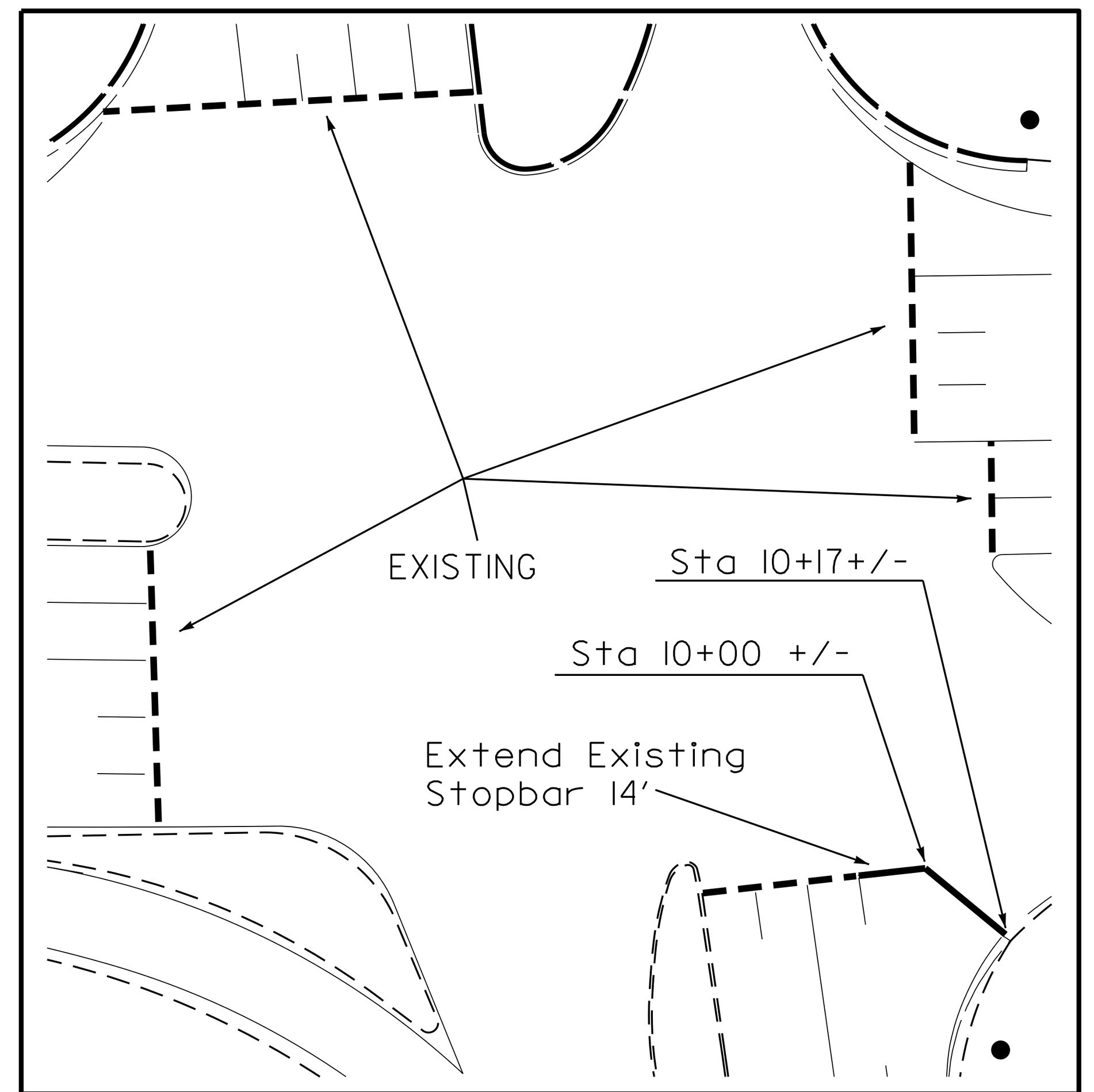
All Heads L.E.D.



11, 12
31, 32
51, 52
71, 72

21, 22, 23
41
61, 62
81, 82

42
63



Proposed Stopbar Locations

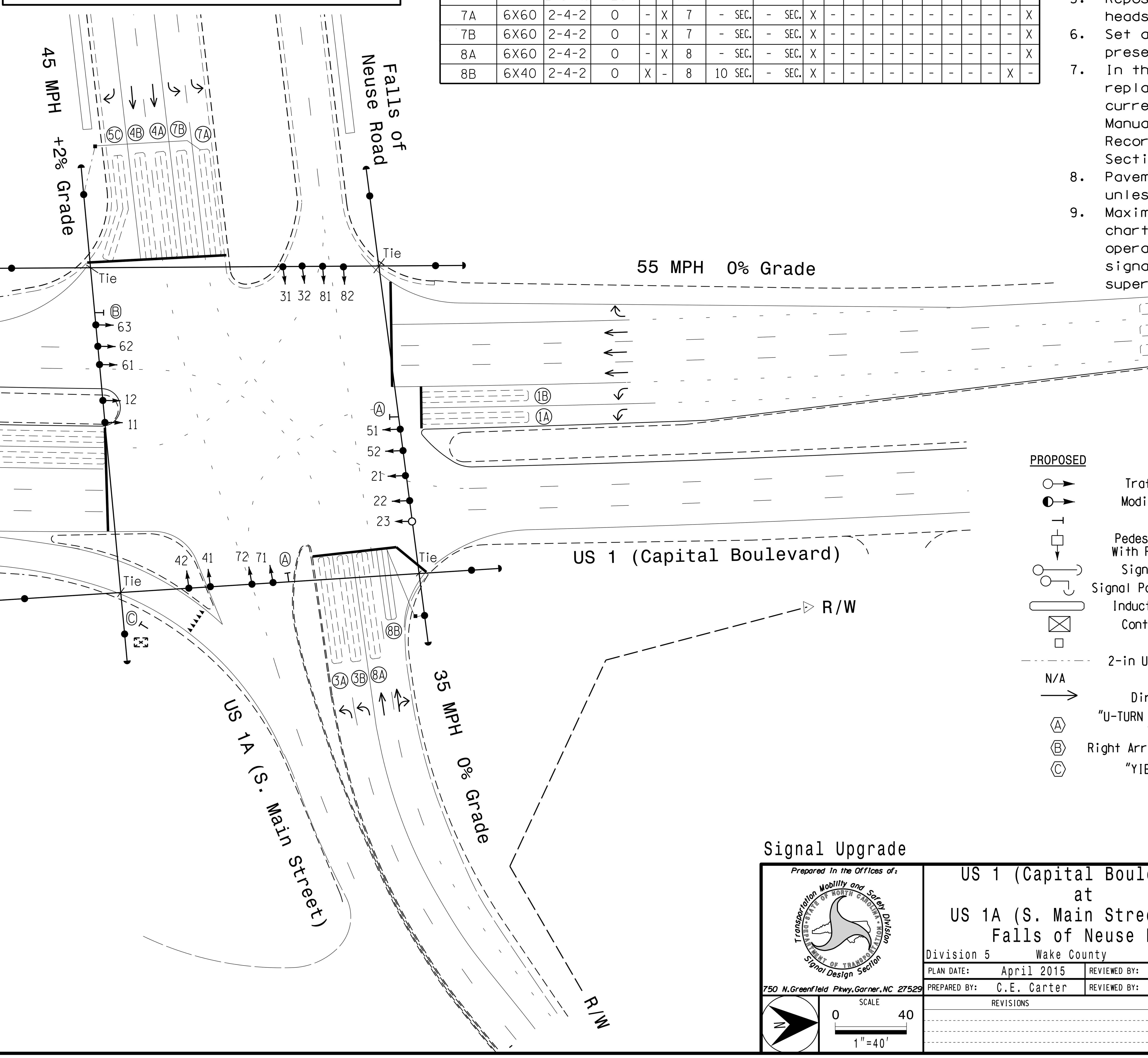
SE-PAC 2070 LOOP & DETECTOR UNIT INSTALLATION CHART

INDUCTIVE LOOPS: LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING	DETECTOR PROGRAMMING: ASSIGNED PHASE	TIMING: DELAY	TIMING: EXTEND (STRETCH)	OPERATION MODE 0: VEHICLE	1: PEDESTRIAN	2: 1 CALL	3: STOP A	4: STOP B	5: PROT/PER LEFT	6: PROT/PER THROUGH	7: AND	SWITCH	SYSTEM LOOPS	STATUS: NEW	STATUS: EXISTING
1A	6X60	2-4-2	0	-	X	1	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
1B	6X60	2-4-2	0	-	X	1	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
2A	6X6	EXISTING	420	-	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
2B	6X6	EXISTING	420	-	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
2C	6X6	EXISTING	420	-	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
3A	6X60	2-4-2	0	-	X	3	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
3B	6X60	2-4-2	0	-	X	3	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
4A	6X60	2-4-2	0	-	X	4	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
4B	6X60	2-4-2	0	-	X	4	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
5A	6X60	2-4-2	0	-	X	5	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
5B	6X60	2-4-2	0	-	X	5	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
5C	6X60	2-4-2	0	-	X	5	15 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
6A	6X6	EXISTING	420	-	X	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
6B	6X6	EXISTING	420	-	X	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
6C	6X6	EXISTING	420	-	X	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
7A	6X60	2-4-2	0	-	X	7	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
7B	6X60	2-4-2	0	-	X	7	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
8A	6X60	2-4-2	0	-	X	8	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	X
8B	6X40	2-4-2	0	X	-	8	10 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	X	-

7 Phase
Fully Actuated
(Raleigh Signal System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 7 may be reversed, but phase 3 and phase 7 shall not operate simultaneously.
5. Reposition existing signal heads numbered # 21 and 22.
6. Set all detector units to presence mode.
7. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
8. Pavement markings are existing unless otherwise shown.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head With Push Button & Sign	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
	Directional Arrow	
A	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	A
B	Right Arrow "ONLY" Sign (R3-5R)	B
C	"YIELD" Sign (R1-2)	C

SE-PAC 2070 TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6	7	8
Min Green *	7	14	7	7	7	14	7	7
Passage Gap *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Maximum Green *	20	125	30	45	20	125	20	45
Yellow Change	3.0	5.2	3.2	4.3	3.0	5.2	3.0	3.8
Red Clear	3.9	2.0	3.8	2.5	4.3	1.9	4.5	2.9
Walk *	-	-	-	-	-	-	-	-
Pedestrian Clear	-	-	-	-	-	-	-	-
Added Initial *	-	1.5	-	-	-	1.5	-	-
Maximum Initial *	-	46	-	-	-	46	-	-
Time Before Reduction *	-	30	-	-	-	30	-	-
Time To Reduce *	-	50	-	-	-	50	-	-
Minimum Gap	-	3.4	-	-	-	3.4	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	NON-LOCK	LOCK	NON-LOCK	NON-LOCK	NON-LOCK	LOCK	NON-LOCK	NON-LOCK
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

Prepared in the Offices of: Transportation Mobility and Safety Division, Signal Design Section, State of North Carolina Department of Transportation
750 N.Greenfield Pkwy,Garner,NC 27529

US 1 (Capital Boulevard)
at
US 1A (S. Main Street) and
Falls of Neuse Road

Division 5 Wake County Raleigh

PLAN DATE:	April 2015	REVIEWED BY:
PREPARED BY:	C.E. Carter	REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. ZIEMBA

DocuSigned by: 1B9B4... SIGNATURE 4/24/2015 DATE

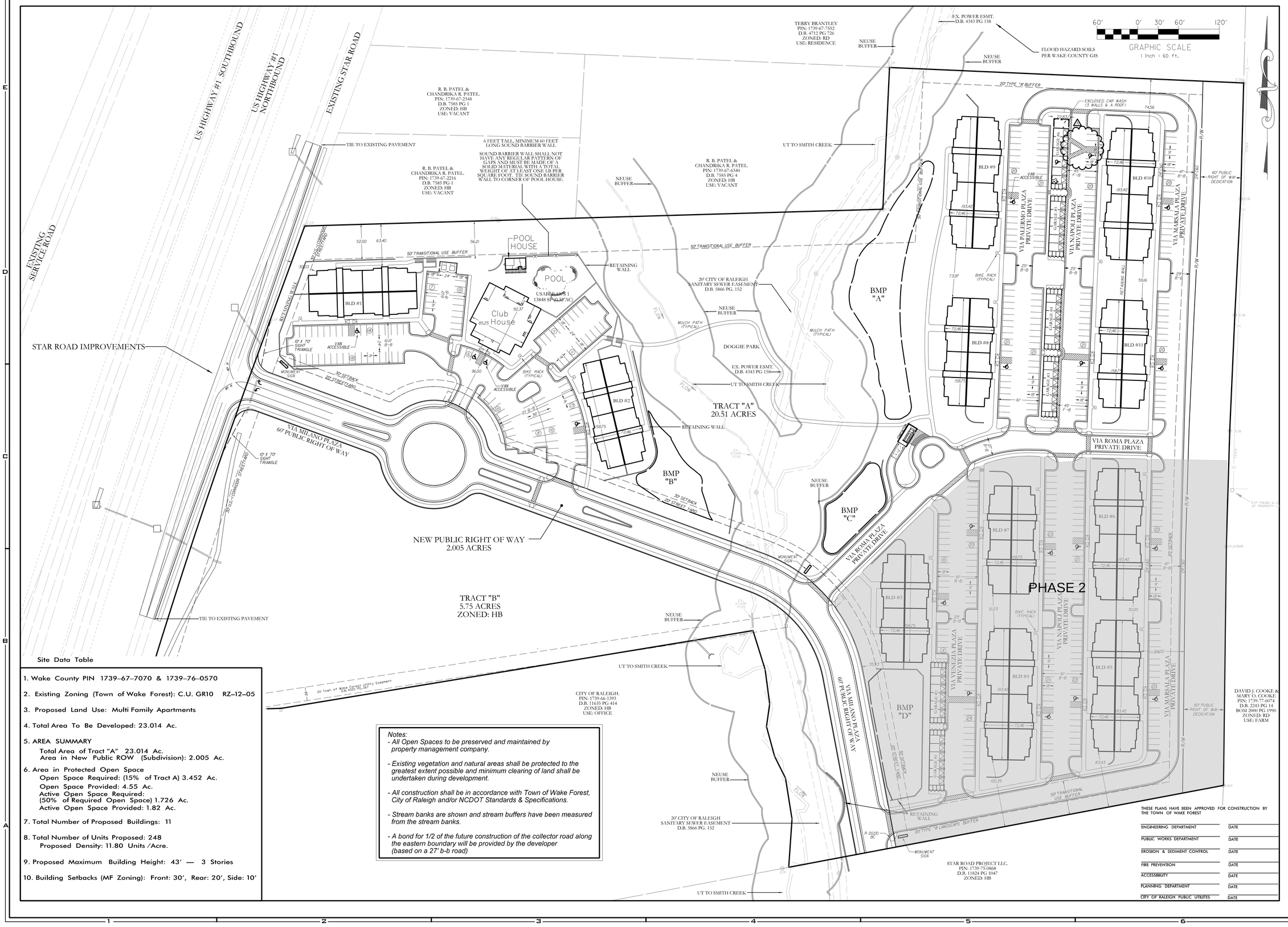
SIG. INVENTORY NO. 05-1422

24-APR-2015 13:31
S:*ITS&SU*ITS Signals*Signal Design Section*Central Region*Div 5*05-1422*051422_sig_dsn_20150424.dgn
rziemba

APPENDIX D

ADJACENT DEVELOPMENT INFORMATION

"ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL TOWN OF WAKE FOREST, CITY OF RALEIGH AND / OR NCDOT STANDARDS AND SPECIFICATIONS"



Site Data Table

1. Wake County PIN 1739–67–7070 & 1739–76–0570
2. Existing Zoning (Town of Wake Forest): C.U. GR10 RZ–12–05
3. Proposed Land Use: Multi Family Apartments
4. Total Area To Be Developed: 23.014 Ac.
5. AREA SUMMARY
   Total Area of Tract "A" 23.014 Ac.
   Area in New Public ROW (Subdivision): 2.005 Ac.
6. Area in Protected Open Space
   Open Space Required: (15% of Tract A) 3.452 Ac.
   Open Space Provided: 4.55 Ac.
   Active Open Space Required: (50% of Required Open Space) 1.726 Ac.
   Active Open Space Provided: 1.82 Ac.
7. Total Number of Proposed Buildings: 11
8. Total Number of Units Proposed: 248
   Proposed Density: 11.80 Units /Acre.
9. Proposed Maximum Building Height: 43' — 3 Stories
10. Building Setbacks (MF Zoning): Front: 30', Rear: 20', Side: 10'

Notes:
- *All Open Spaces to be preserved and maintained by property management company.*
- *Existing vegetation and natural areas shall be protected to the greatest extent possible and minimum clearing of land shall be undertaken during development.*
- *All construction shall be in accordance with Town of Wake Forest, City of Raleigh and/or NCDOT Standards & Specifications.*
- *Stream banks are shown and stream buffers have been measured from the stream banks.*
- *A bond for 1/2 of the future construction of the collector road along the eastern boundary will be provided by the developer (based on a 27' b-b road)*

THESE PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE TOWN OF WAKE FOREST

ENGINEERING DEPARTMENT	DATE
PUBLIC WORKS DEPARTMENT	DATE
EROSION & SEDIMENT CONTROL	DATE
FIRE PREVENTION	DATE
ACCESSIBILITY	DATE
PLANNING DEPARTMENT	DATE
CITY OF RALEIGH PUBLIC UTILITES	DATE

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636-3127
(919) 851-1918
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM
FIRM LICENSE NO. C-1021

LA SCALA - APARTMENT SITE

DEVELOPER:
VILLAGIO APARTMENTS, LLC
123 SOUTH WHITE STREET
WAKE FOREST, NC 27587

NO	DATE	REMARKS
A	08-02-16	JPS HUD Responses

REVISIONS

PROJECT NO:	2010030.00
DRAWN BY:	DFB
DWG. CHECKED BY:	PCP
SCALE:	SEE PLAN
DATE:	MAR. 10TH 2014

SITE PLAN

C-200

RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

RKA Project Number: 17295 - Capital Sports Complex Sheet No. ____ of ___

Project Description: Adjacent Development Info - La Scala Apartments Date: 2/6/18

Apartments - 248 units

PM (Adjacent, Equation)

$T = 0.55(X) + 17.65$

$= 0.55(248) + 17.65$

$T = 154$ trips

Enter (65%) Exit (35%)

$T = 100$ $T = 54$

SAT Midday (Generator, Equation)

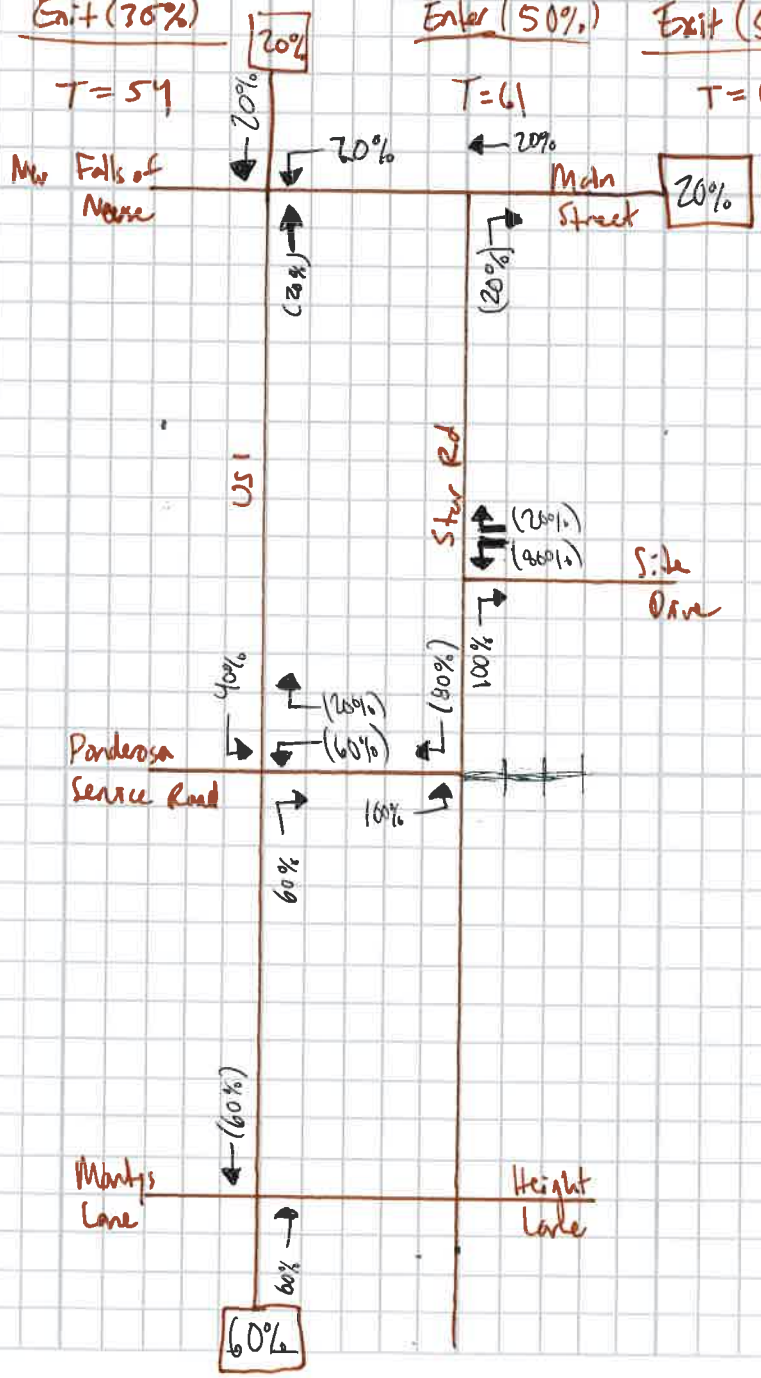
$T = 0.41(x) + 19.23$

$T = 0.41(248) + 19.23$

$T = 121$ trips

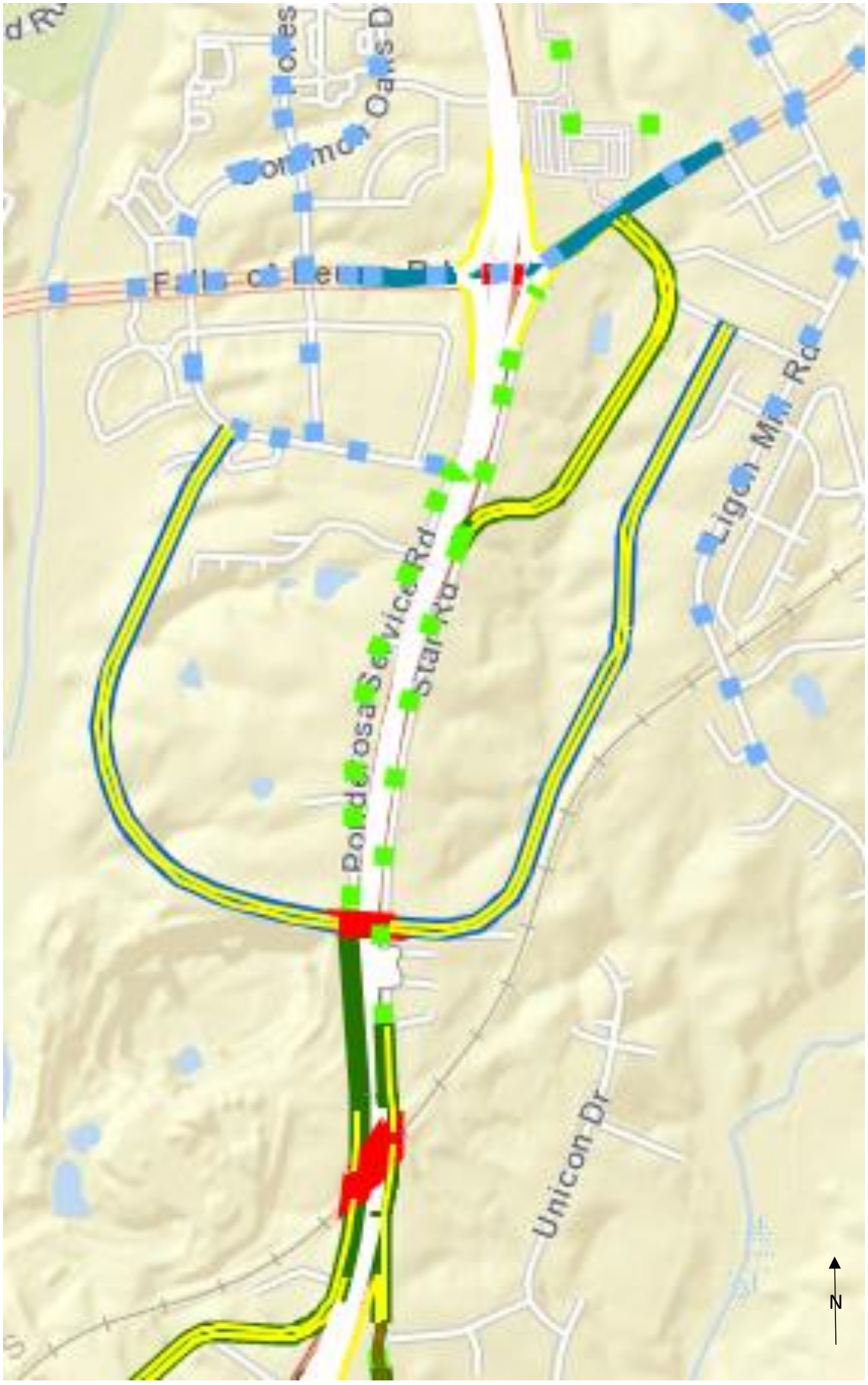
Enter (50%) Exit (50%)

$T = 61$ $T = 60$

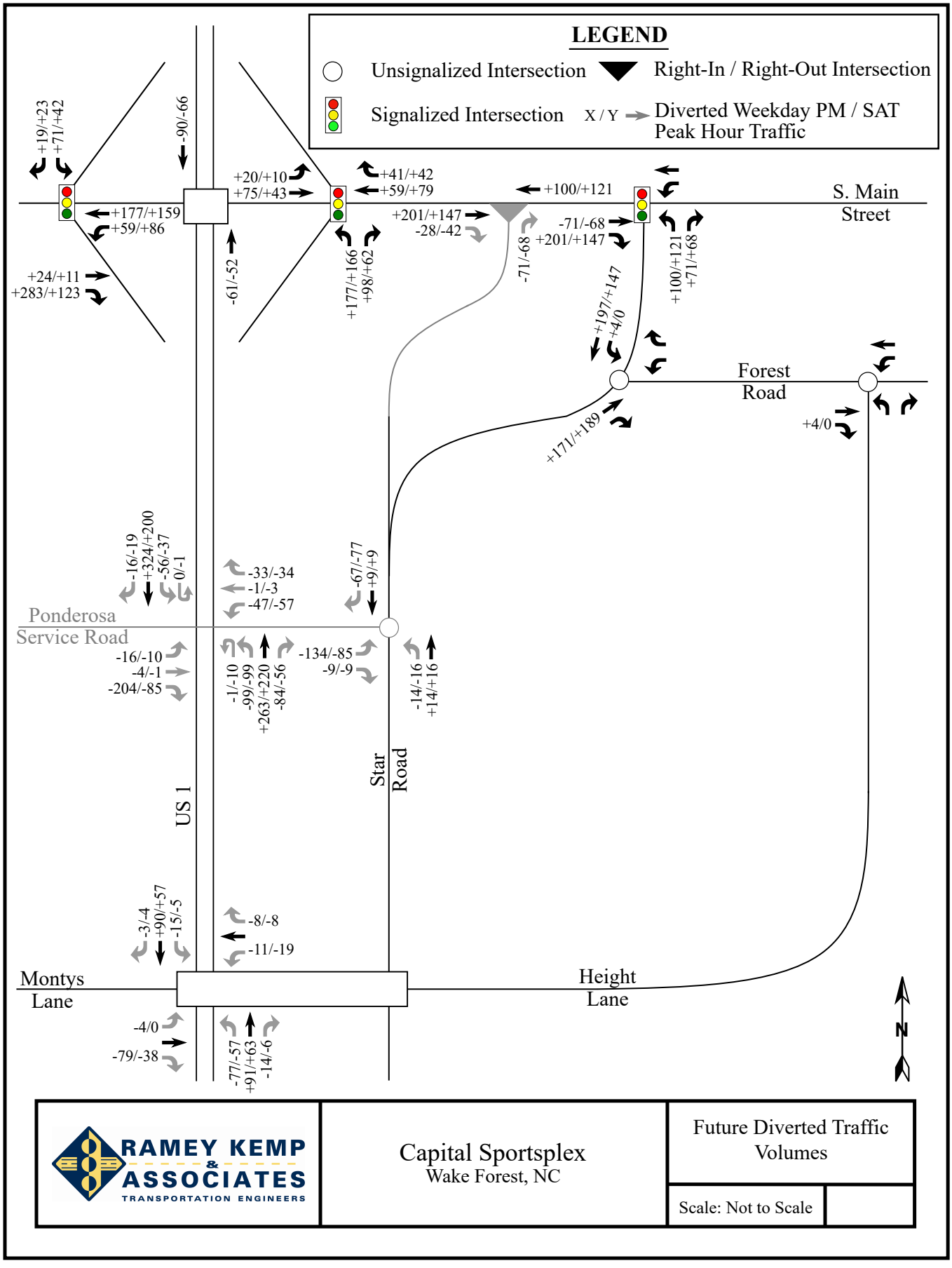


APPENDIX E

FUTURE ROADWAY IMPROVEMENTS INFORMATION



From CAMPO website

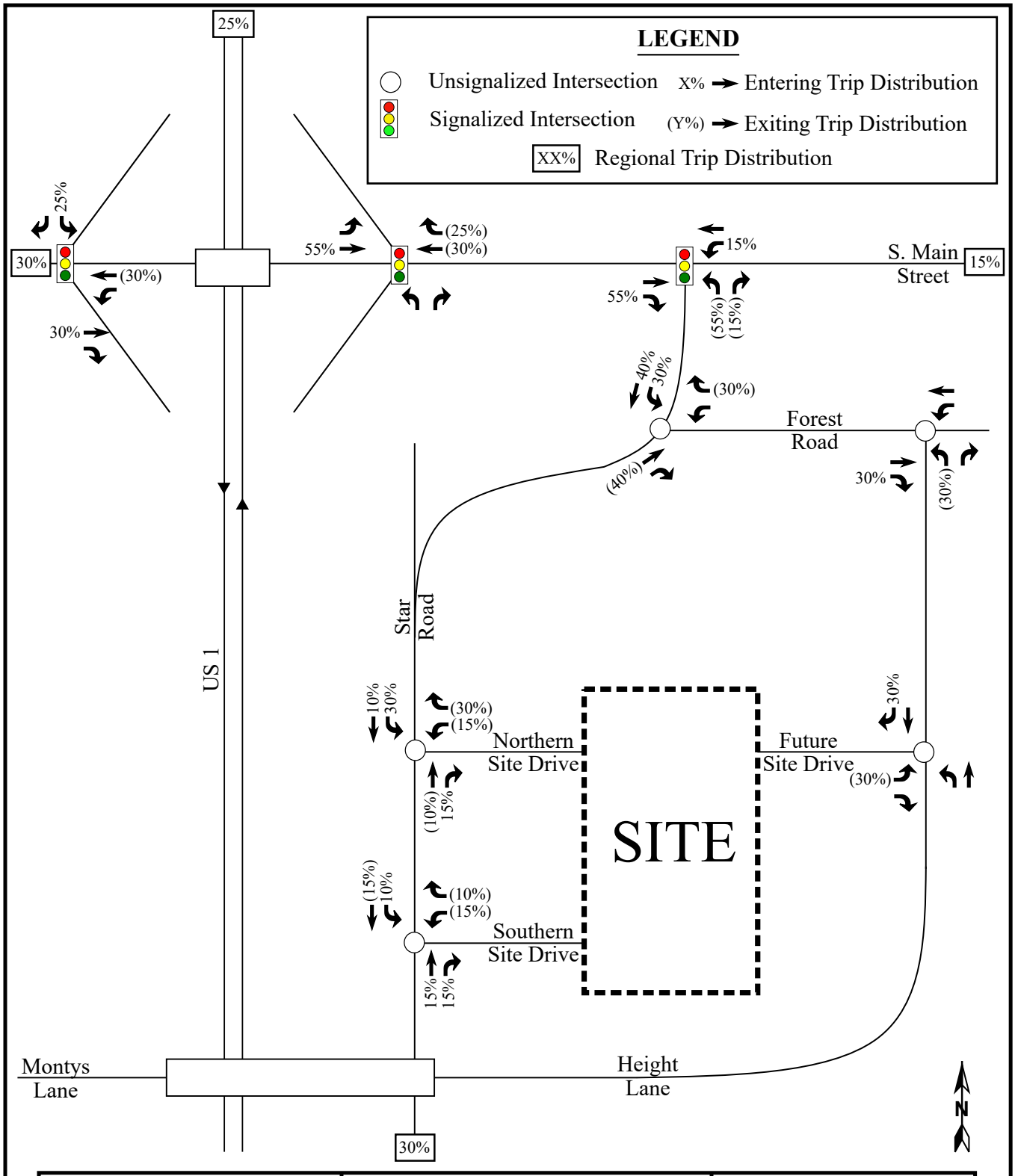


RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Capital Sportsplex
Wake Forest, NC

Future Diverted Traffic Volumes

Scale: Not to Scale

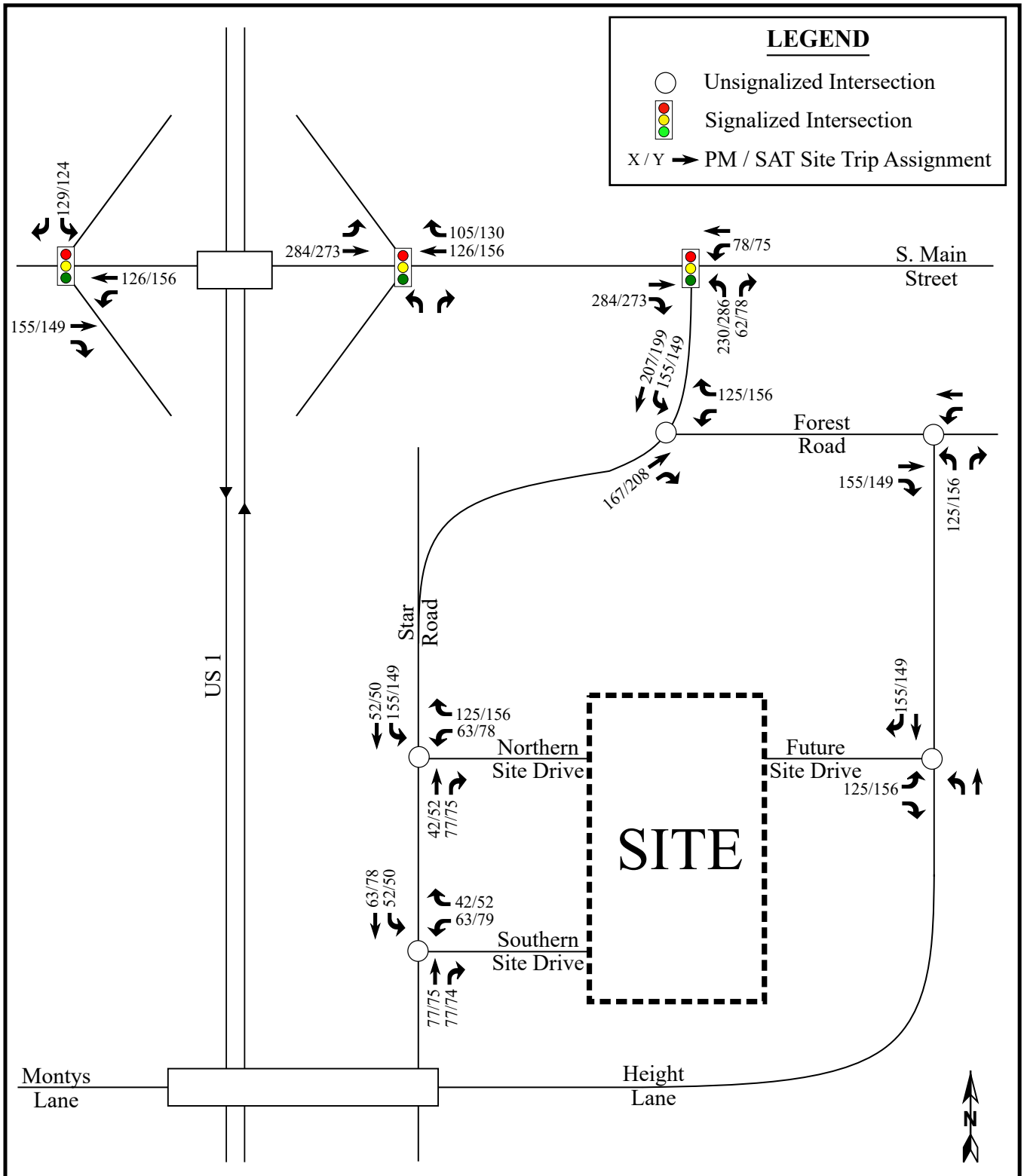


RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Capital Sports Complex
Wake Forest, NC

Future (2030) Site Trip Distribution

Scale: Not to Scale



RAMEY KEMP & ASSOCIATES
TRANSPORTATION ENGINEERS

Capital Sports Complex
Wake Forest, NC

Future (2030) Site Trip Distribution

Scale: Not to Scale

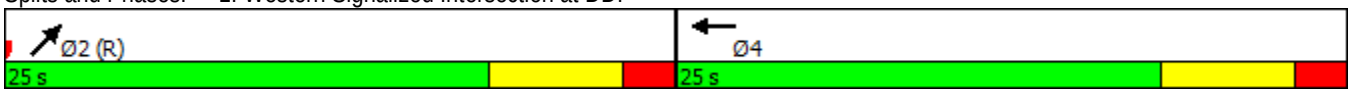
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	1135	0	0	1499	0	0	0	0
Future Volume (vph)	0	0	0	0	1135	0	0	1499	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	0	0	0	5085	0	0	5085	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	5085	0	0	5085	0	0	0	0
Right Turn on Red			No			No	No		No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		175			239			204			261	
Travel Time (s)		3.4			4.7			4.0			5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1234	0	0	1629	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	1234	0	0	1629	0	0	0	0
Turn Type					NA			NA				
Protected Phases					4			2				
Permitted Phases												
Detector Phase					4			2				
Switch Phase												
Minimum Initial (s)					10.0			10.0				
Minimum Split (s)					25.0			25.0				
Total Split (s)					25.0			25.0				
Total Split (%)					50.0%			50.0%				
Maximum Green (s)					18.0			18.0				
Yellow Time (s)					5.0			5.0				
All-Red Time (s)					2.0			2.0				
Lost Time Adjust (s)					-2.0			-2.0				
Total Lost Time (s)					5.0			5.0				
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)					3.0			3.0				
Recall Mode					Max			C-Max				
Act Effct Green (s)					20.0			20.0				
Actuated g/C Ratio					0.40			0.40				
v/c Ratio					0.61			0.80				
Control Delay					20.5			17.1				
Queue Delay					0.0			0.0				
Total Delay					20.5			17.1				
LOS					C			B				
Approach Delay					20.5			17.1				
Approach LOS					C			B				
Queue Length 50th (ft)					146			146				
Queue Length 95th (ft)					186			197				
Internal Link Dist (ft)		95			159			124			181	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Turn Bay Length (ft)												
Base Capacity (vph)					2034			2034				
Starvation Cap Reductn					0			0				
Spillback Cap Reductn					0			0				
Storage Cap Reductn					0			0				
Reduced v/c Ratio					0.61			0.80				

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 50
Offset: 0 (0%), Referenced to phase 2:NET and 6:, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 18.6 Intersection LOS: B
Intersection Capacity Utilization 61.6% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Western Signalized Intersection at DDI



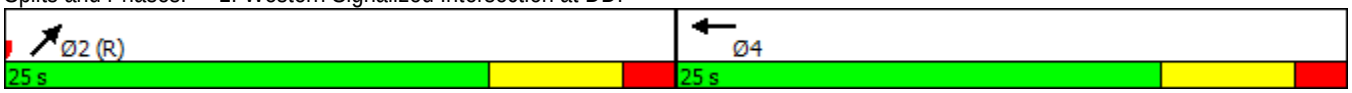
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations					↑↑↑			↑↑↑				
Traffic Volume (vph)	0	0	0	0	1157	0	0	1447	0	0	0	0
Future Volume (vph)	0	0	0	0	1157	0	0	1447	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	0	0	0	5085	0	0	5085	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	5085	0	0	5085	0	0	0	0
Right Turn on Red			No			No	No		No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		175			239			204			261	
Travel Time (s)		3.4			4.7			4.0			5.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	1258	0	0	1573	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	1258	0	0	1573	0	0	0	0
Turn Type					NA			NA				
Protected Phases					4			2				
Permitted Phases												
Detector Phase					4			2				
Switch Phase												
Minimum Initial (s)					10.0			10.0				
Minimum Split (s)					25.0			25.0				
Total Split (s)					25.0			25.0				
Total Split (%)					50.0%			50.0%				
Maximum Green (s)					18.0			18.0				
Yellow Time (s)					5.0			5.0				
All-Red Time (s)					2.0			2.0				
Lost Time Adjust (s)					-2.0			-2.0				
Total Lost Time (s)					5.0			5.0				
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)					3.0			3.0				
Recall Mode					Max			C-Max				
Act Effct Green (s)					20.0			20.0				
Actuated g/C Ratio					0.40			0.40				
v/c Ratio					0.62			0.77				
Control Delay					18.7			16.3				
Queue Delay					0.0			0.0				
Total Delay					18.7			16.3				
LOS					B			B				
Approach Delay					18.7			16.3				
Approach LOS					B			B				
Queue Length 50th (ft)					152			139				
Queue Length 95th (ft)					192			187				
Internal Link Dist (ft)		95			159			124			181	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Turn Bay Length (ft)												
Base Capacity (vph)					2034			2034				
Starvation Cap Reductn					0			0				
Spillback Cap Reductn					0			0				
Storage Cap Reductn					0			0				
Reduced v/c Ratio					0.62			0.77				

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 50
Offset: 0 (0%), Referenced to phase 2:NET and 6:, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 17.3 Intersection LOS: B
Intersection Capacity Utilization 69.0% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Western Signalized Intersection at DDI



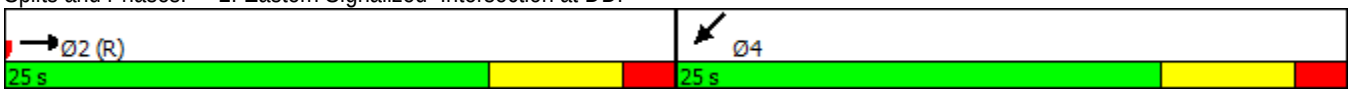
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1507	0	0	0	0	0	0	0	0	1208	0
Future Volume (vph)	0	1507	0	0	0	0	0	0	0	0	1208	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	5085	0	0	0	0	0	0	0	0	5085	0
Flt Permitted												
Satd. Flow (perm)	0	5085	0	0	0	0	0	0	0	0	5085	0
Right Turn on Red			No			No			No	No		No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		212			243			178			231	
Travel Time (s)		4.1			4.7			3.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1638	0	0	0	0	0	0	0	0	1313	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1638	0	0	0	0	0	0	0	0	1313	0
Turn Type		NA									NA	
Protected Phases		2									4	
Permitted Phases												
Detector Phase		2									4	
Switch Phase												
Minimum Initial (s)		10.0									10.0	
Minimum Split (s)		25.0									25.0	
Total Split (s)		25.0									25.0	
Total Split (%)		50.0%									50.0%	
Maximum Green (s)		18.0									18.0	
Yellow Time (s)		5.0									5.0	
All-Red Time (s)		2.0									2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		5.0									5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		C-Max									Max	
Act Effct Green (s)		20.0									20.0	
Actuated g/C Ratio		0.40									0.40	
v/c Ratio		0.81									0.65	
Control Delay		7.1									14.0	
Queue Delay		0.0									0.0	
Total Delay		7.1									14.0	
LOS		A									B	
Approach Delay		7.1									14.0	
Approach LOS		A									B	
Queue Length 50th (ft)		27									108	
Queue Length 95th (ft)		33									147	
Internal Link Dist (ft)		132			163			98			151	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Turn Bay Length (ft)												
Base Capacity (vph)		2034									2034	
Starvation Cap Reductn		0									0	
Spillback Cap Reductn		0									0	
Storage Cap Reductn		0									0	
Reduced v/c Ratio		0.81									0.65	

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 50
Offset: 14 (28%), Referenced to phase 2:EBT and 6:, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 10.2 Intersection LOS: B
Intersection Capacity Utilization 64.5% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 2: Eastern Signalized Intersection at DDI



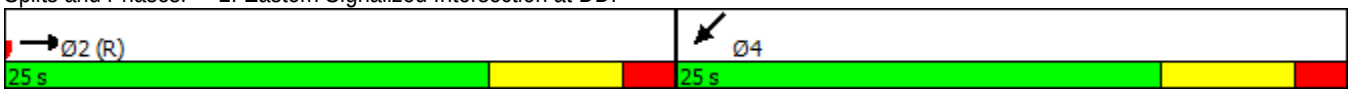
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑↑									↑↑↑	
Traffic Volume (vph)	0	1335	0	0	0	0	0	0	0	0	1447	0
Future Volume (vph)	0	1335	0	0	0	0	0	0	0	0	1447	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	5085	0	0	0	0	0	0	0	0	5085	0
Flt Permitted												
Satd. Flow (perm)	0	5085	0	0	0	0	0	0	0	0	5085	0
Right Turn on Red			No			No			No	No		No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		212			243			178			231	
Travel Time (s)		4.1			4.7			3.5			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1451	0	0	0	0	0	0	0	0	1573	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1451	0	0	0	0	0	0	0	0	1573	0
Turn Type		NA									NA	
Protected Phases		2									4	
Permitted Phases												
Detector Phase		2									4	
Switch Phase												
Minimum Initial (s)		10.0									10.0	
Minimum Split (s)		25.0									25.0	
Total Split (s)		25.0									25.0	
Total Split (%)		50.0%									50.0%	
Maximum Green (s)		18.0									18.0	
Yellow Time (s)		5.0									5.0	
All-Red Time (s)		2.0									2.0	
Lost Time Adjust (s)		-2.0									-2.0	
Total Lost Time (s)		5.0									5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0									3.0	
Recall Mode		C-Max									Max	
Act Effct Green (s)		20.0									20.0	
Actuated g/C Ratio		0.40									0.40	
v/c Ratio		0.71									0.77	
Control Delay		6.4									16.3	
Queue Delay		0.0									0.0	
Total Delay		6.4									16.3	
LOS		A									B	
Approach Delay		6.4									16.3	
Approach LOS		A									B	
Queue Length 50th (ft)		23									139	
Queue Length 95th (ft)		28									187	
Internal Link Dist (ft)		132			163			98			151	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Turn Bay Length (ft)												
Base Capacity (vph)		2034									2034	
Starvation Cap Reductn		0									0	
Spillback Cap Reductn		0									0	
Storage Cap Reductn		0									0	
Reduced v/c Ratio		0.71									0.77	

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 50
Offset: 16 (32%), Referenced to phase 2:EBT and 6:, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 11.5 Intersection LOS: B
Intersection Capacity Utilization 68.4% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 2: Eastern Signalized Intersection at DDI



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1720	485	78	1195	330	133
Future Volume (vph)	1720	485	78	1195	330	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			100		100	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	1770	3539	1770	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			35	35	
Link Distance (ft)	258			1340	838	
Travel Time (s)	5.0			26.1	16.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1870	527	85	1299	359	145
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1870	527	85	1299	359	145
Turn Type	NA	Prot	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases						8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	10.0	7.0	7.0
Minimum Split (s)	17.0	17.0	14.0	17.0	14.0	14.0
Total Split (s)	53.0	53.0	14.0	67.0	23.0	23.0
Total Split (%)	58.9%	58.9%	15.6%	74.4%	25.6%	25.6%
Maximum Green (s)	46.0	46.0	7.0	60.0	16.0	16.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Act Effct Green (s)	50.8	50.8	9.0	62.0	18.0	18.0
Actuated g/C Ratio	0.56	0.56	0.10	0.69	0.20	0.20
v/c Ratio	0.94	0.59	0.48	0.53	1.01	0.46
Control Delay	30.2	17.3	48.1	7.9	89.4	37.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.2	17.3	48.1	7.9	89.4	37.2
LOS	C	B	D	A	F	D
Approach Delay	27.4			10.3	74.4	
Approach LOS	C			B	E	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)	522	197	46	165	~210	73
Queue Length 95th (ft)	#720	306	94	211	#386	132
Internal Link Dist (ft)	178			1260	758	
Turn Bay Length (ft)			200			
Base Capacity (vph)	1997	893	177	2437	354	316
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.59	0.48	0.53	1.01	0.46

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 80 (89%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 27.4 Intersection LOS: C
Intersection Capacity Utilization 84.2% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 3: New Star Road & South Main Street

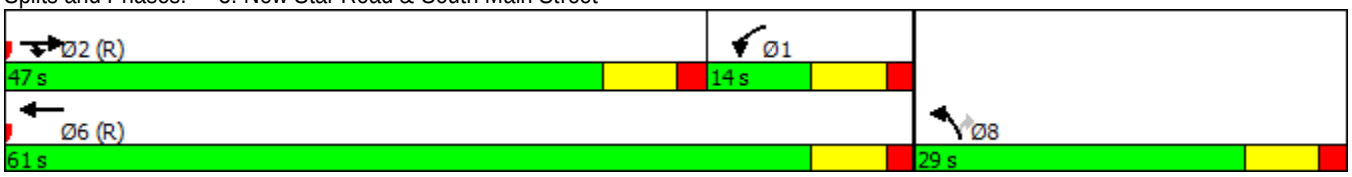
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1460	420	75	1518	407	146
Future Volume (vph)	1460	420	75	1518	407	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	200		0	0
Storage Lanes		1	1		1	1
Taper Length (ft)			100		100	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	1770	3539	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	1770	3539	1770	1583
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			35	35	
Link Distance (ft)	258			1340	838	
Travel Time (s)	5.0			26.1	16.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1587	457	82	1650	442	159
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1587	457	82	1650	442	159
Turn Type	NA	Prot	Prot	NA	Prot	Perm
Protected Phases	2	2	1	6	8	
Permitted Phases						8
Detector Phase	2	2	1	6	8	8
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	10.0	7.0	7.0
Minimum Split (s)	17.0	17.0	14.0	17.0	14.0	14.0
Total Split (s)	47.0	47.0	14.0	61.0	29.0	29.0
Total Split (%)	52.2%	52.2%	15.6%	67.8%	32.2%	32.2%
Maximum Green (s)	40.0	40.0	7.0	54.0	22.0	22.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	C-Max	None	C-Max	Max	Max
Act Effct Green (s)	44.8	44.8	9.0	56.0	24.0	24.0
Actuated g/C Ratio	0.50	0.50	0.10	0.62	0.27	0.27
v/c Ratio	0.90	0.58	0.46	0.75	0.94	0.38
Control Delay	30.6	20.8	47.4	14.8	62.4	30.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	20.8	47.4	14.8	62.4	30.1
LOS	C	C	D	B	E	C
Approach Delay	28.4			16.3	53.8	
Approach LOS	C			B	D	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)	441	187	45	316	245	74
Queue Length 95th (ft)	#613	290	90	404	#429	130
Internal Link Dist (ft)	178			1260	758	
Turn Bay Length (ft)			200			
Base Capacity (vph)	1761	787	177	2202	472	422
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.58	0.46	0.75	0.94	0.38

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 36 (40%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 27.1 Intersection LOS: C
Intersection Capacity Utilization 81.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: New Star Road & South Main Street



Intersection	
Int Delay, s/veh	2.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	125	338	4	159	404
Future Vol, veh/h	4	125	338	4	159	404
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	136	367	4	173	439

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1155	370	0	0	372	0
Stage 1	370	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	218	676	-	-	1186	-
Stage 1	699	-	-	-	-	-
Stage 2	449	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	176	676	-	-	1186	-
Mov Cap-2 Maneuver	176	-	-	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	362	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	2.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	621	1186	-
HCM Lane V/C Ratio	-	-	0.226	0.146	-
HCM Control Delay (s)	-	-	12.5	8.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.5	-

Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	156	397	4	149	346
Future Vol, veh/h	4	156	397	4	149	346
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	170	432	4	162	376

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1134	434	0	0	436	0
Stage 1	434	-	-	-	-	-
Stage 2	700	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	224	622	-	-	1124	-
Stage 1	653	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	183	622	-	-	1124	-
Mov Cap-2 Maneuver	183	-	-	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	403	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.7	0	2.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	587	1124	-
HCM Lane V/C Ratio	-	-	0.296	0.144	-
HCM Control Delay (s)	-	-	13.7	8.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.5	-

Intersection						
Int Delay, s/veh	4.3					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	159	4	4	125	4
Future Vol, veh/h	4	159	4	4	125	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	173	4	4	136	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	177	0	104	91
Stage 1	-	-	-	-	91	-
Stage 2	-	-	-	-	13	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1399	-	894	967
Stage 1	-	-	-	-	933	-
Stage 2	-	-	-	-	1010	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1399	-	891	967
Mov Cap-2 Maneuver	-	-	-	-	891	-
Stage 1	-	-	-	-	933	-
Stage 2	-	-	-	-	1007	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.8	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	893	-	-	1399	-
HCM Lane V/C Ratio	0.157	-	-	0.003	-
HCM Control Delay (s)	9.8	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Intersection						
Int Delay, s/veh	5.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	149	4	4	156	4
Future Vol, veh/h	4	149	4	4	156	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	162	4	4	170	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	166	0	98	85
Stage 1	-	-	-	-	85	-
Stage 2	-	-	-	-	13	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1412	-	901	974
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	1010	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1412	-	898	974
Mov Cap-2 Maneuver	-	-	-	-	898	-
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	1007	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.8	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	900	-	-	1412	-
HCM Lane V/C Ratio	0.193	-	-	0.003	-
HCM Control Delay (s)	10	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	63	42	121	77	52	95
Future Vol, veh/h	63	42	121	77	52	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	46	132	84	57	103

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	389	173	0	0	215	0
Stage 1	173	-	-	-	-	-
Stage 2	216	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	615	871	-	-	1355	-
Stage 1	857	-	-	-	-	-
Stage 2	820	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	587	871	-	-	1355	-
Mov Cap-2 Maneuver	587	-	-	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	2.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	675	1355	-
HCM Lane V/C Ratio	-	-	0.169	0.042	-
HCM Control Delay (s)	-	-	11.4	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	79	52	105	74	50	114
Future Vol, veh/h	79	52	105	74	50	114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	57	114	80	54	124

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	387	154	0	0	195	0
Stage 1	154	-	-	-	-	-
Stage 2	233	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	616	892	-	-	1378	-
Stage 1	874	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	590	892	-	-	1378	-
Mov Cap-2 Maneuver	590	-	-	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	2.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	682	1378	-
HCM Lane V/C Ratio	-	-	0.209	0.039	-
HCM Control Delay (s)	-	-	11.7	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

MOVEMENT SUMMARY

Site: Combined (2030) PM

Capital Sports Complex
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Star Road											
8	T1	67	2.0	0.177	6.0	LOS A	0.9	23.9	0.42	0.27	30.4
18	R2	86	2.0	0.177	6.0	LOS A	0.9	23.9	0.42	0.27	29.8
Approach		152	2.0	0.177	6.0	LOS A	0.9	23.9	0.42	0.27	30.1
East: Northern Site Drive											
1	L2	70	2.0	0.215	5.8	LOS A	1.2	31.7	0.29	0.14	23.2
16	R2	139	2.0	0.215	5.8	LOS A	1.2	31.7	0.29	0.14	22.7
Approach		209	2.0	0.215	5.8	LOS A	1.2	31.7	0.29	0.14	22.9
North: Star Road											
7u	U	4	2.0	0.255	6.2	LOS A	1.5	38.4	0.29	0.14	30.5
7	L2	172	2.0	0.255	6.2	LOS A	1.5	38.4	0.29	0.14	29.1
4	T1	72	2.0	0.255	6.2	LOS A	1.5	38.4	0.29	0.14	29.1
Approach		249	2.0	0.255	6.2	LOS A	1.5	38.4	0.29	0.14	29.1
All Vehicles		610	2.0	0.255	6.0	LOS A	1.5	38.4	0.32	0.17	26.8

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Combined (2030) SAT

Capital Sports Complex
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Star Road											
8	T1	58	2.0	0.163	5.8	LOS A	0.9	21.9	0.41	0.26	30.5
18	R2	83	2.0	0.163	5.8	LOS A	0.9	21.9	0.41	0.26	29.9
Approach		141	2.0	0.163	5.8	LOS A	0.9	21.9	0.41	0.26	30.1
East: Northern Site Drive											
1	L2	87	2.0	0.264	6.3	LOS A	1.6	41.2	0.28	0.13	23.1
16	R2	173	2.0	0.264	6.3	LOS A	1.6	41.2	0.28	0.13	22.6
Approach		260	2.0	0.264	6.3	LOS A	1.6	41.2	0.28	0.13	22.8
North: Star Road											
7u	U	4	2.0	0.236	6.1	LOS A	1.4	34.5	0.32	0.17	29.5
7	L2	166	2.0	0.236	6.1	LOS A	1.4	34.5	0.32	0.17	29.1
4	T1	56	2.0	0.236	6.1	LOS A	1.4	34.5	0.32	0.17	29.2
Approach		226	2.0	0.236	6.1	LOS A	1.4	34.5	0.32	0.17	29.1
All Vehicles		627	2.0	0.264	6.1	LOS A	1.6	41.2	0.32	0.17	26.3

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Intersection						
Int Delay, s/veh	4.4					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	125	4	4	4	4	155
Future Vol, veh/h	125	4	4	4	4	155
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	136	4	4	4	4	168

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	102	89	173	0	-	0
Stage 1	89	-	-	-	-	-
Stage 2	13	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	896	969	1404	-	-	-
Stage 1	934	-	-	-	-	-
Stage 2	1010	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	893	969	1404	-	-	-
Mov Cap-2 Maneuver	893	-	-	-	-	-
Stage 1	934	-	-	-	-	-
Stage 2	1007	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	3.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1404	-	895	-	-
HCM Lane V/C Ratio	0.003	-	0.157	-	-
HCM Control Delay (s)	7.6	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	156	4	4	4	4	149
Future Vol, veh/h	156	4	4	4	4	149
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	170	4	4	4	4	162

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	98	85	166	0	-	0
Stage 1	85	-	-	-	-	-
Stage 2	13	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	901	974	1412	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	1010	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	898	974	1412	-	-	-
Mov Cap-2 Maneuver	898	-	-	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	1007	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	3.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1412	-	900	-	-
HCM Lane V/C Ratio	0.003	-	0.193	-	-
HCM Control Delay (s)	7.6	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

APPENDIX F

CAPACITY ANALYSIS CALCULATIONS

US 1

&

NEW FALLS OF NEUSE ROAD / SOUTH MAIN STREET

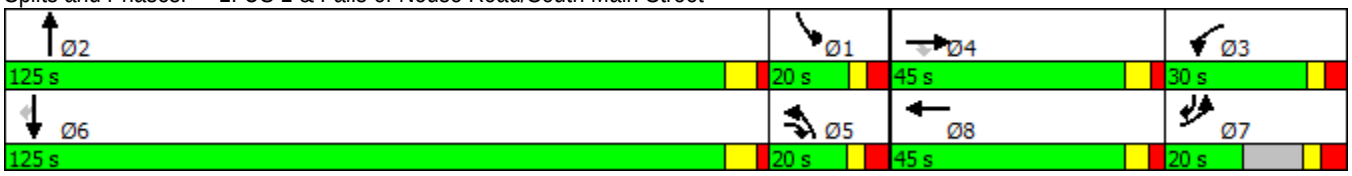
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	367	654	97	284	487	132	156	1378	464	233	1250	397
Future Volume (vph)	367	654	97	284	487	132	156	1378	464	233	1250	397
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		300	0		0	400		250	225		125
Storage Lanes	2		1	2		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850		0.968				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3426	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3426	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			35			55			55	
Link Distance (ft)		1590			321			542			1002	
Travel Time (s)		24.1			6.3			6.7			12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	408	727	108	316	541	147	173	1531	516	259	1389	441
Shared Lane Traffic (%)												
Lane Group Flow (vph)	408	727	108	316	688	0	173	1531	516	259	1389	441
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Free	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4						Free			6
Detector Phase	7	4	5	3	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0		7.0	14.0	7.0
Minimum Split (s)	14.5	13.8	14.3	14.0	13.7		14.3	21.2		13.9	21.1	14.5
Total Split (s)	20.0	45.0	20.0	30.0	45.0		20.0	125.0		20.0	125.0	20.0
Total Split (%)	9.1%	20.5%	9.1%	13.6%	20.5%		9.1%	56.8%		9.1%	56.8%	9.1%
Maximum Green (s)	12.5	38.2	12.7	23.0	38.3		12.7	117.8		13.1	117.9	12.5
Yellow Time (s)	3.0	4.3	3.0	3.2	3.8		3.0	5.2		3.0	5.2	3.0
All-Red Time (s)	4.5	2.5	4.3	3.8	2.9		4.3	2.0		3.9	1.9	4.5
Lost Time Adjust (s)	-2.5	-1.8	-2.3	-2.0	-1.7		-2.3	-2.2		-1.9	-2.1	-2.5
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lag	Lead		Lag	Lead		Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0		2.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4		2.0	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0		0.0	30.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	50.0		0.0	50.0	0.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	None
Act Effct Green (s)	21.0	40.2	64.7	21.0	40.2		19.5	65.0	161.3	15.1	60.6	86.6
Actuated g/C Ratio	0.13	0.25	0.40	0.13	0.25		0.12	0.40	1.00	0.09	0.38	0.54
v/c Ratio	0.91	0.83	0.17	0.71	0.81		0.42	0.75	0.33	0.81	0.73	0.52
Control Delay	95.5	67.0	33.9	77.3	66.2		70.6	43.7	0.5	91.7	46.0	26.4
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.5	67.0	33.9	77.3	66.2		70.6	43.7	0.5	91.7	46.0	26.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	E	C	E	E		E	D	A	F	D	C
Approach Delay		73.5			69.7			35.8			47.5	
Approach LOS		E			E			D			D	
Queue Length 50th (ft)	221	385	73	166	362		88	503	0	140	464	293
Queue Length 95th (ft)	#321	#547	137	238	#514		141	578	0	#240	538	392
Internal Link Dist (ft)		1510			241			462			922	
Turn Bay Length (ft)	300		300				400		250	225		125
Base Capacity (vph)	534	881	634	534	853		414	3799	1583	320	3799	839
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.83	0.17	0.59	0.81		0.42	0.40	0.33	0.81	0.37	0.53

Intersection Summary

Area Type: Other
Cycle Length: 220
Actuated Cycle Length: 161.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 51.9 Intersection LOS: D
Intersection Capacity Utilization 78.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: US 1 & Falls of Neuse Road/South Main Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	436	559	146	390	535	236	116	1013	374	228	1230	481
Future Volume (vph)	436	559	146	390	535	236	116	1013	374	228	1230	481
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		300	0		0	400		250	225		125
Storage Lanes	2		1	2		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850		0.954				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3376	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3376	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			35			55			55	
Link Distance (ft)		1590			321			542			1002	
Travel Time (s)		24.1			6.3			6.7			12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	484	621	162	433	594	262	129	1126	416	253	1367	534
Shared Lane Traffic (%)												
Lane Group Flow (vph)	484	621	162	433	856	0	129	1126	416	253	1367	534
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Free	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4						Free			6
Detector Phase	7	4	5	3	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0		7.0	14.0	7.0
Minimum Split (s)	14.5	13.8	14.3	14.0	13.7		14.3	21.2		13.9	21.1	14.5
Total Split (s)	20.0	45.0	20.0	30.0	45.0		20.0	125.0		20.0	125.0	20.0
Total Split (%)	9.1%	20.5%	9.1%	13.6%	20.5%		9.1%	56.8%		9.1%	56.8%	9.1%
Maximum Green (s)	12.5	38.2	12.7	23.0	38.3		12.7	117.8		13.1	117.9	12.5
Yellow Time (s)	3.0	4.3	3.0	3.2	3.8		3.0	5.2		3.0	5.2	3.0
All-Red Time (s)	4.5	2.5	4.3	3.8	2.9		4.3	2.0		3.9	1.9	4.5
Lost Time Adjust (s)	-2.5	-1.8	-2.3	-2.0	-1.7		-2.3	-2.2		-1.9	-2.1	-2.5
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lag	Lead		Lag	Lead		Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0		2.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4		2.0	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0		0.0	30.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	50.0		0.0	50.0	0.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	None
Act Effct Green (s)	20.1	34.9	54.5	25.3	40.1		14.6	51.3	152.6	21.1	57.8	82.9
Actuated g/C Ratio	0.13	0.23	0.36	0.17	0.26		0.10	0.34	1.00	0.14	0.38	0.54
v/c Ratio	1.07	0.77	0.29	0.76	0.97		0.39	0.66	0.26	0.53	0.71	0.62
Control Delay	124.8	62.5	37.2	71.2	78.1		70.2	45.6	0.4	66.8	42.9	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	124.8	62.5	37.2	71.2	78.1		70.2	45.6	0.4	66.8	42.9	27.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	E	D	E	E		E	D	A	E	D	C
Approach Delay		83.0			75.8			36.2			41.9	
Approach LOS		F			E			D			D	
Queue Length 50th (ft)	~267	302	113	213	441		62	344	0	123	424	358
Queue Length 95th (ft)	#381	403	190	#319	#668		106	433	0	181	501	478
Internal Link Dist (ft)		1510			241			462			922	
Turn Bay Length (ft)	300		300				400		250	225		125
Base Capacity (vph)	564	930	558	568	887		338	4010	1583	473	4010	854
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.67	0.29	0.76	0.97		0.38	0.28	0.26	0.53	0.34	0.63

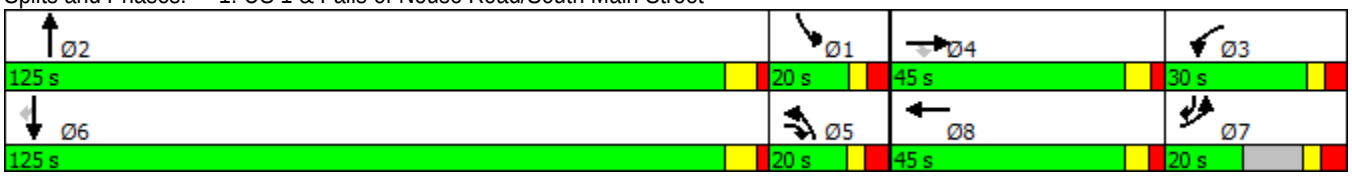
Intersection Summary

Area Type: Other
Cycle Length: 220
Actuated Cycle Length: 152.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 55.4 Intersection LOS: E
Intersection Capacity Utilization 81.0% ICU Level of Service D
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: US 1 & Falls of Neuse Road/South Main Street



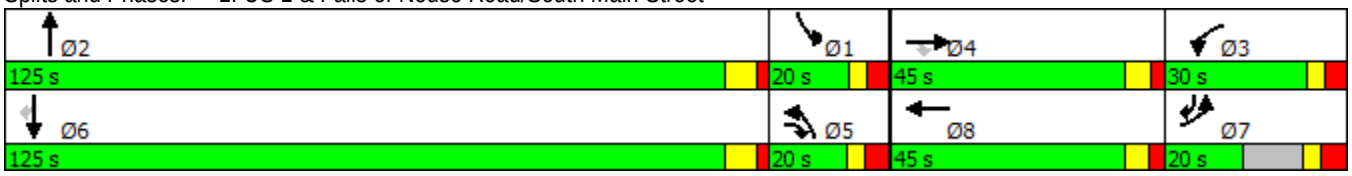
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	374	667	99	310	497	135	159	1417	473	238	1295	405
Future Volume (vph)	374	667	99	310	497	135	159	1417	473	238	1295	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		300	0		0	400		250	225		125
Storage Lanes	2		1	2		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850		0.968				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3426	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3426	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			35			55			55	
Link Distance (ft)		1590			321			542			1002	
Travel Time (s)		24.1			6.3			6.7			12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	416	741	110	344	552	150	177	1574	526	264	1439	450
Shared Lane Traffic (%)												
Lane Group Flow (vph)	416	741	110	344	702	0	177	1574	526	264	1439	450
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Free	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4						Free			6
Detector Phase	7	4	5	3	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0		7.0	14.0	7.0
Minimum Split (s)	14.5	13.8	14.3	14.0	13.7		14.3	21.2		13.9	21.1	14.5
Total Split (s)	20.0	45.0	20.0	30.0	45.0		20.0	125.0		20.0	125.0	20.0
Total Split (%)	9.1%	20.5%	9.1%	13.6%	20.5%		9.1%	56.8%		9.1%	56.8%	9.1%
Maximum Green (s)	12.5	38.2	12.7	23.0	38.3		12.7	117.8		13.1	117.9	12.5
Yellow Time (s)	3.0	4.3	3.0	3.2	3.8		3.0	5.2		3.0	5.2	3.0
All-Red Time (s)	4.5	2.5	4.3	3.8	2.9		4.3	2.0		3.9	1.9	4.5
Lost Time Adjust (s)	-2.5	-1.8	-2.3	-2.0	-1.7		-2.3	-2.2		-1.9	-2.1	-2.5
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lag	Lead		Lag	Lead		Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0		2.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4		2.0	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0		0.0	30.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	50.0		0.0	50.0	0.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	None
Act Effct Green (s)	22.5	40.2	64.3	22.5	40.2		19.1	66.8	164.7	15.1	62.8	90.4
Actuated g/C Ratio	0.14	0.24	0.39	0.14	0.24		0.12	0.41	1.00	0.09	0.38	0.55
v/c Ratio	0.89	0.86	0.18	0.73	0.84		0.45	0.76	0.33	0.84	0.74	0.52
Control Delay	91.2	71.1	35.8	79.1	70.1		73.2	44.8	0.6	96.8	46.7	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.2	71.1	35.8	79.1	70.1		73.2	44.8	0.6	96.8	46.7	25.8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	E	D	E	E		E	D	A	F	D	C
Approach Delay		74.7			73.0			36.8			48.5	
Approach LOS		E			E			D			D	
Queue Length 50th (ft)	229	408	78	185	385		93	537	0	147	497	300
Queue Length 95th (ft)	#341	#584	142	263	#548		147	599	0	#255	560	399
Internal Link Dist (ft)		1510			241			462			922	
Turn Bay Length (ft)	300		300				400		250	225		125
Base Capacity (vph)	523	863	617	523	836		397	3722	1583	314	3722	858
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.86	0.18	0.66	0.84		0.45	0.42	0.33	0.84	0.39	0.52

Intersection Summary

Area Type: Other
Cycle Length: 220
Actuated Cycle Length: 164.7
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 53.3 Intersection LOS: D
Intersection Capacity Utilization 79.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: US 1 & Falls of Neuse Road/South Main Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	445	570	149	410	546	241	118	1045	381	233	1267	491
Future Volume (vph)	445	570	149	410	546	241	118	1045	381	233	1267	491
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		300	0		0	400		250	225		125
Storage Lanes	2		1	2		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850		0.954				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3376	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3376	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			35			55			55	
Link Distance (ft)		1590			321			542			1002	
Travel Time (s)		24.1			6.3			6.7			12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	494	633	166	456	607	268	131	1161	423	259	1408	546
Shared Lane Traffic (%)												
Lane Group Flow (vph)	494	633	166	456	875	0	131	1161	423	259	1408	546
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Free	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4						Free			6
Detector Phase	7	4	5	3	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0		7.0	14.0	7.0
Minimum Split (s)	14.5	13.8	14.3	14.0	13.7		14.3	21.2		13.9	21.1	14.5
Total Split (s)	20.0	45.0	20.0	30.0	45.0		20.0	125.0		20.0	125.0	20.0
Total Split (%)	9.1%	20.5%	9.1%	13.6%	20.5%		9.1%	56.8%		9.1%	56.8%	9.1%
Maximum Green (s)	12.5	38.2	12.7	23.0	38.3		12.7	117.8		13.1	117.9	12.5
Yellow Time (s)	3.0	4.3	3.0	3.2	3.8		3.0	5.2		3.0	5.2	3.0
All-Red Time (s)	4.5	2.5	4.3	3.8	2.9		4.3	2.0		3.9	1.9	4.5
Lost Time Adjust (s)	-2.5	-1.8	-2.3	-2.0	-1.7		-2.3	-2.2		-1.9	-2.1	-2.5
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lag	Lead		Lag	Lead		Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0		2.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4		2.0	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0		0.0	30.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	50.0		0.0	50.0	0.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	None
Act Effct Green (s)	21.5	36.6	56.2	25.1	40.1		14.6	52.5	155.5	21.2	59.2	85.7
Actuated g/C Ratio	0.14	0.24	0.36	0.16	0.26		0.09	0.34	1.00	0.14	0.38	0.55
v/c Ratio	1.04	0.76	0.29	0.82	1.00		0.41	0.68	0.27	0.55	0.73	0.63
Control Delay	116.0	62.6	37.8	76.8	88.3		71.9	46.7	0.4	68.5	43.9	27.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.0	62.6	37.8	76.8	88.3		71.9	46.7	0.4	68.5	43.9	27.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	E	D	E	F		E	D	A	E	D	C
Approach Delay		79.8			84.3			37.2			42.8	
Approach LOS		E			F			D			D	
Queue Length 50th (ft)	~270	314	118	232	~468		64	365	0	129	450	371
Queue Length 95th (ft)	#404	421	200	#355	#710		109	449	0	188	520	493
Internal Link Dist (ft)		1510			241			462			922	
Turn Bay Length (ft)	300		300				400		250	225		125
Base Capacity (vph)	553	913	565	553	871		332	3936	1583	468	3936	860
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.69	0.29	0.82	1.00		0.39	0.29	0.27	0.55	0.36	0.63

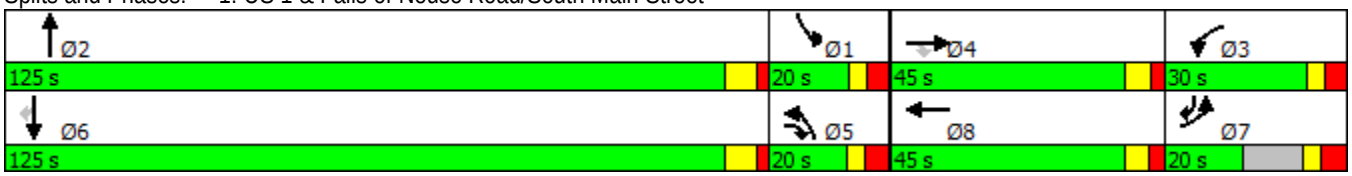
Intersection Summary

Area Type: Other
Cycle Length: 220
Actuated Cycle Length: 155.5
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 57.1 Intersection LOS: E
Intersection Capacity Utilization 82.5% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: US 1 & Falls of Neuse Road/South Main Street



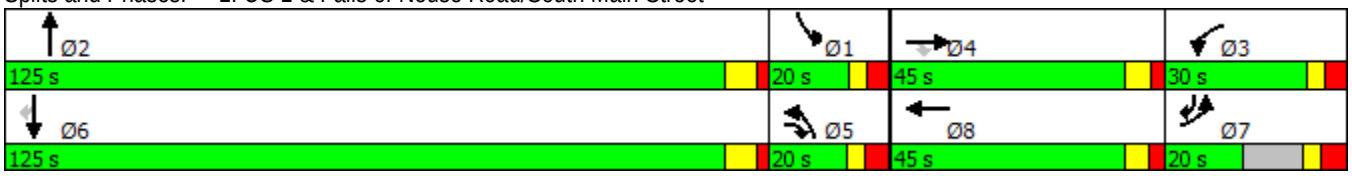
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	374	719	202	387	497	135	284	1522	473	238	1425	405
Future Volume (vph)	374	719	202	387	497	135	284	1522	473	238	1425	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		300	0		0	400		250	225		125
Storage Lanes	2		1	2		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850		0.968				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3426	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3426	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			35			55			55	
Link Distance (ft)		1590			321			542			1002	
Travel Time (s)		24.1			6.3			6.7			12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	416	799	224	430	552	150	316	1691	526	264	1583	450
Shared Lane Traffic (%)												
Lane Group Flow (vph)	416	799	224	430	702	0	316	1691	526	264	1583	450
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Free	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4						Free			6
Detector Phase	7	4	5	3	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0		7.0	14.0	7.0
Minimum Split (s)	14.5	13.8	14.3	14.0	13.7		14.3	21.2		13.9	21.1	14.5
Total Split (s)	20.0	45.0	20.0	30.0	45.0		20.0	125.0		20.0	125.0	20.0
Total Split (%)	9.1%	20.5%	9.1%	13.6%	20.5%		9.1%	56.8%		9.1%	56.8%	9.1%
Maximum Green (s)	12.5	38.2	12.7	23.0	38.3		12.7	117.8		13.1	117.9	12.5
Yellow Time (s)	3.0	4.3	3.0	3.2	3.8		3.0	5.2		3.0	5.2	3.0
All-Red Time (s)	4.5	2.5	4.3	3.8	2.9		4.3	2.0		3.9	1.9	4.5
Lost Time Adjust (s)	-2.5	-1.8	-2.3	-2.0	-1.7		-2.3	-2.2		-1.9	-2.1	-2.5
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lag	Lead		Lag	Lead		Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0		2.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4		2.0	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0		0.0	30.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	50.0		0.0	50.0	0.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	None
Act Effct Green (s)	25.1	40.1	63.9	25.1	40.1		18.7	74.2	174.5	15.0	70.5	100.6
Actuated g/C Ratio	0.14	0.23	0.37	0.14	0.23		0.11	0.43	1.00	0.09	0.40	0.58
v/c Ratio	0.84	0.98	0.39	0.87	0.89		0.86	0.78	0.33	0.89	0.77	0.49
Control Delay	89.2	93.3	44.9	91.9	79.8		98.5	45.9	0.6	109.0	47.6	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.2	93.3	44.9	91.9	79.8		98.5	45.9	0.6	109.0	47.6	23.8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	F	D	F	E		F	D	A	F	D	C
Approach Delay		84.6			84.4			43.0			50.0	
Approach LOS		F			F			D			D	
Queue Length 50th (ft)	242	482	188	251	412		185	606	0	156	572	296
Queue Length 95th (ft)	#368	#708	304	#387	#593		#304	659	0	#272	624	388
Internal Link Dist (ft)		1510			241			462			922	
Turn Bay Length (ft)	300		300				400		250	225		125
Base Capacity (vph)	493	813	579	493	787		368	3506	1583	295	3506	912
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.98	0.39	0.87	0.89		0.86	0.48	0.33	0.89	0.45	0.49

Intersection Summary

Area Type: Other
Cycle Length: 220
Actuated Cycle Length: 174.5
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 59.6 Intersection LOS: E
Intersection Capacity Utilization 83.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: US 1 & Falls of Neuse Road/South Main Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	445	620	248	485	546	241	274	1176	381	233	1391	491
Future Volume (vph)	445	620	248	485	546	241	274	1176	381	233	1391	491
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		300	0		0	400		250	225		125
Storage Lanes	2		1	2		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850		0.954				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3376	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3376	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			35			55			55	
Link Distance (ft)		1590			321			542			1002	
Travel Time (s)		24.1			6.3			6.7			12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	494	689	276	539	607	268	304	1307	423	259	1546	546
Shared Lane Traffic (%)												
Lane Group Flow (vph)	494	689	276	539	875	0	304	1307	423	259	1546	546
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Free	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4						Free			6
Detector Phase	7	4	5	3	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0		7.0	14.0	7.0
Minimum Split (s)	14.5	13.8	14.3	14.0	13.7		14.3	21.2		13.9	21.1	14.5
Total Split (s)	20.0	45.0	20.0	30.0	45.0		20.0	125.0		20.0	125.0	20.0
Total Split (%)	9.1%	20.5%	9.1%	13.6%	20.5%		9.1%	56.8%		9.1%	56.8%	9.1%
Maximum Green (s)	12.5	38.2	12.7	23.0	38.3		12.7	117.8		13.1	117.9	12.5
Yellow Time (s)	3.0	4.3	3.0	3.2	3.8		3.0	5.2		3.0	5.2	3.0
All-Red Time (s)	4.5	2.5	4.3	3.8	2.9		4.3	2.0		3.9	1.9	4.5
Lost Time Adjust (s)	-2.5	-1.8	-2.3	-2.0	-1.7		-2.3	-2.2		-1.9	-2.1	-2.5
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lag	Lead		Lag	Lead		Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0		2.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4		2.0	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0		0.0	30.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	50.0		0.0	50.0	0.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	None
Act Effct Green (s)	25.1	40.1	60.1	25.1	40.1		15.0	58.4	165.5	21.9	65.3	95.3
Actuated g/C Ratio	0.15	0.24	0.36	0.15	0.24		0.09	0.35	1.00	0.13	0.39	0.58
v/c Ratio	0.95	0.80	0.48	1.04	1.07		0.97	0.73	0.27	0.57	0.77	0.60
Control Delay	97.8	67.9	45.4	115.8	109.7		118.5	49.3	0.4	73.5	46.4	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.8	67.9	45.4	115.8	109.7		118.5	49.3	0.4	73.5	46.4	25.8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	E	D	F	F		F	D	A	E	D	C
Approach Delay		73.8			112.0			49.5			44.6	
Approach LOS		E			F			D			D	
Queue Length 50th (ft)	277	372	230	~322	~549		172	460	0	135	531	371
Queue Length 95th (ft)	#436	493	359	#494	#766		#304	515	0	198	585	486
Internal Link Dist (ft)		1510			241			462			922	
Turn Bay Length (ft)	300		300				400		250	225		125
Base Capacity (vph)	519	857	575	519	817		312	3695	1583	453	3695	911
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.95	0.80	0.48	1.04	1.07		0.97	0.35	0.27	0.57	0.42	0.60

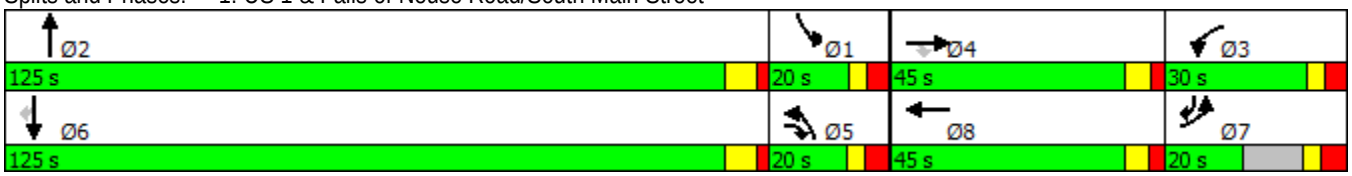
Intersection Summary

Area Type: Other
Cycle Length: 220
Actuated Cycle Length: 165.5
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 65.0 Intersection LOS: E
Intersection Capacity Utilization 86.9% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: US 1 & Falls of Neuse Road/South Main Street



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	374	719	202	387	497	135	284	1522	473	238	1425	405
Future Volume (vph)	374	719	202	387	497	135	284	1522	473	238	1425	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		300	0		0	400		250	225		125
Storage Lanes	2		1	2		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850		0.968				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3426	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3426	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			35			55			55	
Link Distance (ft)		1590			321			542			1002	
Travel Time (s)		24.1			6.3			6.7			12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	416	799	224	430	552	150	316	1691	526	264	1583	450
Shared Lane Traffic (%)												
Lane Group Flow (vph)	416	799	224	430	702	0	316	1691	526	264	1583	450
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Free	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4						Free			6
Detector Phase	7	4	5	3	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0		7.0	14.0	7.0
Minimum Split (s)	14.5	13.8	14.3	14.0	13.7		14.3	21.2		13.9	21.1	14.5
Total Split (s)	15.0	57.0	22.0	27.0	69.0		22.0	78.0		18.0	74.0	15.0
Total Split (%)	8.3%	31.7%	12.2%	15.0%	38.3%		12.2%	43.3%		10.0%	41.1%	8.3%
Maximum Green (s)	7.5	50.2	14.7	20.0	62.3		14.7	70.8		11.1	66.9	7.5
Yellow Time (s)	3.0	4.3	3.0	3.2	3.8		3.0	5.2		3.0	5.2	3.0
All-Red Time (s)	4.5	2.5	4.3	3.8	2.9		4.3	2.0		3.9	1.9	4.5
Lost Time Adjust (s)	-2.5	-1.8	-2.3	-2.0	-1.7		-2.3	-2.2		-1.9	-2.1	-2.5
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lag	Lead		Lag	Lead		Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0		2.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4		2.0	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0		0.0	30.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	50.0		0.0	50.0	0.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	None
Act Effct Green (s)	24.1	44.2	66.3	22.1	42.3		17.1	68.2	168.3	13.6	64.8	93.9
Actuated g/C Ratio	0.14	0.26	0.39	0.13	0.25		0.10	0.41	1.00	0.08	0.39	0.56
v/c Ratio	0.85	0.86	0.36	0.95	0.82		0.91	0.82	0.33	0.95	0.81	0.51
Control Delay	87.0	69.6	38.3	104.0	67.9		103.8	48.8	0.6	118.5	50.5	26.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.0	69.6	38.3	104.0	67.9		103.8	48.8	0.6	118.5	50.5	26.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	E	D	F	E		F	D	A	F	D	C
Approach Delay		69.8			81.6			45.7			53.6	
Approach LOS		E			F			D			D	
Queue Length 50th (ft)	242	460	181	256	402		187	611	0	~164	577	302
Queue Length 95th (ft)	#385	543	258	#397	468		#302	712	0	#279	675	454
Internal Link Dist (ft)		1510			241			462			922	
Turn Bay Length (ft)	300		300				400		250	225		125
Base Capacity (vph)	490	1099	623	451	1310		348	2218	1583	277	2097	882
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.73	0.36	0.95	0.54		0.91	0.76	0.33	0.95	0.75	0.51

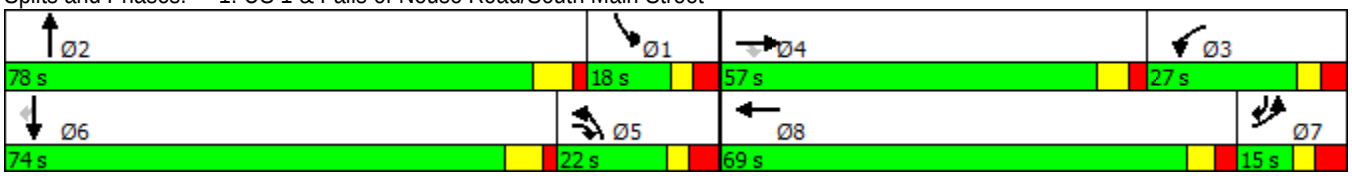
Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 168.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 58.3 Intersection LOS: E
Intersection Capacity Utilization 83.8% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 1: US 1 & Falls of Neuse Road/South Main Street



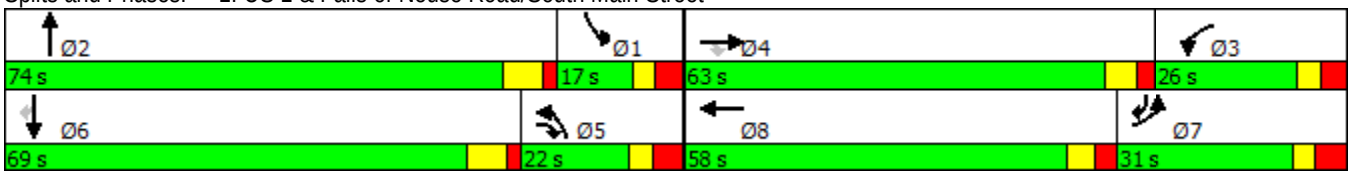
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	445	620	248	485	546	241	274	1176	381	233	1391	491
Future Volume (vph)	445	620	248	485	546	241	274	1176	381	233	1391	491
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		300	0		0	400		250	225		125
Storage Lanes	2		1	2		0	1		1	2		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850		0.954				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3376	0	3433	5085	1583	3433	5085	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1583	3433	3376	0	3433	5085	1583	3433	5085	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			35			55			55	
Link Distance (ft)		1590			321			542			1002	
Travel Time (s)		24.1			6.3			6.7			12.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	494	689	276	539	607	268	304	1307	423	259	1546	546
Shared Lane Traffic (%)												
Lane Group Flow (vph)	494	689	276	539	875	0	304	1307	423	259	1546	546
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	Free	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4						Free			6
Detector Phase	7	4	5	3	8		5	2		1	6	7
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	14.0		7.0	14.0	7.0
Minimum Split (s)	14.5	13.8	14.3	14.0	13.7		14.3	21.2		13.9	21.1	14.5
Total Split (s)	31.0	63.0	22.0	26.0	58.0		22.0	74.0		17.0	69.0	31.0
Total Split (%)	17.2%	35.0%	12.2%	14.4%	32.2%		12.2%	41.1%		9.4%	38.3%	17.2%
Maximum Green (s)	23.5	56.2	14.7	19.0	51.3		14.7	66.8		10.1	61.9	23.5
Yellow Time (s)	3.0	4.3	3.0	3.2	3.8		3.0	5.2		3.0	5.2	3.0
All-Red Time (s)	4.5	2.5	4.3	3.8	2.9		4.3	2.0		3.9	1.9	4.5
Lost Time Adjust (s)	-2.5	-1.8	-2.3	-2.0	-1.7		-2.3	-2.2		-1.9	-2.1	-2.5
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lag	Lead	Lag	Lag	Lead		Lag	Lead		Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	6.0		2.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	2.0		2.0	3.4		2.0	3.4	2.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	30.0		0.0	30.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	50.0		0.0	50.0	0.0
Recall Mode	None	None	None	None	None		None	Min		None	Min	None
Act Effct Green (s)	26.1	41.2	63.3	34.6	49.8		17.0	60.2	175.1	19.0	62.2	93.3
Actuated g/C Ratio	0.15	0.24	0.36	0.20	0.28		0.10	0.34	1.00	0.11	0.36	0.53
v/c Ratio	0.97	0.83	0.48	0.79	0.91		0.91	0.75	0.27	0.69	0.86	0.65
Control Delay	105.8	72.7	46.2	76.5	74.9		108.6	53.8	0.4	84.9	58.3	34.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	105.8	72.7	46.2	76.5	74.9		108.6	53.8	0.4	84.9	58.3	34.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	E	D	E	E		F	D	A	F	E	C
Approach Delay		78.9			75.5			50.9			55.6	
Approach LOS		E			E			D			E	
Queue Length 50th (ft)	305	413	256	313	522		187	506	0	154	621	457
Queue Length 95th (ft)	#433	463	328	#458	614		#286	527	0	#274	684	599
Internal Link Dist (ft)		1510			241			462			922	
Turn Bay Length (ft)	300		300				400		250	225		125
Base Capacity (vph)	510	1174	572	678	1024		334	2007	1583	373	1862	843
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.59	0.48	0.79	0.85		0.91	0.65	0.27	0.69	0.83	0.65

Intersection Summary

Area Type: Other
Cycle Length: 180
Actuated Cycle Length: 175.1
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 62.8 Intersection LOS: E
Intersection Capacity Utilization 86.9% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: US 1 & Falls of Neuse Road/South Main Street



APPENDIX G

CAPACITY ANALYSIS CALCULATIONS

STAR ROAD

&

SOUTH MAIN STREET

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1329	22	0	903	0	44
Future Volume (Veh/h)	1329	22	0	903	0	44
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1477	24	0	1003	0	49
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	321					
pX, platoon unblocked			0.81		0.81	0.81
vC, conflicting volume			1501		1740	750
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1141		1437	211
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	92
cM capacity (veh/h)			490		100	641

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	985	516	251	251	251	251	49
Volume Left	0	0	0	0	0	0	0
Volume Right	0	24	0	0	0	0	49
cSH	1700	1700	1700	1700	1700	1700	641
Volume to Capacity	0.58	0.30	0.15	0.15	0.15	0.15	0.08
Queue Length 95th (ft)	0	0	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	11.1
Lane LOS							B
Approach Delay (s)	0.0		0.0				11.1
Approach LOS							B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1129	32	0	1161	0	41
Future Volume (Veh/h)	1129	32	0	1161	0	41
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1254	36	0	1290	0	46
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	321					
pX, platoon unblocked			0.84		0.84	0.84
vC, conflicting volume			1290		1594	645
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			957		1321	186
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	93
cM capacity (veh/h)			598		124	690

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	836	454	322	322	322	322	46
Volume Left	0	0	0	0	0	0	0
Volume Right	0	36	0	0	0	0	46
cSH	1700	1700	1700	1700	1700	1700	690
Volume to Capacity	0.49	0.27	0.19	0.19	0.19	0.19	0.07
Queue Length 95th (ft)	0	0	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	10.6
Lane LOS							B
Approach Delay (s)	0.0		0.0				10.6
Approach LOS							B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1356	22	0	941	0	56
Future Volume (Veh/h)	1356	22	0	941	0	56
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1507	24	0	1046	0	62
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	321					
pX, platoon unblocked			0.80		0.80	0.80
vC, conflicting volume			1531		1780	766
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1164		1476	208
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	90
cM capacity (veh/h)			477		94	639

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	1005	526	262	262	262	262	62
Volume Left	0	0	0	0	0	0	0
Volume Right	0	24	0	0	0	0	62
cSH	1700	1700	1700	1700	1700	1700	639
Volume to Capacity	0.59	0.31	0.15	0.15	0.15	0.15	0.10
Queue Length 95th (ft)	0	0	0	0	0	0	8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	11.2
Lane LOS							B
Approach Delay (s)	0.0		0.0				11.2
Approach LOS							B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1152	33	0	1196	0	54
Future Volume (Veh/h)	1152	33	0	1196	0	54
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1280	37	0	1329	0	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	321					
pX, platoon unblocked			0.83		0.83	0.83
vC, conflicting volume			1317		1631	658
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			983		1359	194
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	91
cM capacity (veh/h)			583		117	680

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	853	464	332	332	332	332	60
Volume Left	0	0	0	0	0	0	0
Volume Right	0	37	0	0	0	0	60
cSH	1700	1700	1700	1700	1700	1700	680
Volume to Capacity	0.50	0.27	0.20	0.20	0.20	0.20	0.09
Queue Length 95th (ft)	0	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	10.8
Lane LOS							B
Approach Delay (s)	0.0		0.0				10.8
Approach LOS							B

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1356	74	0	1018	0	118
Future Volume (Veh/h)	1356	74	0	1018	0	118
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1507	82	0	1131	0	131
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	321					
pX, platoon unblocked			0.78		0.78	0.78
vC, conflicting volume			1589		1831	794
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1184		1495	162
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	80
cM capacity (veh/h)			455		88	664

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	1005	584	283	283	283	283	131
Volume Left	0	0	0	0	0	0	0
Volume Right	0	82	0	0	0	0	131
cSH	1700	1700	1700	1700	1700	1700	664
Volume to Capacity	0.59	0.34	0.17	0.17	0.17	0.17	0.20
Queue Length 95th (ft)	0	0	0	0	0	0	18
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	11.8
Lane LOS							B
Approach Delay (s)	0.0		0.0				11.8
Approach LOS							B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1152	83	0	1271	0	132
Future Volume (Veh/h)	1152	83	0	1271	0	132
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1280	92	0	1412	0	147
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	321					
pX, platoon unblocked			0.82		0.82	0.82
vC, conflicting volume			1372		1679	686
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1009		1384	170
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	79
cM capacity (veh/h)			558		110	691

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	WB 4	NB 1
Volume Total	853	519	353	353	353	353	147
Volume Left	0	0	0	0	0	0	0
Volume Right	0	92	0	0	0	0	147
cSH	1700	1700	1700	1700	1700	1700	691
Volume to Capacity	0.50	0.31	0.21	0.21	0.21	0.21	0.21
Queue Length 95th (ft)	0	0	0	0	0	0	20
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	11.6
Lane LOS							B
Approach Delay (s)	0.0		0.0				11.6
Approach LOS							B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX H

CAPACITY ANALYSIS CALCULATIONS

US 1

&

PONDEROSA SERVICE ROAD

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	3	158	5	1	15	77	1970	6	4	1614	13
Future Vol, veh/h	13	3	158	5	1	15	77	1970	6	4	1614	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	0	250	-	150	250	-	125
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	3	176	6	1	17	86	2189	7	4	1793	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3068	4162	897	3267	4162	1094	1793	0	0	2189	0	0
Stage 1	1802	1802	-	2360	2360	-	-	-	-	-	-	-
Stage 2	1266	2360	-	907	1802	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 5	~ 2	283	~ 4	2	209	341	-	-	238	-	-
Stage 1	82	130	-	36	67	-	-	-	-	-	-	-
Stage 2	179	67	-	297	130	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 1	283	-	~ 1	209	341	-	-	238	-	-
Mov Cap-2 Maneuver	-	~ 1	-	-	~ 1	-	-	-	-	-	-	-
Stage 1	61	128	-	27	50	-	-	-	-	-	-	-
Stage 2	120	50	-	108	128	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0.7	0.1
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	341	-	-	-	283	-	209	238	-	-
HCM Lane V/C Ratio	0.251	-	-	-	0.62	-	0.08	0.019	-	-
HCM Control Delay (s)	19.1	-	-	-	36.5	-	23.7	20.4	-	-
HCM Lane LOS	C	-	-	-	E	-	C	C	-	-
HCM 95th %tile Q(veh)	1	-	-	-	3.8	-	0.3	0.1	-	-

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	13	3	158	5	1	15	1	76	1970	6	4	1614
Future Volume (Veh/h)	13	3	158	5	1	15	1	76	1970	6	4	1614
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%				0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	3	176	6	1	17	0	84	2189	7	4	1793
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			1									
Median type									Raised			Raised
Median storage veh)									1			1
Upstream signal (ft)												
pX, platoon unblocked							0.00					
vC, conflicting volume	3081	4165	896	3263	4172	1094	0	1807			2196	
vC1, stage 1 conf vol	1801	1801		2357	2357							
vC2, stage 2 conf vol	1280	2364		906	1815							
vCu, unblocked vol	3081	4165	896	3263	4172	1094	0	1807			2196	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			4.1	
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			2.2	
p0 queue free %	69	90	38	50	95	92	0	75			98	
cM capacity (veh/h)	45	32	283	12	22	209	0	337			237	

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	193	7	17	84	1094	1094	7	4	896	896	14
Volume Left	14	6	0	84	0	0	0	4	0	0	0
Volume Right	176	0	17	0	0	0	7	0	0	0	14
cSH	249	13	209	337	1700	1700	1700	237	1700	1700	1700
Volume to Capacity	0.78	0.54	0.08	0.25	0.64	0.64	0.00	0.02	0.53	0.53	0.01
Queue Length 95th (ft)	142	32	7	24	0	0	0	1	0	0	0
Control Delay (s)	56.0	462.1	23.8	19.2	0.0	0.0	0.0	20.5	0.0	0.0	0.0
Lane LOS	F	F	C	C				C			
Approach Delay (s)	56.0	151.6		0.7				0.0			
Approach LOS	F	F									

Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	75.3%	ICU Level of Service	D	
Analysis Period (min)	15			

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	13
Future Volume (Veh/h)	13
Sign Control	
Grade	
Peak Hour Factor	0.90
Hourly flow rate (vph)	14
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	
vC, conflicting volume	
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	
tC, single (s)	
tC, 2 stage (s)	
tF (s)	
p0 queue free %	
cM capacity (veh/h)	
Direction, Lane #	

Intersection

Int Delay, s/veh	25.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	1	66	9	2	15	84	1479	7	6	1745	15
Future Vol, veh/h	8	1	66	9	2	15	84	1479	7	6	1745	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	0	250	-	150	250	-	125
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	1	73	10	2	17	93	1643	8	7	1939	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2961	3782	969	2813	3782	822	1939	0	0	1643	0	0
Stage 1	1952	1952	-	1830	1830	-	-	-	-	-	-	-
Stage 2	1009	1830	-	983	1952	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 6	4	253	~ 8	4	317	299	-	-	390	-	-
Stage 1	66	109	-	79	126	-	-	-	-	-	-	-
Stage 2	257	126	-	267	109	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 2	3	253	~ 3	3	317	299	-	-	390	-	-
Mov Cap-2 Maneuver	~ 2	3	-	~ 3	3	-	-	-	-	-	-	-
Stage 1	45	107	-	54	87	-	-	-	-	-	-	-
Stage 2	163	87	-	184	107	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	$ 611.1	$ 1504.6	1.2	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	299	-	-	2	253	3	317	390	-	-
HCM Lane V/C Ratio	0.312	-	-	5	0.29	4.074	0.053	0.017	-	-
HCM Control Delay (s)	22.4	-	$	4909.5	24.$	$ 3533.2	17	14.4	-	-
HCM Lane LOS	C	-	-	F	C	F	C	B	-	-
HCM 95th %tile Q(veh)	1.3	-	-	2.5	1.2	2.8	0.2	0.1	-	-

Notes

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

Intersection

Int Delay, s/veh	28.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	13	3	161	37	1	26	1	78	2009	66	44	1646	13
Future Vol, veh/h	13	3	161	37	1	26	1	78	2009	66	44	1646	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	None
Storage Length	-	-	25	-	-	0	-	250	-	150	250	-	125
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	3	179	41	1	29	1	87	2232	73	49	1829	14

Major/Minor	Minor2			Minor1			Major1				Major2		
Conflicting Flow All	3219	4335	914	3422	4335	1116	-	1829	0	0	2232	0	0
Stage 1	1927	1927	-	2408	2408	-	-	-	-	-	-	-	-
Stage 2	1292	2408	-	1014	1927	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	6.44	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.52	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 4	~ 2	276	~ 3	2	202	-	330	-	-	229	-	-
Stage 1	69	112	-	~ 34	64	-	-	-	-	-	-	-	-
Stage 2	172	64	-	256	112	-	-	-	-	-	-	-	-
Platoon blocked, %									-	-		-	-
Mov Cap-1 Maneuver	~ 2	~ 2	276	-	2	202	0	0	-	-	229	-	-
Mov Cap-2 Maneuver	~ 2	~ 2	-	-	2	-	-	-	-	-	-	-	-
Stage 1	69	88	-	~ 34	64	-	-	-	-	-	-	-	-
Stage 2	145	64	-	68	88	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	650.1			0.6
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	2	276	-	202	229	-	-
HCM Lane V/C Ratio	-	-	-	8.889	0.648	-	0.143	0.213	-	-
HCM Control Delay (s)	-	-	-	$ 6797.2	39.2	-	25.8	24.9	-	-
HCM Lane LOS	-	-	-	F	E	-	D	C	-	-
HCM 95th %tile Q(veh)	-	-	-	3.8	4.1	-	0.5	0.8	-	-

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	13	3	161	37	1	26	1	78	2009	66	44	1646
Future Volume (Veh/h)	13	3	161	37	1	26	1	78	2009	66	44	1646
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%				0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	14	3	179	41	1	29	0	87	2232	73	49	1829
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			1									
Median type									Raised			Raised
Median storage veh)									1			1
Upstream signal (ft)												
pX, platoon unblocked							0.00					
vC, conflicting volume	3246	4406	914	3420	4347	1116	0	1843			2305	
vC1, stage 1 conf vol	1927	1927		2406	2406							
vC2, stage 2 conf vol	1320	2479		1014	1941							
vCu, unblocked vol	3246	4406	914	3420	4347	1116	0	1843			2305	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			4.1	
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			2.2	
p0 queue free %	42	0	35	0	0	86	0	73			77	
cM capacity (veh/h)	24	1	275	0	1	202	0	326			215	

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	196	42	29	87	1116	1116	73	49	914	914	14
Volume Left	14	41	0	87	0	0	0	49	0	0	0
Volume Right	179	0	29	0	0	0	73	0	0	0	14
cSH	104	0	202	326	1700	1700	1700	215	1700	1700	1700
Volume to Capacity	1.88	Err	0.14	0.27	0.66	0.66	0.04	0.23	0.54	0.54	0.01
Queue Length 95th (ft)	402	Err	12	26	0	0	0	21	0	0	0
Control Delay (s)	500.7	Err	25.8	20.0	0.0	0.0	0.0	26.7	0.0	0.0	0.0
Lane LOS	F	F	D	C				D			
Approach Delay (s)	500.7	Err		0.7				0.7			
Approach LOS	F	F									

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	13
Future Volume (Veh/h)	13
Sign Control	
Grade	
Peak Hour Factor	0.90
Hourly flow rate (vph)	14
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	
vC, conflicting volume	
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	
tC, single (s)	
tC, 2 stage (s)	
tF (s)	
p0 queue free %	
cM capacity (veh/h)	
Direction, Lane #	

Intersection

Int Delay, s/veh	138.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	8	1	67	45	2	27	8	78	1509	44	1	29	1780	15
Future Vol, veh/h	8	1	67	45	2	27	8	78	1509	44	1	29	1780	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	-	-	25	-	-	0	-	250	-	150	-	250	-	125
Veh in Median Storage, #	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	-	0	-	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	1	74	50	2	30	9	87	1677	49	1	32	1978	17

Major/Minor	Minor2			Minor1			Major1				Major2			
Conflicting Flow All	3075	3912	989	2924	3912	838	-	1978	0	0	-	1677	0	0
Stage 1	2044	2044	-	1868	1868	-	-	-	-	-	-	-	-	-
Stage 2	1031	1868	-	1056	2044	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	6.44	4.14	-	-	6.44	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.52	2.22	-	-	2.52	2.22	-	-
Pot Cap-1 Maneuver	~ 5	3	246	~ 7	3	309	-	289	-	-	-	378	-	-
Stage 1	58	98	-	75	120	-	-	-	-	-	-	-	-	-
Stage 2	249	120	-	241	98	-	-	-	-	-	-	-	-	-
Platoon blocked, %									-	-			-	-
Mov Cap-1 Maneuver	~ 2	3	246	~ 3	3	309	~ -11	~ -11	-	-	~ -32	~ -32	-	-
Mov Cap-2 Maneuver	~ 2	3	-	~ 3	3	-	-	-	-	-	-	-	-	-
Stage 1	58	98	-	75	120	-	-	-	-	-	-	-	-	-
Stage 2	221	120	-	166	98	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 604.2	$ 6164.5		
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	+	-	-	2	246	3	309	+	-	-
HCM Lane V/C Ratio	-	-	-	5	0.303	17.407	0.097	-	-	-
HCM Control Delay (s)	-	-	$ 4909.5	25.9	$ 9695.5	17.9	-	-	-	
HCM Lane LOS	-	-	-	F	D	F	C	-	-	-
HCM 95th %tile Q(veh)	-	-	-	2.5	1.2	8.5	0.3	-	-	-

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (veh/h)	8	1	67	45	2	27	8	78	1509	44	1	29
Future Volume (Veh/h)	8	1	67	45	2	27	8	78	1509	44	1	29
Sign Control		Stop			Stop				Free			
Grade		0%			0%				0%			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	9	1	74	50	2	30	0	87	1677	49	0	32
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			1									
Median type									Raised			
Median storage veh)									1			
Upstream signal (ft)												
pX, platoon unblocked							0.00				0.00	
vC, conflicting volume	3086	3942	989	2904	3910	838	0	1995			0	1726
vC1, stage 1 conf vol	2042	2042		1851	1851							
vC2, stage 2 conf vol	1044	1900		1054	2059							
vCu, unblocked vol	3086	3942	989	2904	3910	838	0	1995			0	1726
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	0.0	4.1			0.0	4.1
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	0.0	2.2			0.0	2.2
p0 queue free %	73	97	70	0	3	90	0	69			0	91
cM capacity (veh/h)	33	30	246	28	2	309	0	284			0	362

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	84	52	30	87	838	838	49	32	989	989	17
Volume Left	9	50	0	87	0	0	0	32	0	0	0
Volume Right	74	0	30	0	0	0	49	0	0	0	17
cSH	277	19	309	284	1700	1700	1700	362	1700	1700	1700
Volume to Capacity	0.30	2.74	0.10	0.31	0.49	0.49	0.03	0.09	0.58	0.58	0.01
Queue Length 95th (ft)	31	173	8	31	0	0	0	7	0	0	0
Control Delay (s)	41.3	1207.2	17.9	23.2	0.0	0.0	0.0	15.9	0.0	0.0	0.0
Lane LOS	E	F	C	C				C			
Approach Delay (s)	41.3	772.1		1.1				0.3			
Approach LOS	E	F									

Intersection Summary			
Average Delay	17.3		
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	SBT	SBR
Lane Configurations		
Traffic Volume (veh/h)	1780	15
Future Volume (Veh/h)	1780	15
Sign Control	Free	
Grade	0%	
Peak Hour Factor	0.90	0.90
Hourly flow rate (vph)	1978	17
Pedestrians		
Lane Width (ft)		
Walking Speed (ft/s)		
Percent Blockage		
Right turn flare (veh)		
Median type	Raised	
Median storage veh)	1	
Upstream signal (ft)		
pX, platoon unblocked		
vC, conflicting volume		
vC1, stage 1 conf vol		
vC2, stage 2 conf vol		
vCu, unblocked vol		
tC, single (s)		
tC, 2 stage (s)		
tF (s)		
p0 queue free %		
cM capacity (veh/h)		
Direction, Lane #		

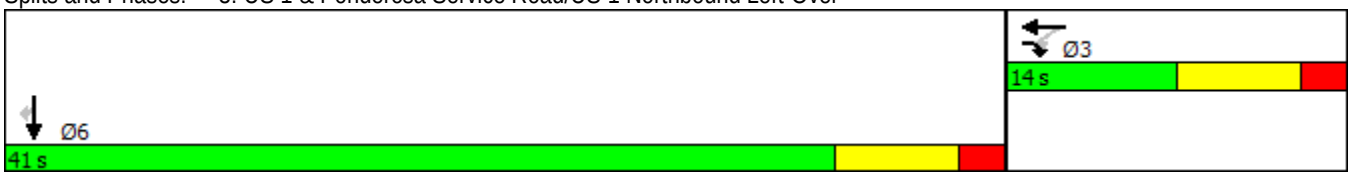
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	161	94	78	0	0	0	0	0	1713	14
Future Volume (vph)	0	0	161	94	78	0	0	0	0	0	1713	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		125
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.865									0.850
Flt Protected					0.973							
Satd. Flow (prot)	0	0	1611	0	1812	0	0	0	0	0	3539	1583
Flt Permitted					0.973							
Satd. Flow (perm)	0	0	1611	0	1812	0	0	0	0	0	3539	1583
Right Turn on Red			No	No		No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			55			55	
Link Distance (ft)		311			343			646			346	
Travel Time (s)		8.5			7.8			8.0			4.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	179	104	87	0	0	0	0	0	1903	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	179	0	191	0	0	0	0	0	1903	16
Turn Type			Prot	Perm	NA						NA	Perm
Protected Phases			3		3						6	
Permitted Phases				3								6
Detector Phase			3	3	3						6	6
Switch Phase												
Minimum Initial (s)			7.0	7.0	7.0						14.0	14.0
Minimum Split (s)			14.0	14.0	14.0						21.0	21.0
Total Split (s)			14.0	14.0	14.0						41.0	41.0
Total Split (%)			25.5%	25.5%	25.5%						74.5%	74.5%
Maximum Green (s)			7.0	7.0	7.0						34.0	34.0
Yellow Time (s)			5.0	5.0	5.0						5.0	5.0
All-Red Time (s)			2.0	2.0	2.0						2.0	2.0
Lost Time Adjust (s)			-2.0		-2.0						-2.0	-2.0
Total Lost Time (s)			5.0		5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0						3.0	3.0
Recall Mode			None	None	None						Min	Min
Act Effct Green (s)			9.0		9.0						35.9	35.9
Actuated g/C Ratio			0.16		0.16						0.65	0.65
v/c Ratio			0.68		0.65						0.82	0.02
Control Delay			37.7		33.8						11.2	3.4
Queue Delay			0.0		0.0						0.0	0.0
Total Delay			37.7		33.8						11.2	3.4
LOS			D		C						B	A
Approach Delay		37.7			33.8						11.1	
Approach LOS		D			C						B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)			56		59						195	1
Queue Length 95th (ft)			#134		#135						289	6
Internal Link Dist (ft)		231			263			566			266	
Turn Bay Length (ft)												125
Base Capacity (vph)			263		296						2319	1037
Starvation Cap Reductn			0		0						0	0
Spillback Cap Reductn			0		0						0	0
Storage Cap Reductn			0		0						0	0
Reduced v/c Ratio			0.68		0.65						0.82	0.02

Intersection Summary

Area Type: Other
Cycle Length: 55
Actuated Cycle Length: 54.9
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 15.1 Intersection LOS: B
Intersection Capacity Utilization 79.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: US 1 & Ponderosa Service Road/US 1 Northbound Left-Over



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	366	0	0	0	294	0	2064	69	0	0	0
Future Volume (vph)	0	366	0	0	0	294	0	2064	69	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		150	0		0
Storage Lanes	0		0	0		1	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt						0.865			0.850			
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Right Turn on Red	No		No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		55			25			55			55	
Link Distance (ft)		343			96			342			818	
Travel Time (s)		4.3			2.6			4.2			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	407	0	0	0	327	0	2293	77	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	407	0	0	0	327	0	2293	77	0	0	0
Turn Type		NA				Prot		NA	Perm			
Protected Phases		7				7		2				
Permitted Phases	7								2			
Detector Phase	7	7				7		2	2			
Switch Phase												
Minimum Initial (s)	7.0	7.0				7.0		14.0	14.0			
Minimum Split (s)	14.0	14.0				14.0		21.0	21.0			
Total Split (s)	35.0	35.0				35.0		75.0	75.0			
Total Split (%)	31.8%	31.8%				31.8%		68.2%	68.2%			
Maximum Green (s)	28.0	28.0				28.0		68.0	68.0			
Yellow Time (s)	5.0	5.0				5.0		5.0	5.0			
All-Red Time (s)	2.0	2.0				2.0		2.0	2.0			
Lost Time Adjust (s)		-2.0				-2.0		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0				3.0		3.0	3.0			
Recall Mode	None	None				None		Min	Min			
Act Effct Green (s)		28.0				28.0		70.1	70.1			
Actuated g/C Ratio		0.26				0.26		0.65	0.65			
v/c Ratio		0.84				0.78		1.00	0.08			
Control Delay		54.8				51.5		38.9	7.8			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		54.8				51.5		38.9	7.8			
LOS		D				D		D	A			
Approach Delay		54.8			51.5			37.9				
Approach LOS		D			D			D				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		268				211		~852	19			
Queue Length 95th (ft)		#417				#326		#1042	37			
Internal Link Dist (ft)		263			16			262			738	
Turn Bay Length (ft)									150			
Base Capacity (vph)		517				447		2294	1026			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.79				0.73		1.00	0.08			

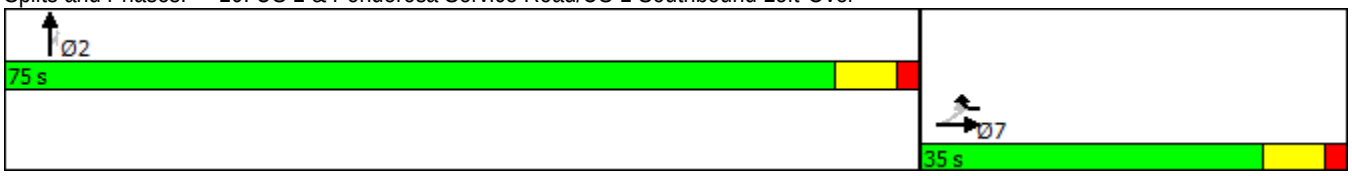
Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 108.1
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 41.5 Intersection LOS: D
Intersection Capacity Utilization 127.5% ICU Level of Service H
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 10: US 1 & Ponderosa Service Road/US 1 Southbound Left-Over



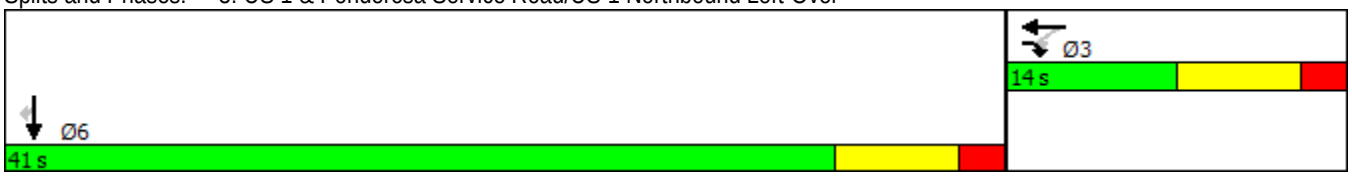
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	67	127	78	0	0	0	0	0	1873	17
Future Volume (vph)	0	0	67	127	78	0	0	0	0	0	1873	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	0		125
Storage Lanes	0		1	0		0	0		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.865									0.850
Flt Protected					0.970							
Satd. Flow (prot)	0	0	1611	0	1807	0	0	0	0	0	3539	1583
Flt Permitted					0.970							
Satd. Flow (perm)	0	0	1611	0	1807	0	0	0	0	0	3539	1583
Right Turn on Red			No	No		No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			55			55	
Link Distance (ft)		311			343			646			346	
Travel Time (s)		8.5			7.8			8.0			4.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	74	141	87	0	0	0	0	0	2081	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	74	0	228	0	0	0	0	0	2081	19
Turn Type			Prot	Perm	NA						NA	Perm
Protected Phases			3		3						6	
Permitted Phases				3								6
Detector Phase			3	3	3						6	6
Switch Phase												
Minimum Initial (s)			7.0	7.0	7.0						14.0	14.0
Minimum Split (s)			14.0	14.0	14.0						21.0	21.0
Total Split (s)			14.0	14.0	14.0						41.0	41.0
Total Split (%)			25.5%	25.5%	25.5%						74.5%	74.5%
Maximum Green (s)			7.0	7.0	7.0						34.0	34.0
Yellow Time (s)			5.0	5.0	5.0						5.0	5.0
All-Red Time (s)			2.0	2.0	2.0						2.0	2.0
Lost Time Adjust (s)			-2.0		-2.0						-2.0	-2.0
Total Lost Time (s)			5.0		5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0						3.0	3.0
Recall Mode			None	None	None						Min	Min
Act Effct Green (s)			9.0		9.0						38.2	38.2
Actuated g/C Ratio			0.16		0.16						0.67	0.67
v/c Ratio			0.29		0.80						0.88	0.02
Control Delay			23.7		46.2						14.3	3.4
Queue Delay			0.0		0.0						0.0	0.0
Total Delay			23.7		46.2						14.3	3.4
LOS			C		D						B	A
Approach Delay		23.7			46.2						14.2	
Approach LOS		C			D						B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)			22		72						240	2
Queue Length 95th (ft)			52		#169						#470	6
Internal Link Dist (ft)		231			263			566			266	
Turn Bay Length (ft)												125
Base Capacity (vph)			254		285						2359	1055
Starvation Cap Reductn			0		0						0	0
Spillback Cap Reductn			0		0						0	0
Storage Cap Reductn			0		0						0	0
Reduced v/c Ratio			0.29		0.80						0.88	0.02

Intersection Summary

Area Type: Other
Cycle Length: 55
Actuated Cycle Length: 57.3
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 17.6 Intersection LOS: B
Intersection Capacity Utilization 81.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: US 1 & Ponderosa Service Road/US 1 Northbound Left-Over



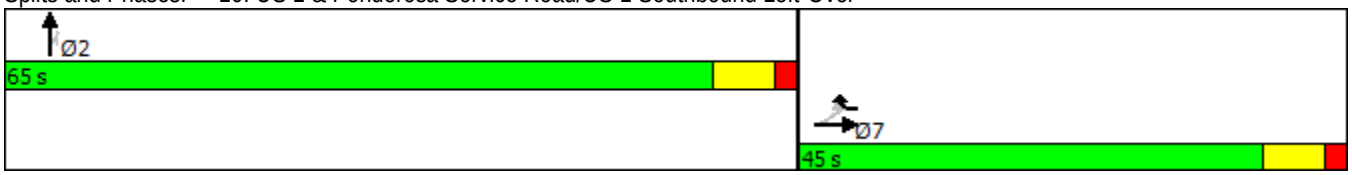
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	331	0	0	0	361	0	1569	45	0	0	0
Future Volume (vph)	1	331	0	0	0	361	0	1569	45	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		150	0		0
Storage Lanes	0		0	0		1	0		1	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt						0.865			0.850			
Flt Protected												
Satd. Flow (prot)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1863	0	0	0	1611	0	3539	1583	0	0	0
Right Turn on Red	No		No			Yes			No			No
Satd. Flow (RTOR)						40						
Link Speed (mph)		55			25			55			55	
Link Distance (ft)		343			96			342			818	
Travel Time (s)		4.3			2.6			4.2			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	368	0	0	0	401	0	1743	50	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	369	0	0	0	401	0	1743	50	0	0	0
Turn Type	Perm	NA				Prot		NA	Perm			
Protected Phases		7				7		2				
Permitted Phases	7								2			
Detector Phase	7	7				7		2	2			
Switch Phase												
Minimum Initial (s)	7.0	7.0				7.0		14.0	14.0			
Minimum Split (s)	14.0	14.0				14.0		21.0	21.0			
Total Split (s)	45.0	45.0				45.0		65.0	65.0			
Total Split (%)	40.9%	40.9%				40.9%		59.1%	59.1%			
Maximum Green (s)	38.0	38.0				38.0		58.0	58.0			
Yellow Time (s)	5.0	5.0				5.0		5.0	5.0			
All-Red Time (s)	2.0	2.0				2.0		2.0	2.0			
Lost Time Adjust (s)		-2.0				-2.0		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0				3.0		3.0	3.0			
Recall Mode	None	None				None		Min	Min			
Act Effct Green (s)		29.8				29.8		54.0	54.0			
Actuated g/C Ratio		0.32				0.32		0.57	0.57			
v/c Ratio		0.63				0.75		0.86	0.06			
Control Delay		33.3				36.0		23.5	10.6			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		33.3				36.0		23.5	10.6			
LOS		C				D		C	B			
Approach Delay		33.3			36.0			23.1				
Approach LOS		C			D			C				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		204				212		435	12			
Queue Length 95th (ft)		300				322		676	34			
Internal Link Dist (ft)		263			16			262			738	
Turn Bay Length (ft)									150			
Base Capacity (vph)		819				731		2335	1044			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.45				0.55		0.75	0.05			

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 94.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 26.6 Intersection LOS: C
Intersection Capacity Utilization 95.7% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 10: US 1 & Ponderosa Service Road/US 1 Southbound Left-Over



APPENDIX I

CAPACITY ANALYSIS CALCULATIONS

STAR ROAD

&

PONDEROSA SERVICE ROAD

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	7	11	4	4	10
Future Vol, veh/h	6	7	11	4	4	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	8	12	4	4	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	39	10	16	0	-	0
Stage 1	10	-	-	-	-	-
Stage 2	29	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	973	1071	1602	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	994	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	965	1071	1602	-	-	-
Mov Cap-2 Maneuver	965	-	-	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	986	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	5.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1602	-	1019	-	-
HCM Lane V/C Ratio	0.008	-	0.014	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	4.4					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	7	13	4	4	13
Future Vol, veh/h	6	7	13	4	4	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	8	14	4	4	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	45	12	19	0	-	0
Stage 1	12	-	-	-	-	-
Stage 2	33	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	965	1069	1597	-	-	-
Stage 1	1011	-	-	-	-	-
Stage 2	989	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	956	1069	1597	-	-	-
Mov Cap-2 Maneuver	956	-	-	-	-	-
Stage 1	1011	-	-	-	-	-
Stage 2	980	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	5.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1597	-	1014	-	-
HCM Lane V/C Ratio	0.009	-	0.014	-	-
HCM Control Delay (s)	7.3	0	8.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	106	7	11	4	4	53
Future Vol, veh/h	106	7	11	4	4	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	118	8	12	4	4	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	63	34	63	0	-	0
Stage 1	34	-	-	-	-	-
Stage 2	29	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	943	1039	1540	-	-	-
Stage 1	988	-	-	-	-	-
Stage 2	994	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	935	1039	1540	-	-	-
Mov Cap-2 Maneuver	935	-	-	-	-	-
Stage 1	988	-	-	-	-	-
Stage 2	986	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	5.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1540	-	941	-	-
HCM Lane V/C Ratio	0.008	-	0.133	-	-
HCM Control Delay (s)	7.4	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	67	7	13	4	4	61
Future Vol, veh/h	67	7	13	4	4	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	8	14	4	4	68

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	71	38	72	0	-	0
Stage 1	38	-	-	-	-	-
Stage 2	33	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	933	1034	1528	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	989	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	925	1034	1528	-	-	-
Mov Cap-2 Maneuver	925	-	-	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	980	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	5.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1528	-	934	-	-
HCM Lane V/C Ratio	0.009	-	0.088	-	-
HCM Control Delay (s)	7.4	0	9.2	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	435	241	172	56	53
Future Vol, veh/h	0	435	241	172	56	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	483	268	191	62	59

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	0	0	727	191
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	-	351	851
Stage 1	0	-	-	-	429	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	851
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	EB	NB	SB
HCM Control Delay, s	0		9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBL	NBT	EBR	SBLn1
Capacity (veh/h)	-	-	-	851
HCM Lane V/C Ratio	-	-	-	0.142
HCM Control Delay (s)	-	-	-	9.9
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.5

Intersection						
Int Delay, s/veh	1.2					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	376	300	149	54	61
Future Vol, veh/h	0	376	300	149	54	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	418	333	166	60	68

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	0	0	832	166
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	-	-	4.12	-	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.218	-	4.018	3.318
Pot Cap-1 Maneuver	0	-	-	-	305	878
Stage 1	0	-	-	-	384	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %		-		-		
Mov Cap-1 Maneuver	-	-	-	-	0	878
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-

Approach	EB	NB	SB
HCM Control Delay, s	0		9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBL	NBT	EBR	SBLn1
Capacity (veh/h)	-	-	-	878
HCM Lane V/C Ratio	-	-	-	0.146
HCM Control Delay (s)	-	-	-	9.8
HCM Lane LOS	-	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.5

APPENDIX J

CAPACITY ANALYSIS CALCULATIONS

US 1

&

HEIGHT LANE / MONTYS LANE

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	4	61	9	4	6	60	2044	11	12	1764	2
Future Vol, veh/h	3	4	61	9	4	6	60	2044	11	12	1764	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	225	-	250	300	-	275
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	4	68	10	4	7	67	2271	12	13	1960	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3258	4391	980	3413	4391	1136	1960	0	0	2271	0	0
Stage 1	1987	1987	-	2404	2404	-	-	-	-	-	-	-
Stage 2	1271	2404	-	1009	1987	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	4	~ 2	249	~ 3	~ 2	196	293	-	-	221	-	-
Stage 1	63	105	-	34	64	-	-	-	-	-	-	-
Stage 2	178	64	-	257	105	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 1	249	-	~ 1	196	293	-	-	221	-	-
Mov Cap-2 Maneuver	-	~ 1	-	-	~ 1	-	-	-	-	-	-	-
Stage 1	49	99	-	26	49	-	-	-	-	-	-	-
Stage 2	121	49	-	168	99	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0.6	0.2
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	293	-	-	-	249	-	196	221	-	-
HCM Lane V/C Ratio	0.228	-	-	-	0.272	-	0.034	0.06	-	-
HCM Control Delay (s)	20.9	-	-	-	24.8	-	24	22.3	-	-
HCM Lane LOS	C	-	-	-	C	-	C	C	-	-
HCM 95th %tile Q(veh)	0.9	-	-	-	1.1	-	0.1	0.2	-	-

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	0	61	9	0	6	60	2044	11	12	1764	2
Future Volume (Veh/h)	3	0	61	9	0	6	60	2044	11	12	1764	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	0	68	10	0	7	67	2271	12	13	1960	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	3262	4403	980	3479	4393	1136	1962			2283		
vC1, stage 1 conf vol	1986	1986		2405	2405							
vC2, stage 2 conf vol	1276	2417		1074	1988							
vCu, unblocked vol	3262	4403	980	3479	4393	1136	1962			2283		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	100	73	47	100	96	77			94		
cM capacity (veh/h)	37	24	249	19	18	196	293			219		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	3	68	10	7	67	1136	1136	12	13	980	980	2
Volume Left	3	0	10	0	67	0	0	0	13	0	0	0
Volume Right	0	68	0	7	0	0	0	12	0	0	0	2
cSH	37	249	19	196	293	1700	1700	1700	219	1700	1700	1700
Volume to Capacity	0.08	0.27	0.53	0.04	0.23	0.67	0.67	0.01	0.06	0.58	0.58	0.00
Queue Length 95th (ft)	6	27	36	3	22	0	0	0	5	0	0	0
Control Delay (s)	110.5	24.8	325.5	24.0	20.9	0.0	0.0	0.0	22.5	0.0	0.0	0.0
Lane LOS	F	C	F	C	C				C			
Approach Delay (s)	28.4		201.4		0.6				0.1			
Approach LOS	D		F									

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	4	29	15	4	6	44	1564	5	4	1821	3
Future Vol, veh/h	4	4	29	15	4	6	44	1564	5	4	1821	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	225	-	250	300	-	275
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	32	17	4	7	49	1738	6	4	2023	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3001	3868	1012	2859	3868	869	2023	0	0	1738	0	0
Stage 1	2032	2032	-	1836	1836	-	-	-	-	-	-	-
Stage 2	969	1836	-	1023	2032	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	6	~ 3	237	~ 8	~ 3	295	277	-	-	358	-	-
Stage 1	59	99	-	78	125	-	-	-	-	-	-	-
Stage 2	272	125	-	252	99	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 2	237	-	~ 2	295	277	-	-	358	-	-
Mov Cap-2 Maneuver	-	~ 2	-	-	~ 2	-	-	-	-	-	-	-
Stage 1	49	98	-	64	103	-	-	-	-	-	-	-
Stage 2	209	103	-	206	98	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0.6	0
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	277	-	-	-	237	-	295	358	-	-
HCM Lane V/C Ratio	0.176	-	-	-	0.136	-	0.023	0.012	-	-
HCM Control Delay (s)	20.8	-	-	-	22.6	-	17.5	15.2	-	-
HCM Lane LOS	C	-	-	-	C	-	C	C	-	-
HCM 95th %tile Q(veh)	0.6	-	-	-	0.5	-	0.1	0	-	-

Notes

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	4	29	15	4	6	44	1564	5	4	1821	3
Future Volume (Veh/h)	4	4	29	15	4	6	44	1564	5	4	1821	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	32	17	4	7	49	1738	6	4	2023	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	3007	3873	1012	2890	3870	869	2026			1744		
vC1, stage 1 conf vol	2031	2031		1836	1836							
vC2, stage 2 conf vol	976	1842		1054	2034							
vCu, unblocked vol	3007	3873	1012	2890	3870	869	2026			1744		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	91	87	60	87	98	82			99		
cM capacity (veh/h)	43	46	237	43	31	295	276			356		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	8	32	21	7	49	869	869	6	4	1012	1012	3
Volume Left	4	0	17	0	49	0	0	0	4	0	0	0
Volume Right	0	32	0	7	0	0	0	6	0	0	0	3
cSH	44	237	40	295	276	1700	1700	1700	356	1700	1700	1700
Volume to Capacity	0.18	0.13	0.52	0.02	0.18	0.51	0.51	0.00	0.01	0.59	0.59	0.00
Queue Length 95th (ft)	15	11	46	2	16	0	0	0	1	0	0	0
Control Delay (s)	103.3	22.5	167.7	17.5	20.8	0.0	0.0	0.0	15.2	0.0	0.0	0.0
Lane LOS	F	C	F	C	C				C			
Approach Delay (s)	38.7		130.1		0.6				0.0			
Approach LOS	E		F									

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection

Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	4	62	9	4	6	61	2145	11	12	1831	2
Future Vol, veh/h	3	4	62	9	4	6	61	2145	11	12	1831	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	225	-	250	300	-	275
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	4	69	10	4	7	68	2383	12	13	2034	2

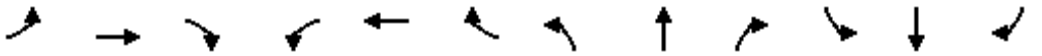
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3390	4580	1017	3565	4580	1192	2034	0	0	2383	0	0
Stage 1	2061	2061	-	2519	2519	-	-	-	-	-	-	-
Stage 2	1329	2519	-	1046	2061	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 3	~ 1	235	~ 2	~ 1	180	274	-	-	200	-	-
Stage 1	56	96	-	28	56	-	-	-	-	-	-	-
Stage 2	163	56	-	244	96	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 1	235	-	~ 1	180	274	-	-	200	-	-
Mov Cap-2 Maneuver	-	~ 1	-	-	~ 1	-	-	-	-	-	-	-
Stage 1	42	90	-	21	42	-	-	-	-	-	-	-
Stage 2	106	42	-	153	90	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0.6	0.2
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	274	-	-	-	235	-	180	200	-	-
HCM Lane V/C Ratio	0.247	-	-	-	0.293	-	0.037	0.067	-	-
HCM Control Delay (s)	22.4	-	-	-	26.6	-	25.8	24.3	-	-
HCM Lane LOS	C	-	-	-	D	-	D	C	-	-
HCM 95th %tile Q(veh)	1	-	-	-	1.2	-	0.1	0.2	-	-

Notes

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	4	62	9	4	6	61	2145	11	12	1831	2
Future Volume (Veh/h)	3	4	62	9	4	6	61	2145	11	12	1831	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	4	69	10	4	7	68	2383	12	13	2034	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	3396	4591	1017	3633	4581	1192	2036			2395		
vC1, stage 1 conf vol	2060	2060		2519	2519							
vC2, stage 2 conf vol	1336	2531		1114	2062							
vCu, unblocked vol	3396	4591	1017	3633	4581	1192	2036			2395		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	80	71	35	70	96	75			93		
cM capacity (veh/h)	31	20	235	15	13	180	274			198		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	7	69	14	7	68	1192	1192	12	13	1017	1017	2
Volume Left	3	0	10	0	68	0	0	0	13	0	0	0
Volume Right	0	69	0	7	0	0	0	12	0	0	0	2
cSH	24	235	15	180	274	1700	1700	1700	198	1700	1700	1700
Volume to Capacity	0.30	0.29	0.95	0.04	0.25	0.70	0.70	0.01	0.07	0.60	0.60	0.00
Queue Length 95th (ft)	22	29	56	3	24	0	0	0	5	0	0	0
Control Delay (s)	213.3	26.5	565.2	25.8	22.4	0.0	0.0	0.0	24.5	0.0	0.0	0.0
Lane LOS	F	D	F	D	C				C			
Approach Delay (s)	43.7		385.4		0.6				0.2			
Approach LOS	E		F									

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection

Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	4	30	15	4	6	45	1632	5	4	1893	3
Future Vol, veh/h	4	4	30	15	4	6	45	1632	5	4	1893	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	225	-	250	300	-	275
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	4	33	17	4	7	50	1813	6	4	2103	3

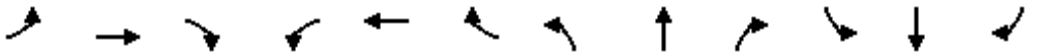
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3121	4025	1052	2976	4025	907	2103	0	0	1813	0	0
Stage 1	2112	2112	-	1913	1913	-	-	-	-	-	-	-
Stage 2	1009	1913	-	1063	2112	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	5	~ 3	223	~ 6	~ 3	279	258	-	-	335	-	-
Stage 1	52	90	-	70	114	-	-	-	-	-	-	-
Stage 2	257	114	-	238	90	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 2	223	-	~ 2	279	258	-	-	335	-	-
Mov Cap-2 Maneuver	-	~ 2	-	-	~ 2	-	-	-	-	-	-	-
Stage 1	42	89	-	56	92	-	-	-	-	-	-	-
Stage 2	192	92	-	190	89	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0.6	0
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	258	-	-	-	223	-	279	335	-	-
HCM Lane V/C Ratio	0.194	-	-	-	0.149	-	0.024	0.013	-	-
HCM Control Delay (s)	22.3	-	-	-	24	-	18.2	15.9	-	-
HCM Lane LOS	C	-	-	-	C	-	C	C	-	-
HCM 95th %tile Q(veh)	0.7	-	-	-	0.5	-	0.1	0	-	-

Notes

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	4	30	15	4	6	45	1632	5	4	1893	3
Future Volume (Veh/h)	4	4	30	15	4	6	45	1632	5	4	1893	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	4	33	17	4	7	50	1813	6	4	2103	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	3126	4030	1052	3008	4027	906	2106			1819		
vC1, stage 1 conf vol	2111	2111		1913	1913							
vC2, stage 2 conf vol	1016	1919		1094	2114							
vCu, unblocked vol	3126	4030	1052	3008	4027	906	2106			1819		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	90	85	55	85	97	81			99		
cM capacity (veh/h)	38	41	223	38	26	279	257			333		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	8	33	21	7	50	906	906	6	4	1052	1052	3
Volume Left	4	0	17	0	50	0	0	0	4	0	0	0
Volume Right	0	33	0	7	0	0	0	6	0	0	0	3
cSH	40	223	35	279	257	1700	1700	1700	333	1700	1700	1700
Volume to Capacity	0.20	0.15	0.61	0.03	0.19	0.53	0.53	0.00	0.01	0.62	0.62	0.00
Queue Length 95th (ft)	16	13	52	2	18	0	0	0	1	0	0	0
Control Delay (s)	117.7	23.9	210.5	18.2	22.4	0.0	0.0	0.0	15.9	0.0	0.0	0.0
Lane LOS	F	C	F	C	C				C			
Approach Delay (s)	42.2		162.5		0.6				0.0			
Approach LOS	E		F									

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection

Int Delay, s/veh	33.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	0	62	0	0	141	61	2145	165	0	1966	2
Future Vol, veh/h	19	0	62	0	0	141	61	2145	165	0	1966	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	0	-	0	-	-	0	225	-	250	-	-	275
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	0	69	0	0	157	68	2383	183	0	2184	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3511	-	1092	-	-	-	2184	0	0	-	-	0
Stage 1	2184	-	-	-	-	-	-	-	-	-	-	-
Stage 2	1327	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	6.94	-	-	-	4.14	-	-	-	-	-
Critical Hdwy Stg 1	6.54	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	3.32	-	-	-	2.22	-	-	-	-	-
Pot Cap-1 Maneuver	~ 2	0	210	0	0	0	239	-	-	0	-	-
Stage 1	47	0	-	0	0	0	-	-	-	0	-	-
Stage 2	164	0	-	0	0	0	-	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 2	-	210	-	-	-	239	-	-	-	-	-
Mov Cap-2 Maneuver	~ 2	-	-	-	-	-	-	-	-	-	-	-
Stage 1	34	-	-	-	-	-	-	-	-	-	-	-
Stage 2	117	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	1802.2	0	0.7	0
HCM LOS	F	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBT	SBR
Capacity (veh/h)	239	-	-	2	210	-	-	-
HCM Lane V/C Ratio	0.284	-	-	-10.556	0.328	-	-	-
HCM Control Delay (s)	25.9	-	-	$ 7584.4	30.3	0	-	-
HCM Lane LOS	D	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	1.1	-	-	4.3	1.4	-	-	-

Notes

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

Intersection

Int Delay, s/veh	11.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	0	30	0	0	177	45	1632	154	0	2064	3
Future Vol, veh/h	9	0	30	0	0	177	45	1632	154	0	2064	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	0	-	0	-	-	0	225	-	250	-	-	275
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	0	33	0	0	197	50	1813	171	0	2293	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3300	-	1147	-	-	-	2293	0	0	-	-	0
Stage 1	2293	-	-	-	-	-	-	-	-	-	-	-
Stage 2	1007	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	-	6.94	-	-	-	4.14	-	-	-	-	-
Critical Hdwy Stg 1	6.54	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	-	3.32	-	-	-	2.22	-	-	-	-	-
Pot Cap-1 Maneuver	~ 3	0	193	0	0	0	217	-	-	0	-	-
Stage 1	40	0	-	0	0	0	-	-	-	0	-	-
Stage 2	258	0	-	0	0	0	-	-	-	0	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 2	-	193	-	-	-	217	-	-	-	-	-
Mov Cap-2 Maneuver	~ 2	-	-	-	-	-	-	-	-	-	-	-
Stage 1	31	-	-	-	-	-	-	-	-	-	-	-
Stage 2	199	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay,$	1154.1	0	0.7	0
HCM LOS	F	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBT	SBR
Capacity (veh/h)	217	-	-	2	193	-	-	-
HCM Lane V/C Ratio	0.23	-	-	5	0.173	-	-	-
HCM Control Delay (s)	26.5	-	-	$ 4909.5	27.5	0	-	-
HCM Lane LOS	D	-	-	F	D	A	-	-
HCM 95th %tile Q(veh)	0.9	-	-	2.5	0.6	-	-	-

Notes

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

APPENDIX K

CAPACITY ANALYSIS CALCULATIONS

STAR ROAD

&

HEIGHT LANE

Intersection												
Int Delay, s/veh	6.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	3	3	1	3	7	4	4	2	6	4	8
Future Vol, veh/h	17	3	3	1	3	7	4	4	2	6	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	3	3	1	3	8	4	4	2	7	4	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	11	0	0	7	0	0	59	56	5	55	53	7
Stage 1	-	-	-	-	-	-	43	43	-	9	9	-
Stage 2	-	-	-	-	-	-	16	13	-	46	44	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1608	-	-	1614	-	-	937	835	1078	943	838	1075
Stage 1	-	-	-	-	-	-	971	859	-	1012	888	-
Stage 2	-	-	-	-	-	-	1004	885	-	968	858	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1608	-	-	1614	-	-	916	824	1078	928	827	1075
Mov Cap-2 Maneuver	-	-	-	-	-	-	916	824	-	928	827	-
Stage 1	-	-	-	-	-	-	959	849	-	1000	887	-
Stage 2	-	-	-	-	-	-	990	884	-	949	848	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.4	0.7	9	8.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	903	1608	-	-	1614	-	-	960
HCM Lane V/C Ratio	0.012	0.012	-	-	0.001	-	-	0.021
HCM Control Delay (s)	9	7.3	0	-	7.2	0	-	8.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	4	3	4	5	5	3	4	4	6	2	13
Future Vol, veh/h	6	4	3	4	5	5	3	4	4	6	2	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	4	3	4	6	6	3	4	4	7	2	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	11	0	0	8	0	0	45	39	6	41	38	8
Stage 1	-	-	-	-	-	-	19	19	-	17	17	-
Stage 2	-	-	-	-	-	-	26	20	-	24	21	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1608	-	-	1612	-	-	957	853	1077	963	854	1074
Stage 1	-	-	-	-	-	-	1000	880	-	1002	881	-
Stage 2	-	-	-	-	-	-	992	879	-	994	878	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1608	-	-	1612	-	-	938	848	1077	951	849	1074
Mov Cap-2 Maneuver	-	-	-	-	-	-	938	848	-	951	849	-
Stage 1	-	-	-	-	-	-	996	876	-	998	879	-
Stage 2	-	-	-	-	-	-	974	877	-	981	874	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.3	2.1	8.9	8.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	946	1608	-	-	1612	-	-	1011
HCM Lane V/C Ratio	0.013	0.004	-	-	0.003	-	-	0.023
HCM Control Delay (s)	8.9	7.2	0	-	7.2	0	-	8.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	17	3	3	1	3	7	4	4	2	6	4	8
Future Vol, veh/h	17	3	3	1	3	7	4	4	2	6	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	3	3	1	3	8	4	4	2	7	4	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	11	0	0	7	0	0	59	56	5	55	53	7
Stage 1	-	-	-	-	-	-	43	43	-	9	9	-
Stage 2	-	-	-	-	-	-	16	13	-	46	44	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1608	-	-	1614	-	-	937	835	1078	943	838	1075
Stage 1	-	-	-	-	-	-	971	859	-	1012	888	-
Stage 2	-	-	-	-	-	-	1004	885	-	968	858	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1608	-	-	1614	-	-	916	824	1078	928	827	1075
Mov Cap-2 Maneuver	-	-	-	-	-	-	916	824	-	928	827	-
Stage 1	-	-	-	-	-	-	959	849	-	1000	887	-
Stage 2	-	-	-	-	-	-	990	884	-	949	848	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.4	0.7	9	8.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	903	1608	-	-	1614	-	-	960
HCM Lane V/C Ratio	0.012	0.012	-	-	0.001	-	-	0.021
HCM Control Delay (s)	9	7.3	0	-	7.2	0	-	8.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh 5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	4	3	4	5	5	3	4	4	6	2	13
Future Vol, veh/h	6	4	3	4	5	5	3	4	4	6	2	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	4	3	4	6	6	3	4	4	7	2	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	11	0	0	8	0	0	45	39	6	41	38	8
Stage 1	-	-	-	-	-	-	19	19	-	17	17	-
Stage 2	-	-	-	-	-	-	26	20	-	24	21	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1608	-	-	1612	-	-	957	853	1077	963	854	1074
Stage 1	-	-	-	-	-	-	1000	880	-	1002	881	-
Stage 2	-	-	-	-	-	-	992	879	-	994	878	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1608	-	-	1612	-	-	938	848	1077	951	849	1074
Mov Cap-2 Maneuver	-	-	-	-	-	-	938	848	-	951	849	-
Stage 1	-	-	-	-	-	-	996	876	-	998	879	-
Stage 2	-	-	-	-	-	-	974	877	-	981	874	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.3	2.1	8.9	8.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	946	1608	-	-	1612	-	-	1011
HCM Lane V/C Ratio	0.013	0.004	-	-	0.003	-	-	0.023
HCM Control Delay (s)	8.9	7.2	0	-	7.2	0	-	8.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection

Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	162	2	1	1	3	7	4	4	2	7	6	134
Future Vol, veh/h	162	2	1	1	3	7	4	4	2	7	6	134
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	180	2	1	1	3	8	4	4	2	8	7	149

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	11	0	0	3	0	0	450	376	3	375	372	7
Stage 1	-	-	-	-	-	-	363	363	-	9	9	-
Stage 2	-	-	-	-	-	-	87	13	-	366	363	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1608	-	-	1619	-	-	519	555	1081	582	558	1075
Stage 1	-	-	-	-	-	-	656	625	-	1012	888	-
Stage 2	-	-	-	-	-	-	921	885	-	653	625	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1608	-	-	1619	-	-	404	492	1081	527	495	1075
Mov Cap-2 Maneuver	-	-	-	-	-	-	404	492	-	527	495	-
Stage 1	-	-	-	-	-	-	583	555	-	899	887	-
Stage 2	-	-	-	-	-	-	787	884	-	574	555	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	7.4	0.7	12.3	9.4
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	503	1608	-	-	1619	-	-	980
HCM Lane V/C Ratio	0.022	0.112	-	-	0.001	-	-	0.167
HCM Control Delay (s)	12.3	7.5	0	-	7.2	0	-	9.4
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.4	-	-	0	-	-	0.6

Intersection

Int Delay, s/veh 8.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	152	4	2	4	5	5	3	4	4	6	3	169
Future Vol, veh/h	152	4	2	4	5	5	3	4	4	6	3	169
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	169	4	2	4	6	6	3	4	4	7	3	188

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	11	0	0	7	0	0	456	363	6	365	361	8
Stage 1	-	-	-	-	-	-	343	343	-	17	17	-
Stage 2	-	-	-	-	-	-	113	20	-	348	344	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1608	-	-	1614	-	-	515	565	1077	591	566	1074
Stage 1	-	-	-	-	-	-	672	637	-	1002	881	-
Stage 2	-	-	-	-	-	-	892	879	-	668	637	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1608	-	-	1614	-	-	388	504	1077	536	505	1074
Mov Cap-2 Maneuver	-	-	-	-	-	-	388	504	-	536	505	-
Stage 1	-	-	-	-	-	-	601	569	-	896	879	-
Stage 2	-	-	-	-	-	-	732	877	-	590	569	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	7.2	2.1	11.5	9.4
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	568	1608	-	-	1614	-	-	1020
HCM Lane V/C Ratio	0.022	0.105	-	-	0.003	-	-	0.194
HCM Control Delay (s)	11.5	7.5	0	-	7.2	0	-	9.4
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.4	-	-	0	-	-	0.7

APPENDIX L

CAPACITY ANALYSIS CALCULATIONS

STAR ROAD

&

NORTHERN SITE DRIVE

MOVEMENT SUMMARY

Site: Combined (2018) PM

Capital Sports Complex
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Star Road											
8	T1	167	2.0	0.356	9.6	LOS A	2.2	54.8	0.65	0.56	28.9
18	R2	86	2.0	0.356	9.6	LOS A	2.2	54.8	0.65	0.56	28.4
Approach		252	2.0	0.356	9.6	LOS A	2.2	54.8	0.65	0.56	28.8
East: Northern Site Drive											
1	L2	70	2.0	0.305	8.3	LOS A	1.8	45.3	0.58	0.46	22.6
16	R2	162	2.0	0.305	8.3	LOS A	1.8	45.3	0.58	0.46	22.2
Approach		232	2.0	0.305	8.3	LOS A	1.8	45.3	0.58	0.46	22.3
North: Star Road											
7u	U	118	2.0	0.554	11.0	LOS B	5.2	131.5	0.45	0.24	28.9
7	L2	230	2.0	0.554	11.0	LOS B	5.2	131.5	0.45	0.24	27.6
4	T1	190	2.0	0.554	11.0	LOS B	5.2	131.5	0.45	0.24	27.7
Approach		538	2.0	0.554	11.0	LOS B	5.2	131.5	0.45	0.24	27.9
All Vehicles		1022	2.0	0.554	10.0	LOS B	5.2	131.5	0.53	0.37	26.6

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: Combined (2018) SAT

Capital Sports Complex
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Star Road											
8	T1	207	2.0	0.387	9.8	LOS A	2.4	62.0	0.63	0.52	28.9
18	R2	83	2.0	0.387	9.8	LOS A	2.4	62.0	0.63	0.52	28.4
Approach		290	2.0	0.387	9.8	LOS A	2.4	62.0	0.63	0.52	28.7
East: Northern Site Drive											
1	L2	87	2.0	0.382	9.5	LOS A	2.4	61.1	0.62	0.50	22.4
16	R2	203	2.0	0.382	9.5	LOS A	2.4	61.1	0.62	0.50	21.9
Approach		290	2.0	0.382	9.5	LOS A	2.4	61.1	0.62	0.50	22.1
North: Star Road											
7u	U	74	2.0	0.496	9.9	LOS A	4.2	105.8	0.46	0.26	28.1
7	L2	221	2.0	0.496	9.9	LOS A	4.2	105.8	0.46	0.26	27.8
4	T1	174	2.0	0.496	9.9	LOS A	4.2	105.8	0.46	0.26	27.9
Approach		470	2.0	0.496	9.9	LOS A	4.2	105.8	0.46	0.26	27.9
All Vehicles		1050	2.0	0.496	9.8	LOS A	4.2	105.8	0.55	0.40	26.2

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX M

CAPACITY ANALYSIS CALCULATIONS

STAR ROAD

&

SOUTHERN SITE DRIVE

Intersection	
Int Delay, s/veh	6.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	63	146	92	77	155	84
Future Vol, veh/h	63	146	92	77	155	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	70	162	102	86	172	93

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	583	145	0	0	188	0
Stage 1	145	-	-	-	-	-
Stage 2	438	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	475	902	-	-	1386	-
Stage 1	882	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	413	902	-	-	1386	-
Mov Cap-2 Maneuver	413	-	-	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	566	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	5.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	665	1386	-
HCM Lane V/C Ratio	-	-	0.349	0.124	-
HCM Control Delay (s)	-	-	13.3	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.6	0.4	-

Intersection	
Int Delay, s/veh	7.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	78	182	83	74	149	100
Future Vol, veh/h	78	182	83	74	149	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	202	92	82	166	111

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	575	133	0	0	174	0
Stage 1	133	-	-	-	-	-
Stage 2	442	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	480	916	-	-	1403	-
Stage 1	893	-	-	-	-	-
Stage 2	648	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	420	916	-	-	1403	-
Mov Cap-2 Maneuver	420	-	-	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	566	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.2	0	4.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	676	1403	-
HCM Lane V/C Ratio	-	-	0.427	0.118	-
HCM Control Delay (s)	-	-	14.2	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	2.1	0.4	-

APPENDIX N

CAPACITY ANALYSIS CALCULATIONS

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NORTHBOUND U-TURN LOCATION

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	80	0	0	0	0	2014
Future Vol, veh/h	80	0	0	0	0	2014
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	89	0	0	0	0	2238

Major/Minor	Minor1			Major2	
Conflicting Flow All	1119	-		-	-
Stage 1	0	-		-	-
Stage 2	1119	-		-	-
Critical Hdwy	6.84	-		-	-
Critical Hdwy Stg 1	-	-		-	-
Critical Hdwy Stg 2	5.84	-		-	-
Follow-up Hdwy	3.52	-		-	-
Pot Cap-1 Maneuver	201	0		0	-
Stage 1	-	0		0	-
Stage 2	274	0		0	-
Platoon blocked, %					-
Mov Cap-1 Maneuver	201	-		-	-
Mov Cap-2 Maneuver	201	-		-	-
Stage 1	-	-		-	-
Stage 2	274	-		-	-

Approach	WB	SB
HCM Control Delay, s	36.4	0
HCM LOS	E	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	201	-
HCM Lane V/C Ratio	0.442	-
HCM Control Delay (s)	36.4	-
HCM Lane LOS	E	-
HCM 95th %tile Q(veh)	2.1	-

Intersection	
Int Delay, s/veh	2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	99	0	0	0	0	2123
Future Vol, veh/h	99	0	0	0	0	2123
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	110	0	0	0	0	2359

Major/Minor	Minor1			Major2	
Conflicting Flow All	1179	-		-	-
Stage 1	0	-		-	-
Stage 2	1179	-		-	-
Critical Hdwy	6.84	-		-	-
Critical Hdwy Stg 1	-	-		-	-
Critical Hdwy Stg 2	5.84	-		-	-
Follow-up Hdwy	3.52	-		-	-
Pot Cap-1 Maneuver	183	0		0	-
Stage 1	-	0		0	-
Stage 2	254	0		0	-
Platoon blocked, %					-
Mov Cap-1 Maneuver	183	-		-	-
Mov Cap-2 Maneuver	183	-		-	-
Stage 1	-	-		-	-
Stage 2	254	-		-	-

Approach	WB	SB
HCM Control Delay, s	50.6	0
HCM LOS	F	

Minor Lane/Major Mvmt	WBLn1	SBT
Capacity (veh/h)	183	-
HCM Lane V/C Ratio	0.601	-
HCM Control Delay (s)	50.6	-
HCM Lane LOS	F	-
HCM 95th %tile Q(veh)	3.3	-