

March 22, 2019

Ms. Shannon Buster, P.E. Senior Civil Engineer, Olsson 1301 Burlington Street, Suite 100 North Kansas City, MO 64116

RE: Hook Farms North- Lee's Summit, Missouri

Dear Ms. Buster,

Per your request, Priority Engineer's has performed additional analysis at the intersection of SW Pryor Road and SW Hook Road. As you know, this intersection was previously evaluated in the Traffic Impact Study for Hook Farms North dated 11/20/2018. The traffic study indicated that the intersection of SW Pryor Road and SW Hook Road met the conditions of Warrant Three, Peak Hour based upon the 70% factor but not the 100% factor. As we discussed, while Warrant Three is not intended to be used for justification of signals under most circumstances, it is a good indicator of emerging traffic needs and is often the only Warrant evaluated if traffic data consists solely of AM and PM turning movement counts.

Since the traffic study's analysis of this intersection was based upon AM and PM turning movement counts and an additional analysis of the intersection is desired, a new 13-hour count was performed at this intersection on 1/24/2019 to supplement the data collected at this location in 2016. The vehicular data from this count is included as an attachment.

## Warrant Three, Peak Hour

After the supplemental count was performed, the peak hour was determined to be 4:45-5:45 PM. There were 372 vehicles approaching the intersection from the south, 274 vehicles approaching the intersection from the north, 165 vehicles approaching the intersection from the west and 104 vehicles approaching the intersection from the east. During the peak hour a total of 915 vehicles entered the intersection.

The 2016 count documented a peak hour of 4:45 PM-5:45 PM with 290 vehicles approaching from the south, 402 vehicles approaching from the north, 127 vehicles approaching from the west and 173 vehicles approached from the east. A total of 992 vehicles approached the intersection.

While there are some variances in overall traffic patterns and volumes in comparing the two counts, neither count should be excluded from analysis. While the 2016 count meets the threshold of Warrant Three, Peak Hour adjusted for the 70% factor, the 2019 count has 36 vehicles fewer on the minor approach than required.

## Warrant Two, Four-Hour

Warrant Two, Four-Hour requires that four hours of an average day exceed the thresholds for vehicles on both the combination of major approaches and the most significant minor approach. In the included attachments are analysis that shows that this warrant is not met for the 100% condition but is met using the lower threshold of the 70% factor.

## Warrant One, Eight-Hour

Warrant One, Eight-Hour, requires that either conditions A or B be met for 8 hours during an average day. Condition A is intended for locations where the large volume of traffic is the principal reason for the consideration of traffic control signals. Condition B is intended for areas where the volume of traffic in condition A is not met but the volume is sufficient enough to cause excessive delays.

When evaluating this warrant at the 70% factor, 6 of the hours met the requirements of Condition A and 3 of the hours met Condition B. This analysis is also included in the attachments. In regards to Warrant One, the vehicular volume (Condition A) is the more significant concern. An analysis of Condition A+B was not performed because it requires that additional mitigation be performed first

Summarizing the signal warrant analysis, the existing conditions did not meet Warrant Three, Peak Hour (70%) in the 2019 count, unlike the 2016 count. The existing conditions of Warrant Two, Four-Hour (70%) were met however, while the conditions of Warrant One, Eight-Hour (70%) existing were not met.

Table 1 and Table 2 below summarizes the Signal Warrant Analysis:

Table 1. Sig	gnal Warrants	Evaluated in	<b>Original Traff</b>	ic Study		
Count Date	Existing AM Peak Hour (70%)	Existing PM Peak Hour (70%)	Approved AM Peak Hour (70%)	Approved PM Peak Hour (70%)	Proposed AM Peak Hour (70 %)	Proposed PM Peak Hour (70 %)
Oct-16	No	Yes	Yes	Yes	Yes	Yes

Table 2. Si															
Count Date	AM Peak Hour	PM Peak Hour	Warrant Two Four-Hour	Warrant Two Four-	Warrant Öne Eight-Hour	Warrant Öne Eight-Hour									
1/24/2019	No	No	No	Yes	No	No									

## 2019 scenario

Based upon prior conversations between Olsson Staff and the City it is unlikely that there will be a signal installed at this intersection during calendar year 2019. There are four previously approved developments near this intersection, the Whispering Woods Residential Development located north of the intersection on SW Pryor Road, the Arborwalk South Residential Development located east of SW Pryor Road and north of Missouri Route 150, the Arborwalk North Residential Development located east of the intersection on the south side SW Hook Road, and the Summit View Residential

Development located west of the intersection. It is our understanding that significant completion of residential lots has not occurred on any of these developments yet. It is anticipated that some homes could be occupied in 2019.

Using the distribution listed from the TIS for Whispering Woods Residential Development and Summit View Residential Development and the trip distribution described in the Hook Farms North TIS for the Arborwalk North and South Residential Developments, an analysis was made of this intersection to determine how many houses could be built and exactly meet the threshold of Warrant One, Eight-Hour at the 70% factor using the hourly trip distribution of Land Use 210 listed in Appendix A of the <u>Trip Generation Manual</u> with a 50% distribution between vehicles entering and exiting.

The hour from 2:00-3:00 PM is approaching the thresholds for the 8-hour warrant and minor local traffic increases would exceed Warrant One, Eight-Hour threshold. The next highest hour of traffic that does not currently meet this threshold is the hour of 12:00-1:00 PM. Assuming a conservative occupation of 75 homes occupied for each of the approved developments, this intersection will not exceed the threshold of the warrant for this hour with the construction of 25 homes at each of the proposed entrances into this proposed development. A scenario of 75 homes being constructed on only one of the three entrances was also evaluated with the same conservative estimate of 75 homes at each of the approved developments and it was determined that the threshold will still not be exceeded.

The level of Service was then reviewed for the 2019 scenarios in comparison to the existing conditions scenarios and the approved development scenarios. This evaluation assumed that all 75 homes for Hook Farms North would be constructed off of SW Hook Road based upon conversations with Olsson Staff. The results are displayed in the following table:

Table 3: Level Of Service		
Scenario	Intersection Delay (s/veh.)	Level of Service
Existing AM	14.6	В
Existing PM	26.5	D
Existing + 75 Homes (approved + Hook Farms) AM	19.5	С
Existing + 75 Homes (approved + Hook Farms) PM	56.9	F
Full Buildout Approved Only AM	25.7	D
Full Buildout Approved Only AM	82.7	F
Full Buildout Approved Only (Signalized) AM	10.3	В
Full Buildout Approved Only (Signalized) PM	10	В

During the AM peak hour for the 2019 scenario, all movements with the exception of the southbound through movement exceed the City's performance criteria of a level of service C or better. During the PM hour for the 2019 scenario the through movements for northbound, westbound, and southbound through movements do not meet the City's performance criteria. However, this scenario is conservative, in that it assumes that all for approved developments, plus the proposed Hook Farms North development will all achieve an occupancy of 75 homes within this calendar year. The 2019 scenario performs significantly better than the full build out of the approved developments without signalization.

As previously discussed in this memo, the most current traffic count indicates that a signal is warranted based upon Warrant Two, The Four-Hour Warrant. Warrants One and Three are not met with the existing traffic. The proposed 2019 Scenario could be constructed without meeting the threshold for Warrant One, The Eight Hour Warrant. Currently the level of service in the PM Peak Hour does not meet the City's Performance Criteria for the intersection of SW Hook Road and SW Pryror Road in the PM Peak Hour. This is consistent with the residential nature of the surrounding area and it's associated commuter traffic patterns. After signalization, this intersection will exceed the City's Performance Criteria.

Respectfully,

Jesse Skinner, P.E., PTOE

Senior Transportation Engineer

Priority Engineer's, Inc.

Attachments

Cc: Mr. Michael Park, P.E, PTOE



	Α	В	С	D	Е	F	G	НІ	J	K	L	М	N	0	Р	Q	R	S	Т	U	V	W	X	Υ	Z	AA	AB
1	Time	Peds	SB Right	SB Thru	SB Left	SB UTm	Bike	Peds	WB Right	WB Thru	WB Left	WB Utm	Bike		Peds	NB Right	NB Thru	NB Left	NB UTm	Bike		Peds	EB Right	EB Thru	EB Left	EB UTrn	Bike
2	05:45	0	0	9	0	0	0	0	0	0	1	0	0		0	0	0	0	0	0		0	0	0	1	0	0
3	06:00	0	0	20	5	0	0	0	3	6	0	0	0		0	3	16	1	0	0		0	1	2	8	0	0
4	06:15	0	2	15	11	0	0	0	4	2	2	0	0		0	6	28	1	0	0		0	2	8	4	0	0
5	06:30	0	2	29	17	0	0	0	2	4	3	0	0		0	8	27	1	0	0		0	1	8	13	0	
6	06:45	0	0	41	24	0	0	0	11	3	5	0	0		0	15	38	1	0	0		0	3	24	13	0	
7	07:00	0	0	51	38	0	0	0	16	7	6	0	0		0	15	36	2	0	0		0	5	24	6	0	0
8	07:15	0	8	42	19	0	0	0	32	8	4	0	0		0	7	65	2	0	0		0	0	15	10	0	
9	07:30	0	6	49	16	0	0	0	19	13	7	0	0		0	7	73	1	0	0		0	1	9	12	0	
10	07:45	0	5	37	9	0	0	0	11	9	5	0	0		0	4	53	1	0	0		0	1	10	16	0	
11	08:00 08:15	0	5 5	45 34	20 10	0	0	0	13	13	6 5	0	0		0	2	32 30	3	0	0		0	4	10	18 11	0	
12	08:30	0	5	26	0	0	0	0	5	6	1	0	0		0	3	47	1	0	0		0	2	6	11	0	0
13 14	08:45	0	2	34	6	0	0	0	3	1	0	0	0		0	4	33	0	0	0		0	3	9	9	0	0
15	09:00	0	5	21	1	0	0	0	5	3	0	0	0		0	3	33	0	0	0		0	2	3	4	0	0
16	09:15	0	5	24	7	0	0	0	5	1	5	0	0		0	0	39	0	0	0		0	0	3	6	0	0
17	09:30	0	3	21	5	0	0	0	1	4	0	0	0		0	1	28	0	0	0		0	0	4	4	0	0
18	09:45	0	0	28	7	0	0	0	4	3	4	0	0		0	5	33	2	0	0		0	0	4	5	0	0
19	10:00	0	4	21	1	0	0	0	8	6	3	0	0		0	3	19	1	0	0		0	2	4	7	0	0
20	10:15	0	4	21	4	0	0	0	3	4	3	0	0		0	1	26	1	0	0		0	2	7	4	0	0
21	10:30	0	4	19	3	0	0	0	4	2	1	0	0		0	0	20	0	0	0		0	3	4	3	0	0
22	10:45	0	1	15	10	0	0	0	5	6	0	0	0		0	1	18	0	0	0		0	0	4	5	0	0
23	11:00	0	4	29	6	0	0	0	4	7	1	0	0		0	4	20	2	0	0		0	2	4	7	0	0
24	11:15	0	3	32	4	0	0	0	6	7	4	0	0		0	2	24	0	0	0		0	1	5	5	0	0
5	11:30	0	0	18	5	0	0	0	8	6	7	0	0		0	0	20	1	0	0		0	0	6	5	0	0
26	11:45	0	4	19	2	0	0	0	6	6	2	0	0		0	1	21	1	0	0		0	3	3	7	0	0
27	12:00	0	4	33	1	0	0	0	2	2	3	0	0		0	2	19	0	0	0		0	2	5	7	0	0
28	12:15	0	3	34	4	0	0	0	10	3	4	0	0		0	4	33	1	0	0		0	1	4	4	0	0
29	12:30	0	3	23	8	0	0	0	5	7	4	0	0		0	0	23	3	0	0		0	1	3	6	0	0
30	12:45	0	6	21	9	0	0	0	7	8	3	0	0		0	6	32	2	0	0		0	1	2	5	0	0
31	13:00	0	3	24	7	0	0	0	6	8	6	0	0		0	1	20	0	0	0		0	1	5	3	0	0
32	13:15	0	2	22	4	0	0	0	9	5	3	0	0		0	1	22	1	0	0		0	1	6	5	0	
33	13:30	0	7	25	7	0	0	0	13	6	1	0	0		0	1	30	2	0	0		0	3	9	0	0	
34	13:45	0	7	28	15	0	0	0	6	3	1	0	0		0	7	21	1	0	0		0	2	8	3	0	
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38 39	15:00	0	6	42	13	1	0	0	15	10	7	0	0		0	3	41	3	0	0		0	1	9	8	0	
40	15:15	0	9	53	17	0	0	0	18	11	5	0	0		0	2	37	3	0	0		0	2	6	13	0	0
11	15:30	0	6	58	8	0	0	0	8	10	9	0	0		0	3	33	5	0	0		0	3	3	10	0	0
_	15:45	0	3	43	13	0	0	0	18	8	8	0	0		0	4	50	2	0	0		0	2	5	12	0	0
43	16:00	0	18	50	17	0	0	0	13	5	6	0	0		0	2	38	2	0	0		0	1	13	18	0	0
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16	16:45	0	13	70	13	0	0	0	18	11	8	0	0		0	5	55	4	0	0		0	4	17	12	0	0
47	17:00	0	12	59	12	0	0	0	17	18	7	0	0		0	11	51	1	0	0		0	3	7	7	0	0
18	17:15	0	18	69	15	0	0	0	17	19	11	0	0		0	5	61	2	0	0		0	4	11	9	0	0
19	17:30	0	12	60	19	0	0	0	20	10	9	0	0		0	4	72	3	0	0		0	5	13	12	0	0
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51	18:00	0	5	48	18	0	0	0	8	9	7	0	0		0	3	52	4	0	0		0	1	11	12	0	0
52	18:15	0	13	52	16	0	0	0	10	8	9	0	0		0	2	46	3	0	0		0	0	12	11	0	0
53	18:30	0	10	42	10	0	0	0	13	8	7	0	0		0	2	41	1	0	0		0	2	8	2	0	0
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55	19:00	0	2	8	3	0	0	0	0	2	0	0	0		0	1	4	2	0	0		0	0	3	0	0	0
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19:00	0	2	8	3	0	0	0	0	2	0	0	0	0	1	4	2	0	0	0	0	3	0	0	0								

Time	Peds	SB Right	SB Thru	SB Left	SB UTm	Bike	Peds	WB Right	WB Thru	WB Left	WB Utm	Bike	Peds	NB Right	NB Thru	NB Left	NB UTm	Bike	Peds	EB Right			EB Left U	EB JTm	Bike	SB	NB	WB	ЕВ	Major Minor	
05:45	0	0	9	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	(	)	0	0	1	0	0						
06:00 06:15	0	0	20 15	5 11	0	0	0	3 4	6 2	0 2	0	0	0	3 6	16 28	1	0	0	(		1 2	2	8	0	0						
06:30	0	2	29 41	17 24	0	0	0	2	4	3	0	0	0	8 15	27 38	1	0	0	(		1	8 24	13 13	0	0						
06:45	0	0 166	41	24	0	0	0	11 45	3	5	0	0	0	145	38	1	U	0			87	24	13	U	U	166	145	45	87	311 87	
07:00	0	0	51	38	0	0	0	16	7	6	0	0	0	15	36	2	0	0	(	)	5	24	6	0	0						
07:15 07:30	0	8 6	42 49	19 16	0	0	0	32 19	8 13	4 7	0	0	0	7 7	65 73	2	0	0	(		0 1	15 9	10 12	0	0						
07:45	0	5 280	37	9	0	0	0	11 137	9	5	0	0	0	4 266	53	1	0	0	(		1 09	10	16	0	0	280	266	137	109	546 137	
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08:00 08:15	0	5 5	45 34	20 10	0	0	0	13 6	13 3	6 5	0	0	0	4 2	32 30	1 3	0	0	(		4	10 4	18 11	0	0						
08:30 08:45	0	5 2	26 34	0 6	0	0	0	5 3	6 1	1 0	0	0	0	3 4	47 33	1 0	0	0	(		2	6 9	11 9	0	0						
		192						62						160						,	91					192	160	62	91	352 91	
09:00	0	5	21	1	0	0	0	5	3	0	0	0	0	3	33	0	0	0	(		2	3	4 6	0	0						
09:15 09:30	0	5 3	24 21	7 5	0	0	0	5 1	1 4	5 0	0	0	0	0 1	39 28	0	0	0	(	)	0	4	4	0	0						
09:45	0	0 127	28	7	0	0	0	4 35	3	4	0	0	0	5 144	33	2	0	0	(		0 35	4	5	0	0	127	144	35	35	271 35	
10:00	0	4	21	1	0	0	0	8	6	3	0	0	0	3	19	1	0	0	(	)	2	4	7	0	0						
10:15 10:30	0	4	21	4	0	0	0	3	4	3	0	0	0	1	26 20	1	0	0	(	)	2	7 4	4 3	0	0						
10:30	0	1	15	10	0	0	0	5	6	0	0	0	0	1	18	0	0	0	(	)	0	4	5	0	0						
		107						45						90							45					107	90	45	45	197 45	
11:00 11:15	0	4	29 32	6 4	0	0	0	4 6	7 7	1 4	0	0	0	4 2	20 24	2	0	0	(		2	4 5	7 5	0	0						
11:30 11:45	0	0 4	18 19	5 2	0	0	0 0	8 6	6 6	7 2	0	0	0	0 1	20 21	1 1	0	0	(		0 3	6 3	5 7	0	0						
11.40	Ü	126	15	2	Ü	Ü	U	64	U	2	U	U	Ü	96	21		U	U	·		48	Ü	٠		· ·	126	96	64	48	222 64	
12:00	0	4	33	1	0	0	0	2	2	3	0	0	0	2	19	0	0	0	(		2	5	7	0	0						
12:15 12:30	0	3	34 23	4 8	0	0 0	0	10 5	3 7	4	0	0	0	4 0	33 23	1	0	0	(		1	4 3	4 6	0	0						
12:45	0	6 149	21	9	0	0	0	7 58	8	3	0	0	0	6 125	32	2	0	0	(		1 41	2	5	0	0	149	125	58	41	274 58	
42.00	0		0.4	-		0	0		0		0		0		20	0	0	0	(		1	5	3	0	0						
13:00 13:15	0	3 2	24 22	7 4	0	0	0	6 9	8 5	6 3	0	0	0	1	20 22	0 1	0	0	(	)	1	6	5	0	0						
13:30 13:45	0	7 7	25 28	7 15	0	0 0	0	13 6	6 3	1 1	0	0	0	1 7	30 21	2 1	0	0	(		3 2	9 8	0 3	0	0						
		151						67						107						•	46					151	107	67	46	258 67	
14:00 14:15	0	9	31 44	10 5	0	0	0	8 20	8 15	5 12	0	0	0	0 4	20 22	1 0	0	0	(		2	8	5 9	0	0						
14:30	0	6	38	8	0	0	0	62	22	12	0	0	0	2	38	3	0	0	(	)	1	5	5	0	0						
14:45	0	13 222	36	14	0	0	0	22 202	12	4	0	0	0	3 122	28	1	0	0	(		53	4	ō	U	U	222	122	202	53	344 202	
15:00	0	6	42	13	1	0	0	15	10	7	0	0	0	3	41	3	0	0	(	)	1	9	8	0	0						
15:15 15:30	0	9 6	53 58	17 8	0	0	0	18 8	11 10	5 9		0	0		37 33	3 5	0	0	(		2	6 3	13 10	0	0						
15:45	0		43		0			18 127	8	8	0			4 186		2			(		2 74	5	12	0	0	272	186	127	74	458 127	
																										212	100	127	74	430 121	
16:00 16:15	0	18 12	50 54	17 11	0	0	0	13 6	5 9	6 9	0	0	0		38 50	2 1	0		(	)	1	13 13	18 15	0	0						
16:30 16:45	0	11 13	55 70	6 13	0	0	0	14 18	16 11	9		0	0	7 5	56 55	5 4	0		(		1	9 17	14 12	0							
		330						124						227						1	18					330	227	124	118	557 124	
17:00	0	12	59	12	0	0		17	18	7		0		11	51	1		0	(		3 4	7 11	7 9	0	0						
17:15 17:30	0	18 12	69 60	15 19	0	0	0	17 20	19 10	11 9	0	0	0	4	61 72	2		0	(	)	5	13	12	0	0						
17:45	0	10 347	52	9	0	0	0	20 166	10	8	0	0	0	5 262	44	3	0	0	(		3 89	9	6	0	0	347	262	166	89	609 166	
18:00	0	5	48	18	0	0	0	8	9	7	0	0	0	3	52	4	0	0	(	)	1	11	12	0	0						
18:15 18:30	0	13 10	52 42	16 10	0	0	0		8	9 7		0	0	2	46	3 1	0	0	(		0	12 8	11 2	0							
18:45	0	10	29	13	0	0		11		4				5		1				)	6	8	7	0		000	193	106	90	4E0 400	
		266						106						193							80					266	193	100	80	459 106	
19:00	0	2	8	3	0	0	0	0	2	0	0	0	0	1	4	2	0	0	(	)	0	3	0	0	0						

Time		de SB	SB		SB	Bike		WD	\A/D	WD			P Peds	Q NB Right	NB	NB	NB	U Bike	V	Peds	EB	Е	В	Z A EB E Left U	EB p	ike	AC	AD SB	AE NB	AF WB	AG EB	AH	Al Major	AJ Minor		Condition	AM Condition B Major	
2 3 06:00 4 06:15 5 06:30 6 06:45 7	0	2	15 29 41	11	0	0	0	3 4 2 11 45	2	2	0	0	0	3 6 8 15	28 27	1	0 0 0	0			0 0 0	1 2 1 3 87	2 8 8 24	8 4 13 13	0 0 0	0 0 0 0		166	145	45	87		311	87	0		0	0 1
_	0	8	42 49 37	19	0 0 0 0	0		32 19	8	7		0	0		65 73	2	0 0 0	0			0 0 0	5 0 1 1	24 15 9 10	6 10 12 16	0 0 0 0	0 0 0		280	266	137	109		546	137	1	1	1	1
3 4 5 08:00 6 08:15 7 08:30 8 08:45 9	0	5	26 34	10	0 0 0 0	0	0	6 5	3	5		0	0	4 2 3 4 160	30 47	3	0 0 0	0			0 0 0	4 4 2 3 91	10 4 6 9	18 11 11 9	0 0 0	0 0 0		192	160	62	91		352	91	1		0	0 1
0 0 09:00 2 09:15 3 09:30 4 09:45	0	5 5 3	21 24 21 28	7	0	0	0	5 5 1	1 4	5	0	_	0	3 0 1	39 28	0 0 0 2	0 0 0	0			0 0 0	2 0 0 0 0	3 3 4 4	4 6 4 5	0 0 0	0 0 0		127	144	35	35		271	35	0		0	0 0
26 27 10:00 28 10:15 29 10:30 30 10:45	0	4 4	21 21 19 15	4	0	0	0	8 3	4 2	1	_	0	0	3 1 0 1 90	26 20	1	0 0 0	0			0 0 0	2 2 3 0 45	4 7 4 4	7 4 3 5	0 0 0	0 0 0 0		107	90	45	45		197	45	0		0	0 0
2 3 11:00 4 11:15 5 11:30	0	3 0	29 32 18 19	4		0	0	4 6 8	7	4	0 0 0 0	0	0	4 2 0	24 20	0	-	0			0 0 0	2 1 0 3 48	4 5 6 3	7 5 5 7	0 0 0	0 0 0 0		126	96	64	48		222	64	0		0	0 1
9 12:00 0 12:15 1 12:30 2 12:45	0	3	33 34 23 21	4	0	0	0	2 10 5	3 7	4	_	0	0	2 4 0	33 23	0 1 3 2	0 0 0	0			0 0 0	2 1 1 1 41	5 4 3 2	7 4 6 5	0 0 0	0 0 0 0		149	125	58	41		274	58	0		0	0 1
4   5   13:00   6   13:15   7   13:30   8   13:45	0	7	22 25 28	7 4 7 15	0	0	0	9	5 6	3	0 0 0	0	0	1 1 1	22 30	1 2	0 0 0	0			0 0 0			3 5 0 3	0			151	107	67	46		258	67	0		0	0 1
9 14:00 1 14:00 2 14:15 3 14:30 4 14:45 5 6	0	9 8	31 44 38 3 36	5	0 0 0 0	0	0	8 20 62	15 22 12	12 12		0	0	0 4 2	22 38	0	0 0 0	0			0 0 0	2 1 1 3 53	8 2 5 4	5 9 5 8	0	0		222	122	202	53		344	202	0	1		0 1
15:00 15:15 15:30	0	6 9	42 53 58 43	13 17 8 13	0	0	0	15 18 8	10 11 10 8	5 9	0 0 0	0	0	3 2 3	37 33	3 5	0 0 0	0			0 0 0	2	6	8 13 10 12	0	0		272	186	127	74		458	127	1	1		0 1
16:15 16:30	0	18 12 11	5 50 2 54 55 3 70	_	0	0	0	13 6 14	5 9 16 11	9	0 0 0	0	0	2 2 7	50 56	1 5	0 0 0	0			0 0 0	1	13 9	18 15 14 12	0	0		330	227	124	118		557	124	1	1	1	1
3 17:00 0 17:15 1 17:30 2 17:45	0	12 18 12	59 69 60 52	15	0 0 0 0	0	0	17 17 20	18 19 10	11 9	0 0 0	0	0	11 5 4	61 72	2	0 0 0	0			0 0 0	5	11 13	7 9 12 6	0	0		347	262	166	89		609	166	1	1	1	1
3 4 5 18:00 6 18:15 7 18:30 8 18:45 9 0 1 19:00 2	0 0 0			18 16 10 13	0 0 0 0 0	0 0 0	0	8 10 13	8 8 12	9	0 0 0	0	 0	3 2 2	46 41	3	0 0 0	0			0 0 0	1		2	0	0		266	193	106	80		459	106	1			0 1
79 80 81 19:00	0	200	8	3	0	0	0			0	0	0	0		4	2	0	0					3	0	0	0		200		ore than 8 ho			100	100		6	3 NO	

Existina	

Time	Peds		ight SB Th	u SBL	eft SB U	Tm B	Bike	Peds	WB Rigi	nt WB Thr	u WBL	eft WBU	ltm Bi	ke	Peds	NB Righ	t NBT	Thru NBL	eft NBU	JTm Bii	(e	Peds I	EB Right E	B Thru E	B Left El	3 UTm E	3lke	SB	NB	WB	EB
12:00-1 PM	0	D	16	111	22	0	0	(	)	24	20	14	0	0	(	)	12	107	6	0	0	0	5	14	22	0	0	149	125	58	41
2:00-3:00 PM	0	D	36	149	37	0	0	(	) 1	12	57	33	0	0	(	)	9	108	5	0	0	0	7	19	27	0	0	222	122	202	53

50 Homes Whispering Woods, Arborwalk South, Arborwalk North and Summit Fair, 75 homes Hook Farms-25 @ each entrance

Time	Major Approach	Minor Approach (west)	Minor Approach (east)	Appendix A Distribution	Condition A Major	SB trips generated	NB trips generated	WB trips generated		New Major Approach	New Minor Approach (west)	New Minor Approach (east)	Peds
12:00-1 PM	274	58	41	5.50%	350	21	18	18	11	313	76	52	
Hook Farms						11	9	14	3	333	90	55	

75 Homes each Whispering Woods, Arborwalk South, Arborwalk North and Summit Fair, 75 homes Hook Farms-25 @ each entrance

Time	Major Approach	Minor Approach (west)	Minor Approach (east)	Appendix A Distribution	Condition A Major	Approved SB trips generated	Approved NB trips generated	Approved WB trips generated	Approved EB trips generated	New Major Approach	New Minor Approach (west)	New Minor Approach (east)	Peds
12:00-1 PM	274	58	41	0.055	350	35	29	29	25	338	87	66	
Hook Farms						11	9	14	3	358	101	69	

75 Homes each Whispering Woods, Arborwalk South, Arborwalk North and Summit Fair, 75 homes Hook Farms-75 homes at the SW Pryor Rd entrance

Time	Major Approach	Minor Approach (west)	Minor Approach (east)	Appendix A Distribution	Condition A Major	Approved SB trips generated	Approved NB trips generated	Approved WB trips generated	Approved EB trips generated	New Major Approach	New Minor Approach (west)	New Minor Approach (east)	Peds
12:00-1 PM	274	58	41	0.055	350	35	29	29	25	338	87	66	
Hook Farms						13	7	3	3	358	gn.	60	

75 Homes each Whispering Woods, Arborwalk South, Arborwalk North and Summit Fair, 75 homes Hook Farms-75 homes from SW Hook entrance

Time	Major Approach	Minor Approach (west)	Minor Approach (east)	Appendix A Distribution	Condition A Major	Approved SB trips generated	Approved NB trips generated	WB trips	Approved EB trips generated	New Major Approach	New Minor Approach (west)	New Minor Approach (east)	Peds
12:00-1 PM	274	58	41	0.055	350	35	29	29	25	338	87	66	
Hook Farms						0	7	2	10	354	00	85	

Convergence, Y/N

HCM Lane V/C Ratio

**HCM Control Delay** 

HCM Lane LOS

HCM 95th-tile Q

Service Time

Cap

Yes

409

6.518

0.142

13

В

0.5

Yes

442

5.93

0.638

24.5

С

4.4

Yes

399

6.765

0.238

14.6

В

0.9

Yes

433

6.079

0.441

17.5

С

2.2

Intersection												
Intersection Delay, s/veh	19.5											
Intersection LOS	С											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	7		7	1		*	7		7	<b>↑</b>	7
Traffic Vol, veh/h	75	95	30	33	45	64	29	222	25	97	240	36
Future Vol, veh/h	75	95	30	33	45	64	29	222	25	97	240	36
Peak Hour Factor	0.79	0.63	0.75	0.50	0.69	0.83	0.50	0.91	0.66	0.64	0.78	0.71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	95	151	40	66	65	77	58	244	38	152	308	51
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	1
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			3			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	3			2			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			3			2			2		
HCM Control Delay	16.5			14.8			22.5			21.2		
HCM LOS	С			В			С			С		
Lane		NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3		
Vol Left, %		100%	0%	100%	0%	100%	0%	100%	0%	0%		
Vol Thru, %		0%	90%	0%	76%	0%	41%	0%	100%	0%		
Vol Right, %		0%	10%	0%	24%	0%	59%	0%	0%	100%		
Sign Control		Stop										
Traffic Vol by Lane		29	247	75	125	33	109	97	240	36		
LT Vol		29	0	75	0	33	0	97	0	0		
Through Vol		0	222	0	95	0	45	0	240	0		
RT Vol		0	25	0	30	0	64	0	0	36		
Lane Flow Rate		58	282	95	191	66	142	152	308	51		
Geometry Grp		8	8	8	8	8	8	8	8	8		
Degree of Util (X)		0.142	0.642	0.238	0.441	0.171	0.331	0.355	0.676	0.101		
Departure Headway (Hd)		8.794	8.206	9.026	8.329	9.3	8.363	8.422	7.909	7.191		

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Yes

386

7.052

0.171

14

В

0.6

Yes

430

6.115

0.33

15.2

С

1.4

Yes

429

6.143

0.354

15.7

С

1.6

Yes

458

5.63

0.672

25.6

D

4.9

Yes

500

4.912

0.102

10.7

В

0.3

Intersection												
Intersection Delay, s/veh	56.9											
Intersection LOS	F											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	f)		7	7		*	7		7	<b>^</b>	7
Traffic Vol, veh/h	60	77	48	50	97	89	70	267	41	67	341	87
Future Vol, veh/h	60	77	48	50	97	89	70	267	41	67	341	87
Peak Hour Factor	0.79	0.63	0.75	0.50	0.69	0.83	0.50	0.91	0.66	0.64	0.78	0.71
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	76	122	64	100	141	107	140	293	62	105	437	123
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	1

Approach	EB	WB	NB	SB	
Opposing Approach	WB	EB	SB	NB	
Opposing Lanes	2	2	3	2	
Conflicting Approach Left	SB	NB	EB	WB	
Conflicting Lanes Left	3	2	2	2	
Conflicting Approach Right	NB	SB	WB	EB	
Conflicting Lanes Right	2	3	2	2	
HCM Control Delay	22.6	27.8	53	88.5	
HCM LOS	С	D	F	F	

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3	
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%	0%	
Vol Thru, %	0%	87%	0%	62%	0%	52%	0%	100%	0%	
Vol Right, %	0%	13%	0%	38%	0%	48%	0%	0%	100%	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	
Traffic Vol by Lane	70	308	60	125	50	186	67	341	87	
LT Vol	70	0	60	0	50	0	67	0	0	
Through Vol	0	267	0	77	0	97	0	341	0	
RT Vol	0	41	0	48	0	89	0	0	87	
Lane Flow Rate	140	356	76	186	100	248	105	437	123	
Geometry Grp	8	8	8	8	8	8	8	8	8	
Degree of Util (X)	0.395	0.943	0.231	0.526	0.295	0.673	0.292	1.156	0.299	
Departure Headway (Hd)	10.554	9.933	11.458	10.653	11.089	10.218	10.039	9.519	8.791	
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Cap	343	366	315	341	326	357	358	385	409	
Service Time	8.254	7.633	9.158	8.353	8.789	7.918	7.79	7.27	6.542	
HCM Lane V/C Ratio	0.408	0.973	0.241	0.545	0.307	0.695	0.293	1.135	0.301	
HCM Control Delay	20	66	17.6	24.6	18.4	31.6	16.9	126.2	15.3	
HCM Lane LOS	С	F	С	С	С	D	С	F	С	
HCM 95th-tile Q	1.8	10.1	0.9	2.9	1.2	4.7	1.2	17	1.2	

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