



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. Signal Warrants Evaluated in Original Traffic 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. Signal Warrants Evaluated in Memo						
Count Date	Existing AM Peak Hour (70%)	Existing PM Peak Hour (70 %)	Existing Warrant Two Four-Hour (100%)	Existing Warrant Two Four-Hour (70%)	Existing Warrant One Eight-Hour (100%)	Existing Warrant One Eight-Hour (70%)
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 Trip Generation Manual 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	B
Existing PM	26.5	D
Existing + 75 Homes (approved + Hook Farms) AM	19.5	C
Existing + 75 Homes (approved + Hook Farms) PM	56.9	F
Full Buildout Approved Only AM	25.7	D
Full Buildout Approved Only PM	82.7	F
Full Buildout Approved Only (Signalized) AM	10.3	B
Full Buildout Approved Only (Signalized) PM	10	B

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 Pryor 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



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 Utm	Bike	
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	230
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	205
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	241
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	239

Total	0	55	258	59	0	0	0	0	72	58	35	0	0	0	0	25	239	10	0	0	0	0	16	48	40	0	0
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372

165

274

104

Major 537
Minor 165

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

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN			
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 UTm	Bike		SB	NB	WB	EB		Major	Minor	Condition A Major	Condition A Minor	Condition B Major	Condition B Minor			
2																																											
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	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	0															
7			166							45							145							87						166	145	45	87		311	87	0	0	0	1			
8																																											
9	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															
10	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	0															
11	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	0															
12	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	0															
13			280							137							266							109						280	266	137	109		546	137	1	1	1	1			
14																																											
15	08:00	0	5	45	20	0	0		0	13	13	6	0	0		0	4	32	1	0	0		0	4	10	18	0	0															
16	08:15	0	5	34	10	0	0		0	6	3	5	0	0		0	2	30	3	0	0		0	4	4	11	0	0															
17	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															
18	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															
19			192							62							160							91						192	160	62	91		352	91	1	0	0	1			
20																																											
21	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															
22	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															
23	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															
24	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															
25			127							35							144							35						127	144	35	35		271	35	0	0	0	0			
26																																											
27	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															
28	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															
29	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															
30	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															
31			107							45							90							45						107	90	45	45		197	45	0	0	0	0			
32																																											
33	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															
34	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															
35	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															
36	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															
37			126							64							96							48						126	96	64	48		222	64	0	0	0	1			
38																																											
39	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															
40	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															
41	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															
42	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															
43			149							58							125							41						149	125	58	41		274	58	0	0	0	1			
44																																											
45	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															
46	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	0															
47	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	0															
48	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	0															
49			151							67							107							46						151	107	67	46		258	67	0	0	0	1			
50																																											
51	14:00	0	9	31	10	0	0		0	8	8	5	0	0		0	0	20	1	0	0		0	2	8	5	0	0															
52	14:15	0	8	44	5	0	0		0	20	15	12	0	0		0	4	22	0	0	0		0	1	2	9	0	0															
53	14:30	0	6	38	8	0	0		0	62	22	12	0	0		0	2	38	3	0	0		0	1	5	5	0	0															
54	14:45	0	13	36	14	0	0		0	22	12	4	0	0		0	3	28	1	0	0																						

Existing Counts																															
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 Utm	Bike	SB	NB	WB	EB
12:00-1 PM	0	16	111	22	0	0		0	24	20	14	0	0		0	12	107	6	0	0		0	5	14	22	0	0	149	125	58	41
2:00-3:00 PM	0	36	149	37	0	0		0	112	57	33	0	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	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	5.50%	350	21	18	18	11	313	76	52	
Hook Farms						11	9	14	3	333	90	58	

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	338	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	338	90	69	










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	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						9	7	3	19	338	90	88	

8: Pryor Road & Hook Road

2019 AM PEAK HOUR (75 homes)

Intersection	
Intersection Delay, s/veh	19.5
Intersection LOS	C










Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	C	B	C	C

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	Stop	Stop	Stop	Stop	Stop	Stop	Stop	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
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	409	442	399	433	386	430	429	458	500
Service Time	6.518	5.93	6.765	6.079	7.052	6.115	6.143	5.63	4.912
HCM Lane V/C Ratio	0.142	0.638	0.238	0.441	0.171	0.33	0.354	0.672	0.102
HCM Control Delay	13	24.5	14.6	17.5	14	15.2	15.7	25.6	10.7
HCM Lane LOS	B	C	B	C	B	C	C	D	B
HCM 95th-tile Q	0.5	4.4	0.9	2.2	0.6	1.4	1.6	4.9	0.3

8: Pryor Road & Hook Road

2019 PM Peak our (75 Homes)

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												
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	C	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	C	F	C	C	C	D	C	F	C			
HCM 95th-tile Q	1.8	10.1	0.9	2.9	1.2	4.7	1.2	17	1.2			