SUMMARY OF ANALYSIS
DOANSBURG ROAD AND FAIRFIELD DRIVE

Existing Conditions:

The existing intersection is an unsignalized confluence of many approaches. The primary intersection has three legs; E. Branch Rd approaching from the west, Fairfield Dr approaching from the east and Doansburg Rd approaching from the south. Additionally, there are three residential driveways and one commercial driveway that all access the road network within the influence of the intersection. E. Branch Rd and Fairfield Dr are uncontrolled and Doansburg Rd is stop sign controlled. None of the driveways are signed, but by law should yield the right of way to on-coming vehicles. Reviewing traffic operations at this intersection, assuming that no traffic enters or exits the residential driveways and only minimal traffic (as counted) accesses the commercial driveway in the peak hours, the intersection appears to operate acceptably in the PM peak hour, but the Doansburg Rd left turn movement does operate at LOS F (63.4 sec/veh of delay) in the AM peak hour. However, the volume to capacity ratio for that movement is only 0.29, so even though vehicles are delayed, the failing level of service doesn't cause significant queuing or congestion. Based on the 30 mph speed limit, the stopping sight distance is 200 feet and the preferred intersection sight distance is 320 feet. The existing intersection configuration allows for sight distances of 360' looking east and 480' looking west from the Doansburg Rd approach, which is marginally acceptable. Due to limitations by vegetation the sight distances from the driveways are only 250' to the east and 320' to the west, which is less than desirable.

Signal Warrant Analysis:

A review of the hourly traffic volumes between 7:00 AM and 8:00 PM show that Warrant 1 (8-hour warrant) is not met in any of the 13 hours reviewed and although there is one hour that meets the Warrant 3 (peak hour warrant) criteria, there isn't enough overall delay to satisfy that warrant either. Warrant 2 (4-hour warrant) is marginally satisfied with just 4 hours meeting criteria. Warrant 7 (crash experience) is not satisfied, as there were not 5 accidents per year susceptible to correction by signalization (left or right turn, or right angle accidents). The satisfaction of Warrant 2 combined with the failing level of service for northbound left turns and the limited sight distances do justify the installation of a traffic signal, or similar treatment such as a roundabout, but it is only marginally warranted.

Accident Analysis:

Due to the limited sight distance and road curvature there were 14 accidents in the vicinity of the intersection, but only 7 occurred at the intersection itself. Of those accidents only 1 was of an accident type susceptible to correction by traffic signal. The accident rate calculated for this intersection is 0.88 accidents per million entering vehicles (acc/MEV), which is higher than the 0.35 acc/MEV state-wide average rate for similar intersections. The higher rate at this intersection may be attributed to the limited sight distance, the excessive number of driveways and/or the road curvature. However, a detailed look at the accident types did not reveal any significant pattern of

concern. A summary of the accident types occurring at the intersection and their severity is shown in the table below:

ACCIDENT SUMMARY

Accident Type	Number of Occurrences	Accident Severity	Number of Occurrences
Left Turn	1	Fatality	0
Rear End	2	Personal Injury	2
Out of Control	2	Property Damage Only	3
Overtaking	1	Non-Reportable	2
Sideswipe	1		
	7		7

Field Condition and Right of Way Review:

The field conditions at this intersection make any roadway improvements extremely difficult. Doansburg Rd approaches the intersection on a 7%-8% upslope; the terrain drops off significantly in the southeast corner; and there are two residential driveways in the southwest corner that rise at a 10%-15% slope. The construction of a roundabout would also result in utility pole relocations and the removal and replacement of a decorative stone wall fronting the residential property to the north. It would also require the closing of one of the commercial driveway entrances to the VFW property and the taking of some of their parking lot. Additionally, right of way taking would be required from both the VFW and the northside residential property owner in order to accommodate a roundabout.

Design Alternative Consideration:

Two design alternatives were considered to improve traffic operations at this intersection; the installation of a traffic signal and the construction of a roundabout. For the traffic signal, LOS B with overall intersection delays of approximately 14 sec/veh of delay could be achieved for both the AM and PM peak hours. Roundabout operations would yield LOS A with delays below 8 sec/veh. However, given the significant grades and multiple driveway connections within the intersection, the construction of a roundabout at this location would be extremely difficult. A concept sketch illustrating these issues is included later under this tab.

Conceptual Cost Estimate:

Based on our past experience with similar projects, knowledge of construction pricing in this region of New York State and our understanding of the issues, it is estimated that a traffic signal would cost approximately $250,000. If a roundabout were able to be constructed, which as stated above would be extremely difficult, it is estimated that construction and design would cost approximately $1,720,000. These costs include construction of all improvements, right of way costs, and costs for design and inspection. A breakdown of the big picture cost items is included later under this tab.

Summary & Conclusion:

The analyses show that a traffic signal is marginally warranted, and the intersection could remain as it currently exists. Delays would be a higher than desirable, but no capacity or queuing issues were identified, and the accident analysis didn't note an accident pattern that could be corrected by a change in traffic control. However, given the limited sight distances, it is recommended to install a traffic signal at this location to improve safety and traffic operations. If a traffic signal were installed it is highly recommended that an agreement be worked out between the VFW and the adjacent residential property to share a driveway on the northern side of the intersection to reduce the number of conflict points. Unfortunately, there does not appear to be a viable solution to remove the two residential driveways on the southwest corner from the intersection, but a flashing red beacon could be placed facing those driveways to reinforce them pulling out safely. A roundabout could result in improved and acceptable traffic operations at this intersection, but the physical constraints at this location make construction of a roundabout infeasible.

The intersection evaluation worksheet summarizing the lane geometry and traffic operations, traffic volume data sheets, traffic signal warrant analysis sheets, accident summary sheets, capacity analysis worksheets, cost estimate breakdown and roundabout concept sketch for this intersection can be found on the following pages under this tab.

INTERSECTION EVALUATION WORKSHEET

Project:	Putnam County Roundabout Evaluation
Location:	Putnam County (Various Locations)
Intersection:	Doansburg Rd & Fairfield Dr
GPS Coord.:	41°27'30.85"N, 73°33'11.27"W
Traffic Control:	Stop Sign (NW & SE)

Traffic Control Notes (if applicable):

TWSC. No Pedestrian Crossings. NW RT in flared radius lane channelized by small raised island.

Other Intersection Notes (if applicable):

NW Sight Distance - 360' to east/480' to west. SE Sight Distance - 250' to east/320' to west, both limited by vegitation before horizontal curvatures.

APPROACH DATA

	Doansburg Rd			Driveway/Parking Lot			E. Branch Rd			Fairfield Dr		
	Northbound (NW)			**Southbound (SE)**			**Eastbound (NE)**			**Westbound (SW)**		
	Left	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**
Lane Assignments:		<-1	1		<-1->			<-1->			<-1->	
Lane Widths:		12'	12'		10'			12'			12'	
Turn Bay Lengths:		-	50'		-			-			-	
Speed Limits:	30 mph			30 mph			30 mph			30 mph		

TRAFFIC COUNT DATA

(traffic volumes below represent counted traffic adjusted by 1.05 to account for seasonal variation and annual growth)

AM Peak Hour	Time Period:	7:00	to	8:00				Date Counted:	4/24/2018			
Volume:	20	2	83	0	3	1	0	59	83	486	85	0
Truck %:	1%	1%	20%	0%	33%	1%	0%	9%	5%	4%	4%	0%
Peds (Bikes):	0 (0)			2 (0)			0 (0)			0 (0)		
PHF = 0.87												
PM Peak Hour	Time Period:	5:00	to	6:00				Date Counted:	4/24/2018			
Volume:	64	4	457	1	0	1	0	120	27	177	65	0
Truck %:	1%	1%	2%	50%	0%	1%	0%	4%	1%	2%	3%	0%
Peds (Bikes):	0 (0)			0 (0)			0 (0)			0 (0)		
PHF = 0.97												

EXISTING CONDITION LEVEL OF SERVICE

AM Peak Delay (s):	63.4	9.5	45.3	0.0			9.2		
LOS:	F	A	E	A			A		
v/c:	0.29	0.11	0.05	0.00			0.40		
95% Queue:	30'	< 25'	< 25'	0			50'		
A (8.4) Overall	**C (20.8)**		**E (45.3)**	**A (0.0)**			**A (7.9)**		
PM Peak Delay (s):	16.3	13.1	18.3	0.0			7.9		
LOS:	B	B	C (18.3)	A			A		
v/c:	0.18	0.52	0.01	0.00			0.13		
95% Queue:	< 25'	80'	< 25'	0			< 25'		
A (9.3) Overall	**B (13.5)**		**C (18.3)**	**A (0.0)**			**A (5.8)**		

Note: LOS calculated using HCM 6 methodologies. For unsignalized intersections, only side street approach delay and mainline left turn delay is shown. The HCM 6 methodology assumes zero delay for all other movements.

INTERSECTION EVALUATION WORKSHEET

	Doansburg Rd			Driveway/Parking Lot			E. Branch Rd			Fairfield Dr		
	Northbound (NW)			Southbound (SE)			Eastbound (NE)			Westbound (SW)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BUILD ALTERNATIVE #1 - LEVEL OF SERVICE												
Description of Improvements:	Actuated Traffic Signal with No Geometric Improvements											
AM Peak Delay (s):	18.4		20.1	18.2			5.1			15.0		
LOS:	B		C	B (18.2)			A			B		
v/c:	0.06		0.32	0.01			0.17			0.79		
95% Queue:	25'		30'	< 25'			25'			415'		
B (13.9) Overall	**B (19.7)**			**B (18.2)**			**A (5.1)**			**B (15.0)**		
PM Peak Delay (s):	8.3		18.4	7.8			8.7			10.8		
LOS:	A		B	A			A			B		
v/c:	0.10		0.79	0.00			0.23			0.40		
95% Queue:	30'		45'	< 25'			45'			90'		
B (14.1) Overall	**B (17.1)**			**A (7.8)**			**A (8.7)**			**B (10.8)**		
BUILD ALTERNATIVE #2 - LEVEL OF SERVICE												
Description of Improvements:	Single Lane Roundabout (120 ft. Diameter)											
AM Peak Delay (s):	4.2			6.8			7.7			8.2		
LOS:	A			A			A			A		
v/c:	0.11			0.01			0.23			0.51		
95% Queue:	< 25'			< 25'			25'			75'		
A (7.6) Overall	**A (4.2)**			**A (6.8)**			**A (7.7)**			**A (8.2)**		
PM Peak Delay (s):	7.8			5.5			4.5			4.6		
LOS:	A			A			A			A		
v/c:	0.46			0.00			0.14			0.20		
95% Queue:	50'			< 25'			< 25'			25'		
A (6.4) Overall	**A (7.8)**			**A (5.5)**			**A (4.5)**			**A (4.6)**		
BUILD ALTERNATIVE #3 - LEVEL OF SERVICE												
Description of Improvements:												
AM Peak Delay (s):												
LOS:												
v/c:												
95% Queue:												
Overall												
PM Peak Delay (s):												
LOS:												
v/c:												
95% Queue:												
Overall												

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Site Code : 2018011_
Start Date : 4/24/2018
Page No : 1

Groups Printed- Cars - Trucks

	Parking Lot From North					Fairfield Dr From East					Doansburg Rd From South					E Branch Rd From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	1	0	1	2	0	19	110	0	129	23	0	8	0	31	16	10	0	0	26	188
07:15 AM	0	0	0	0	0	0	18	151	0	169	20	0	4	0	24	20	14	0	0	34	227
07:30 AM	1	0	0	1	2	0	24	107	0	131	16	2	3	0	21	15	18	0	0	33	187
07:45 AM	0	2	0	0	2	0	20	95	0	115	20	0	4	0	24	28	14	0	0	42	183
Total	1	3	0	2	6	0	81	463	0	544	79	2	19	0	100	79	56	0	0	135	785
08:00 AM	0	0	0	0	0	0	17	79	0	96	22	0	3	0	25	13	13	0	0	26	147
08:15 AM	0	1	0	0	1	0	21	99	0	120	25	0	6	0	31	18	8	0	0	26	178
08:30 AM	0	1	0	0	1	1	15	89	0	105	26	0	10	0	36	14	15	0	0	29	171
08:45 AM	0	1	0	0	1	0	14	67	0	81	28	0	5	1	34	11	13	0	0	24	140
Total	0	3	0	0	3	1	67	334	0	402	101	0	24	1	126	56	49	0	0	105	636
09:00 AM	0	0	0	0	0	0	16	53	0	69	29	0	7	0	36	4	8	0	0	12	117
09:15 AM	0	0	0	0	0	0	11	53	0	64	26	0	4	0	30	8	12	0	0	20	114
09:30 AM	0	0	0	0	0	0	28	47	0	75	15	0	3	0	18	3	9	0	0	12	105
09:45 AM	0	0	0	0	0	0	12	41	0	53	38	0	5	0	43	7	10	0	0	17	113
Total	0	0	0	0	0	0	67	194	0	261	108	0	19	0	127	22	39	0	0	61	449
10:00 AM	0	0	0	0	0	0	14	29	0	43	31	0	5	0	36	8	10	0	0	18	97
10:15 AM	0	0	0	0	0	0	11	49	0	60	31	0	4	0	35	2	8	0	0	10	105
10:30 AM	0	0	0	0	0	0	11	36	0	47	41	0	2	0	43	7	9	0	0	16	106
10:45 AM	0	0	0	0	0	0	8	30	0	38	28	0	1	0	29	5	10	0	0	15	82
Total	0	0	0	0	0	0	44	144	0	188	131	0	12	0	143	22	37	0	0	59	390
11:00 AM	0	0	1	0	1	0	9	34	0	43	36	0	5	0	41	2	13	0	0	15	100
11:15 AM	0	0	0	0	0	0	13	31	0	44	30	0	3	0	33	4	9	0	0	13	90
11:30 AM	0	0	0	0	0	0	7	30	0	37	28	0	8	0	36	5	13	0	0	18	91
11:45 AM	0	0	0	0	0	0	8	43	0	51	35	0	5	0	40	6	9	0	0	15	106
Total	0	0	1	0	1	0	37	138	0	175	129	0	21	0	150	17	44	0	0	61	387
12:00 PM	0	0	0	0	0	0	7	32	0	39	45	0	2	0	47	5	12	0	0	17	103
12:15 PM	0	0	0	0	0	0	12	34	0	46	35	1	4	0	40	10	6	0	0	16	102
12:30 PM	0	0	1	0	1	0	13	43	0	56	43	0	7	0	50	5	21	0	0	26	133
12:45 PM	0	1	1	0	2	0	10	42	0	52	33	0	10	0	43	6	12	0	0	18	115
Total	0	1	2	0	3	0	42	151	0	193	156	1	23	0	180	26	51	0	0	77	453
01:00 PM	0	0	0	0	0	0	7	41	0	48	38	0	11	0	49	8	5	0	0	13	110
01:15 PM	0	0	0	0	0	0	12	46	0	58	43	0	6	0	49	9	15	0	0	24	131
01:30 PM	0	0	0	0	0	0	13	55	0	68	33	0	6	0	39	12	13	0	0	25	132
01:45 PM	0	2	0	0	2	0	6	30	0	36	38	0	4	0	42	15	13	0	0	28	108
Total	0	2	0	0	2	0	38	172	0	210	152	0	27	0	179	44	46	0	0	90	481
02:00 PM	0	0	0	0	0	0	18	47	0	65	52	0	5	0	57	3	13	0	0	16	138
02:15 PM	0	0	0	0	0	0	12	44	0	56	42	1	8	0	51	5	16	0	0	21	128
02:30 PM	0	0	0	1	1	0	9	42	0	51	56	0	5	0	61	3	16	0	1	20	133
02:45 PM	0	0	0	0	0	0	11	40	0	51	72	1	10	0	83	10	12	0	0	22	156
Total	0	0	0	1	1	0	50	173	0	223	222	2	28	0	252	21	57	0	1	79	555
03:00 PM	0	0	0	0	0	0	21	50	0	71	62	0	13	0	75	7	22	0	0	29	175
03:15 PM	0	0	0	1	1	0	12	43	0	55	59	0	7	0	66	6	10	0	1	17	139
03:30 PM	0	0	1	1	2	0	10	30	0	40	89	2	7	0	98	5	34	0	2	41	181
03:45 PM	0	0	0	0	0	0	7	40	0	47	74	0	13	0	87	8	33	0	1	42	176
Total	0	0	1	2	3	0	50	163	0	213	284	2	40	0	326	26	99	0	4	129	671

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Start Date : 4/24/2018
Page No : 2

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Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	0	1	0	0	1	0	8	55	0	63	81	0	28	0	109	5	23	0	0	28	201
04:15 PM	0	0	0	0	0	0	20	42	0	62	116	0	13	0	129	11	20	0	0	31	222
04:30 PM	0	0	0	0	0	0	19	39	0	58	102	0	17	0	119	8	33	0	0	41	218
04:45 PM	0	1	0	0	1	0	16	43	0	59	88	2	12	0	102	6	20	1	0	27	189
Total	0	2	0	0	2	0	63	179	0	242	387	2	70	0	459	30	96	1	0	127	830
05:00 PM	1	0	0	0	1	0	14	37	0	51	115	3	17	0	135	7	28	0	0	35	222
05:15 PM	0	0	1	0	1	0	14	39	0	53	105	0	15	0	120	5	25	0	0	30	204
05:30 PM	0	0	0	0	0	0	18	50	0	68	101	0	13	0	114	8	34	0	0	42	224
05:45 PM	0	0	0	0	0	0	16	43	0	59	114	1	16	0	131	6	27	0	0	33	223
Total	1	0	1	0	2	0	62	169	0	231	435	4	61	0	500	26	114	0	0	140	873
06:00 PM	0	0	0	0	0	0	14	48	0	62	95	0	11	0	106	6	27	0	0	33	201
06:15 PM	0	1	0	0	1	0	18	48	0	66	98	0	9	0	107	7	23	0	0	30	204
06:30 PM	0	1	0	0	1	0	9	36	0	45	96	0	2	0	98	10	21	0	0	31	175
06:45 PM	0	0	0	0	0	0	18	43	0	61	81	0	6	0	87	10	23	1	0	34	182
Total	0	2	0	0	2	0	59	175	0	234	370	0	28	0	398	33	94	1	0	128	762
07:00 PM	0	0	0	0	0	0	22	29	0	51	60	1	11	0	72	4	13	0	0	17	140
07:15 PM	0	0	0	0	0	0	8	37	0	45	67	1	6	0	74	2	21	0	0	23	142
07:30 PM	0	0	0	0	0	0	13	28	0	41	69	0	8	0	77	1	17	0	0	18	136
07:45 PM	0	0	0	0	0	0	9	27	0	36	54	0	2	0	56	5	12	1	0	18	110
Total	0	0	0	0	0	0	52	121	0	173	250	2	27	0	279	12	63	1	0	76	528
Grand Total	2	13	5	5	25	1	712	2576	0	3289	2804	15	399	1	3219	414	845	3	5	1267	7800
Apprch %	8	52	20	20		0	21.6	78.3	0		87.1	0.5	12.4	0		32.7	66.7	0.2	0.4		
Total %	0	0.2	0.1	0.1	0.3	0	9.1	33	0	42.2	35.9	0.2	5.1	0	41.3	5.3	10.8	0	0.1	16.2	
Cars	2	11	2	5	20	1	689	2461			2696										
% Cars	100	84.6	40	100	80	100	96.8	95.5	0	95.8	96.1	93.3	94	100	95.9	93.7	95.1	100	100	94.7	95.6
Trucks	0	2	3	0	5	0	23	115	0	138	108	1	24	0	133	26	41	0	0	67	343
% Trucks	0	15.4	60	0	20	0	3.2	4.5	0	4.2	3.9	6.7	6	0	4.1	6.3	4.9	0	0	5.3	4.4

	Parking Lot From North					Fairfield Dr From East					Doansburg Rd From South					E Branch Rd From West					
Start Time	Right	Thru		Peds	App. Total	Right	Thru		Peds	App. Total	Right	Thru		Peds	App. Total	Right	Thru		Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	1	0	1	2	0	19	110	0	129	23	0	8	0	31	16	10	0	0	26	188
07:15 AM	0	0	0	0	0	0	18	151	0	169	20	0	4	0	24	20	14	0	0	34	227
07:30 AM	1	0	0	1	2	0	24	107	0	131	16	2	3	0	21	15	18	0	0	33	187
07:45 AM	0	2	0	0	2	0	20	95	0	115	20	0	4	0	24	28	14	0	0	42	183
Total Volume	1	3	0	2	6	0	81	463	0	544	79	2	19	0	100	79	56	0	0	135	785
% App. Total	16.7	50	0	33.3		0	14.9	85.1	0		79	2	19	0		58.5	41.5	0	0		
PHF	.250	.375	.000	.500	.750	.000	.844	.767	.000	.805	.859	.250	.594	.000	.806	.705	.778	.000	.000	.804	.865

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Start Date : 4/24/2018
Page No : 3

	Parking Lot From North					Fairfield Dr From East					Doansburg Rd From South					E Branch Rd From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 07:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	**1**	0	0	0	1	0	14	37	0	51	**115**	**3**	**17**	0	**135**	7	28	0	0	35	222
05:15 PM	0	0	**1**	0	1	0	14	39	0	53	105	0	15	0	120	5	25	0	0	30	204
05:30 PM	0	0	0	0	0	0	**18**	**50**	0	**68**	101	0	13	0	114	**8**	**34**	0	0	**42**	**224**
05:45 PM	0	0	0	0	0	0	16	43	0	59	114	1	16	0	131	6	27	0	0	33	223
Total Volume	1	0	1	0	2	0	62	169	0	231	435	4	61	0	500	26	114	0	0	140	873
% App. Total	50	0	50	0		0	26.8	73.2	0		87	0.8	12.2	0		18.6	81.4	0	0		
PHF	.250	.000	.250	.000	.500	.000	.861	.845	.000	.849	.946	.333	.897	.000	.926	.813	.838	.000	.000	.833	.974

TRAFFIC SIGNAL WARRANT SUMMARY

Project: Putnam County Roundabout Evaluation Condition: 2019 Existing Condition

Location: Fairfield Dr/E. Branch Rd and Doansburg Rd Date: April 25, 2019

Major Street: Fairfield Dr/E. Branch Rd Lanes: 1 Critical Approach Speed: 30 mph

Minor Street: Doansburg Rd Lanes: 1

Volume Level Criteria

1. Is the critical speed of major street traffic greater than 40 mph? No
2. Is the intersection in a built-up area of an isolated community with population less than 10,000? No

If either Question 1 or Question 2 is answered "Yes", then use the 70% volume level. Criteria used: 100%

WARRANT 1 - EIGHT HOUR VEHICULAR VOLUME

Warrant 1 Satisfied: NO

Warrant 1 is satisfied if EITHER Condition A OR Condition B is 100% satisfied.
Warrant 1 is also satisfied if BOTH Condition A AND Condition B are satisfied to the 80% volume level.

			Condition 1A - Minimum Vehicular Volume (X indicates that criteria is met for specified condition)				Condition 1B - Interuption of Continuous Traffic (X indicates that criteria is met for specified condition)				Total Satisfied Hours (8 required)		
											0	0	0
Minimum Volume Criteria:			500	150	400	120	750	75	600	60	Condition	Condition	80% for
Start Time	Major St. Volume[1]	Minor St. Volume[2]	Major St. 100%	Minor St. 100%	Major St. 80%	Minor St. 80%	Major St. 100%	Minor St. 100%	Major St. 80%	Minor St. 80%	1A Satisfied	1B Satisfied	Both Satisfied
12:00 AM			-	-	-	-	-	-	-	-	-	-	-
1:00 AM			-	-	-	-	-	-	-	-	-	-	-
2:00 AM			-	-	-	-	-	-	-	-	-	-	-
3:00 AM			-	-	-	-	-	-	-	-	-	-	-
4:00 AM			-	-	-	-	-	-	-	-	-	-	-
5:00 AM			-	-	-	-	-	-	-	-	-	-	-
6:00 AM			-	-	-	-	-	-	-	-	-	-	-
7:00 AM	713	105	X	-	X	-	-	X	X	X	-	-	-
8:00 AM	532	132	X	-	X	X	-	X	-	X	-	-	-
9:00 AM	338	133	-	-	-	X	-	X	-	X	-	-	-
10:00 AM	259	150	-	X	-	X	-	X	-	X	-	-	-
11:00 AM	248	158	-	X	-	X	-	X	-	X	-	-	-
12:00 PM	284	189	-	X	-	X	-	X	-	X	-	-	-
1:00 PM	315	188	-	X	-	X	-	X	-	X	-	-	-
2:00 PM	317	265	-	X	-	X	-	X	-	X	-	-	-
3:00 PM	359	342	-	X	-	X	-	X	-	X	-	-	-
4:00 PM	387	482	-	X	-	X	-	X	-	X	-	-	-
5:00 PM	400	525	-	X	X	X	-	X	-	X	-	-	-
6:00 PM	380	418	-	X	-	X	-	X	-	X	-	-	-
7:00 PM	261	293	-	X	-	X	-	X	-	X	-	-	-
8:00 PM			-	-	-	-	-	-	-	-	-	-	-
9:00 PM			-	-	-	-	-	-	-	-	-	-	-
10:00 PM			-	-	-	-	-	-	-	-	-	-	-
11:00 PM			-	-	-	-	-	-	-	-	-	-	-

[1] Major Street Volume is the total combined volume of both mainline approaches.

[2] Minor Street volumes is the highest single side street approach volume.

WARRANT 2 - FOUR HOUR VEHICULAR VOLUME

Warrant 2 Satisfied: YES

Warrant is satisfied if four (4) or more hours satisfy the volume requirements depicted on the four hour warranting graph **(see page 2)**.

No. of Points Above Criteria Curve: 4

WARRANT 3 - PEAK HOUR VEHICULAR VOLUME

Warrant 3 Satisfied: NO

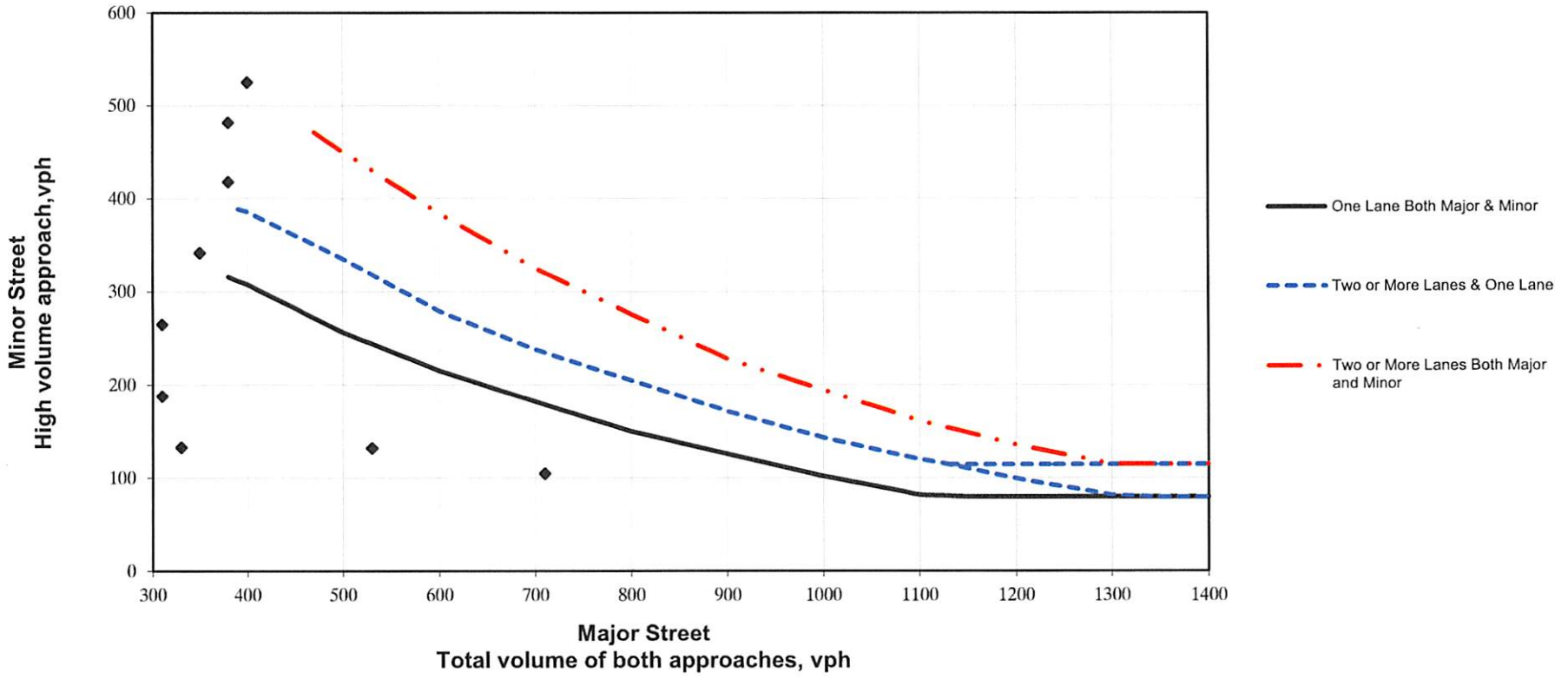
Warrant is satisfied if any hour satisfy the volume requirements depicted on the peak hour warranting graph **(see page 3)**, and ALL three of the following requirement are met.

No. of Points Above Criteria Curve: 1

1. Total stopped time delay on Minor Street equals or exceeds 4 VHD (single lane) or 5 VHD (two lanes): 2.9 VHD Max. No
2. Volume on Minor Street equals or exceeds 100 vehicles (single lane) or 150 vehicles (two lanes): Yes
3. Total intersection volume serviced during the hour equals or exceeds 650 veh. (3-leg) or 800 veh. (4-leg or more): No*

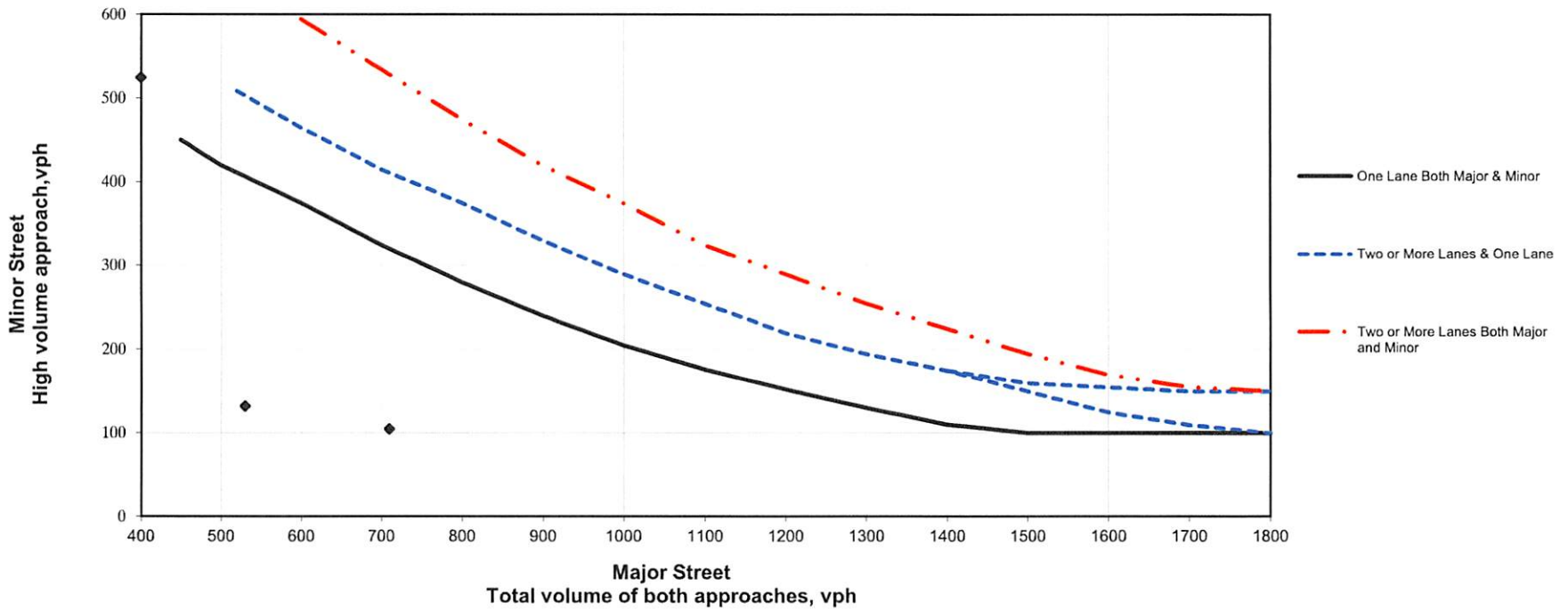
**** not in a peak hour that is above curve.***

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: Points on graph represent hourly volumes. Points above the respective curve satisfy warrant, points below do not satisfy warrant.

Figure 4C-3. Warrant 3, Peak Hour



Note: Points on graph represent hourly volumes. Points above the respective curve satisfy warrant, points below do not satisfy warrant.

Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	0	59	83	486	85	0	20	2	83	0	3	1
Future Vol, veh/h	0	59	83	486	85	0	20	2	83	0	3	1
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	-	-	30	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	9	5	4	4	0	1	1	20	0	33	1
Mvmt Flow	0	68	95	559	98	0	23	2	95	0	3	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	100	0	0	163	0	0	1334	1334	116	1335	1381	100
Stage 1	-	-	-	-	-	-	116	116	-	1218	1218	-
Stage 2	-	-	-	-	-	-	1218	1218	-	117	163	-
Critical Hdwy	4.1	-	-	4.14	-	-	7.11	6.51	6.4	7.1	6.83	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.1	5.83	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.1	5.83	-
Follow-up Hdwy	2.2	-	-	2.236	-	-	3.509	4.009	3.48	3.5	4.297	3.309
Pot Cap-1 Maneuver	1505	-	-	1404	-	-	132	155	890	132	124	958
Stage 1	-	-	-	-	-	-	891	802	-	223	221	-
Stage 2	-	-	-	-	-	-	222	254	-	892	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1503	-	-	1404	-	-	86	90	890	78	72	956
Mov Cap-2 Maneuver	-	-	-	-	-	-	86	90	-	78	72	-
Stage 1	-	-	-	-	-	-	891	802	-	223	128	-
Stage 2	-	-	-	-	-	-	125	147	-	794	708	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.9	20.8	45.3
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	86	890	1503	-	-	1404	-	-	94
HCM Lane V/C Ratio	0.294	0.107	-	-	-	0.398	-	-	0.049
HCM Control Delay (s)	63.4	9.5	0	-	-	9.2	0	-	45.3
HCM Lane LOS	F	A	A	-	-	A	A	-	E
HCM 95th %tile Q(veh)	1.1	0.4	0	-	-	1.9	-	-	0.2

Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	163	657	25	95	4
v/c Ratio	0.14	0.77	0.08	0.25	0.01
Control Delay	2.7	18.4	23.0	7.8	20.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.7	18.4	23.0	7.8	20.0
Queue Length 50th (ft)	9	195	9	0	1
Queue Length 95th (ft)	26	#415	26	32	8
Internal Link Dist (ft)	544	507	309		382
Turn Bay Length (ft)				30	
Base Capacity (vph)	1207	853	371	413	348
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.14	0.77	0.07	0.23	0.01

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	59	83	486	85	0	20	2	83	0	3	1
Future Volume (veh/h)	0	59	83	486	85	0	20	2	83	0	3	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1841	1841	1841	1885	1885	1604	1411	1411	1411
Adj Flow Rate, veh/h	0	68	95	559	98	0	23	2	95	0	3	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	9	9	9	4	4	4	1	1	20	33	33	33
Cap, veh/h	0	408	570	724	107	0	406	31	299	0	223	74
Arrive On Green	0.00	0.61	0.61	0.61	0.61	0.00	0.22	0.22	0.22	0.00	0.22	0.22
Sat Flow, veh/h	0	666	931	1001	175	0	1318	140	1359	0	1013	338
Grp Volume(v), veh/h	0	0	163	657	0	0	25	0	95	0	0	4
Grp Sat Flow(s),veh/h/ln	0	0	1597	1176	0	0	1458	0	1359	0	0	1350
Q Serve(g_s), s	0.0	0.0	2.6	27.6	0.0	0.0	0.6	0.0	3.5	0.0	0.0	0.1
Cycle Q Clear(g_c), s	0.0	0.0	2.6	30.3	0.0	0.0	0.8	0.0	3.5	0.0	0.0	0.1
Prop In Lane	0.00		0.58	0.85		0.00	0.92		1.00	0.00		0.25
Lane Grp Cap(c), veh/h	0	0	977	832	0	0	437	0	299	0	0	297
V/C Ratio(X)	0.00	0.00	0.17	0.79	0.00	0.00	0.06	0.00	0.32	0.00	0.00	0.01
Avail Cap(c_a), veh/h	0	0	1209	1016	0	0	484	0	343	0	0	341
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	5.0	11.5	0.0	0.0	18.4	0.0	19.4	0.0	0.0	18.1
Incr Delay (d2), s/veh	0.0	0.0	0.1	3.5	0.0	0.0	0.1	0.0	0.6	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.7	6.6	0.0	0.0	0.3	0.0	1.1	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	5.1	15.0	0.0	0.0	18.4	0.0	20.1	0.0	0.0	18.2
LnGrp LOS	A	A	A	B	A	A	B	A	C	A	A	B
Approach Vol, veh/h		163			657			120			4	
Approach Delay, s/veh		5.1			15.0			19.7			18.2	
Approach LOS		A			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		41.4		18.1		41.4		18.1				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		45.0		15.0		45.0		15.0				
Max Q Clear Time (g_c+I1), s		4.6		2.1		32.3		5.5				
Green Ext Time (p_c), s		1.1		0.0		4.1		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			13.9									
HCM 6th LOS			B									

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	163	657	120	4
Demand Flow Rate, veh/h	174	683	139	5
Vehicles Circulating, veh/h	585	25	74	706
Vehicles Exiting, veh/h	126	188	685	2
Ped Vol Crossing Leg, #/h	0	0	0	2
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.7	8.2	4.2	6.8
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	174	683	139	5
Cap Entry Lane, veh/h	760	1345	1280	672
Entry HV Adj Factor	0.936	0.962	0.863	0.802
Flow Entry, veh/h	163	657	120	4
Cap Entry, veh/h	711	1294	1104	538
V/C Ratio	0.229	0.508	0.109	0.007
Control Delay, s/veh	7.7	8.2	4.2	6.8
LOS	A	A	A	A
95th %tile Queue, veh	1	3	0	0

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↰	↱		↕	
Traffic Vol, veh/h	0	120	27	177	65	0	64	4	457	1	0	1
Future Vol, veh/h	0	120	27	177	65	0	64	4	457	1	0	1
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	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	-	-	30	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	4	1	2	3	0	1	1	2	50	0	1
Mvmt Flow	0	124	28	182	67	0	66	4	471	1	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	67	0	0	152	0	0	570	569	138	571	583	67
Stage 1	-	-	-	-	-	-	138	138	-	431	431	-
Stage 2	-	-	-	-	-	-	432	431	-	140	152	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.11	6.51	6.22	7.6	6.5	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-	6.11	5.51	-	6.6	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.11	5.51	-	6.6	5.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.509	4.009	3.318	3.95	4	3.309
Pot Cap-1 Maneuver	1547	-	-	1429	-	-	434	433	910	367	427	999
Stage 1	-	-	-	-	-	-	868	784	-	519	586	-
Stage 2	-	-	-	-	-	-	604	585	-	761	775	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1547	-	-	1429	-	-	390	376	910	158	371	999
Mov Cap-2 Maneuver	-	-	-	-	-	-	390	376	-	158	371	-
Stage 1	-	-	-	-	-	-	868	784	-	519	509	-
Stage 2	-	-	-	-	-	-	524	508	-	365	775	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	5.8	13.5	18.3
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	389	910	1547	-	-	1429	-	-	273
HCM Lane V/C Ratio	0.18	0.518	-	-	-	0.128	-	-	0.008
HCM Control Delay (s)	16.3	13.1	0	-	-	7.9	0	-	18.3
HCM Lane LOS	C	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	0.6	3.1	0	-	-	0.4	-	-	0

Lane Group	EBT	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	152	249	70	471	2
v/c Ratio	0.22	0.51	0.13	0.53	0.00
Control Delay	8.0	14.0	9.5	4.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	14.0	9.5	4.0	0.0
Queue Length 50th (ft)	18	41	10	0	0
Queue Length 95th (ft)	43	88	30	44	0
Internal Link Dist (ft)	544	507	309		382
Turn Bay Length (ft)				30	
Base Capacity (vph)	1791	1282	543	883	471
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.08	0.19	0.13	0.53	0.00

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	120	27	177	65	0	64	4	457	1	0	1
Future Volume (veh/h)	0	120	27	177	65	0	64	4	457	1	0	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1856	1856	1856	1885	1885	1870	1900	1900	1900
Adj Flow Rate, veh/h	0	124	28	182	67	0	66	4	471	1	0	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	4	4	4	3	3	3	1	1	2	0	0	0
Cap, veh/h	0	546	123	468	149	0	682	36	593	327	43	235
Arrive On Green	0.00	0.38	0.38	0.38	0.38	0.00	0.37	0.37	0.37	0.37	0.00	0.37
Sat Flow, veh/h	0	1453	328	833	398	0	1354	97	1585	512	116	628
Grp Volume(v), veh/h	0	0	152	249	0	0	70	0	471	2	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1782	1230	0	0	1451	0	1585	1257	0	0
Q Serve(g_s), s	0.0	0.0	2.3	4.9	0.0	0.0	1.1	0.0	10.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	2.3	7.3	0.0	0.0	1.2	0.0	10.6	0.0	0.0	0.0
Prop In Lane	0.00		0.18	0.73		0.00	0.94		1.00	0.50		0.50
Lane Grp Cap(c), veh/h	0	0	669	618	0	0	718	0	593	606	0	0
V/C Ratio(X)	0.00	0.00	0.23	0.40	0.00	0.00	0.10	0.00	0.79	0.00	0.00	0.00
Avail Cap(c_a), veh/h	0	0	2006	1630	0	0	720	0	595	607	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	8.5	10.4	0.0	0.0	8.2	0.0	11.1	7.8	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.4	0.0	0.0	0.1	0.0	7.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.7	1.4	0.0	0.0	0.3	0.0	3.9	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	8.7	10.8	0.0	0.0	8.3	0.0	18.4	7.8	0.0	0.0
LnGrp LOS	A	A	A	B	A	A	A	A	B	A	A	A
Approach Vol, veh/h		152			249			541			2	
Approach Delay, s/veh		8.7			10.8			17.1			7.8	
Approach LOS		A			B			B			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	20.0	20.0	20.0	20.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	45.0	15.0	45.0	15.0
Max Q Clear Time (g_c+I1), s	4.3	2.0	9.3	12.6
Green Ext Time (p_c), s	0.9	0.0	1.7	0.6

Intersection Summary	
HCM 6th Ctrl Delay	14.1
HCM 6th LOS	B

Intersection	
Intersection Delay, s/veh	6.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	152	249	541	2
Demand Flow Rate, veh/h	157	255	551	3
Vehicles Circulating, veh/h	187	71	130	322
Vehicles Exiting, veh/h	137	610	214	4
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.5	4.6	7.8	5.5
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	157	255	551	3
Cap Entry Lane, veh/h	1140	1283	1209	994
Entry HV Adj Factor	0.968	0.976	0.982	0.667
Flow Entry, veh/h	152	249	541	2
Cap Entry, veh/h	1104	1253	1186	662
V/C Ratio	0.138	0.199	0.456	0.003
Control Delay, s/veh	4.5	4.6	7.8	5.5
LOS	A	A	A	A
95th %tile Queue, veh	0	1	2	0

NYSDOT QRA ACCIDENT VERBAL DESCRIPTION

Print Date 4/24/2019 Print Time 10:55:20AM

Query Number/Name	Query Type	Query SubType	Accident Date Range
45683doansburg at fairfield	AttributeQuery	None	1/1/2016 12:00:00AM To 12/31/2018 12:00:00AM

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36108648	17-February-2016	PUTNAM	Patterson Town	FAIRFIELD DR	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	STRAIGHT AT HILLCREST	CLOUDY	STOP SIGN	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
2	NON-REPORTABLE	COLLISION WITH MOTOR VEHICLE	LEFT TURN (WITH OTHER CAR)	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	2	SOUTH	MAKING LEFT TURN	0	46	F

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	MD	Y	N	N

Apparent Factor Sequence Number	Apparent Factor
1	TURNING IMPROPER
2	NOT APPLICABLE

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
2	1	NORTH-WEST	STOPPED IN TRAFFIC	0	23	M

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	CT	N	N	N

Apparent Factor Sequence Number	Apparent Factor
1	NOT APPLICABLE
2	NOT APPLICABLE

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36108650	18-February-2016	PUTNAM	Patterson Town	FAIRFIELD DR	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	STRAIGHT AT HILLCREST	CLEAR	YIELD SIGN	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
2	INJURY	COLLISION WITH MOTOR VEHICLE	REAR END	0	1	POSSIBL

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	NORTH-EAST	MAKING RIGHT TURN	5117	21	M

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	N	N	N

Apparent Factor Sequence Number	Apparent Factor
1	FOLLOWING TOO CLOSELY
2	NOT APPLICABLE

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
2	1	NORTH-EAST	MAKING RIGHT TURN	3548	63	F

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	N	N	N

Apparent Factor Sequence Number	Apparent Factor
1	NOT APPLICABLE
2	NOT APPLICABLE

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36160986	05-April-2016	PUTNAM	Patterson Town	E BRANCH RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	STRAIGHT AT HILLCREST	CLEAR	STOP SIGN	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
2	NON-REPORTABLE	COLLISION WITH MOTOR VEHICLE	REAR END	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	EAST	SLOWED OR STOPPING	0	58	M

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	N	N	N

Apparent Factor Sequence Number	Apparent Factor
1	NOT APPLICABLE

2	NOT APPLICABLE

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
2	1	EAST	GOING STRAIGHT AHEAD	0	27	M

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	Y	N	N

Apparent Factor Sequence Number	Apparent Factor
1	FOLLOWING TOO CLOSELY
2	NOT APPLICABLE

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36201206	10-May-2016	PUTNAM	Patterson Town	E BRANCH RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	CURVE AND GRADE	CLOUDY	NONE	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
1	NON-REPORTABLE	COLLISION WITH OTHER FIXED OBJECT	OTHER	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	NORTH	BACKING	0	18	F

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	Y	N	N

Apparent Factor Sequence Number	Apparent Factor

1	BACKING UNSAFELY
2	NOT APPLICABLE

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36296026	13-July-2016	PUTNAM	Patterson Town	DOANSBURG RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	CURVE AND GRADE	CLEAR	YIELD SIGN	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
2	PROPERTY DAMAGE	COLLISION WITH MOTOR VEHICLE	OVERTAKING	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	NORTH-EAST	MAKING RIGHT TURN	3145	21	M

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	N	N	N

Apparent Factor Sequence Number	Apparent Factor
1	FOLLOWING TOO CLOSELY
2	NOT APPLICABLE

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
2	1	NORTH-EAST	MAKING RIGHT TURN	0	52	F

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	CT	N	N	N

Apparent Factor Sequence Number	Apparent Factor
1	NOT APPLICABLE
2	NOT APPLICABLE

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36597928	31-January-2017	PUTNAM	Patterson Town	E BRANCH RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
WET	CURVE AND GRADE	SNOW	NO PASSING ZONE	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
1	PROPERTY DAMAGE	COLLISION WITH FENCE	OTHER	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	SOUTH	GOING STRAIGHT AHEAD	0	23	F

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	CT	Y	N	N

Apparent Factor Sequence Number	Apparent Factor
1	UNSAFE SPEED
2	NOT APPLICABLE

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36607617	10-February-2017	PUTNAM	Patterson Town	E BRANCH RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
WET	STRAIGHT/ GRADE	CLEAR	NO PASSING ZONE	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
1	NON-REPORTABLE	COLLISION WITH DEER	OTHER	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	EAST	GOING STRAIGHT AHEAD	0	33	F

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	N	N	N

Apparent Factor Sequence Number	Apparent Factor
1	ANIMAL'S ACTION
2	NOT APPLICABLE

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36607705	10-February-2017	PUTNAM	Patterson Town	E BRANCH RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
WET	CURVE AND HILLCREST	CLEAR	STOP SIGN	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
2	PROPERTY DAMAGE AND INJURY	COLLISION WITH MOTOR VEHICLE	HEAD ON	0	1	POSSIBL

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	2	NORTH-WEST	MAKING LEFT TURN	4879	18	M

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	Y	N	N

Apparent Factor Sequence Number	Apparent Factor
1	TRAFFIC CONTROL DEVICES DISREGARDED
2	UNSAFE SPEED

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
2	1	NORTH	GOING STRAIGHT AHEAD	3402	41	M

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	N	N	N

Apparent Factor Sequence Number	Apparent Factor
1	NOT APPLICABLE
2	NOT APPLICABLE

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36621229	23-February-2017	PUTNAM	Patterson Town	FAIRFIELD DR	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	CURVE AND LEVEL	CLEAR	NO PASSING ZONE	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
1	INJURY	COLL. W/EARTH ELE./ROCK CUT/DITCH	OTHER	0	1	INCAPA

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	SOUTH	GOING STRAIGHT AHEAD	0	48	M

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	CT	Y	N	N

Apparent Factor Sequence Number	Apparent Factor
1	LOST CONSCIOUSNESS
2	NOT APPLICABLE

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36657032	19-March-2017	PUTNAM	Patterson Town	FAIRFIELD DR	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	STRAIGHT AT HILLCREST	CLEAR	STOP SIGN	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
2	NON-REPORTABLE	COLLISION WITH MOTOR VEHICLE	LEFT TURN (AGAINST OTHER CAR)	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	NORTH-WEST	MAKING LEFT TURN	0	78	F

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	Y	N	N

Apparent Factor Sequence Number	Apparent Factor
1	TURNING IMPROPER
2	NOT APPLICABLE

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
2	1	NORTH	STOPPED IN TRAFFIC	0	25	F

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	N	N	N

Apparent Factor Sequence Number	Apparent Factor
1	NOT APPLICABLE
2	NOT APPLICABLE

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36780733	20-June-2017	PUTNAM	Patterson Town	DOANSBURG RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	CURVE AND GRADE	CLEAR	STOP SIGN	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
1	PROPERTY DAMAGE	COLLISION WITH TREE	OTHER	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	EAST	SLOWED OR STOPPING	11400	26	M

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	N	N	N

Apparent Factor Sequence Number	Apparent Factor
1	OBSTRUCTION/DEBRIS
2	NOT APPLICABLE

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36948501	24-October-2017	PUTNAM	Patterson Town	FAIRFIELD DR	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
WET	CURVE AND GRADE	RAIN	NO PASSING ZONE	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
1	PROPERTY DAMAGE	COLL. W/EARTH ELE./ROCK CUT/DITCH	OTHER	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	WEST	MAKING LEFT TURN	3151	77	F

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	N	N	N

Apparent Factor Sequence Number	Apparent Factor
1	VIEW OBSTRUCTED/LIMITED
2	TURNING IMPROPER

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
37319138	01-June-2018	PUTNAM	Patterson Town	E BRANCH RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
WET	STRAIGHT AND LEVEL	RAIN	STOP SIGN	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
1	PROPERTY DAMAGE	COLLISION WITH OTHER	OTHER	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	NORTH-EAST	GOING STRAIGHT AHEAD	5168	25	M

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	NY	Y	N	N

Apparent Factor Sequence Number	Apparent Factor
1	TRAFFIC CONTROL DEVICES DISREGARDED
2	FELL ASLEEP

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
37625010	30-November-2018	PUTNAM	Patterson Town	E BRANCH RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	STRAIGHT/ GRADE	CLEAR	NO PASSING ZONE	NOT APPLICABLE	NOT APPLICABLE

Number of Vehicles	Accident Class	Type of Accident	Manner of Collision	Fatality	Injury	Ext of Injuries
1	PROPERTY DAMAGE	COLLISION WITH DEER	OTHER	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	SOUTH	GOING STRAIGHT AHEAD	0	48	M

Vehicle Type	State of Registration	Citation Issued	School Bus Involved	Property Damage
CAR/VAN/PICKUP	CT	N	N	N

Apparent Factor Sequence Number	Apparent Factor
1	ANIMAL'S ACTION
2	NOT APPLICABLE

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

Intersection: Doansburg Rd & Fairfield Dr
Client: Putnam County — GPI No. 2019058.00
Calculated By: D. Creen — Date: 6/27/2019
Checked By: M. Wieszchowski — Date: 6/28/2019

ACTUATED TRAFFIC SIGNAL WITH NO GEOMETRIC IMPROVEMENTS

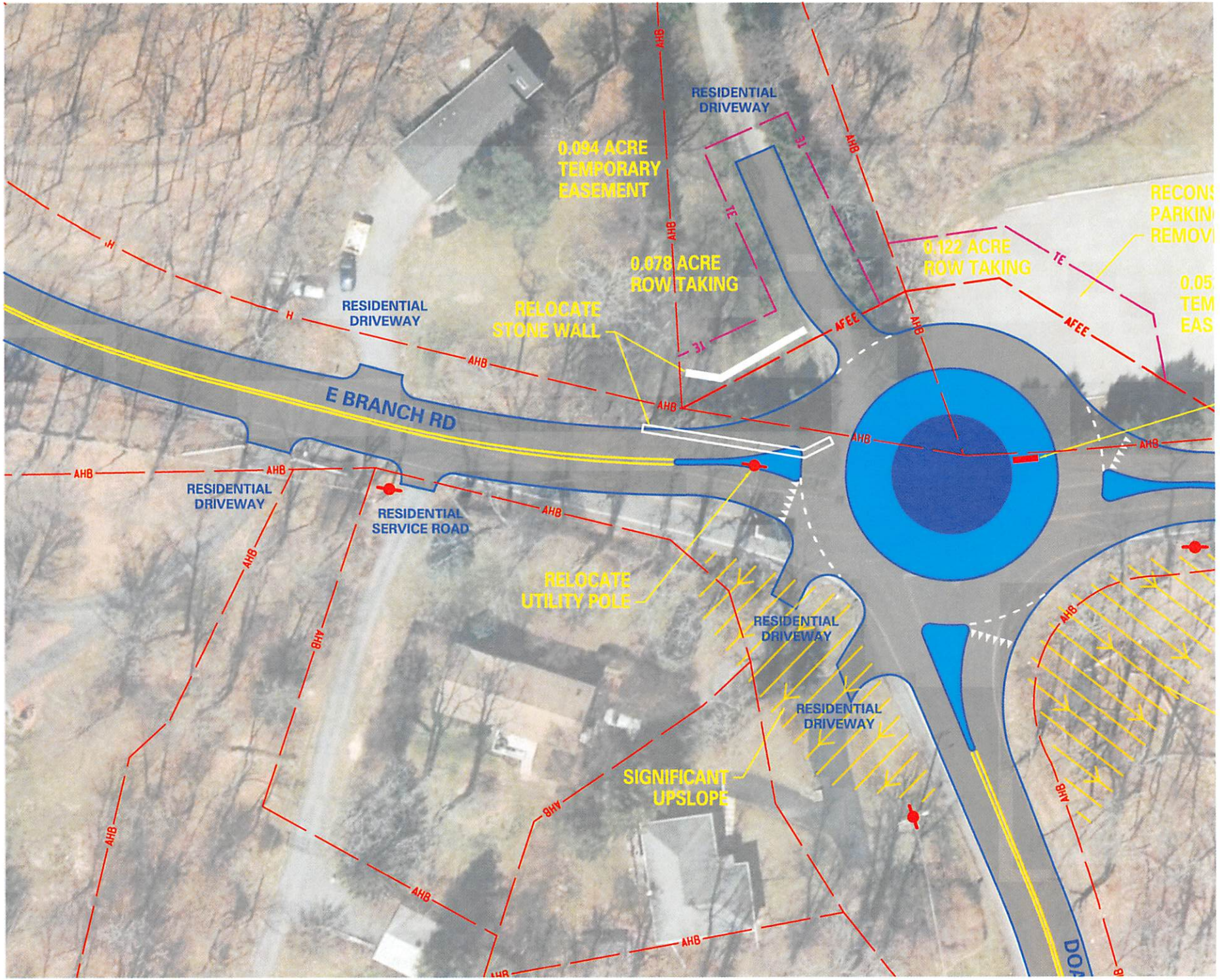
DESCRIPTION	TOTAL QUANTITY	UNIT	UNIT PRICE	TOTAL COST
ACTUATED TRAFFIC SIGNAL [1]	1	EA	$150,000	$150,000
WORK ZONE TRAFFIC CONTROL	1	LS	$20,000	$20,000
			ESTIMATED CONSTRUCTION COST (CONCEPTUAL)	$170,000
CONTIGENCY (20%)	1	LS	$34,000	$35,000
DESIGN AND INSPECTION (25%)	1	LS	$42,500	$45,000
			FINAL TOTAL	$250,000

[1] INCLUDES TYPICAL COST FOR CONTROLLER, SIGNAL POLES, LOOPS, WIRING, SIGNAL HEADS, ETC., FOR AN ACTUATED TRAFFIC SIGNAL.

SINGLE LANE ROUNDABOUT (120 FT DIAMETER)

DESCRIPTION	TOTAL QUANTITY	UNIT	UNIT PRICE	TOTAL COST
SINGLE LANE ROUNDABOUT [2]	1	EA	$750,000	$750,000
ADDITONAL EARTHWORK (ABOVE AND BEYOND TYPICAL)	875	CY	$20	$20,000
UTILITY RELOCATION [3]	1	EA	$75,000	$75,000
STONE WALL RELOCATION	250	SF	$100	$25,000
COMMUNITY SIGN RELOCATION	1	EA	$5,000	$5,000
RECONSTRUCT PARKING LOT	1	LS	$20,000	$20,000
STORMWATER AND TREATMENT [4]	1	LS	$100,000	$100,000
WORK ZONE TRAFFIC CONTROL	1	LS	$150,000	$150,000
			ESTIMATED CONSTRUCTION COST (CONCEPTUAL)	$1,145,000
RIGHT OF WAY (RESIDENTIAL)	0.078	ACRE	$65,000	$6,000
RIGHT OF WAY (COMMERCIAL)	0.122	ACRE	$340,000	$42,000
TEMPORARY EASEMENT (RESIDENTIAL)	0.074	ACRE	$15,000	$2,000
TEMPORARY EASEMENT (COMMERCIAL)	0.052	ACRE	$70,000	$4,000
CONTIGENCY (20%)	1	LS	$229,000	$230,000
DESIGN AND INSPECTION (25%)	1	LS	$286,250	$290,000
			FINAL TOTAL	$1,720,000

[2] INCLUDES TYPICAL COST FOR PAVEMENT, CURB, EARTHWORK, DRAINAGE, LANDSCAPING, ETC., FOR A SINGLE LANE ROUNDABOUT.
[3] ELECTRIC AND GAS RELOCATIONS ARE ASSUMED NO COST FOR MUNICIPAL PROJECTS. WATER AND SEWER RELOCATIONS ARE ASSUMED AT $75,000 EACH.
[4] IMPACTS OVER 5,000 SF WITHIN DEP WATERSHEDS REQUIRE POST STORMWATER TREATMENT. $100,000 ALLOWANCE FOR EXTRA ROW OR WORK REQUIRED.


RESIDENTIAL DRIVEWAY
0.094 ACRE TEMPORARY EASEMENT
0.078 ACRE ROW TAKING
0.122 ACRE ROW TAKING
RECONS
PARKIN
REMOVI
0.05
TEM
EAS
RESIDENTIAL DRIVEWAY
RELOCATE STONE WALL
E BRANCH RD
RESIDENTIAL DRIVEWAY
RESIDENTIAL SERVICE ROAD
RELOCATE UTILITY POLE
RESIDENTIAL DRIVEWAY
RESIDENTIAL DRIVEWAY
SIGNIFICANT UPSLOPE
AHB
TE
AFEE