SUMMARY OF ANALYSIS
MILL STREET/CHURCH RD AND PEEKSKILL HOLLOW ROAD

Existing Conditions:

This location is a complex offset intersection with traffic signal control. Mill St and Church Rd access Peekskill Hollow Rd with approximately a 100-foot separation. There is a slip ramp directly across from Church Rd allowing Mill St access with an easy through movement. Traveling in the opposite direction, from Mill St to Church Rd, requires traffic to turn left onto Peekskill Hollow Rd then immediately turn right on Church Rd. See the intersection diagram on the Intersection Evaluation sheet for an aerial picture depicting the existing condition. The intersection is currently signalized with three phases, one for Peekskill Hollow Rd, and separate split phases for each of the side streets; Mill St and Church Rd. It should be noted that Church Rd is at a steep upgrade and with the combination of a commercial building (deli) on the southwest corner, its fencing and retaining wall, visibility looking west from Church Rd approaches zero.

Analyses show that the intersection operates at LOS C overall in both the AM and PM peak hours with all approaches operating at LOS C. The highest volume to capacity ratio for any of the approaches is 0.62, which indicates that there is significant capacity remaining to accommodate growth.

Signal Warrant Analysis:

A review of the hourly traffic volumes between 7:00 AM and 8:00 PM show that no hours met the warranting criteria for any of the Signal Warrants. Additionally, 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). A traffic signal is not technically warranted at this location, but because of the complex offset intersection condition and lack of any sight distance to the west from Church Street, it is understandable why there is an existing traffic signal at this location.

Accident Analysis:

Accident data noted 11 accidents at this location in the 3-year period reviewed. The accident rate calculated for this intersection is 1.33 accidents per million entering vehicles (acc/MEV), which about doubles the state-wide average for rural 4-legged signalized intersection of 0.68 acc/MEC. However, given that the intersection is offset (side streets not aligned), the state-wide average isn't applicable to this situation. Reviewing the accident types, the predominant type is rear end (5 accidents), which would be expected at a traffic signal, and the second most common type is animal collisions, which is reasonable in rural area. There is no accident pattern discernable that would warrant a change in traffic control or intersection geometry. Although there are sight distance concerns for Church Rd, there appears to be no significant safety issues as the existing traffic signal removes the need to see in that direction before pulling onto Peekskill Hollow Rd. A summary of the accident types and severity are shown in the table below:

ACCIDENT SUMMARY

Accident Type	Number of Occurrences	Accident Severity	Number of Occurrences
Right Angle	1	Fatality	0
Left Turn	1	Personal Injury	2
Rear End	5	Property Damage Only	6
Backing	1	Non-Reportable	3
Animal	3		
	11		11

Field Condition and Right of Way Review:

As mentioned under existing conditions, the sight distance looking west from Church Rd is non-existent, as a commercial deli sits above a retaining wall that runs along the roadway. Additionally, there are several physical and cultural constraints at this intersection that would make construction of a roundabout extremely difficult. There is a large cemetery on a hill in the southeastern corner of the intersection and the cemetery's retaining wall travels along the corner radius just a few feet from the edge of pavement. In the northwest corner sits a building for the Putnam County Historical Society and Museum, which is located less than 20-foot from the edge of pavement. If a roundabout were constructed right of way taking would also be required on the northeast corner, taking property from Putnam County Grange 841.

Design Alternative Consideration:

As discussed previously the existing traffic operations are at a desirable level of service (LOS C) with the existing traffic signal in place. However, a roundabout alternative was still reviewed to determine feasibility. If a roundabout was to be constructed, it was assumed that the historical society museum and the cemetery should remain untouched, so a concept plan was developed to allow for a 3-legged roundabout at Mill St and to shift Church Rd to create a separate unsignalized T-intersection. With this configuration, all movements operated at LOS A in both the AM and PM peak hours. Unfortunately, the change in elevation along Church Rd and throughout the southwest corner, doesn't allow Church Rd to be converted to a stop controlled condition without significant reconstruction and realignment. Due to the grade along Church Rd, the only way to get sufficient sight distance would be to begin a shift of the roadway about 400-foot from the intersection and curve it up through the existing deli building area. This realignment would require a significant cut into the hill, purchase of the deli property, the demolition of the building, large retaining walls, and a significant amount of earthwork and grading. A concept sketch illustrating this build condition is included later under this tab.

Conceptual Cost Estimate:

Due to the significant physical and cultural constraints it may not be possible to construct a roundabout at this location, but if so, our best estimate of cost would be approximately $2,830,000. These costs include construction of all improvements and right of way taking, as well as 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 not warranted, but the significant sight distance issues along Church Rd doesn't allow for any other acceptable traffic control, so the existing signal is appropriate. Given the limitations of the site, the cultural resources which should be avoided and the severe grade difference going down Church Rd, the construction of a roundabout would be costly and may not be possible at all. Due to this, a roundabout is infeasible at this location. It is recommended that the existing traffic signal control be retained.

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:	Mill St & Peekskil Hollow Rd
GPS Coord.:	41°21'12.62"N, 73°50'23.53"W
Traffic Control:	Traffic Signal

Traffic Control Notes (if applicable):

3-phase signal. Split Phase Mill St and Church Rd.
NW RT channelized with yield sign. Fixed time signal likely.

Other Intersection Notes (if applicable):

Offset intersection - Mill St and Church Rd.
No Turn on Red (NTOR) on 3 approaches.

APPROACH DATA

	Peekskill Hollow Rd			Peekskill Hollow Rd			Church Rd			Mill St		
	Northbound (NE)			**Southbound (SW)**			**Eastbound**			**Westbound (NW)**		
	Left	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**	**Left**	**Thru**	**Right**
Lane Assignments:		<-1->	NTOR		<-1->	NTOR		<-1->	NTOR		<-1	1
Lane Widths:		11'			11'			12'			12'	12'
Turn Bay Lengths:		-			-			-			-	80
Speed Limits:	40 mph			40 mph			40 mph			40 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:	5/1/2018			
Volume:	16	70	50	33	103	19	17	198	41	11	37	5
Truck %:	1%	7%	2%	1%	5%	6%	19%	2%	3%	1%	3%	40%
Peds (Bikes):	0 (0)			0 (0)			0 (0)			0 (0)		
PHF = 0.86												
PM Peak Hour	Time Period:	5:00	to	6:00				Date Counted:	5/1/2018			
Volume:	23	113	30	21	84	18	13	72	16	49	193	42
Truck %:	5%	2%	1%	1%	1%	6%	1%	1%	1%	2%	1%	1%
Peds (Bikes):	0 (0)			0 (0)			0 (0)			0 (0)		
PHF = 0.92												

EXISTING CONDITION LEVEL OF SERVICE

AM Peak Delay (s):	24.0	24.4	29.9	21.3	20.4
LOS:	C	C	C	C	C
v/c:	0.32	0.36	0.62	0.11	0.02
95% Queue:	105'	120'	190'	45'	< 25'
C (26.4) Overall	**C (24.0)**	**C (24.4)**	**C (29.9)**	**C (21.2)**	
PM Peak Delay (s):	24.6	23.2	22.8	28.3	21.4
LOS:	C	C	C	C	C
v/c:	0.37	0.27	0.24	0.56	0.12
95% Queue:	125'	95'	80'	175'	< 25'
C (25.2) Overall	**C (24.6)**	**C (23.2)**	**C (22.8)**	**C (27.3)**	

Note: LOS calculated using HCM 6 methodologies.

INTERSECTION EVALUATION WORKSHEET

	Peekskill Hollow Rd			Peekskill Hollow Rd			Church Rd			Mill St		
	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BUILD ALTERNATIVE #1 - LEVEL OF SERVICE												
Description of Improvements:	Single Lane Roundabout - 4 Leg (120 ft. Diameter)											
AM Peak Delay (s):	5.2			4.2			5.7			3.6		
LOS:	A			A			A			A		
v/c:	0.16			0.15			0.27			0.1		
95% Queue:	25'			25'			25'			< 25'		
A (5.0) Overall	**A (5.2)**			**A (4.2)**			**A (5.7)**			**A (3.6)**		
PM Peak Delay (s):	4.4			5.0			4.0			5.9		
LOS:	A			A			A			A		
v/c:	0.16			0.14			0.10			0.29		
95% Queue:	25'			25'			< 25'			25'		
A (5.1) Overall	**A (4.4)**			**A (5.0)**			**A (4.0)**			**A (5.9)**		
BUILD ALTERNATIVE #2 - LEVEL OF SERVICE												
Description of Improvements:	Single Lane Roundabout - 3 Leg (120' Radius) + Church Rd Stop Controlled Note: delay reported is the weighted average delay of the two intersections combined for each direction of travel.											
AM Peak Delay (s):	5.7			4.1			18.4			3.4		
LOS:	A			A			C			A		
v/c:	0.30			0.14			0.45			0.1		
95% Queue:	25'			25'			60'			< 25'		
B (10.5) Overall	**A (5.7)**			**A (4.1)**			**C (18.4)**			**A (3.4)**		
PM Peak Delay (s):	4.9			4.8			17.1			5.7		
LOS:	A			A			C			A		
v/c:	0.20			0.14			0.21			0.28		
95% Queue:	25'			< 25'			25'			25'		
A (7.0) Overall	**A (4.9)**			**A (4.8)**			**C (17.1)**			**A (5.7)**		
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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Groups Printed- Cars - Trucks

	Peekskill Hollow Road From North					Mill Street From East					Peekskill Hollow Road From South					Church Road 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	30	7	0	37	2	4	1	0	7	19	18	6	0	43	20	55	5	0	80	167
07:15 AM	1	21	7	0	29	1	7	2	0	10	8	22	1	0	31	4	52	6	0	62	132
07:30 AM	6	25	7	0	38	0	9	6	0	15	8	14	4	0	26	8	47	1	0	56	135
07:45 AM	11	22	10	0	43	2	15	1	0	18	13	13	4	0	30	7	35	4	0	46	137
Total	18	98	31	0	147	5	35	10	0	50	48	67	15	0	130	39	189	16	0	244	571
08:00 AM	4	13	7	0	24	5	16	3	0	24	11	16	2	0	29	5	46	3	0	54	131
08:15 AM	7	19	6	0	32	0	10	3	0	13	5	9	5	0	19	4	47	4	0	55	119
08:30 AM	2	24	8	0	34	1	6	7	0	14	12	9	2	0	23	4	42	4	0	50	121
08:45 AM	6	16	5	0	27	3	13	5	0	21	8	7	2	0	17	1	36	2	0	39	104
Total	19	72	26	0	117	9	45	18	0	72	36	41	11	0	88	14	171	13	0	198	475
09:00 AM	4	15	6	0	25	2	6	1	0	9	5	10	1	0	16	4	36	4	0	44	94
09:15 AM	1	5	4	0	10	5	11	5	0	21	6	15	1	0	22	4	21	3	0	28	81
09:30 AM	0	11	10	0	21	4	15	1	0	20	3	7	2	0	12	3	27	2	0	32	85
09:45 AM	2	7	3	0	12	2	15	4	0	21	3	10	2	0	15	1	17	4	0	22	70
Total	7	38	23	0	68	13	47	11	0	71	17	42	6	0	65	12	101	13	0	126	330
10:00 AM	1	7	4	0	12	3	8	6	0	17	3	4	1	0	8	1	29	1	0	31	68
10:15 AM	2	17	1	0	20	4	5	3	0	12	3	11	2	0	16	3	17	2	0	22	70
10:30 AM	3	10	4	0	17	6	7	7	0	20	10	12	2	0	24	2	22	0	0	24	85
10:45 AM	3	10	3	0	16	3	12	2	0	17	7	8	0	0	15	1	16	3	0	20	68
Total	9	44	12	0	65	16	32	18	0	66	23	35	5	0	63	7	84	6	0	97	291
11:00 AM	2	9	6	0	17	6	15	5	0	26	2	6	2	0	10	1	9	2	0	12	65
11:15 AM	2	7	7	0	16	0	6	9	0	15	4	2	2	0	8	2	17	2	0	21	60
11:30 AM	2	7	4	0	13	10	10	7	0	27	3	6	2	0	11	3	17	0	0	20	71
11:45 AM	3	14	4	0	21	2	21	6	0	29	5	11	4	0	20	1	12	6	0	19	89
Total	9	37	21	0	67	18	52	27	0	97	14	25	10	0	49	7	55	10	0	72	285
12:00 PM	3	11	5	0	19	7	12	4	0	23	3	13	3	0	19	2	13	2	0	17	78
12:15 PM	6	14	6	0	26	2	16	4	0	22	7	13	2	0	22	3	16	3	0	22	92
12:30 PM	2	7	4	0	13	6	5	10	0	21	1	11	3	0	15	2	21	4	0	27	76
12:45 PM	5	10	8	0	23	8	22	2	0	32	7	18	1	0	26	3	17	2	0	22	103
Total	16	42	23	0	81	23	55	20	0	98	18	55	9	0	82	10	67	11	0	88	349
01:00 PM	3	7	1	0	11	8	13	2	0	23	5	14	5	0	24	3	12	3	0	18	76
01:15 PM	1	20	9	0	30	6	11	7	0	24	7	14	1	0	22	2	15	4	0	21	97
01:30 PM	3	9	2	0	14	5	8	4	0	17	5	8	1	0	14	2	13	0	0	15	60
01:45 PM	0	11	2	0	13	5	9	8	0	22	8	22	9	0	39	3	17	1	0	21	95
Total	7	47	14	0	68	24	41	21	0	86	25	58	16	0	99	10	57	8	0	75	328
02:00 PM	5	17	2	0	24	6	23	3	0	32	11	26	3	0	40	6	18	3	0	27	123
02:15 PM	0	19	5	0	24	11	16	7	0	34	8	18	1	0	27	5	19	4	0	28	113
02:30 PM	3	7	5	0	15	3	15	7	2	27	10	23	1	0	34	3	12	3	0	18	94
02:45 PM	7	16	2	0	25	4	26	2	0	32	7	26	5	0	38	3	12	2	0	17	112
Total	15	59	14	0	88	24	80	19	2	125	36	93	10	0	139	17	61	12	0	90	442
03:00 PM	7	10	2	0	19	8	31	5	0	44	3	16	5	0	24	1	10	1	0	12	99
03:15 PM	4	20	3	0	27	6	35	5	0	46	4	18	4	0	26	3	10	5	0	18	117
03:30 PM	4	9	3	0	16	7	33	11	0	51	4	17	6	0	27	0	25	7	0	32	126
03:45 PM	6	16	8	0	30	11	30	12	0	53	2	17	4	0	23	4	17	4	0	25	131
Total	21	55	16	0	92	32	129	33	0	194	13	68	19	0	100	8	62	17	0	87	473

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Groups Printed- Cars - Trucks

	Peekskill Hollow Road From North					Mill Street From East					Peekskill Hollow Road From South					Church Road 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
04:00 PM	2	18	2	0	22	11	40	13	0	64	3	20	5	0	28	5	24	7	0	36	150
04:15 PM	6	11	3	0	20	5	45	6	0	56	9	30	9	0	48	8	18	1	0	27	151
04:30 PM	4	23	5	0	32	15	39	7	0	61	5	25	3	0	33	5	22	5	0	32	158
04:45 PM	3	13	5	0	21	13	42	13	0	68	7	22	4	0	33	2	17	3	0	22	144
Total	15	65	15	0	95	44	166	39	0	249	24	97	21	0	142	20	81	16	0	117	603
05:00 PM	2	21	8	0	31	9	49	10	0	68	11	31	5	0	47	5	22	2	0	29	175
05:15 PM	6	19	3	0	28	5	36	12	0	53	8	34	8	0	50	1	21	5	0	27	158
05:30 PM	6	19	3	0	28	14	48	12	0	74	5	22	3	0	30	7	15	3	0	25	157
05:45 PM	3	21	6	0	30	12	51	13	0	76	5	21	6	0	32	2	11	2	0	15	153
Total	17	80	20	0	117	40	184	47	0	271	29	108	22	0	159	15	69	12	0	96	643
06:00 PM	3	15	5	0	23	13	37	16	0	66	8	22	14	0	44	1	17	2	0	20	153
06:15 PM	4	14	2	1	21	10	43	13	0	66	5	18	7	0	30	7	16	5	0	28	145
06:30 PM	10	21	3	0	34	5	39	4	0	48	8	23	14	0	45	2	16	5	0	23	150
06:45 PM	4	12	2	0	18	8	36	8	0	52	6	24	4	0	34	6	12	1	0	19	123
Total	21	62	12	1	96	36	155	41	0	232	27	87	39	0	153	16	61	13	0	90	571
07:00 PM	1	7	4	0	12	12	37	8	0	57	4	7	6	0	17	1	13	2	0	16	102
07:15 PM	0	15	0	0	15	7	22	5	0	34	5	16	5	0	26	3	13	2	0	18	93
07:30 PM	1	9	2	0	12	10	23	6	0	39	3	13	5	0	21	2	10	3	0	15	87
07:45 PM	1	14	7	0	22	5	32	3	2	42	1	9	3	0	13	1	24	7	0	32	109
Total	3	45	13	0	61	34	114	22	2	172	13	45	19	0	77	7	60	14	0	81	391
Grand Total	177	744	240	1	1162	318	1135	326	4	1783	323	821	202	0	1346	182	1118	161	0	1461	5752
Apprch %	15.2	64	20.7	0.1		17.8	63.7	18.3	0.2		24	61	15	0		12.5	76.5	11	0		
Total %	3.1	12.9	4.2	0	20.2	5.5	19.7	5.7	0.1	31	5.6	14.3	3.5	0	23.4	3.2	19.4	2.8	0	25.4	
Cars	163	710	227	1	1101	295	1103										1083				
% Cars	92.1	95.4	94.6	100	94.8	92.8	97.2	94.5	100	95.9	96.6	96.5	97.5	0	96.7	95.1	96.9	93.2	0	96.2	95.9
Trucks	14	34	13	0	61	23	32	18	0	73	11	29	5	0	45	9	35	11	0	55	234
% Trucks	7.9	4.6	5.4	0	5.2	7.2	2.8	5.5	0	4.1	3.4	3.5	2.5	0	3.3	4.9	3.1	6.8	0	3.8	4.1

	Peekskill Hollow Road From North					Mill Street From East					Peekskill Hollow Road From South					Church Road 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	**30**	7	0	37	**2**	4	1	0	7	**19**	18	**6**	0	**43**	**20**	**55**	5	0	**80**	**167**
07:15 AM	1	21	7	0	29	1	7	2	0	10	8	**22**	1	0	31	4	52	**6**	0	62	132
07:30 AM	6	25	7	0	38	0	9	**6**	0	15	8	14	4	0	26	8	47	1	0	56	135
07:45 AM	**11**	**22**	**10**	0	**43**	**2**	**15**	1	0	**18**	13	13	4	0	30	7	35	4	0	46	137
Total Volume	18	98	31	0	147	5	35	10	0	50	48	67	15	0	130	39	189	16	0	244	571
% App. Total	12.2	66.7	21.1	0		10	70	20	0		36.9	51.5	11.5	0		16	77.5	6.6	0		
PHF	.409	.817	.775	.000	.855	.625	.583	.417	.000	.694	.632	.761	.625	.000	.756	.488	.859	.667	.000	.763	.855

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	Peekskill Hollow Road From North					Mill Street From East					Peekskill Hollow Road From South					Church Road 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	2	21	8	0	31	9	49	10	0	68	11	31	5	0	47	5	22	2	0	29	175
05:15 PM	6	19	3	0	28	5	36	12	0	53	8	34	8	0	50	1	21	5	0	27	158
05:30 PM	6	19	3	0	28	14	48	12	0	74	5	22	3	0	30	7	15	3	0	25	157
05:45 PM	3	21	6	0	30	12	51	13	0	76	5	21	6	0	32	2	11	2	0	15	153
Total Volume	17	80	20	0	117	40	184	47	0	271	29	108	22	0	159	15	69	12	0	96	643
% App. Total	14.5	68.4	17.1	0		14.8	67.9	17.3	0		18.2	67.9	13.8	0		15.6	71.9	12.5	0		
PHF	.708	.952	.625	.000	.944	.714	.902	.904	.000	.891	.659	.794	.688	.000	.795	.536	.784	.600	.000	.828	.919

TRAFFIC SIGNAL WARRANT SUMMARY

Project: Putnam County Roundabout Evaluation Condition: 2019 Existing Condition

Location: Peekskill Hollow Rd and Mill St/Church Rd Date: April 29, 2019

Major Street: Mill St./Church Rd. Lanes: 1 Critical Approach Speed: 40 mph

Minor Street: Peekskill Hollow 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	309	154	-	X	-	X	-	X	-	X	-	-	-
8:00 AM	284	123	-	-	-	X	-	X	-	X	-	-	-
9:00 AM	207	71	-	-	-	-	-	-	-	X	-	-	-
10:00 AM	171	68	-	-	-	-	-	-	-	X	-	-	-
11:00 AM	177	70	-	-	-	-	-	-	-	X	-	-	-
12:00 PM	195	86	-	-	-	-	-	X	-	X	-	-	-
1:00 PM	169	104	-	-	-	-	-	X	-	X	-	-	-
2:00 PM	226	146	-	-	-	X	-	X	-	X	-	-	-
3:00 PM	295	105	-	-	-	-	-	X	-	X	-	-	-
4:00 PM	384	149	-	-	-	X	-	X	-	X	-	-	-
5:00 PM	385	167	-	X	-	X	-	X	-	X	-	-	-
6:00 PM	338	161	-	X	-	X	-	X	-	X	-	-	-
7:00 PM	266	81	-	-	-	-	-	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: NO

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: 0

WARRANT 3 - PEAK HOUR VEHICULAR VOLUME

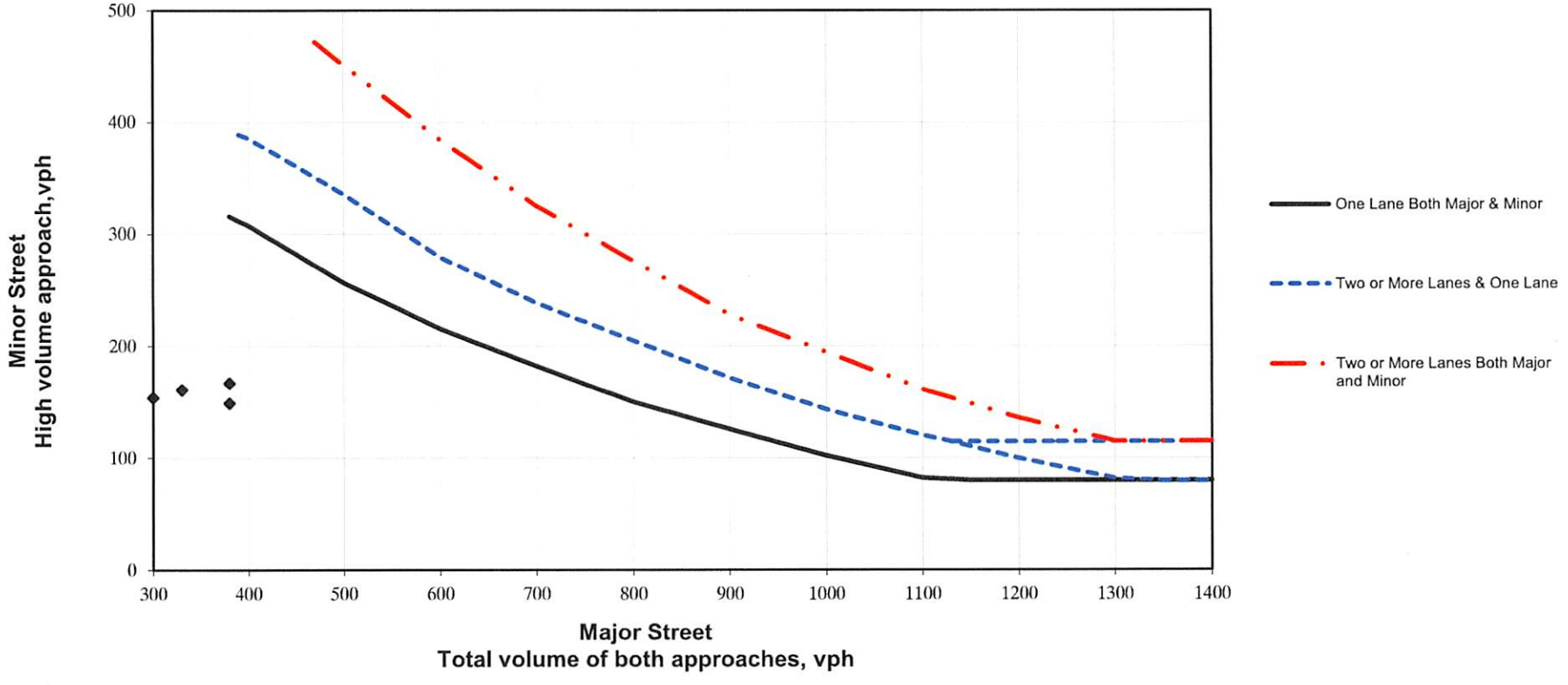
Warrant 3 Satisfied: NO

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: 0

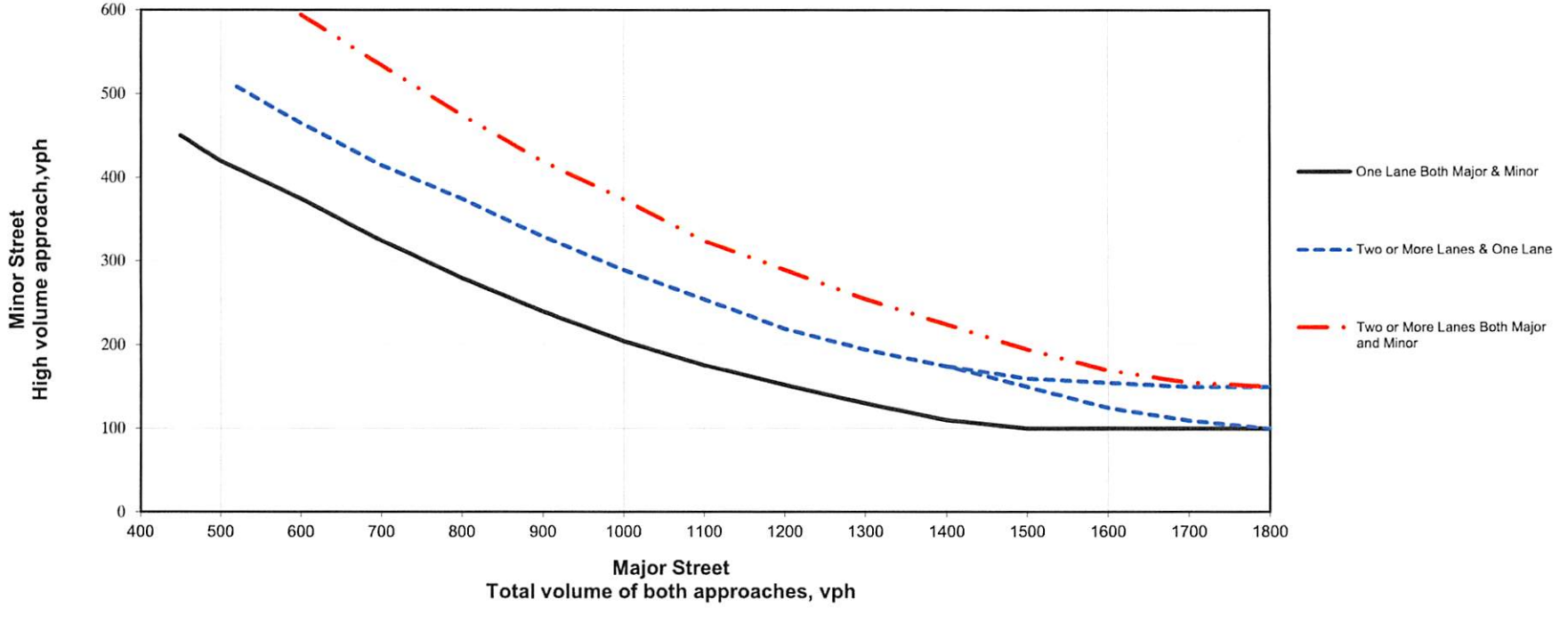
1. Total stopped time delay on Minor Street equals or exceeds 4 VHD (single lane) or 5 VHD (two lanes): 1.32 VHD Max. No
2. Volume on Minor Street equals or exceeds 100 vehicles (single lane) or 150 vehicles (two lanes): Yes
3. Total intersection volume serviced during the hour equals or exceeds 650 veh. (3-leg) or 800 veh. (4-leg or more): No

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.

Lane Group	EBT	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	298	56	6	158	180
v/c Ratio	0.62	0.11	0.02	0.39	0.41
Control Delay	30.9	21.7	0.0	25.9	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	21.7	0.0	25.9	26.2
Queue Length 50th (ft)	122	20	0	60	69
Queue Length 95th (ft)	190	44	0	106	118
Internal Link Dist (ft)	325	285		444	463
Turn Bay Length (ft)			80		
Base Capacity (vph)	478	488	382	409	434
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	0.62	0.11	0.02	0.39	0.41

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	198	41	11	37	5	16	70	50	33	103	19
Future Volume (veh/h)	17	198	41	11	37	5	16	70	50	33	103	19
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	1870	1870	1870	1856	1856	1307	1796	1796	1796	1826	1826	1826
Adj Flow Rate, veh/h	20	230	48	13	43	6	19	81	58	38	120	22
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	3	3	40	7	7	7	5	5	5
Cap, veh/h	32	373	78	114	376	295	78	252	161	118	332	55
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	122	1398	292	426	1408	1108	92	947	603	226	1246	205
Grp Volume(v), veh/h	298	0	0	56	0	6	158	0	0	180	0	0
Grp Sat Flow(s),veh/h/ln	1812	0	0	1834	0	1108	1642	0	0	1677	0	0
Q Serve(g_s), s	10.8	0.0	0.0	1.7	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.8	0.0	0.0	1.7	0.0	0.3	5.7	0.0	0.0	6.2	0.0	0.0
Prop In Lane	0.07		0.16	0.23		1.00	0.12		0.37	0.21		0.12
Lane Grp Cap(c), veh/h	483	0	0	489	0	295	492	0	0	505	0	0
V/C Ratio(X)	0.62	0.00	0.00	0.11	0.00	0.02	0.32	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	483	0	0	489	0	295	492	0	0	505	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)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.1	0.0	0.0	20.8	0.0	20.3	22.3	0.0	0.0	22.4	0.0	0.0
Incr Delay (d2), s/veh	5.8	0.0	0.0	0.5	0.0	0.1	1.7	0.0	0.0	2.0	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	5.2	0.0	0.0	0.8	0.0	0.1	2.4	0.0	0.0	2.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.9	0.0	0.0	21.3	0.0	20.4	24.0	0.0	0.0	24.4	0.0	0.0
LnGrp LOS	C	A	A	C	A	C	C	A	A	C	A	A
Approach Vol, veh/h		298			62			158			180	
Approach Delay, s/veh		29.9			21.2			24.0			24.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		25.0		25.0		25.0		25.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		20.0		20.0		20.0		20.0				
Max Q Clear Time (g_c+I1), s		8.2		3.7		7.7		12.8				
Green Ext Time (p_c), s		0.7		0.2		0.6		1.0				

Intersection Summary												
HCM 6th Ctrl Delay			26.4									
HCM 6th LOS			C									

Intersection	
Intersection Delay, s/veh	5.0
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	298	62	158	180
Demand Flow Rate, veh/h	308	65	165	187
Vehicles Circulating, veh/h	177	130	297	76
Vehicles Exiting, veh/h	86	332	188	119
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.7	3.6	5.2	4.2
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	308	65	165	187
Cap Entry Lane, veh/h	1152	1209	1019	1277
Entry HV Adj Factor	0.969	0.950	0.959	0.963
Flow Entry, veh/h	298	62	158	180
Cap Entry, veh/h	1116	1147	978	1229
V/C Ratio	0.267	0.054	0.162	0.146
Control Delay, s/veh	5.7	3.6	5.2	4.2
LOS	A	A	A	A
95th %tile Queue, veh	1	0	1	1

Intersection	
Intersection Delay, s/veh	4.9
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	62	389	180
Demand Flow Rate, veh/h	64	400	187
Vehicles Circulating, veh/h	106	38	58
Vehicles Exiting, veh/h	332	207	112
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.4	5.5	4.1
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	64	400	187
Cap Entry Lane, veh/h	1238	1327	1301
Entry HV Adj Factor	0.969	0.972	0.962
Flow Entry, veh/h	62	389	180
Cap Entry, veh/h	1200	1291	1251
V/C Ratio	0.052	0.301	0.144
Control Delay, s/veh	3.4	5.5	4.1
LOS	A	A	A
95th %tile Queue, veh	0	1	1

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	215	41	16	120	114	56
Future Vol, veh/h	215	41	16	120	114	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	3	1	5	5	5
Mvmt Flow	250	48	19	140	133	65

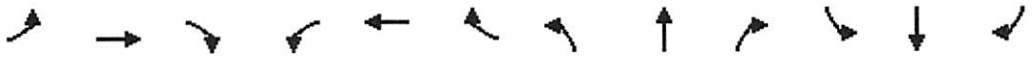
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	344	166	198	0	-	0
Stage 1	166	-	-	-	-	-
Stage 2	178	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.11	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.209	-	-	-
Pot Cap-1 Maneuver	650	876	1381	-	-	-
Stage 1	861	-	-	-	-	-
Stage 2	850	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	640	876	1381	-	-	-
Mov Cap-2 Maneuver	640	-	-	-	-	-
Stage 1	848	-	-	-	-	-
Stage 2	850	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.6	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1381	-	669	-	-
HCM Lane V/C Ratio	0.013	-	0.445	-	-
HCM Control Delay (s)	7.6	0	14.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	2.3	-	-

Lane Group	EBT	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	118	281	49	193	143
v/c Ratio	0.24	0.57	0.10	0.45	0.32
Control Delay	23.2	29.1	1.1	27.0	24.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	29.1	1.1	27.0	24.4
Queue Length 50th (ft)	43	113	0	75	53
Queue Length 95th (ft)	80	177	3	127	95
Internal Link Dist (ft)	325	285		444	463
Turn Bay Length (ft)			80		
Base Capacity (vph)	487	495	501	426	453
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	0.24	0.57	0.10	0.45	0.32

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	72	16	49	193	42	23	113	30	21	84	18
Future Volume (veh/h)	13	72	16	49	193	42	23	113	30	21	84	18
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	1885	1885	1885	1885	1885	1885	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	15	84	19	57	224	49	27	131	35	24	98	21
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	1	1	1	1	1	1	2	2	2	1	1	1
Cap, veh/h	62	346	78	101	397	426	90	347	85	100	354	69
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	231	1296	293	379	1488	1598	131	1303	318	165	1328	257
Grp Volume(v), veh/h	118	0	0	281	0	49	193	0	0	143	0	0
Grp Sat Flow(s),veh/h/ln	1821	0	0	1866	0	1598	1752	0	0	1751	0	0
Q Serve(g_s), s	3.8	0.0	0.0	9.7	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.8	0.0	0.0	9.7	0.0	1.7	6.6	0.0	0.0	4.6	0.0	0.0
Prop In Lane	0.13		0.16	0.20		1.00	0.14		0.18	0.17		0.15
Lane Grp Cap(c), veh/h	486	0	0	498	0	426	522	0	0	523	0	0
V/C Ratio(X)	0.24	0.00	0.00	0.56	0.00	0.12	0.37	0.00	0.00	0.27	0.00	0.00
Avail Cap(c_a), veh/h	486	0	0	498	0	426	522	0	0	523	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)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.6	0.0	0.0	23.7	0.0	20.8	22.6	0.0	0.0	21.9	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.0	4.6	0.0	0.5	2.0	0.0	0.0	1.3	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	1.7	0.0	0.0	4.7	0.0	0.7	3.0	0.0	0.0	2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	0.0	0.0	28.3	0.0	21.4	24.6	0.0	0.0	23.2	0.0	0.0
LnGrp LOS	C	A	A	C	A	C	C	A	A	C	A	A
Approach Vol, veh/h		118			330			193			143	
Approach Delay, s/veh		22.8			27.3			24.6			23.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	25.0	25.0	25.0	25.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	20.0	20.0	20.0	20.0
Max Q Clear Time (g_c+I1), s	6.6	11.7	8.6	5.8
Green Ext Time (p_c), s	0.6	1.1	0.8	0.4

Intersection Summary	
HCM 6th Ctrl Delay	25.2
HCM 6th LOS	C

Intersection	
Intersection Delay, s/veh	5.1
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	118	330	193	143
Demand Flow Rate, veh/h	119	333	197	145
Vehicles Circulating, veh/h	181	177	124	312
Vehicles Exiting, veh/h	276	144	176	198
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.0	5.9	4.4	5.0
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	119	333	197	145
Cap Entry Lane, veh/h	1147	1152	1216	1004
Entry HV Adj Factor	0.993	0.990	0.982	0.986
Flow Entry, veh/h	118	330	193	143
Cap Entry, veh/h	1139	1141	1194	990
V/C Ratio	0.104	0.289	0.162	0.144
Control Delay, s/veh	4.0	5.9	4.4	5.0
LOS	A	A	A	A
95th %tile Queue, veh	0	1	1	1

Intersection	
Intersection Delay, s/veh	5.1
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	330	266	143
Demand Flow Rate, veh/h	336	270	144
Vehicles Circulating, veh/h	150	24	287
Vehicles Exiting, veh/h	144	407	199
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.7	4.4	4.8
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	336	270	144
Cap Entry Lane, veh/h	1184	1346	1030
Entry HV Adj Factor	0.982	0.985	0.992
Flow Entry, veh/h	330	266	143
Cap Entry, veh/h	1163	1327	1021
V/C Ratio	0.284	0.201	0.140
Control Delay, s/veh	5.7	4.4	4.8
LOS	A	A	A
95th %tile Queue, veh	1	1	0

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	85	16	23	143	133	211
Future Vol, veh/h	85	16	23	143	133	211
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	1	1	2	2	1	1
Mvmt Flow	99	19	27	166	155	245

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	498	278	400	0	-	0
Stage 1	278	-	-	-	-	-
Stage 2	220	-	-	-	-	-
Critical Hdwy	6.41	6.21	4.12	-	-	-
Critical Hdwy Stg 1	5.41	-	-	-	-	-
Critical Hdwy Stg 2	5.41	-	-	-	-	-
Follow-up Hdwy	3.509	3.309	2.218	-	-	-
Pot Cap-1 Maneuver	534	763	1159	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	520	763	1159	-	-	-
Mov Cap-2 Maneuver	520	-	-	-	-	-
Stage 1	751	-	-	-	-	-
Stage 2	819	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.4	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1159	-	548	-	-
HCM Lane V/C Ratio	0.023	-	0.214	-	-
HCM Control Delay (s)	8.2	0	13.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	-	-

NYSDOT QRA ACCIDENT VERBAL DESCRIPTION

Print Date 4/24/2019 **Print Time** 10:55:49AM

Query Number/Name	Query Type	Query SubType	Accident Date Range
45684mill at peeskill	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
36072190	27-January-2016	PUTNAM	Putnam Valley Town	CHURCH RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	STRAIGHT/ GRADE	CLEAR	TRAFFIC SIGNAL	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	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	5377	54	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	EAST	SLOWED OR STOPPING	4420	23	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
36209921	12-May-2016	PUTNAM	Putnam Valley Town	MILL ST	

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
2	PROPERTY DAMAGE	COLLISION WITH MOTOR VEHICLE	RIGHT ANGLE	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	WEST	GOING STRAIGHT AHEAD	0	52	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	FAILURE TO YIELD RIGHT OF WAY
2	NOT APPLICABLE

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
2	1	SOUTH	GOING STRAIGHT AHEAD	6627	38	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
36237106	16-May-2016	PUTNAM	Putnam Valley Town	MILL ST	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	STRAIGHT AND LEVEL	CLEAR	NONE	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	NORTH-EAST	GOING STRAIGHT AHEAD	2889	70	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	UNKNOWN

2	NOT ENTERED

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36263952	18-June-2016	PUTNAM	Putnam Valley Town	PEEKSKILL HOLLOW RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	STRAIGHT AND LEVEL	CLEAR	TRAFFIC SIGNAL	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	LEFT TURN (WITH OTHER CAR)	0	1	POSSIBL

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	SOUTH-EAST	MAKING LEFT TURN	2787	17	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	FAILURE TO YIELD RIGHT OF WAY
2	NOT APPLICABLE

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
2	1	NORTH-EAST	GOING STRAIGHT AHEAD	3458	45	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
36382023	14-September-2016	PUTNAM	Putnam Valley Town	CHURCH RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	STRAIGHT/ GRADE	CLEAR	TRAFFIC SIGNAL	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	REAR END	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	EAST	GOING STRAIGHT AHEAD	4013	49	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	2	EAST	GOING STRAIGHT AHEAD	0	54	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
36399468	26-September-2016	PUTNAM	Putnam Valley Town	PEEKSKILL HOLLOW RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	STRAIGHT AND LEVEL	CLEAR	TRAFFIC SIGNAL	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	RIGHT ANGLE	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	SOUTH-EAST	BACKING	0	60	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	BACKING UNSAFELY
2	NOT APPLICABLE

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
2	1	NORTH-EAST	STOPPED IN TRAFFIC	0	52	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
36500574	30-November-2016	PUTNAM	Putnam Valley Town	MILL ST	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
WET	STRAIGHT AND LEVEL	CLOUDY	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 ANIMAL	OTHER	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	WEST	GOING STRAIGHT AHEAD	3483	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	ANIMAL'S ACTION

2	NOT APPLICABLE

Case Number	Accident Date	Region/County	Municipality/Type	Street	Reference Marker
36544187	30-December-2016	PUTNAM	Putnam Valley Town	MILL ST	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	STRAIGHT/ GRADE	CLOUDY	TRAFFIC SIGNAL	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	NORTH	GOING STRAIGHT AHEAD	0	22	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	UNSAFE SPEED
2	FOLLOWING TOO CLOSELY

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
2	1	NORTH	STOPPED IN TRAFFIC	0	54	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
36564548	11-January-2017	PUTNAM	Putnam Valley Town	MILL ST	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
WET	STRAIGHT AND LEVEL	RAIN	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 DEER	OTHER	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	WEST	GOING STRAIGHT AHEAD	0	45	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
36949988	25-October-2017	PUTNAM	Putnam Valley Town	PEEKSKILL HOLLOW RD	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
WET	STRAIGHT AND LEVEL	CLEAR	TRAFFIC SIGNAL	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	REAR END	0	0	

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	SOUTH	GOING STRAIGHT AHEAD	3468	49	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	DRIVER INATTENTION
2	NOT APPLICABLE

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
2	1	SOUTH	STOPPED IN TRAFFIC	3616	57	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
37425618	07-August-2018	PUTNAM	Putnam Valley Town	MILL ST	

Road Surface	Road Cond	Weather	TrafficControls	Location Ped/Bike	Action of Ped/Bike
DRY	STRAIGHT AND LEVEL	CLEAR	TRAFFIC SIGNAL	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	REAR END	0	1	POSSIBL

Vehicle Number	Number of Occupants	Dir of Travel	Pre-Accd Action	Registered Weight	Drivers Age	Sex
1	1	WEST	SLOWED OR STOPPING	4011	45	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	WEST	SLOWED OR STOPPING	3395	22	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

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

Intersection: Peekskill Hollow Rd & Mill Street
Client: Putnam County — GPI No. 2019058.00
Calculated By: D. Creen — Date: 6/27/2019
Checked By: M. Wieszchowski — Date: 6/28/2019

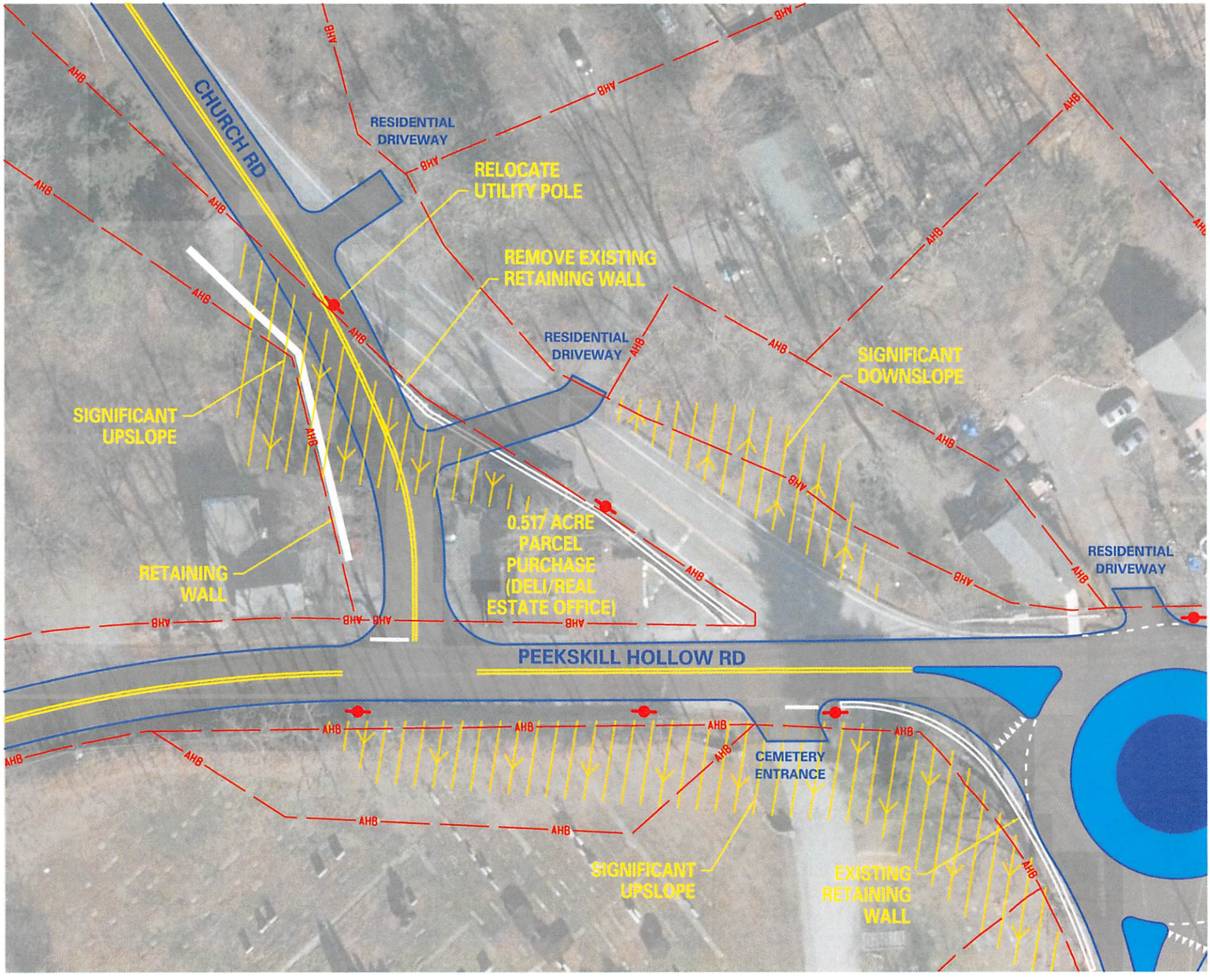
DESCRIPTION	TOTAL QUANTITY	UNIT	UNIT PRICE	TOTAL COST
SINGLE LANE ROUNDABOUT [1]	1	EA	$750,000	$750,000
THREE-WAY INTERSECTION [2]	1	EA	$250,000	$250,000
ADDITONAL EARTHWORK (ABOVE AND BEYOND TYPICAL)	6,500	CY	$20	$130,000
UTILITY RELOCATION [3]	1	EA	$75,000	$75,000
RETAINING WALLS	900	SF	$100	$90,000
STORMWATER AND TREATMENT [4]	1	LS	$100,000	$100,000
WORK ZONE TRAFFIC CONTROL	1	LS	$300,000	$300,000
			ESTIMATED CONSTRUCTION COST (CONCEPTUAL)	**$1,695,000**
RIGHT OF WAY (RESIDENTIAL)	0.056	ACRE	$65,000	$5,000
RIGHT OF WAY (COMMERCIAL)	1	LS	$362,500	$365,000
CONTIGENCY (20%)	1	LS	$339,000	$340,000
DESIGN AND INSPECTION (25%)	1	LS	$423,750	$425,000
			FINAL TOTAL	**$2,830,000**

[1] INCLUDES TYPICAL COST FOR PAVEMENT, CURB, EARTHWORK, DRAINAGE, LANDSCAPING, ETC., FOR A SINGLE LANE ROUNDABOUT.

[2] INCLUDES TYPICAL COST FOR PAVEMENT, CURB, EARTHWORK, DRAINAGE, LANDSCAPING, ETC FOR A THREE WAY INTERSECTION.

[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.


CHURCH RD
RESIDENTIAL DRIVEWAY
RELOCATE UTILITY POLE
REMOVE EXISTING RETAINING WALL
RESIDENTIAL DRIVEWAY
SIGNIFICANT DOWNSLOPE
SIGNIFICANT UPSLOPE
0.517 ACRE PARCEL PURCHASE (DELI/REAL ESTATE OFFICE)
RETAINING WALL
RESIDENTIAL DRIVEWAY
PEEKSKILL HOLLOW RD
CEMETERY ENTRANCE
SIGNIFICANT UPSLOPE
EXISTING RETAINING WALL
AHB

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