

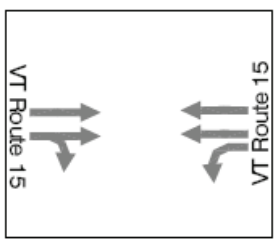
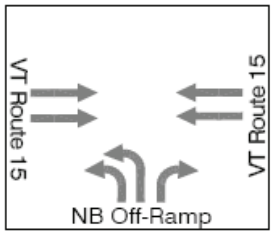
## **APPENDIX G**

### **Detail Level of Service (LOS) Results**

## I-89 On/Off Ramps

Location: I-89 On/Off Ramps

Applicable Future  
Scenario:

ref #	Existing Geometry	Location	Issue *	Applicable Future Scenario:			Potential Solution	Analysis Result / Assessment	Constraints
				No Circ	Part Circ	Full Circ			
2		SB Ramp	OVERALL LOS	X			Update Signal timing & Coordination	Revised signal timing and coordinating the two ramp signals improve traffic operations and decrease overall vehicle delay.	No Constraints
		NB Ramp	Intersection HCL	X	X	X	Update Signal timing & Coordination	Assuming the proposed geometry from the Roland Court Study is implemented - Signal Timing should improve safety conditions by reducing delay and vehicle queueing.	No Constraints

ANALYSIS RESULTS, with suggested solution:

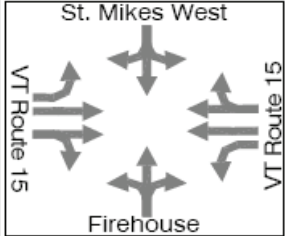
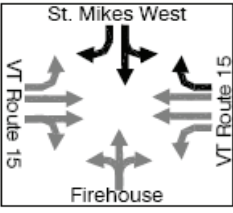
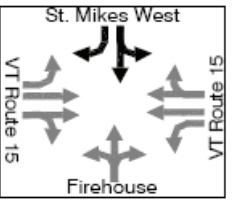
Future Scenario	VT 15 Corridor	VT 15 Approaches										Side Street Approaches							
		Overall		EB				WB				NB				SB			
		Delay	LOS	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)
No Circ	I-89 SB On Ramp	18.9	B	31.2	C	0.9	374	12.4	B	0.97	547	-	-	-	-	-	-	-	-
	I-89 NB Off Ramp	13.7	B	1.5	A	0.48	0	12.3	B	0.74	344	23.8	C	0.81	327	-	-	-	-
Part Circ	I-89 SB On Ramp	11.6	B	22.4	C	0.89	320	5.2	A	0.88	324	-	-	-	-	-	-	-	-
	I-89 NB Off Ramp	10.7	B	1.1	A	0.42	3	7.4	A	0.6	142	23.1	C	0.8	209	-	-	-	-
Full Circ	I-89 SB On Ramp	10	A	17.3	B	0.75	250	5.6	A	0.87	331	-	-	-	-	-	-	-	-
	I-89 NB Off Ramp	9.9	A	0.6	A	0.41	0	6.9	A	0.56	128	21.8	C	0.77	193	-	-	-	-

\*HCL - High Crash Location, as identified by VTrans

## St. Mikes West Entrance

**Location: St Mikes West Entrance**

**Applicable Future Scenario:**

ref #	Existing Geometry	Issue	No Circ	Part Circ	Full Circ	Potential Solution	Analysis Result / Assessment	Constraints
4		OVERALL LOS	X				1) Improves overall LOS by significantly reducing vehicle delay and reducing vehicle queues out of St. Michael's College. 2) Extend WBL storage pocket to 230' Create a 50' storage pocket for WBR	ROW and Adjacent Infrastructure
				X	X		Improves overall LOS by significantly reducing vehicle delay and reducing vehicle queues out of St. Michael's College. The Storage pocket for the Eastbound Left turn movement should be lengthened.	ROW and Adjacent Infrastructure

**ANALYSIS RESULTS, with suggested solution:**

Future Scenario	LANE ADDITIONS	VT 15 Approaches										St. Mikes / Firehouse							
		Overall		EB				WB				NB			SB				
		Delay	LOS	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)
No Circ	St. Mikes West	43.7	D	36.8	D		685	22.1	C		1411	-	-	-	3	>100	F	1.08	440
Part Circ	St. Mikes West	29.4	C	16.2	B	0.75	423	34.9	C	0.93	967	-	-	-	-	48.2	D	0.77	215
Full Circ	St. Mikes West	26.8	C	15.2	B	0.65	435	30.3	C	0.86	854	-	-	-	-	48	D	0.76	210

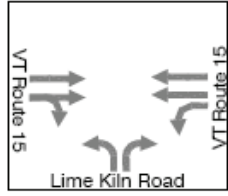
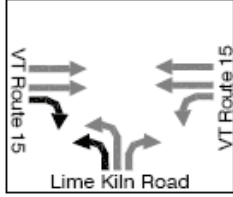
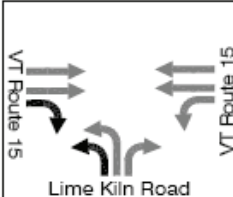
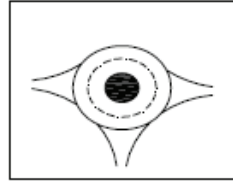
**NOTES:**

St Mikes approach is congested in the No Circ scenario, however this doesn't create operational issues in the network, overall LOS is acceptable.

## Lime Kiln Road

Location: Lime Kiln Road

Applicable Future  
Scenario:

ref #	Existing Geometry	Issue	No Circ	Part Circ	Full Circ	Potential Solution	Analysis Result / Assessment	Constraints
5		OVERALL LOS	X				- Long queues and vehicle delays are reduced by adding a second NBL turn lane. VT 15 conditions are improved in the Eastbound direction by adding a new EBR turn lane.	Right of Way and grades along Lime Kiln Road
		Long Queues on NB approach		X	X		- Although LOS D overall, long queues that block the NBR turn require a second NBL lane in order to reduce queues along the approach. The WBL turn movement has high levels of delay, and the V/C ratio is 0.98, though the estimated queue should be able to stack within the storage pocket.	Right of Way and grades along Lime Kiln Road
							- 2-Lane Roundabout improves operations significantly. Potential operational impacts due to the proximity to nearby traffic signals.	Potential ROW and Proximity to other signals


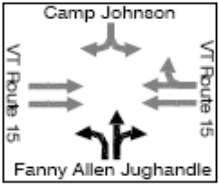
ANALYSIS RESULTS, with suggested solution:

Future Scenario	LANE ADDITIONS	VT 15 Approaches									Lime Kiln Road								
		Overall		EB			WB				NB				SB				
		Delay	LOS	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)
No Circ	Lime Kiln	35.6	D	28.6	C	0.88	1102	21.9	C	0.97	811	84.1	F	0.94	340	-	-	-	-
Part Circ	Lime Kiln	27.9	C	32.6	C	0.98	903	19	B	0.98	419	38.6	D	0.7	190	-	-	-	-
Full Circ	Lime Kiln	26.4	C	23.8	C	0.77	683	17.9	B	0.95	417	47.1	D	0.71	200	-	-	-	-
	<b>ROUNDBABOUT</b>																		
No Circ	VT 15 - Lime Kiln Road																		
Part Circ	VT 15 - Lime Kiln Road	14.6	LOS B	7.5	LOS A	0.67	166	16.1	LOS B	0.886	451	24.2	LOS C	0.821	188	-	-	-	-
Full Circ	VT 15 - Lime Kiln Road	14.4	LOS B	7.5	LOS A	0.66	160	15.6	LOS B	0.859	392	23.4	LOS C	0.821	196	-	-	-	-

## Camp Johnson/FAHC Exit

Location: Camp Johnson / FAHC Exit

### Applicable Future Scenario:

ref #	Existing Geometry	Issue	Applicable Future Scenario:			Potential Solution	Analysis Result / Assessment	Constraints
			No Circ	Part Circ	Full Circ			
7		Long Queues on NB approach	X				- Long queues on the northbound approach of the jughandle will be reduced by creating an exclusive left-turn lane and a shared right-thru lane.	Cemetery to east

### ANALYSIS RESULTS, with suggested solution:

Future Scenario	LANE ADDITION	VT 15 Approaches										Camp Johnson / FAHC Exit							
		Overall		EB				WB				NB				SB			
		Delay	LOS	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)
No Circ	Camp Johnson	14.9	B	13.2	B	0.84	700	10.9	B	0.72	505	37.8	D	0.76	242	28.1	C	0.49	100

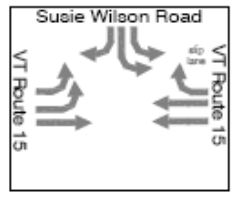
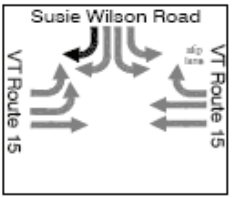
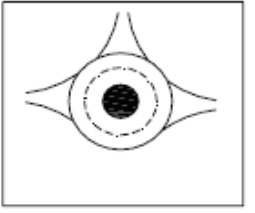
**NOTES:**

A roundabout was not considered here since this lane improvements would be relatively simple.

## Susie Wilson Road

Location: Susie Wilson Road

**Applicable Future Scenario:**

ref #	Existing Geometry	Issue	No Circ	Part Circ	Full Circ	Potential Solution	Analysis Result / Assessment	Constraints
9		OVERALL LOS	<b>X</b>				- Additional SBR turn lane reduces overall vehicle delays at the intersection.	No Constraints
							- 2-Lane Roundabout operates poorly.	Grades & proximity of RR are a concern

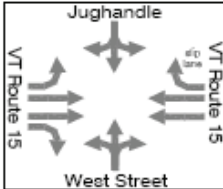
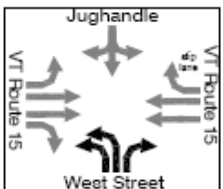
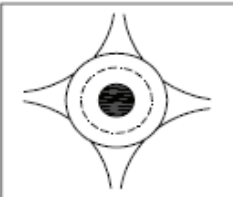
**ANALYSIS RESULTS, with suggested solution:**

Future Scenario	LANE ADDITION	VT 15 Approaches										Susie Wilson Road							
		Overall		EB				WB				NB				SB			
		Delay	LOS	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)
No Circ	Susie Wilson Road	37.4	D	31.8	C	0.93	1007	50	D	0.97	620	-	-	-	-	33.2	C	0.77	322
No Circ	ROUNDABOUT																		
No Circ	VT 15 - Susie Wilson Road	247.4	F	123.3	F	1.221	2529	658.6	F	2.374	4316	-	-	-	-	12.5	B	0.764	211

*West Street*

Location: West Street

**Applicable Future Scenario:**

ref #	Existing Geometry	Issue	No Circ	Part Circ	Full Circ	Potential Solution	Analysis Result / Assessment	Constraints
10		OVERALL LOS	X				Additional NB left turn lane reduces overall vehicle delays at the intersection.	ROW & Rail Crossing
						2-Lane Roundabout improves operations significantly.	Potential ROW Constraints, Grades, and Rail crossing impacts	

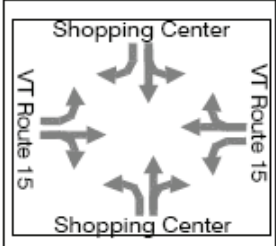
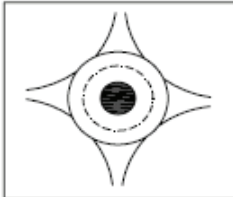
**ANALYSIS RESULTS, with suggested solution:**

Future Scenario	LANE ADDITIONS	VT 15 Approaches										West Street							
		Overall		EB				WB				NB				SB			
		Delay	LOS	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)
No Circ	West Street	11.6	B	7.7	A	0.47	254	7.7	A	0.42	218	29.3	C	0.72	191	21.9	C	0.06	31
	<b>ROUNDBOUT</b>																		
No Circ	VT 15 - West Street	9.3	A	5.1	A	0.465	82	9.3	A	0.577	130	21	C	0.645	156	-	-	-	-

## Pearl Street Shopping Center

Location: Pearl St Shopping Center

### Applicable Future Scenario:

ref #	Existing Geometry	Issue	No Circ	Part Circ	Full Circ	Potential Solution	Analysis Result / Assessment	Constraints
11		OVERALL LOS	X				<p>- Long queues and high vehicle delay's can be improved by providing an exclusive eastbound right-turn lane along VT 15.</p> <p>- 2-Lane Roundabout improves operations significantly.</p>	<p>ROW along VT 15 could be limiting. The additional travel lane increases crossing distance across VT 15 and affects bicycle travel along the corridor.</p> <p>Potential ROW Constraints</p>

### ANALYSIS RESULTS, with suggested solution:

		VT 15 Approaches										Shopping Centers							
		Overall		EB				WB				NB				SB			
		Delay	LOS	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)
Future Scenario	<b>LANE ADDITION</b>																		
No Circ	Pearl St Shopping Centers	45	D	20.4	C	0.68	748	13.2	B	0.61	254	>100	F	1.08	365	55.9	E	0.57	152
Future Scenario	<b>ROUNDBABOUT</b>																		
No Circ	Pearl St Shopping Centers	8.1	A	5.7	A	0.359	59	6.6	A	0.343	55	16.2	B	0.515	92	14.2	B	0.195	26

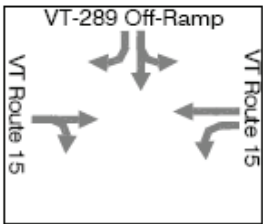
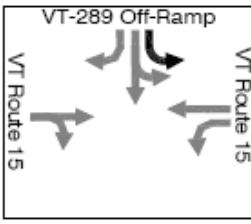
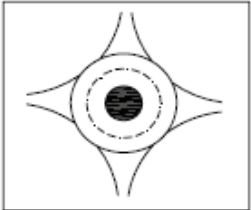
**NOTES:**

There are other exits to these shopping centers (Summit St, and others) that are likely to provide relief during congested times

## I- 289 EB Ramp

Location: I-289 EB Ramps

Applicable Future  
Scenario:

ref #	Existing Geometry	Location	Issue	No Circ	Part Circ	Full Circ	Potential Solution	Analysis Result / Assessment	Constraints
13		EB Ramp	Poor Operation on Ramp			X		- Creating an additional left-turn lane off of the VT-289 ramp can reduce vehicle queues and vehicle delay along the VT-289 ramp	Limited available bridge width for receiving lanes
								- 2-Lane Roundabout improves operations significantly. The Roundabout would have operational impacts on the adjacent ramp signal. Further Evaluation would be necessary to assess its impacts.	Bridge could be impacted, as well as adjacent signal

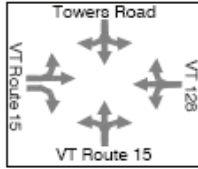
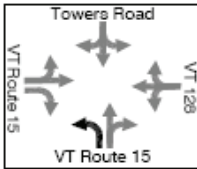
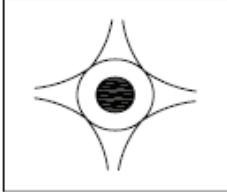

ANALYSIS RESULTS, with suggested solution:

Future Scenario	Overall	VT 15 Approaches						VT 289 Ramps											
		EB			WB			NB			SB								
		Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)		
Full Circ	<b>LANE ADDITION</b>																		
	289 EB Ramp	15.1	B	13.8	B	0.52	158	21.9	C	0.75	329	-	-	-	-	11.8	B	0.64	140
	<b>ROUNDAABOUT</b>																		
Full Circ	VT 15 - VT 289 EB Ramp	12.6	B	12.8	B	0.678	126	3.3	A	0.317	144	-	-	-	-	17.7	B	0.555	126

## Towers Road/VT 128

Location: Towers Road / VT128

### Applicable Future Scenario:

ref #	Existing Geometry	Issue	No Circ	Part Circ	Full Circ	Potential Solution	Analysis Result / Assessment	Constraints
19		OVERALL LOS	X	X	X		- High levels of vehicle delay and long queues warrant roadway expansion on the westbound VT 15 approach to include an exclusive left-turn lane.	ROW & adjacent parking lot
							- 1-Lane Roundabout improves operations significantly.	ROW & adjacent parking lot
							- Reduces EB traffic significantly	None

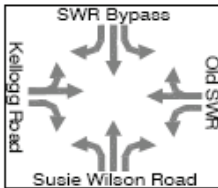
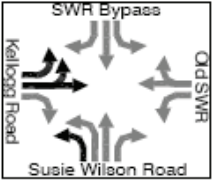
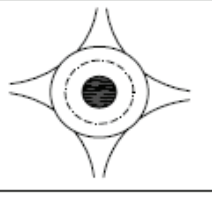
### ANALYSIS RESULTS, with suggested solution:

Future Scenario	LANE ADDITION	Overall		VT 15 / VT128						VT15 / Tower Rd									
				EB			WB			NB			SB						
		Delay	LOS	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)
No Circ	Towers Road / VT128	18.1	B	12.5	B	0.71	312	17.5	B	0.24	108	25.8	C	0.8	654	26	C	0.4	123
Part Circ	Towers Road / VT128	28.1	C	25.9	C	0.81	504	17.1	B	0.21	119	33.4	C	0.83	516	35	D	0.5	114
Full Circ	Towers Road / VT128	29.3	C	26.6	C	0.82	532	17.5	B	0.09	134	36	D	0.85	518	38.3	D	0.53	113
	<b>ROUNDBABOUT</b>																		
No Circ	Towers Road / VT128	10.6	B	8.2	A	0.598	153	11.9	B	0.194	33	14.3	B	0.556	128	10.6	B	0.171	29
Part Circ	Towers Road / VT128	11.6	B	8.1	A	0.627	171	11.5	B	0.255	43	18.4	B	0.633	187	11	B	0.199	34
Full Circ	Towers Road / VT128	12	B	8	A	0.668	198	11.8	B	0.301	50	20	B	0.682	224	11.6	B	0.198	33
	<b>ALLEN MARTIN PARKWAY</b>																		
Part Circ	Towers Road / VT128	31.8	C	26.2	C	0.84	462	22	B	0.24	124	41.6	D	0.85	567	35.9	D	0.58	134
Full Circ	Towers Road / VT128	28.2	C	21.3	C	0.8	350	21.3	B	0.29	133	36	D	0.83	646	31.8	D	0.48	120

## Susie Wilson & Kellogg Road

Location: Susie Wilson & Kellogg Rd.

### Applicable Future Scenario:

ref #	Existing Geometry	Issue	No Circ	Part Circ	Full Circ	Potential Solution	Analysis Result / Assessment	Constraints
22		OVERALL LOS	X	X			- Long vehicle queues and high vehicle delay are improved by expanding the Susie Wilson Road Northbound Left approach to two-left-turn lanes. Kellogg Road would need expansion to accommodate the additional approach lanes. SWR Bypass would need to be widened to receive the two sending lanes.	ROW
							- 2-Lane Roundabout improves operations significantly, however Old Susie Wilson Rd would operate at LOS F.	ROW

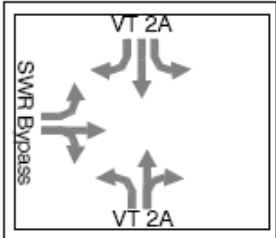
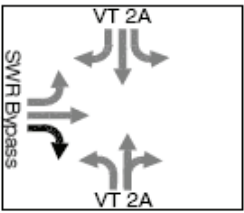
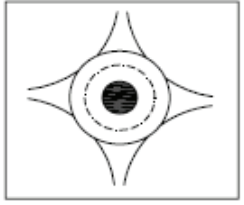
### ANALYSIS RESULTS, with suggested solution:

Future Scenario	LANE ADDITIONS	Kellogg / Old SWR										Susie Wilson Road							
		Overall		EB				WB				NB				SB			
		Delay	LOS	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)
No Circ	Susie Wilson Road - Kellogg Road	35.8	D	30.3	C	0.84	416	22.4	C	0.22	155	37	D	0.94	799	44.5	D	0.89	599
Part Circ	Susie Wilson Road - Kellogg Road	38.2	D	41.6	D	0.97	343	27.5	C	0.46	132	41	D	1.04	372	27.3	C	0.57	348
	<b>ROUNDBABOUT</b>																		
No Circ	SWR - Kellogg Road	30.7	LOS C	12.8	B	0.604	122	226.2	F	1.307	573	22.6	C	0.895	443	26.4	C	0.774	230
Part Circ	SWR - Kellogg Road	25.4	LOS C	11	B	0.556	100	149	F	1.114	386	21	C	0.881	458	25.2	C	0.68	151

## Susie Wilson Bypass & VT 2A

Location: Susie Wilson Bypass & VT2A

Applicable Future Scenario:

ref #	Existing Geometry	Issue	No Circ	Part Circ	Full Circ	Potential Solution	Analysis Result / Assessment	Constraints
23		OVERALL LOS	X				- Long queues would be reduced with an exclusive eastbound right turn lane.	No Constraints
							- 2-Lane Roundabout improves operations significantly.	No Constraints

ANALYSIS RESULTS, with suggested solution:

Future Scenario		Kellogg / Old SWR										Susie Wilson Road							
		Overall		EB				WB				NB			SB				
		Delay	LOS	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)	Delay	LOS	V/C	95th % Queue (ft)
No Circ	<b>LANE ADDITION</b> VT2A -SWR Bypass-VT289	30.2	C	42.5	D	0.96	693	-	-	-	-	33.9	C	0.83	465	15.2	B	0.78	152
No Circ	<b>ROUNDAABOUT</b> VT2A -SWR Bypass-VT289	12.4	B	11.4	B	0.61	145	-	-	-	-	21.1	C	0.67	140	8.1	A	0.394	65