Traffic Impact Analysis

TRI-COUNTY COUNCIL MULTI-PURPOSE CENTER

Wicomico County, Maryland

October 26, 2010

Prepared for:

Salisbury-Wicomico Dept. of Planning and Zoning



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BHT/clg

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INTRODUCTION AND SUMMARY OF FINDINGS

Traffic Impact Analysis

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Wicomico County, Maryland

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STUDY PURPOSE

The Traffic Group, Inc. has conducted a Traffic Impact Analysis for the Salisbury/Wicomico County Metropolitan Organization to determine the impact on the surrounding road system of the proposed relocation of the Tri-County Council, Shore Transit, One Stop, and other agencies to a multi-purpose center located in the northwest quadrant of the intersection of US Route 50

and Walston Switch Road in Wicomico County, Maryland.

For the purpose of this Traffic Impact Analysis, the Tri-County Council Multi-Purpose Center will consist of a 72,670 square foot facility. It was assumed that Shore Transit will operate eleven bus routes during the weekdays from this facility. Greyhound will also utilize the facility. Access will be via the existing Comteck Drive on Walston Switch Road.

STUDY CRITERIA/METHODOLOGY

This study was conducted in accordance with the requirements established by the Maryland State Highway Administration, specifically as outlined in the <u>State Highway Access Manual</u>, Engineering Access Permits Division dated January 2004. The parameters of this study were identified and adhere to the criteria stated in the Maryland State Highway Administration Guidelines.

SCOPE OF SERVICES

The principal scope of services undertaken as part of this study was as follows.

- CONDUCT A FIELD INSPECTION TO COLLECT PHYSICAL INFORMATION CONCERNING THE NEARBY ROAD SYSTEM, INCLUDING CONDITION DIAGRAMS AND PHOTO SURVEYS AT THE FOLLOWING STUDY INTERSECTIONS.
 - O WALSTON SWITCH ROAD AND COMTEK LANE/BEAVER RUN DRIVE
 - O WALSTON SWITCH ROAD AND US 50

The Traffic Group

Traffic Impact Analysis Tri-County Council Multi-Purpose Center Wicomico County, Maryland

TRAFFIC COUNTS

- OBTAIN TURNING MOVEMENT COUNTS BETWEEN THE HOURS OF 7 AM AND 7 PM FOR THE INTERSECTION OF US 50 AND WALSTON SWITCH ROAD FROM THE MARYLAND STATE HIGHWAY ADMINISTRATION WHICH WERE COLLECTED BY SHA ON APRIL 30, 2009.
- FROM THESE COUNTS, DETERMINE THE PEAK HOURS OF STUDY WHICH WILL CAPTURE PEAK HOURS ASSOCIATED WITH WOR-WIC COMMUNITY COLLEGE AND THOSE ASSOCIATED WITH THE TRI-COUNTY COUNCIL/SHORE TRANSIT.
- CONDUCT TURNING MOVEMENT COUNTS AT THE INTERSECTION OF WALSTON SWITCH ROAD AND BEAVER RUN DRIVE DURING THE SELECTED PEAK HOURS OF STUDY.
- ► OBTAIN INFORMATION FROM SHA REGARDING TRAFFIC SIGNAL TIMING AND PHASING AT THE INTERSECTION OF US 50 AND WALSTON SWITCH ROAD.
- FIDENTIFY APPROVED DEVELOPMENTS IN THE AREA TO BE INCLUDED IN THE ANALYSIS OF BACKGROUND CONDITIONS.
- CONDUCT TRIP GENERATION AND TRIP DISTRIBUTION ANALYSES FOR THE APPROVED DEVELOPMENTS AND FOR THE PROPOSED FACILITY.
- DEVELOP TOTAL FUTURE TRAFFIC VOLUME FORECASTS FOR THE STUDY INTERSECTIONS.
- CONDUCT INTERSECTION CAPACITY ANALYSES FOR THE SELECTED PEAK HOURS OF STUDY.
- CONDUCT QUEUING ANALYSES FOR THE FOLLOWING MOVEMENTS
 - EASTBOUND US ROUTE 50 LEFT TURN ONTO NORTHBOUND WALSTON SWITCH ROAD
 - O NORTHBOUND WALSTON SWITCH ROAD LEFT TURN INTO THE SITE.
- **EVALUATE THE EXISTING TRAFFIC SIGNAL TIMING AND PHASING**
- ► IDENTIFY AND EVALUATE NEEDED IMPROVEMENTS TO ADDRESS LEVEL OF SERVICE DEFICIENCIES AND QUEUING DEFICIENCIES, IF ANY.
- PREPARE A REPORT DETAILING THE STUDY METHODOLOGY, FINDINGS, RECOMMENDATIONS, AND CONCLUSIONS.



SUMMARY OF FINDINGS AND RECOMMENDATIONS

Utilizing the Critical Lane Methodology (CLV) all of the study intersections have and are projected to have sufficient capacity for morning and evening peak hour traffic conditions. Utilizing the Highway Capacity Manual Methodology (HCM), which provides results by approach and movement, all of the study intersections operate and are projected to operate at acceptable Levels of Service for the morning and evening peak hour periods.

Queuing analyses were conducted for the left turns on US Route 50 and for the northbound left from Walston Switch Road into the site. In the field, excessive queuing was noted in the median at US Route 50; therefore, queuing analyses were conducted for the northbound and southbound left turns as well.

The results of the queuing analyses indicate that sufficient storage capacity exists and is projected for the eastbound and westbound left turns on US Route 50 for morning and evening peak hour traffic conditions. The queuing analysis for the northbound left turn from Walston Switch Road into the site indicates that less than one vehicle will be in the queue during the morning and evening total peak hour traffic conditions.

Excessive queuing was observed in the field for the northbound movement in the median on Walston Switch Road. The 95th percentile queue for this movement is presently greater than the storage capacity provided in the median, utilizing the HCM methodology and SHA methodology. There is sufficient capacity on the south leg of Walston Switch Road. However, both the northbound and southbound movements receive a green at the same time. When the queue exceeds the length of the median, vehicles may wait behind the stop bar on Walston Switch Road. An opposing left turning vehicle is either delayed unnecessarily or makes the turn in front of the vehicle waiting behind the stop bar for the queue to be reduced, while having a green indication,. Or, when the queue exceeds the length of the median, vehicles may queue into the through lanes of US Route 50, which is, of course, undesirable.

To resolve this situation, it is recommended that the northbound and southbound movements be split. A CLV analysis was conducted to determine the effect of this recommendation on capacity and sufficient capacity will be realized even if these movements are split for existing traffic volumes and for projected traffic volumes to include those generated by the Tri-County Council Multi-Purpose Center.

The data and methodology used to undertake this study is detailed in the sections that follow.



EXISTING TRAFFIC CONDITIONS

SITE INFORMATION

The Traffic Group, Inc. has conducted a Traffic Impact Analysis for the Salisbury/Wicomico County Metropolitan Organization to determine the impact on the surrounding road system of the proposed relocation of the Tri-County Council, Shore Transit, One Stop, and other agencies to a multi-purpose center located in the northwest quadrant of the intersection of US Route 50 and Walston Switch Road in Wicomico County, Maryland. The site location is provided in Exhibit 1.

STUDY AREA

The following intersections were identified to be evaluated in this study.

- US Route 50 and Walston Switch Road
- Walston Switch Road and Comtek Lane/Beaver Run Drive

<u>US Route 50 and Walston Switch Road:</u> US Route 50 is a divided highway consisting of two through lanes, one left turn lane, and one right turn lane in each direction. The speed limit on US Route 50 is 55 mph. Northbound Walston Switch Road consists of a left turn lane, a through lane, and a right turn lane. Southbound Walston Switch Road consists of a shared left/through lane and a right turn lane.

Walston Switch Road and Comtek Lane/Beaver Run Drive: This intersection is STOP controlled with the free movement on Walston Switch Road. The Northbound Walston Switch Road consists of a single lane and southbound Walston Switch Road, at this intersection, consists of a shared left/thru and a right turn lane. Both Comteck Lane and Beaver Run Drive consist of 2 lanes with a median separating the eastbound and westbound traffic.

The existing lane use and intersection control is depicted on Exhibit 2.

TRAFFIC VOLUMES

Intersection turning movement counts were collected by the Maryland State Highway Administration at the intersection of US 50 and Walston Switch Road on a weekday in April, 2009 when Wor-Wic Community College was in session. From this 12 hour count (between the hours of 7 AM and 7 PM) it was determined that the morning peak hour is between 7:15 and 8:15 AM and the evening peak hour is between 4:45 and 5:45 PM. Therefore, turning movement counts were collected at the intersection of Walston Switch Road and Comteck Lane/Beaver Run Drive during these time periods. These

Traffic Impact Analysis Tri-County Council Multi-Purpose Center Wicomico County, Maryland



peak hour traffic volumes are depicted on Exhibit 3. Condition diagrams and photo surveys are included in Appendix A of this report.

ANALYSIS OF EXISTING TRAFFIC CONDITIONS

Utilizing the Critical Lane Methodology (CLV) all of the study intersections have sufficient capacity. Utilizing the Highway Capacity Manual Methodology (HCM), which provides results by approach and movement, all of the study intersections are operating at acceptable Levels of Service for the morning and evening peak hour periods. The results of the capacity analyses are summarized in Exhibit 7.

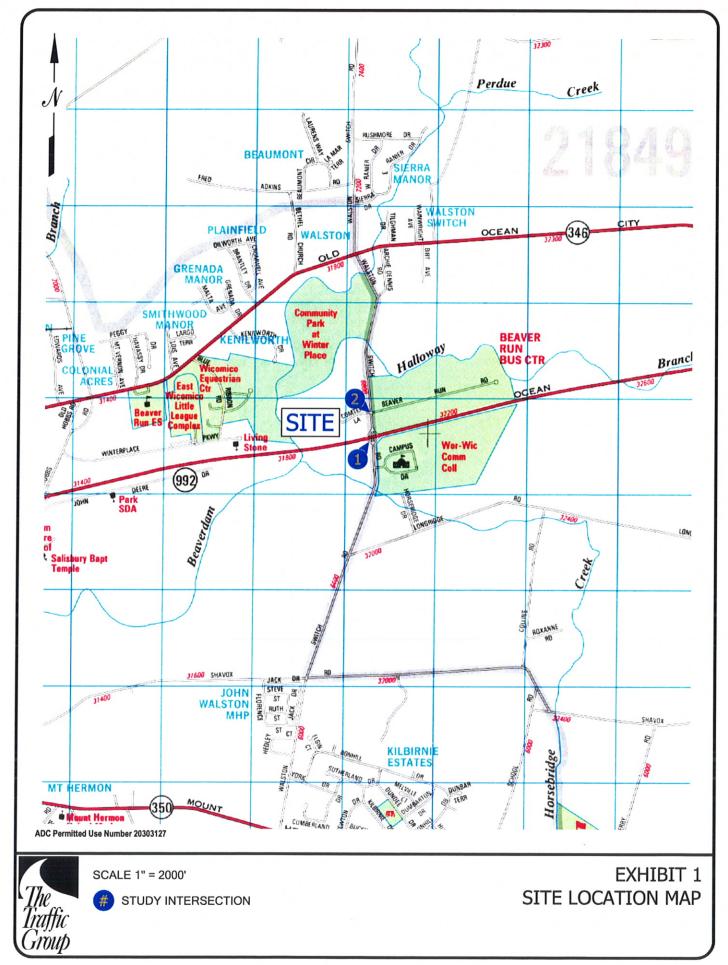
Queuing analyses were conducted for the left turns on US Route 50 and for the northbound left from Walston Switch Road into the site. In the field, excessive queuing was noted on Walston Switch Road at US Route 50; therefore, queuing analyses were conducted for the northbound and southbound left turns as well.

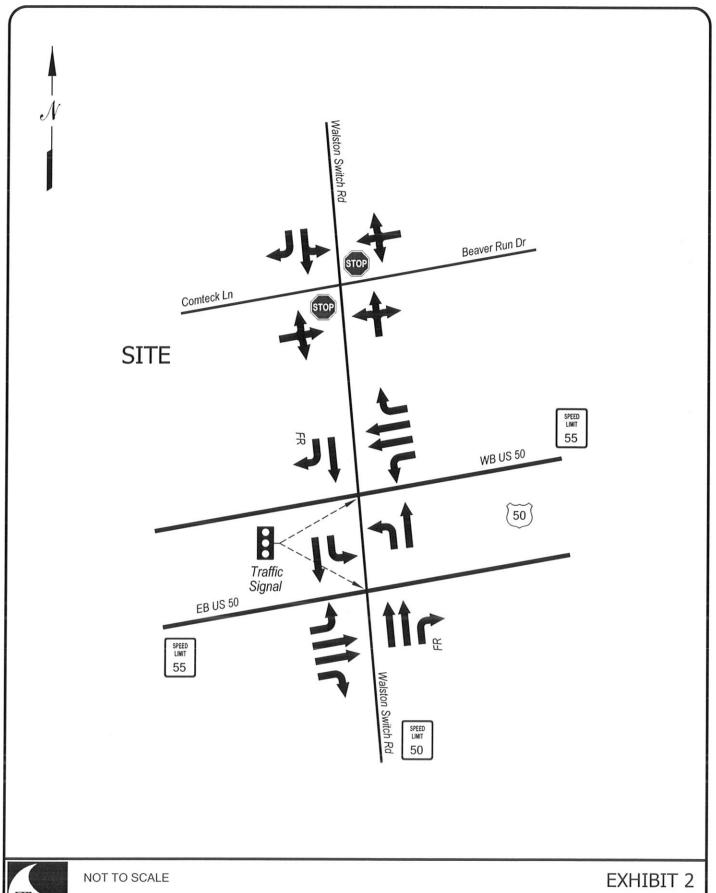
The results of the queuing analyses are provided in Exhibit 8, utilizing the HCM Methodology, and in Exhibit 9, utilizing SHA methodology for signalized intersections. Sufficient storage capacity exists for the eastbound and westbound left turns on US Route 50 for morning and evening existing peak hour traffic conditions.

However, the northbound 95th percentile queues are greater than the storage capacity provided in the median, utilizing the HCM methodology and the SHA methodology. There is sufficient capacity on the south leg of Walston Switch Road to meet the entire queue. However, both the northbound and southbound movements receive a green at the same time. When the queue exceeds the length of the median, vehicles may wait behind the stop bar on Walston Switch Road. An opposing left turning vehicle is either delayed unnecessarily or makes the turn in front of the vehicle waiting behind the stop bar for the queue to be reduced. Or, when the queue exceeds the length of the median, vehicles may queue into the through lanes of US Route 50, which is, of course, undesirable.

To resolve this situation, it is recommended that the northbound and southbound movements be split. A CLV analysis was conducted to determine the effect of this recommendation on capacity. As can be seen in Exhibit 7, sufficient capacity remains even if these movements are split.

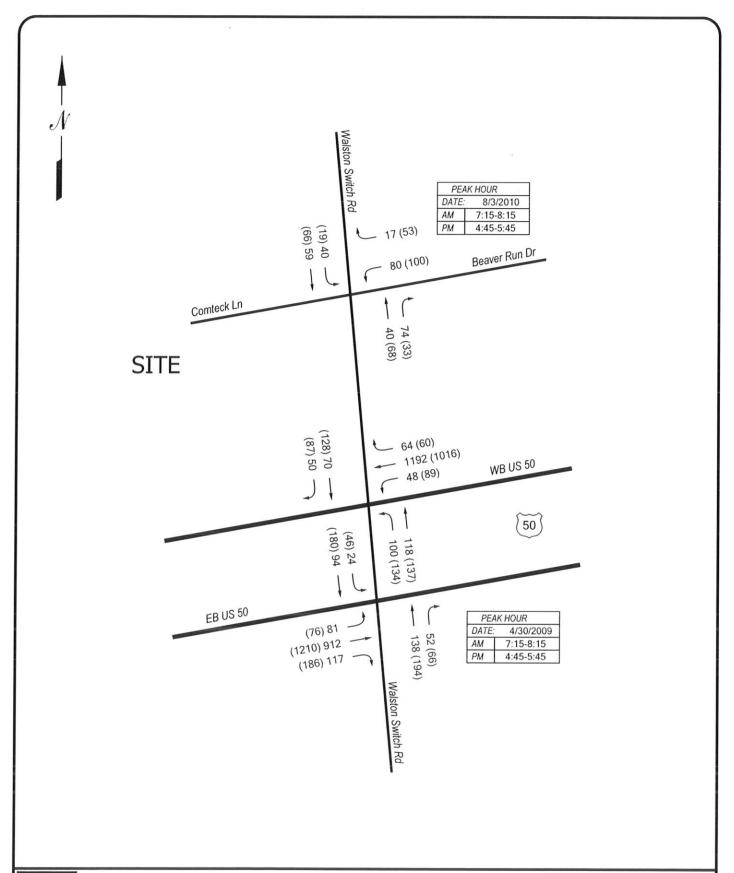








EXISTING LANE USE





NOT TO SCALE

00 - MORNING PEAK HOUR (00) - EVENING PEAK HOUR EXHIBIT 3 EXISTING PEAK HOUR TRAFFIC VOLUMES

TOTAL TRAFFIC CONDITIONS

SITE INFORMATION

The Traffic Group, Inc. has conducted a Traffic Impact Analysis for the Salisbury/Wicomico County Metropolitan Organization to determine the impact on the surrounding road system of the proposed relocation of the Tri-County Council, Shore Transit, One Stop, and other agencies to a multi-purpose center located in the northwest quadrant of the intersection of US Route 50 and Walston Switch Road in Wicomico County, Maryland..

For the purpose of this Traffic Impact Analysis, the Tri-County Council Multi-Purpose Center will consist of a 72,670 square foot facility. It was assumed that Shore Transit will operate eleven bus routes during the weekdays from this facility. Greyhound will also utilize the facility. Access will be via the existing Comteck Drive on Walston Switch Road.

TRIP GENERATION/DISTRIBUTION

It is anticipated that the various agencies will move into the facility within one year. Therefore, no regional growth was applied to the traffic volumes. There are no known approved developments in the area.

Various agencies will occupy the 72,670 square foot facility. Utilizing information from the Institute of Transportation Engineer's (ITE) Trip Generation, 8th Edition, trip generation rates were selected for the general office land use category, ITE-710. It is likely that some employees will arrive at the facility via transit; however, it was assumed that all will arrive by private vehicle, thus generating a "worse-case scenario" for analysis.

It was assumed that Shore Transit will operate eleven bus routes during the weekdays and that one bus would arrive and depart for each route during both the morning and evening peak hour periods. Given that this is a transfer facility and our knowledge of the surrounding area, it was assumed that all Shore Transit passengers would arrive by bus. Greyhound will also operate from this facility, however, none of the buses will arrive nor depart during the morning or evening peak hour period.

The peak hour traffic volumes generated by the site are summarized in Exhibit 4. These volumes were distributed to the roadway network as shown in Exhibit 5 and 5A. The peak hour traffic volumes generated by the site were then added to the existing peak hour traffic volumes to obtain the total peak hour traffic volumes as shown in Exhibit 6.

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ANALYSIS OF TOTAL TRAFFIC CONDITIONS

Utilizing the Critical Lane Methodology (CLV) all of the study intersections have sufficient capacity. Utilizing the Highway Capacity Manual Methodology (HCM), which provides results by approach and movement, all of the study intersections are projected to operate at acceptable Levels of Service for the morning and evening peak hour periods. The results of the capacity analyses are summarized in Exhibit 7.

The results of the queuing analyses are provided in Exhibit 8, utilizing the HCM Methodology, and in Exhibit 9, utilizing SHA methodology for signalized intersections. For total traffic conditions, sufficient storage capacity is projected for the eastbound and westbound left turns on US Route 50 for morning and evening total peak hour traffic conditions. As discussed in the analysis for Existing Traffic Conditions, the excessive queuing in the northbound direction would be resolved by modifying the signal phasing to provide for a split phase in these directions.

A queuing analysis was also conducted for the northbound left turn from Walston Switch Road into the site. As can be seen in Exhibit 8, the HCM methodology projects that less than one vehicle will be in the queue during the morning and evening total peak hour traffic conditions. The SHA queuing analysis methodology applies only to signalized intersections.



TRIP GENERATION FOR SUBJECT SITE

TRIP RATES / FORMULAE

IN/OUT

General Office (ksf, ITE-710)

Morning Trips = $1.55 \times ksf$

88/12

Evening Trips = 1.49 x ksf

17/83

TRIP TOTALS

MORN	IING PEA	(HOUR	EVEN	ING PEAK	HOUR
IN	OUT	TOTAL	IN	OUT	TOTAL

Tri-County Council/Shore Transit

General Office (ksf, ITE-710)

72,670 sq.ft. 99

113

90

108

Buses

11

11

14

22

11

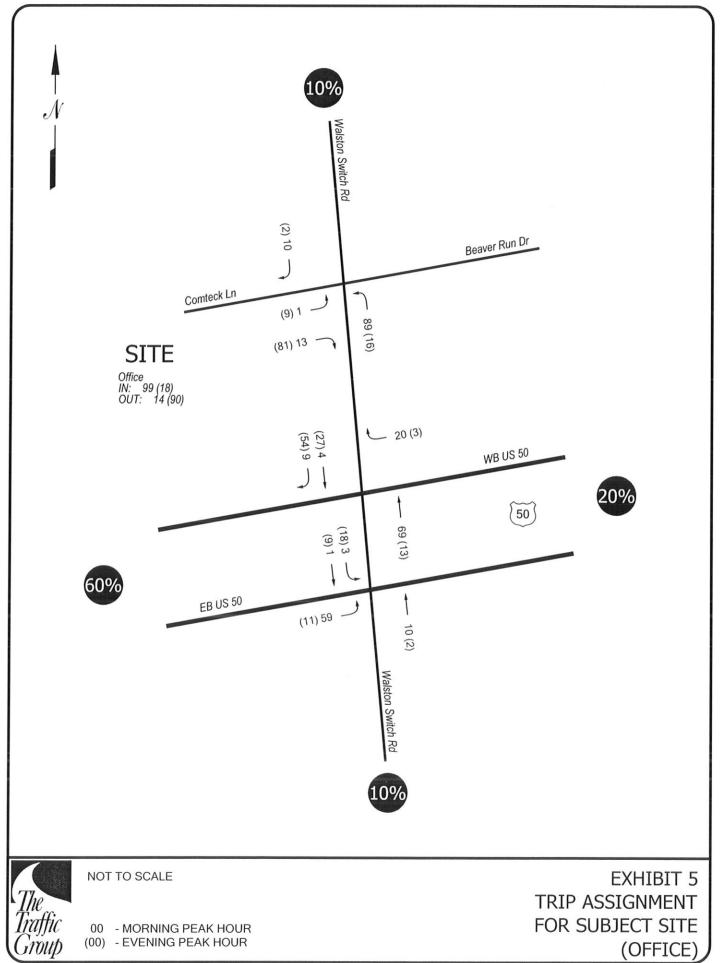
18

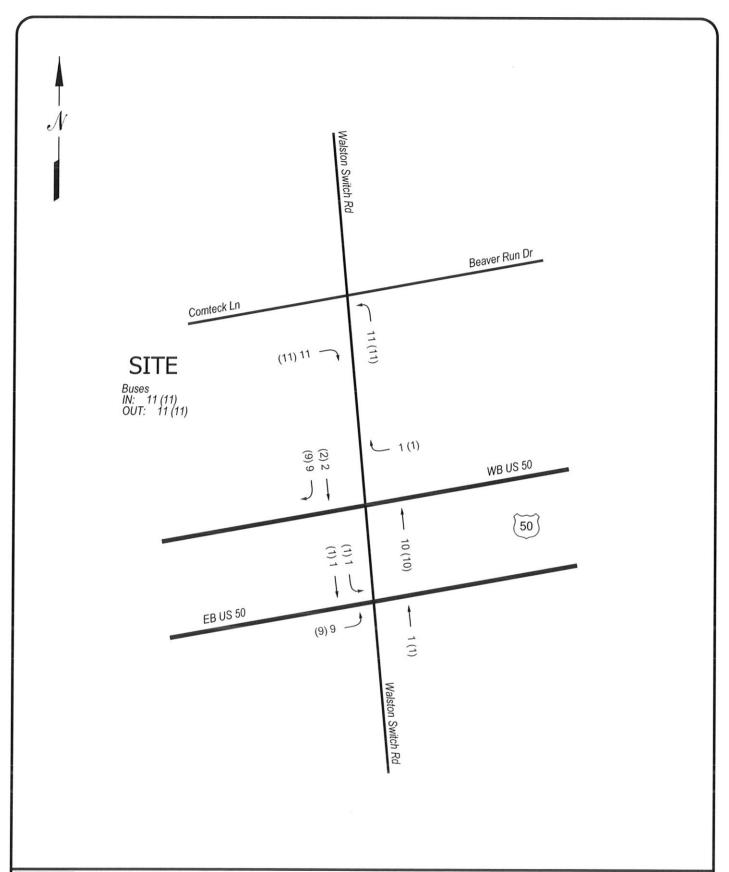
11

22



EXHIBIT 4 TRIP GENERATION FOR SUBJECT SITE

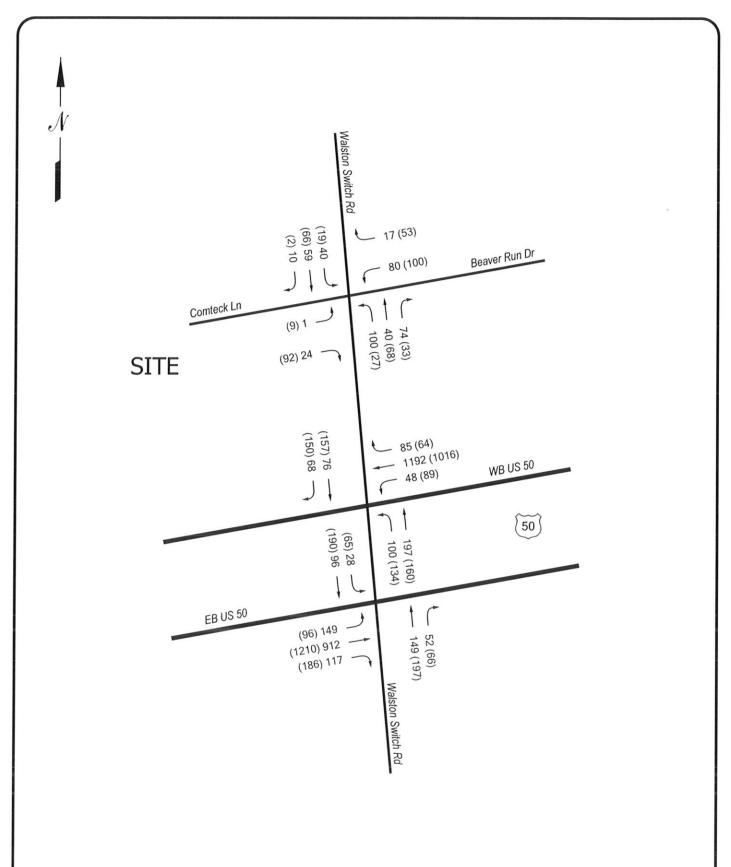






NOT TO SCALE

00 - MORNING PEAK HOUR (00) - EVENING PEAK HOUR EXHIBIT 5A TRIP ASSIGNMENT FOR SUBJECT SITE (BUSES)





NOT TO SCALE

00 - MORNING PEAK HOUR (00) - EVENING PEAK HOUR EXHIBIT 6 TOTAL PEAK HOUR TRAFFIC VOLUMES

	Existing	g Traffic	Total	Traffic
	AM	PM	AM	PM
CLV Analysis	LOS / CLV	LOS / CLV	LOS / CLV	LOS / CLV
US 50 & Walston Switch Rd - Change to N/S Split Phasing	A / 878 -	A / 970 -	A / 948 A / 948	A / 980 A / 980
2. Walston Switch Rd & Beaver Run Dr	A / 251	A / 273	A / 370	A / 352
HCM Analysis	LOS / Delay (sec)	LOS / Delay (sec)	LOS / Delay (sec)	LOS / Delay (sec)
1. US 50 & Walston Switch Rd	B / 16.7	C / 20.5	B / 19.4	C / 21.3
2. Walston Switch Rd & Beaver Run Dr				
NB LTR	A / 7.4	A / 7.4	A / 7.6	A / 7.4
SB LT	A / 7.6	A / 7.5	A / 7.6	A / 7.5
WB LTR	B / 11.0	B / 10.6	C / 15.5	B / 12.3
EB LTR	-		A / 8.9	A / 9.3



EXHIBIT 7 RESULTS OF INTERSECTION CAPACITY ANALYSES

			Ex	cistin	g Traf	fic	;		1	Fotal	Traffi	С	
			ΑN			PN			AN	1		PN	
	Storage	9	95%	√ Que	ue Ler	ıgt	h		95%	√ Que	ue Ler	ıgt	h
Intersection	Length (ft)	No. of Veh.	1	Feet	No. of Veh.	1	Feet	No. of Veh.	1	Feet	No. of Veh.	1	Feet
1. US 50 & Walston Switch Rd													
EB US 50 Left	365	5.9	1	148	5.4	1	135	10.5	I	263	7.1	I	178
WB US 50 Left	402	3.6	1	90	6.8	1	170	3.6	1	90	6.8	1	170
NB Walston Switch Rd Left	100 ¹	7.0	1	175	9.0	1	225	7.0	1	175	9.1	1	228
SB Walston Switch Rd Left	100 ¹	1.6	1	40	3.0	1	75	1.8	1	45	4.2	1	105
2. Walston Switch Rd & Beaver Run Dr													
NB Walston Switch Rd LTR	-		-			-		0.26	1	<25	0.06	1	<25

Note:

- 1. The 100 feet storage length for both the NB and SB left turn reflect the length of the left turn lanes at the median. For NB left turn, there is another 220 feet of storage length on Walston Switch Rd.
- 2. The distance between the stop line on north leg Walston Switch Rd and Comtek Dr is 370 feet.
- 3. An average vehicle length of 25 feet was assumed to obtain the 95% queue length.



EXHIBIT 8 SUMMARY OF QUEUE LENGTHS (HCM ANALYSIS)

		Existing	g Traffic	Total	Traffic
		AM	PM	AM	PM
Intersection	Storage Length (ft)		95% Queue	e Length (ft)	
1. US 50 & Walston Switch Rd					
EB US 50 Left	365	87	81	159	103
WB US 50 Left	402	51	95	51	95
NB Walston Switch Rd Left	100	102	133	102	133
SB Walston Switch Rd Left	100	26	49	30	70

Note:

- 1. The 100 feet storage length for both the NB and SB left turn reflect the length of the left turn lanes at the median. For NB left turn, there is another 220 feet of storage length on Walston Switch Rd.
- 2. The distance between the stop line on north leg Walston Switch Rd and Comtek Dr is 370 feet.



EXHIBIT 9 SUMMARY OF QUEUE LENGTHS (SHA QUEUING ANALYSIS)

RESULTS, RECOMMENDATIONS, and CONCLUSIONS

The Traffic Group, Inc. has conducted a Traffic Impact Analysis for the Salisbury/Wicomico County Metropolitan Organization to determine the impact on the surrounding road system of the proposed relocation of the Tri-County Council, Shore Transit, One Stop, and other agencies to a multi-purpose center located in the northwest quadrant of the intersection of US Route 50 and Walston Switch Road in Wicomico County, Maryland.

For the purpose of this Traffic Impact Analysis, the Tri-County Council Multi-Purpose Center will operate out of a 72,670 square foot facility. It was assumed that Shore Transit will operate eleven bus routes during the weekdays from this facility. Greyhound will also utilize the facility. Access will be via the existing Comteck Drive on Walston Switch Road.

Utilizing the Critical Lane Methodology (CLV) all of the study intersections have and are projected to have sufficient capacity for morning and evening peak hour traffic conditions. Utilizing the Highway Capacity Manual Methodology (HCM), which provides results by approach and movement, all of the study intersections operate and are projected to operate at acceptable Levels of Service for the morning and evening peak hour periods.

Queuing analyses were conducted for the left turns on US Route 50 and for the northbound left from Walston Switch Road into the site. In the field, excessive queuing was noted in the median on Walston Switch Road at US Route 50; therefore, queuing analyses were conducted for the northbound and southbound left turns as well.

The results of the queuing analyses indicate that sufficient storage capacity exists and is projected for the eastbound and westbound left turns on US Route 50 for morning and evening peak hour traffic conditions. The queuing analysis for the northbound left turn from Walston Switch Road into the site indicates that less than one vehicle will be in the queue during the morning and evening total peak hour traffic conditions.

Excessive queuing was observed in the field for the northbound movement on Walston Switch Road. The 95th percentile queue for this movement is presently greater than the storage capacity provided in the median, utilizing the HCM methodology and SHA methodology. There is sufficient capacity on the south leg of Walston Switch Road to meet the left turn storage demand. However, both the northbound and southbound movements receive a green at the same time. When the queue exceeds the length of the median, vehicles may wait behind the stop bar on Walston Switch Road. An opposing left turning vehicle is either delayed unnecessarily or makes the turn in front of the vehicle waiting behind the stop bar for the queue to be reduced, which has a green indication,. Or, when the queue exceeds the length of the median, vehicles may queue into the through lanes of US Route 50, which is, of course, undesirable.

The Tra To resolve this situation, it is recommended that the northbound and southbound movements be split. A CLV analysis was conducted to determine the effect of this recommendation on capacity and sufficient capacity will be realized even if these movements are split for existing traffic volumes and for projected traffic volumes to include those generated by the Tri-County Council Multi-Purpose Center.

Please be aware the road improvements that are detailed above have not been designed. Our recommendation for these road improvements are conceptual in nature and are based upon the mathematical computations/capacity analyses that are provided in this report. It is unlikely, at this point in the process, that The Traffic Group, Inc. has undertaken sufficient field work/design to determine the impact of the recommended road improvements on either above ground or below ground utilities, drainage conditions, or right-of-way conditions that would impact the feasibility or cost of making the improvements that we have recommended. The feasibility and cost of making these improvements will be undertaken in the next phase of our studies.



APPENDIX A

Intersection Turning Movement Counts, Condition Diagrams and Photos

Maryland State Highway Administration Highway Information Services Division Turning Movement Count Study - Field Sheet

Station ID:

S2002220013

County: Wicomico

Comments: LOS AM:A PM:A

Date:

Thursday 04/30/2009

Town: none

Location:

US 50 at WALSTON SWITCH RD (EASTBOUND)

Weather:

Interval (dd): 15 min

Begin Volume End Begin End Volume **PEAK** AM PERIOD PM PERIOD 16:45 HOURS 6:00AM-12:00PM 07:15 08:15 1418 12:00PM-19:00PM 17:45 1958

Hour			n Switch R om North	oad			Switch Ro m South	ad			50 1 East			US !		
Begin	L	т	R	тот	L	Т	R	тот	L	т	R	тот	L	т	R	тот
7:00	5	9	0	14	0	18	11	29	0	0	0	0	15	176	8	199
7:15	5	22	0	27	0	21	11	32	0	0	0	0	22	286	12	320
7:30	6	17	0	23	0	51	17	68	0	0	0	0	18	235	27	280
7:45	8	29	0	37	0	37	9	46	0	0	0	0	26	188	48	262
8:00	5	26	0	31	0	29	15	44	0	0	0	0	15	203	30	248
8:15	7	22	0	29	0	19	16	35	0	0	0	0	17	177	23	217
8:30	6	23	0	29	0	25	11	36	0	0	0	0	21	207	33	261
8:45	6	28	0	34	0	19	11	30	0	0	0	0	27	168	33	228
9:00	5	26	0	31	0	26	14	40	0	0	0	0	13	150	36	199
9:15	7	21	0	28	0	26	11	37	0	0	0	0	15	171	41	227
9:30	3	54	0	57	0	29	16	45	0	0	0	0	10	140	93	243
9:45	2	69	0	71	0	35	10	45	0	0	0	0.	13	126	139	278
10:00	7	21	0	28	0	28	11	39	0	0	0	0	14	124	34	172
10:15	5	11	0	16	0	30	8	38	0	0	0	0	14	135	16	165
10:30	3	16	0	19	0	68	6	74	0	0	0	0	20	129	24	173
10:45	5	11	0	16	0	99	21	120	0	0	0	0	6	160	11	177
11:00	3	15	0	18	0	75	11	86	0	0	0	0	15	115	18	148
11:15	7	15	0	22	0	81	8	89	0	0	0	0	16	139	13	168
11:30	9	15	0	24	0	60	10	70	0	0	0	0	12	158	18	188
11:45	6	15	0	21	0	66	10	76	0	0	0	0	23	143	26	192
12:00	3	16	0	19	0	47	9	56	0	0	0	0	15	156	31	202
12:15	6	15	0	21	0	43	12	55	0	0	0	0	19	186	25	230
12:30	5	12	0	17	0	40	5	45	0	0	0	0	11	168	24	203
12:45	6	20	0	26	0	31	15	46	0	0	0	0	16	172	32	220
13:00	3	13	0	16	0	36	8	44	0	0	0	0	18	188	31	237
13:15	3	16	0	19	0	25	2	27	0	0	0	0	23	150	40	213
13:30	9	33	0	42	0	30	6	36	0	0	0	0	13	122	62	197
13:45	2	22	0	24	0	37	7	44	0	0	0	0	9	197	69	275
14:00	5	14	0	19	0	23	6	29	0	0	0	0	17	178	29	224
14:15 14:30	7	12 10	0	13 17	0	25 53	2	27	0	0	0	0	11	209	25	245
14:45	4	19	0	23	0	63	19 12	72 75	0	0	0	0	10	195	15	220
15:00	5	13	0	18	0	58	9	67	0	0	0	0	16	229	22	267
15:15	9	23	0	32	0	46	18	64	0	0	0	0	15 16	217	20	252
15:30	4	21	0	25	0	40	9	49	0	0	0	0	19	253 247	19 24	288
15:45	3	22	0	25	0	29	10	39	0	0	0	0	12	247	14	290 270
16:00	3	27	0	30	0	39	14	53	0	0	0	0	34	276	33	343
16:15	6	31	0	37	0	47	12	59	0	0	0	0	14	303	34	351
16:30	12	36	0	48	0	68	24	92	0	0	0	0	23	213	31	267
16:45	11	34	0	45	0	53	24	77	0	0	0	0	24	306	37	367
17:00	9	55	0	64	0	43	13	56	0	0	0	0	12	331	46	389
17:15	14	52	0	66	0	54	12	66	0	0	0	0	24	302	55	381
17:30	12	39	0	51	0	44	17	61	0	0	0	0	16	271	48	335
17:45	6	34	0	40	0	44	11	55	0	0	0	0	15	220	52	287
18:00	4	36	0	40	0	34	12	46	0	0	0	0	9	202	50	261
18:15	3	23	0	26	0	33	15	48	0	0	0	0	7	218	54	279
18:30	5	23	0	28	0	39	2	41	0	0	0	0	16	167	14	197
18:45	1	19	0	20	0	42	18	60	0	0	0	0	6	159	21	186
TOTAL	271	1155	0	1426	0	2008	560	2568	0	0	0	0	772	9409	1640	11821
AM Peak	24	94	0	118	0	138	52	190	0	0	0	0	81	912	117	1110
PM Peak	46	180	0	226	0	194	66	260	0	0	0	0	76	1210	186	1472

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_		Grand Total	
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0	1	371	J
2	1	345	J
8	1	323	l
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1	1	326	ļ
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9	1	270	١
7	-	292	١
3	1	345	ļ
8	1	394	ļ
2	-	239	ļ
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7		275	۱
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5		285	١
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_		THE RESERVE AND ADDRESS OF THE PARTY OF THE	ı

Station ID:

S2002220013

Thursday 04/30/2009

County: Wicomico

none

Comments: LOS AM:A PM:A

Date: Location:

US 50 at WALSTON SWITCH RD (EASTBOUND)

Town: Weather:

Interval (dd): 15 min

Begin End Volume Begin End Volume PEAK PM PERIOD 12:00PM-19:00PM AM PERIOD 6:00AM-12:00PM 07:15 08:15 1418 HOURS 16:45 17:45 1958

Hour	Wal	ston Switch North Leg	Road	Wa	Iston Switch R South Leg	load			US 50 East Leg				US 50 West Leg	
Ending	s.c.	PED.	U.T.	s.c.	PED.	U.T.		s.c.	PED.	U.T.		s.c.	PED.	U.T.
7:00	0	0	0		0	0	1	0	0	0		0	0	0
7:15	0	0	0		0	0		0	0	0		0	0	0
7:30	0	0	0	7 77 (0	0		0	0	0		0	0	0
7:45	0	0	0	(0	0		0	0	0		0	0	0
8:00	0	0	0	(0	0		0	0	0		0	0	. 0
8:15	0	0	0	(0	0		0	0	0		0	0	0
8:30	0	0	0	(0		0	0	0		0	0	0
8:45	0	0	0	(0		0	0	0		0	0	0
9:00	0	0	0	(0		0	0	0		0	0	0
9:15	0	0	0	(0		0	0	0		0	0	0
9:30	0	0	0	(0		0	0	0		0	0	0
9:45	0	0	0	(0		0	0	0		0	0	0
10:00	0	0	0	(0		0	0	0		0	0	0
10:15	0	0	0	(_	0		0	0	0		0	0	0
10:30 10:45	0	0	0	0		0		0	0	0		0	0	0
11:00	0	0	0			0			0	0		0	0	0
11:15	0	0	0			0		0	0	0		0	0	0
11:30	0	0	0			0		0	0	0		0	0	0
11:45	0	0	0	0		0		0	0	0		0	0	0
12:00	0	0	0			0		0	0	0	1	0	0	0
12:15	0	0	0	0	_	0		0	0	0	1	0	0	0
12:30	0	0	0	0	_	0		0	0	0	1	0	0	0
12:45	0	0	0	0		0		0	0	0	Ì	0	0	0
13:00	0	0	0	0		0		0	0	0	1	0	0	0
13:15	0	0	0	0	_	0		0	0	0	- 1	0	0	0
13:30	0	0	0	0	0	0		0	0	0	- 1	0	0	0
13:45	0	0	0	0	0	0		0	0	0	- 1	0	0	0
14:00	0	0	0	0	0	0		0	0	0	[0	0	0
14:15	0	0	0	0	0	0		0	0	0	[0	0	0
14:30	0	0	0	0	0	0		0	0	0	[0	0	0
14:45	0	0	0	0	0	0		0	0	0		0	0	0
15:00	0	0	0	0	0	0		0	0	0	- [0	0	0
15:15	0	0	0	0	0	0	- 1	0	0	0	-	0	0	0
15:30	0	0	0	0		0		0	0	0	ļ	0	0	0
15:45	0	0	0	0	0	0	-	0	0	0		0	0	0
16:00	0	0	0	0	0	0		0	0	0	-	0	0	0
16:15	0	0	0	0		0	-	0	0	0	-	0	0	0
16:30	0	0	0	0		0	-	0	0	0	- 1	0	0	0
16:45	0	0	0	0		0		0	0	0	- 1	0	0	0
17:00	0	0	0	0	_	0		0	0	0	-	0	0	0
17:15	0	0	0	0	+	0	+	0	0	0	-	0	0	0
17:30 17:45	0	0	0	0			ł	0	0	0	-	0	0	0
18:00	0	0	0	0		0	ł	0	0	0	- 1	0	0	0
18:15	0	0	0	0	0	0	ł	0	0	0	ŀ	0	0	0
18:30	0	0	0	0		0	ł	0	0	0	ŀ	0	0	0
18:45	0	0	0	0		0	ł	0	0	0	- 1	0	0	0
Total	0	0	0	0		0	ŀ	0	0	0	- 1	0	0	0
AM Peak	0	0	0	0	STREET, SQUARE, SQUARE	0	1	0	0	0	ŀ	0	0	0
PM Peak	0	0	0	0	-	0	ı	0	0	0	t	0	0	0

Station ID:

Date:

Location:

S2002220013

Thursday 04/30/2009 US 50 at WALSTON SWITCH RD (EASTBOUND) County:

Weather:

Wicomico Town: none

Comments: LOS AM:A PM:A

Interval (dd): 15 min Begin End Volume Begin End Volume PEAK AM PERIOD PM PERIOD 6:00AM-12:00PM 07:15 08:15 1418 16:45 17:45 1958 HOURS 12:00PM-19:00PM 4206 † 1426 2780 **Turning Movement Summary** LEG 1 **Walston Switch Road** T 1 Quadrant 772 R 🗻 ULT 271 Quadrant 1155 271 0 0 0 R 0 772 0 _ T S US 50 LEG 3 11821 10240 0 9409 U 11821 1640 0 10240 0 2008 560 0 Quadrant 1640 U t L т R 📂 560 Quadrant † Walston Switch Road LEG 2 2795 2568 t 5363 337 **AM Peak Hour** 118 219 LEG 1 **Walston Switch Road** U I T Quadrant 81 Т † L 24 Quadrant 0 94 24 0 0 0 0 0 81 US 50 0 US 50 LEG LEG 3 988 1110 912 0 1110 988 117 0 0 138 52 Quadrant υt Т Quadrant 117 R ┌─ 52 **Walston Switch Road** LEG 2 211 190 401 496 t PM Peak Hour 226 270 LEG 1 Walston Switch Road Quadrant 76 Т L ULT 46 Quadrant 180 46 0 0 0 0 0 0 76 T US 50 US 50 LEG 4 LEG 3 1472 1322 0 1210 **₽**U 1472 0 186 1322 194 66 186 Quadrant U R -Quadrant t L 4 66 Т † Walston Switch Road LEG 2 † 366 260

626

Maryland State Highway Administration Highway Information Services Division Turning Movement Count Study - Field Sheet

Station ID:

S2002220014

County: Wicomico

Comments: LOS AM:A PM:A (no pedestrians)

Date:

Thursday 04/30/2009

Town: none

Location: US 50 at WALSTON SWITCH RD (WESTBOUND

Weather:

Interval (dd): 15 min

Begin End Volume Begin End Volume AM PERIOD 6:00AM-12:00PM PEAK PM PERIOD 07:15 08:15 1642 HOURS 12:00PM-19:00PM 16:30 17:30 1664

7:00 7:15	L	т	1				m South			Fron	n East			From \	West		Grand Total
			R	тот	L	т	R	тот	L	т	R	тот	L	Т	R	тот	Total
7:15	0	10	6	16	13	20	0	33	4	171	6	181	0	0	0	0	230
CONTRACTOR SHAPE S	0	19	14	33	12	30	0	42	8	267	13	288	0	0	0	0	363
7:30	0	15	9	24	37	32	0	69	9	328	19	356	0	0	0	0	449
7:45	0	19	16	35	27	36	0	63	17	341	18	376	0	0	0	0	474
8:00	0	17	11	28	24	20	0	44	14	256	14	284	0	0	0	0	356
8:15	0	15	7	22	13	23	0	36	14	236	19	269	0	0	0	0	327
8:30	0	20	14	34	15	31	0	46	9	231	9	249	0	0	0	0	329
8:45	0	21	25	46	17	29	0	46	13	223	8	244	0	0	0	0	336
9:00	0	15	13	28	19	20	0	39	16	193	9	218	0	0	0	0	285
9:15	0	15	21	36	20	21	0	41	13	201	7	221	0	0	0	0	298
9:30	0	16	11	27	21	18	0	39	41	183	10	234	0	0	0	0	300
9:45	0	25	8	33	25	24	0	49	46	178	9	233	0	0	0	0	315
10:00	0	11	15	26	23	19	0	42	17	178	5	200	0	0	0	0	268
10:15	0	6	15	21	25	19	0	44	5	188	7	200	0	0	0	0	265
10:30	0	14	17	31	52	36	0	88	5	198	6	209	0	0	0	0	328
10:45	0	10	20	30	81	24	0	105	6	181	9	196	0	0	0	0	331
11:00	0	12	18	30	62	28	0	90	6	157	9	172	0	0	0	0	292
11:15	0	16	18	34	52	43	0	95	6	176	9	191	0	0	0	0	320
11:30	0	17	18	35	47	26	0	73	7	170	4	181	0	0	0	0	289
11:45	0	12	23	35	56	33	0	89	9	159	7	175	0	0	0	0	299
12:00	0	11	29	40	36	26	0	62	8	189	12	209	0	0	0	0	311
12:15	0	16	20	36	32	30	0	62	5	185	9	199	0	0	0	0	297
12:30	0	13	23	36	31	20	0	51	5	211	8	224	0	0	0	0	311
12:45	0	15	15	30	28	19	0	47	10	190	6	206	0	0	0	0	283
13:00	0	7	19	26	25	29	0	54	6	175	13	194	0	0	0	0	274
13:15	0	13	13	26	20	28	0	48	6	158	8	172	0	0	0	0	246
13:30	0	27	21	48	24	19	0	43	14	186	6	206	0	0	0	0	297
13:45	0	15	17	32	32	14	0	46	9	172	11	192	0	0	0	0	270
14:00	0	11	18	29	17	23	0	40	8	165	5	178	0	0	0	0	247
14:15	0	7	23	30	21	15	0	36	6	199	7	212	0	0	0	0	278
14:30 14:45	0	13	13 12	22	45 53	18 26	0	63 79	5 10	195 189	5	205	0	0	0	0	290
15:00	0	15	21	36	56	18	0	79	4	231	12	211	0	0	0	0	315
15:15	0	20	19	39	37	26	0	63	12	219	11 5		0		0	0	356
15:30	0	14	13	27	29	30	0	59	11	219	10	236 257	0	0	0	0	338
15:45	0	11	19	30	29	19	0	41	14	255	8	257	0	0	0	0	343
16:00	0	19	28	47	31	42	0	73	11	241	5	257	0	0	0	0	348
16:15	0	20	20	40	32	29	0	61	19	257	20	296	0	0	0	0	397
16:30	0	28	27	55	56	35	0	91	20	234	17	271	0	0	0	0	417
16:45	0	26	14	40	32	45	0	77	17	263	17	297	0	0	0	0	414
17:00	0	32	32	64	30	25	0	55	24	237	15	276	0	0	0	0	395
17:15	0	41	25	66	38	41	0	79	26	254	13	293	0	0	0	0	438
17:30	0	29	16	45	34	26	0	60	22	262	15	299	0	0	0	0	404
17:45	0	23	22	45	33	24	0	57	16	215	7	238	0	0	0	0	340
18:00	0	19	11	30	27	16	0	43	21	141	10	172	0	0	0	0	245
18:15	0	9	8	17	23	17	0	40	17	184	14	215	0	0	0	0	272
18:30	0	15	19	34	20	35	0	55	14	159	10	183	0	0	0	0	272
18:45	0	10	9	19	31	17	0	48	10	144	10	164	0	0	0	0	231
TOTAL	0	793	825	1618	1536	1244	0	2780	615	9961	486	11062	0	0	0	0	15460
AM Peak	0	70	50	120	100	118	0	218	48	1192	64	1304	0	0	0	0	1642
PM Peak	0	127	98	225	156	146	0	302	87	988	62	1137	0	0	0	0	1664

Station ID:

S2002220014 Thursday 04/30/2009

County: Town:

Comments: LOS AM:A PM:A (no pedestrians)

Date: Location:

US 50 at WALSTON SWITCH RD (WESTBOUND

Weather:

Interval (dd):	15									
Interval (dd):	15 min	PEAK	AM PERIOD	Begin	End	Volume	PM PERIOD	Begin	End	Volume
		HOURS	6:00AM-12:00PM	07:15	08:15	1642	12:00PM-19:00PM	16:30	17:30	1664

	Wale	ton Switch I		Г	Walet	on Switch R	00:15	1042	12:00PM-19	US 50	16:30 17:3		1664	US 50	
Hour	L .	North Leg		L		South Leg				East Leg				West Leg	
Ending	S.C.	PED.	U.T.	\perp	s.c.	PED.	U.T.		S.C.	PED.	U.T.		s.c.	PED.	U.T.
7:00	0	0	0	-	0	0	0	END (\$100 at	0	0	0	0.72.5%	0	0	0
7:15	0	0	0		0	0	0		0	0	0		. 0	0	0
7:30	0	0	0		0	0	0		0	0	0		0	0	. 0
7:45	0	0	0	-	0	0	0		0	0	0	1	0	0	0
8:00	0	0	0	-	0	0	0		0	0	0	10.00	0	0	0
8:15	0	0	0	\vdash	0	0	0		0	0	0		0	0	0
8:30	0	0	0	\vdash	0	0	0		0	0	0		0	0	0
8:45	0	0	0	\vdash	0	0	0		0	0	0		0	0	0
9:00 9:15	0	0	0	\vdash	0	0	0		0	0	0		0	0	0
9:15	0	0	0	\vdash	0	0	0		0	0	0		0	0	0
9:30	0	0	0	\vdash	0	0	0		0	0	0		0	0	0
10:00	0	0	0	\vdash	0	0	0		0	0	0		0	0	0
10:00	0	0	0	\vdash	0	0	0.		0	0	0		0	0	0
10:30	0	0	0		0	0	0		0	0	0		0	0	0
10:45	0	0	0	\vdash	0	0	0		0	0	0		0	0	0
11:00	0	0	0		0	0	0		0	0	0		0	0	0
11:15	0	0	0	\vdash	0	0	0		0	0	0		0	0	0
11:30	0	0	0		0	0	0		0	0	0		0	0	0
11:45	0	0	0		0	0	0		0	0	0		0	0	0
12:00	0	0	0		0	0	0		0	0	0		0	0	0
12:15	0	0	0		0	0	0		0	0	0		0	0	0
12:30	0	0	0		0	0	0		0	0	0		0	0	0
12:45	0	0	0		0	0	0		0	0	0		0	0	0
13:00	0	0	0		0	0	0		0	0	0		0	0	0
13:15	0	0	0		0	0	0		0	0	0		0	0	0
13:30	0	0	0		0	0	0		0	0	0		0	0	0
13:45	0	0	0	L	0	0	0		0	0	0		0	0	0
14:00	0	0	0	\perp	0	0	0		0	0	0		0	0	0
14:15	0	0	0	\perp	0	0	0		0	0	0		0	0	0
14:30	0	0	0	\vdash	0	0	0	- 1	0	0	0		0	0	0
14:45	0	0	0	\vdash	0	0	0	- 1	0	0	0	- 1	0	0	0
15:00	0	0	0	\vdash	0	0	0	- 1	0	0	0		0	0	0
15:15	0	0	0	\vdash	0	0	0	- 1	0	0	0		0	0	0
15:30	0	0	0	\vdash	0	0	0		0	0	0		0	0	0
15:45	0	0	0	\vdash	0	0	0	ļ	0	0	0		0	0	0
16:00	0	0	0	\vdash	0	0	0	-	0	0	0		0	0	0
16:15	0	0	0	\vdash	0	0	0	+	0	0	0		0	0	0
16:30	0	0	0	-	0	0	0		0	0	0		0	0	0
16:45	0	0	0	-	0	0	0	+	0	0	0		0	0	0
17:00 17:15	0	0	0	-	0	0	0	+	0	0	0		0	0	0
17:15	0	0	0	\vdash	0	0	0	+	0	0	0		0	0	0
17:30	0	0	0	\vdash	0	0	0	ł	0	0	0			0	0
18:00	0	0	0	\vdash	0	0	0	ł	0	0	0		0	0	0
18:15	0	0	0		0	0	0	ł	0	0	0	ł	0	0	0
18:15	0	0	0	\vdash	0	0	0	+	0	0	0	ł	0	0	0
18:45	0	0	0		0	0	0	+	0	0	0	ł	0	0	0
Total	0	0	0		0	0	0	ŀ	0	0	0	ł	0	0	0
AM Peak	0	0	0		0	0	0	Ì	0	0	0	1	0	0	0
PM Peak	0	0	0		0	0	0	ı	0	0	0	ı	0	0	0

Station ID: S2002220014 County: Wicomico Comments: LOS AM:A PM:A (no pedestrians)

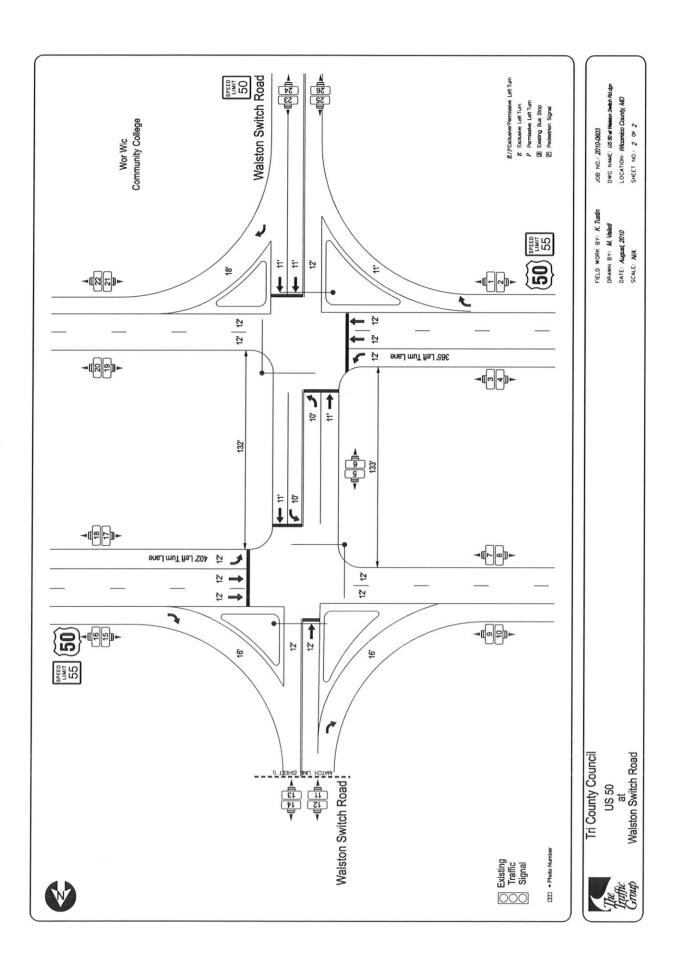
Weather:

Thursday 04/30/2009 none US 50 at WALSTON SWITCH RD (WESTBOUND

Location:

Interval (dd): 15 min Begin Begin End Volume End Volume PEAK AM PERIOD PM PERIOD HOURS 6:00AM-12:00PM 07:15 08:15 1642 12:00PM-19:00PM 16:30 17:30 1664 3348 † **Turning Movement Summary** 1618 1730 LEG 1 Walston Switch Road Quadrant 825 R 🚁 UIT 486 Quadrant 825 793 0 0 12322 0 486 11062 9961 0 _ T LEG 4 US 50 LEG 3 12322 11062 0 615 0 0 U 0 0 0 1536 1244 0 Quadrant 1536 U £ L т R ┌─ 615 Quadrant † Walston Switch Road LEG 2 1408 2780 Ť 4188 302 **AM Peak Hour** 120 182 LEG 1 **Walston Switch Road** Quadrant R т L L 64 UIT Quadrant 50 70 50 0 1342 0 1304 U R 64 0 1192 US 50 US 50 LEG 3 1304 1342 0 48 0 0 0 0 100 118 0 0 Quadrant 100 υţ Т R 📑 48 Quadrant **Walston Switch Road** LEG 2 118 218 336 433 † PM Peak Hour 225 208 LEG 1 Walston Switch Road Quadrant 98 UIT 62 Quadrant R Т L 127 98 0 0 U 👍 1242 0 1137 0 988 LEG 4 US 50 US 50 LEG 3 1242 1137 87 0 0 0 0 0 0 156 146 0 Quadrant 156 U t L 4 T R -87 Quadrant † Walston Switch Road LEG 2 † 214 302

516























































VEHICLE TURNING MOVEMENT COUNT - SUMMARY

Intersection of: Walston Switch Road and: Beaver Run Drive Location: Wicomico County, MD Counted by: EL

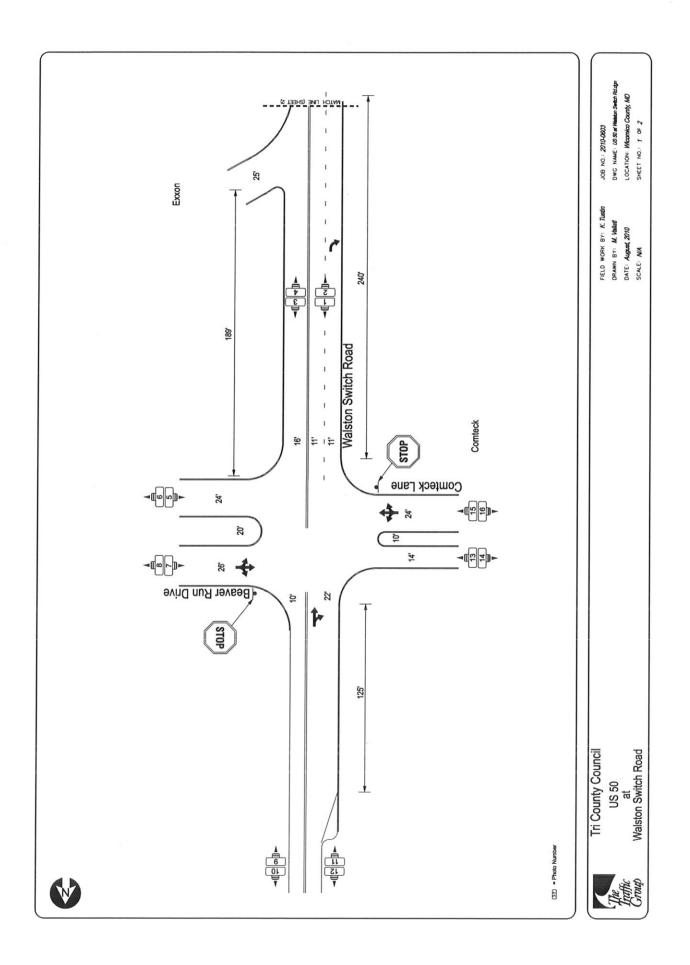
Date: August 3, 2010 Weather: Clear, 70s to 90s

Entered by: KT

Day: Tuesday



		TRAFF	IC FROM	NORTH			TRAFF	IC FROM	SOUTH			TRA	FFIC FRO	M EAST			TRA	FFIC FRO	M WEST		тот
TIME	on:	Walston	Switch F	Road		on:	Walston	Switch I	Road		on	: Beave	r Run Dri	ve		on	: Beave	r Run Dri	ive		N +
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	E+
AM																					
07:0-15					0					0					0					0	
15-30	0	12	9	0	21	22	5	0	0	27	5	0	19	0	24	0	0	0	0	0	7
30-45	0	9	8	0	17	10	13	0	0	23	6	0	24	0	30	0	0	0	0	0	7
45-00	0	23	14	0	37	23	12	0	0	35	4	0	17	0	21	0	0	0	0	0	9
08:0-15	0	15	9	0	24	19	10	0	0	29	2	0	20	0	22	0	0	0	0	0	1 7
15-30					0					0					0					0	
30-45					0					0					0					0	
45-00					0					0					0					0	١,
2 Hr Totals	0	59	40	0	99	74	40	0	0	114	17	0	80	0	97	0	0	0	0	0	3
1 Hr Totals																					
07-08																					
715-815	0	59	40	0	99	74	40	0	0	114	17	0	80	0	97	0	0	0	0	0	3
730-830											333		503	- 5	153		500		1070	182	
745-845																					
08-09																					
PEAK HOUR																					
715-815	0	59	40	0	99	74	40	0	0	114	17	0	80	0	97	0	0	0	0	0	3
PM								100000													
04:0-15					0					0					0					0	
15-30					0					0					0					0	
30-45					0					0					0					0	
45-00	0	11	6	0	17	12	5	0	0	17	11	0	30	0	41	0	0	0	0	0	7
05:0-15	0	14	2	0	16	7	17	0	0	24	19	0	24	0	43	0	0	0	0	0	8
15-30	0	22	5	0	27	10	19	0	0	29	12	0	24	0	36	0	0	0	0	0	9
30-45	0	19	6	0	25	4	27	0	0	31	11	0	22	0	33	0	0	0	0	0	8
45-00					0					0					0					0	(
2 Hr Totals	0	66	19	0	85	33	68	0	0	101	53	0	100	0	153	0	0	0	0	0	33
1 Hr Totals																					
04-05																					
415-515																					
430-530																					(
445-545	0	66	19	0	85	33	68	0	0	101	53	0	100	0	153	0	0	0	0	0	33
05-06																					
EAK HOUR																					
445-545	0	66	19	0	85	33	68	0	0	101	53	0	100	0	153	0	0	0	0	0	33



































APPENDIX B

Intersection Capacity Analysis
CLV Methodology
HCM Methodology

myc, 100603\clv\1.xls-exist, f08/27/10

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

E/W Road: US 50

N/S Road: Walston Switch Rd

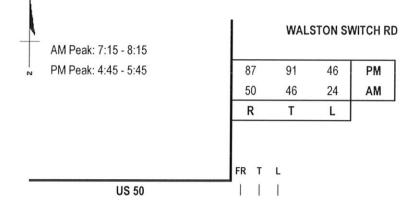
Conditions: Existing Traffic

Date of Count: 4/30/2009

Day of Count: Thursday

Analyst: Ming-Yu Chien





	2.10/08/2007	11-40-11-11-11	
— R	R	64	60
— T	T	1192	1016
— Т	L	48	89
— L		AM	PM

US 50

L —		AM	PM
T —	L	81	76
T —	Т	912	1210
R —	R	117	186

L T FR

L T R

AM 95 43 52

PM 124 71 66

WALSTON SWITCH RD

Capacity Analysis

Morning Peak Hour									
	Thru Volumes		Volumes + Opposing Lefts						
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV		
NB	43	1.00	43	24	1.00	24			
							141		
SB	46	1.00	46	95	1.00	95			
EB	912	0.55	502	48	1.00	48			
							737		
WB	1192	0.55	656	81	1.00	81			

CLV TOTAL= 878
Level of Service (LOS)= A

AM V/C =0.55

	Evening Peak Hour									
\Box	Thru Volumes			Thru Volumes + Opposing Lefts			PM			
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV			
NB	71	1.00	71	46	1.00	46				
$ \ $							215			
SB	91	1.00	91	124	1.00	124				
ЕВ	1210	0.55	666	89	1.00	89				
							755			
WB	1016	0.55	559	76	1.00	76				

CLV TOTAL= 970

Level of Service (LOS)= A

myc, 100603\clv\1.xls-total, f08/27/10

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

E/W Road: US 50

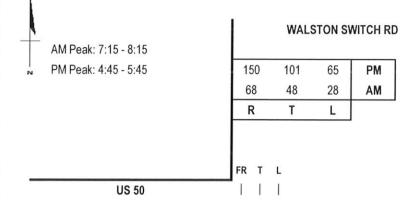
N/S Road: Walston Switch Rd

Conditions: Total Traffic

Date of Count: 4/30/2009 Day of Count: Thursday

Analyst: Ming-Yu Chien





 R
 R
 85
 64

 — T
 T
 1192
 1016

 — T
 L
 48
 89

 — L
 AM
 PM

US 50

	AM	PM
L	149	96
т	912	1210
R	117	186

L T FR

| L T R |
| AM 95 54 52 |
| PM 124 74 66 |
| WALSTON SWITCH RD

Capacity Analysis

			Mornin	g Peak Ho	ur		
	Thru Volumes			+ Opposing Lefts			AM
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	54	1.00	54	28	1.00	28	
							143
SB	48	1.00	48	95	1.00	95	
EB	912	0.55	502	48	1.00	48	
							805
WB	1192	0.55	656	149	1.00	149	

CLV TOTAL= 948

Level of Service (LOS) = A

AM V/C = 0.59

	Evening Peak Hour									
	Thru Volumes			Thru Volumes + Opposing Lefts			PM			
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV			
NB	74	1.00	74	65	1.00	65				
							225			
SB	101	1.00	101	124	1.00	124				
EB	1210	0.55	666	89	1.00	89				
							755			
WB	1016	0.55	559	96	1.00	96				

CLV TOTAL= 980

Level of Service (LOS)= A

CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Prince Georges County

E/W Road: US 50

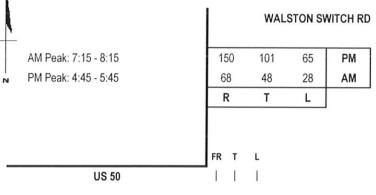
N/S Road: Walston Switch Rd

Conditions: Total Traffic

Date of Count: 4/30/2009 Day of Count: Thursday

Analyst: Ming-Yu Chien





- change to N/S Split phasing

— L		AM	PM
_T	L	48	89
т	T	1192	1016
— R	R	85	64

US 50

L		AM	PM
T	L	149	96
T	т	912	1210
R	R	117	186

T FR T R 52 PM 124 74 66 WALSTON SWITCH RD

Capacity Analysis - North/South Split

			Mornin	g Peak Ho	our		
	Thru Volumes		Thru Volumes + Opposing Lefts				
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	95	1.00	95				95
SB	48	1.00	48				48
EB	912	0.55	502	48	1.00	48	805
WB	1192	0.55	656	149	1.00	149	

CLV TOTAL= Level of Service (LOS)=

AM V/C =0.59

			Evening	g Peak Ho	our		
	Т	hru Volur	nes	+	Opposing	Lefts	PM
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	124	1.00	124				124
SB	101	1.00	101				101
EB	1210	0.55	666	89	1.00	89	755
WB	1016	0.55	559	96	1.00	96	
					CLV TOT	Δ1 =	980

Level of Service (LOS)=

myc, 100603\clv\3.xls-clv, f08/27/10

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

E/W Road: Beaver Run Dr/Comteck Ln

N/S Road: Walston Switch Rd

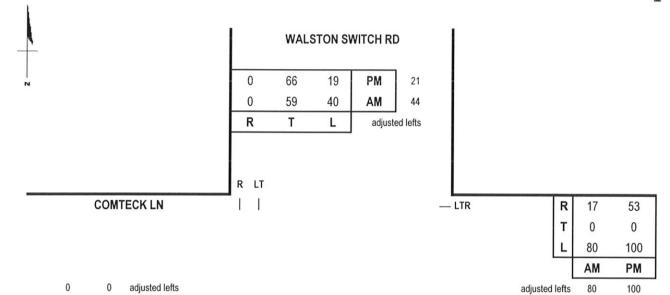
Conditions: Existing Traffic

Date of Count: 8/3/2010 Day of Count: Tuesday

Analyst: Ming-Yu Chien

LTR





	0	0	adjusted lefts
Г	DM	A BA	7

		AM	PM	ı
	L	0	0	ſ
	Т	0	0	l
LTR	R	0	0	

BEAVER RUN DR

djusted l	lefts	L	T	R
0	AM	0	40	74
0	PM	0	68	33

Capacity Analysis

Scenario ID - EXIST3

	Morning Peak Hour														
П		Thru Volu	mes	+0	pposing	Lefts	AM								
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV								
NB	114	1.00	114	40	1.00	40									
							154								
SB	103	1.00	103	0	1.00	0									
EB	0	1.00	0	80	1.00	80									
							97								
WB	97	1.00	97	0	1.00	0									

 CLV TOTAL=
 251

 Level of Service (LOS)=
 A

AM V/C =0.16

	Evening Peak Hour														
	Т	hru Volur	nes	+ 0)pposing	Lefts	PM								
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV								
NB	101	1.00	101	19	1.00	19									
							120								
SB	87	1.00	87	0	1.00	0									
EB	0	1.00	0	100	1.00	100									
Ш							153								
WB	153	1.00	153	0	1.00	0									

CLV TOTAL= 273
Level of Service (LOS)= A

myc, 100603\clv\3.xls-clv, f08/27/10

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

E/W Road: Beaver Run Dr/Comteck Ln

N/S Road: Walston Switch Rd

Conditions: Total Traffic

Date of Count: 8/3/2010 Day of Count: Tuesday

Analyst: Ming-Yu Chien

LTR

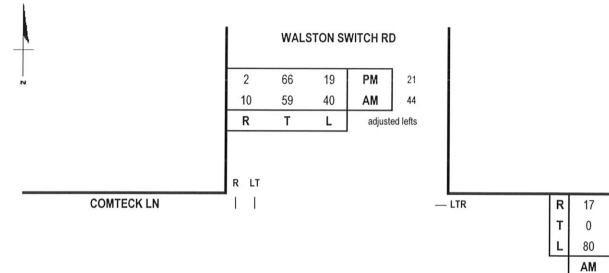


53

0

100 **PM**

110



10 1 adjusted lefts
PM AM

9 1 L 0 0 T 92 24 R

BEAVER RUN DR

adjusted lefts

adjusted lefts L T R

110 AM 100 40 74

30 PM 27 68 33

WALSTON SWITCH RD

Capacity Analysis

Scenario ID - TOT3

	Morning Peak Hour														
		Thru Volu	mes	+ 0)pposing	Lefts	AM								
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV								
NB	224	1.00	224	40	1.00	40									
							264								
SB	103	1.00	103	100	1.00	100									
EB	25	1.00	25	80	1.00	80									
							106								
WB	105	1.00	105	1	1.00	1									

 CLV TOTAL=
 370

 Level of Service (LOS)=
 A

LTR —

AM V/C =0.23

	Evening Peak Hour														
	T	hru Volur	mes	+ C	pposing	Lefts	PM								
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV								
NB	131	1.00	131	19	1.00	19									
							150								
SB	87	1.00	87	27	1.00	27									
EB	102	1.00	102	100	1.00	100									
							202								
WB	163	1.00	163	9	1.00	9									

CLV TOTAL= 352
Level of Service (LOS)= A

					HCS	3+™ D	FT	AILE	-D	RFI	201	RT								
General Info	rmation											rmati	ion							1000
Analyst Agency or Co Date Perform Time Period									,	Inters Area Juriso	ecti Typ dictions	on e on Year	V E	All oth Vicon Existin	unty Co	s unty,	MD			
Volume and	Timing Input													ransı						
	J,				EB				NO SOME	WB			T		NB				SB	
			LT		TH	RT		LT		TH		RT		LT	TH		RT	LT	TH	RT
Number of La	nes, N1		1		2	1		1		2	ļ	1		1	1			1	1	
Lane Group			L		T	R	_	L	_	T		R	_	L	T			L	T	
Volume, V (vp			81		912	117		48		1192	2	64	\dashv	95	43	_		24	46	
% Heavy Veh Peak-Hour Fa			2 0.93		93	0.93		2 0.93		8 0.93	-	2 0.93		2	2	-		2	2	-
	or Actuated (A)		0.93 A		.93 A	0.93 A	_	0.93 A	-	0.93 A	\dashv	0.93 A	-	0.93 A	0.93 A	+		0.93 A	0.93 A	-
Start-up Lost			2.0		2.0	2.0		2.0		2.0	\dashv	2.0	\dashv	2.0	2.0	+		2.0	2.0	-
	Effective Green	е	2.0		2.0	2.0		2.0		2.0	\dashv	2.0	\dashv	2.0	2.0	\dashv		2.0	2.0	1
Arrival Type, A			3		3	3		3		3	一	3		3	3			3	3	
Unit Extension	n, UE		3.0	3	.0	3.0		3.0		3.0		3.0		3.0	3.0		A 100 A 100 A 100	3.0	3.0	
Filtering/Meter			1.00	_	.000	1.00	0	1.000		1.000	0	1.000)	1.000	1.00	0		1.000	1.000	
Initial Unmet [0.0		0.0	0.0		0.0		0.0		0.0		0.0	0.0			0.0	0.0	
Ped / Bike / R	TOR Volumes		0 12.0		0	0		0	_	0	_	0	_	0	0			0	0	
Lane Width					2.0	12.0		12.0	_	12.0	-	12.0	4	10.0	11.0			10.0	11.0	
	Parking / Grade / Parking				0	N		N	4	0	-	N	_	Ν	0		N	N	0	N
	Parking Maneuvers, Nm Buses Stopping, NB					_			4		\dashv		4			_				
	ng, NB Pedestrians, G		0		0 3.2	0		0		3.2		0	\dashv	0	3.2			0	3.2	
Phasing	EB Only	Thru	ρ DT		WB () ply	-	04	1	3.2	7	S Pe	-m		06		1	07	3.2	0
	G = 9.0	G = 3			G = 6		\dashv	G = 0			_	= 13			6 = 0.0			0.0	G = (
Timing	Y = 7.5	Y = 7			Y = 6			Y = 0			-	= 6			' = 0		Y =		Y = 0	
Duration of An	alysis, T = 0.25														ycle Le	ngth,		110.0		
Lane Group (Capacity, Cont	rol De	lay, a	and L	OS D	eterm	ina	tion												
				EB						VΒ					NB				SB	,
		_	Τ	TH		RT	1	_T		Ή	1	T	1	T	TH	F	RT	LT	TH	RT
Adjusted Flow			37	981		126	-	52	_	282	-	9	_	02	46	_		26	49	
Lane Group C	apacity, c		45	217		029	-	97	_	986		36	14		213	+		149	213	
v/c Ratio, X		0.6		0.45	_	12	0.5		0.6		0.0		0.6		0.22			0.17	0.23	
Total Green R		0.0		0.65		65	0.0		0.6		0.6		0.1		0.12			0.12	0.12	
Uniform Delay		48.		9.5	_	.3	50.		12.	.7	8.2	2	46.	5	43.9	\perp		43.7	44.0	
Progression Fa		1.0	000	1.00	0 1.	000	1.0	000	1.0	000	1.0	000	1.0	000	1.000	\perp		1.000	1.000	
Delay Calibrat		0.1		0.11	_	11	0.1	14	0.2	20	0.1	1	0.2	5	0.11			0.11	0.11	
Incremental De	- 2	6.	.7	0.1	(0.1	5.	.8	0.	.5	0.	0	12	2.3	0.5			0.6	0.6	
Initial Queue D	elay, d ₃	0.0	0	0.0	0	.0	0.0	0	0.0	0	0.0)	0.0)	0.0			0.0	0.0	
Control Delay		55	5.5	9.7	7	7.4	56	6.4	13	3.2	8.	2	58	.8	44.4			44.2	44.5	
Lane Group LO		E		Α		4	E		В		Α		Ε		D			D	D	
Approach Dela	ny		12.	8				14.	6					54	3			4	14.4	
Approach LOS			В					В						D					D	
Intersection De	ntersection Delay			7)	$X_{c} = 0$	0.62	2			Int	ersec	tion LO	S			В	

Generated: 8/27/2010 11:39 AM

				ŀ	ICS	+™ D	Εī	TAILE	ΞD	RE	PO	RT									
General Info	rmation								_	200000000000000000000000000000000000000		ormat					N.			Name of	
Analyst	MYC								- 1	Inters						Walsto	n S	witch	Rd		
Agency or Co	. TTG								- 1	Area						areas		40			
Date Perform									- 1	Juris						o Count	y, n	ИD			
Time Period	PM Peak											Year		xistii ri-Ca		ty Coun	cil/.	Shore	2		
									ا	Proje	ct I	D		rans		ty Court	OII)	onore	,		
Volume and	Timing Input																				
				E		L				WB		Lot	_			NB	1.			SB	T ==
Number of Le	noo Na		LT 1	2	H	RT		LT	-	TH		RT	-	LT	_	TH	╀	RT	LT	TH	RT
Number of La Lane Group	nes, M1		L	Z		1 R		1 L		2 T		1 R	\dashv			1 T	+		1	1 T	-
Volume, V (vp)h)		76	-	10	186	3	89		101	6	60		124		71	+		46	91	+
% Heavy Veh			2	8		2		2		8		2	\dashv	2		2	╁		2	2	+
Peak-Hour Fa			0.94			0.94	!	0.94		0.94		0.94		0.94		0.94	+		0.94	0.94	1
	or Actuated (A)		A	A		A		A		A		A	-	A		A	+		A	A	1
Start-up Lost			2.0	2.		2.0		2.0		2.0		2.0	\dashv	2.0		2.0	+		2.0	2.0	1
	Effective Green	, e	2.0	2.		2.0		2.0		2.0		2.0	_	2.0		2.0	1		2.0	2.0	
Arrival Type,			3	3		3		3		3		3	\neg	3		3	T		3	3	1
Unit Extension	n, UE		3.0	3.)	3.0		3.0		3.0		3.0		3.0		3.0	T		3.0	3.0	
Filtering/Meter			1.00	_	000	1.00	0	1.000)	1.00	0	1.000	0	1.00	0	1.000			1.000	1.000	
Initial Unmet [0.0	0.		0.0		0.0		0.0		0.0		0.0		0.0			0.0	0.0	
Ped / Bike / R	TOR Volumes		0	0		0		0		0		0		0		0			0	0	
Lane Width	On Message was the		12.0 N	12.		12.0		12.0		12.0		12.0		10.0		11.0	_		10.0	11.0	
	arking / Grade / Parking					N		N		0		N		Ν		0	1	V	N	0	N
	arking Maneuvers, Nm																				
Buses Stoppir			0	0		0		0		0		0	_	0		0			0	0	
	Pedestrians, G	_			2					3.2	_					3.2		,		3.2	
Phasing	EB Only		& RT		VB C		4	0			_	NS Pe				06			07		8
Timing	G = 9.0	G =			= 8.	.0	_	G = (= 16	6.0			0.0			0.0	G =	
	Y = 7.5	Y =	7.5	Y	= 6			Y = 0)		ΙY	= 6		_	Y =	1809	41-	Y =	253	Y = ()
	nalysis, T = 0.25)C D	-4		-4!			3172				Сус	le Leng	ith,	C =	110.0		DATE OF THE PARTY
Lane Group C	Capacity, Cont	roi De	eiay, a	EB	ים כו	etern	nina 	ation	١/	VB			T			NB			1	SB	
			_T	TH	F	RT	\vdash	LT		H	F	RT	L	Т		TH	R	Т	LT	TH	RT
Adjusted Flow	Rate, v		31	1287		98	1	95	i —	081	1	64	13			76			49	97	
Lane Group C		_	45	2025		57	╁	129	_	95	-	43	17		+	262			179	262	
v/c Ratio, X		0.8	100000	0.64	0.2	70000	+	74	0.5		-	07	0.7		+	29			0.27	0.37	
Total Green R	atio, g/C	0.0		0.60	_	60	-		0.6		-	60	0.1		+	15			0.15	0.15	
Uniform Delay	, d ₁	48		14.0	_	.8	+	0.0	13		-	4	45.		-	1.9			41.8	42.4	
Progression Fa	actor, PF	1.0	000	1.000	1.0	000	1.	000	1.0	000	+	000	1.0		+	000			1.000	1.000	
Delay Calibrat	ion, k	0.1	16	0.22	0.	11	0.	29	0.1	14	0.	11	0.3	1	0.	11			0.11	0.11	
Incremental De	elay, d ₂	4	.8	0.7	0). 1	1	9.7	0	.3	0	0.0	16	.3	1	0.6			0.8	0.9	
Initial Queue D	Delay, d ₃	0.	0	0.0	0.	0	0.	.0	0.	0	0.	0	0.0)	C	0.0			0.0	0.0	
Control Delay		53	3.4	14.6	9	.9	6	9.7	13	3.6	9	0.4	61	.4	4	2.5			42.7	43.3	
Lane Group L0	OS	D)	В	A	1	E	Ξ	В		A	4	Ε			D			D	D	
Approach Dela	ay		16.	0				17.	.7					54	1.5				4	13.1	•
Approach LOS	}		В					В	1					L)					D	
Intersection De	elay		20.	5				$X_C = C$	0.67	7			Inte	erse	ctio	n LOS				С	
							1												1		

					HC	S+™ D	FT	TAII F	:D	RFF	20	RT									
General Info	rmation				110							rmati	ion	a Wash							
Analyst Agency or Co Date Perform Time Period	MYC . TTG								,	Inters Area Jurisc Analy Proje	ecti Typ dictions	on e on Year	L A V T	JS 50 All oth Vicon otal ri-Co ransi	er are nico C unty	eas Count	'y, N	ИD			
Volume and	Timing Input	N 1																			
					EB					WB						1B	,			SB	
Ni. mala an af La	N.		LT	-	TH	RT		LT		TH		RT	_	LT	_	ΓH	Ų F	RT	LT	TH	RT
Number of La Lane Group	nes, N1		1 L	\dashv	2 T	1 R		1 L		2 T	\dashv	1 R	\dashv	1 L		<u>1</u> Т	+		1 L	1 T	
Volume, V (vp	oh)		149	,	912	117	7	48		1192		85	\dashv	95	_	54	+		28	48	
% Heavy Veh			2		8	2		2		8	-	2	\dashv	2		2	+		2	2	
Peak-Hour Fa			0.93	(0.93	0.93		0.93		0.93		0.93		0.93	0.		T		0.93	0.93	
Pretimed (P)	or Actuated (A)		Α		Α	Α		Α		Α		Α		Α	1	4			Α	Α	
Start-up Lost			2.0		2.0	2.0		2.0		2.0		2.0		2.0	2.				2.0	2.0	
	Effective Green	, е	2.0		2.0	2.0		2.0		2.0	_	2.0	_	2.0	2.				2.0	2.0	
Arrival Type, A			3	_	3	3		3		3	_	3	_	3	3		_		3	3	
Unit Extension Filtering/Meter			3.0		3.0 1.000	3.0	0	3.0		3.0 1.000		3.0 1.000		3.0	3.		╀		3.0	3.0 1.000	-
Initial Unmet D			0.0	_	0.0	0.0	U	0.0		0.0		0.0	_	1.000 0.0	0.	000	╁		1.000 0.0	0.0	-
Ped / Bike / R			0.0	\dashv	0.0	0.0		0.0	_	0.0	\dashv	0.0	1	0.0	0.	_	╁		0.0	0.0	-
Lane Width	ane Width				2.0	12.0		12.0	T	12.0		12.0	1	10.0	11	<u> </u>	+		10.0	11.0	†
Parking / Grad	Parking / Grade / Parking				0	N		N		0		Ν		Ν	0		1	J	N	0	N
Parking Mane	arking Maneuvers, N _m																				
Buses Stoppin			0		0	0		0		0		0		0		0			0	0	
	Pedestrians, G	-			3.2					3.2					3	3.2				3.2	
Phasing	EB Only		& RT			Only	4	04			-	S Pe			06				07	0	
Timing	G = 14.0 Y = 7.5	G = Y =		\dashv	G = Y =			G = 0 $Y = 0$			_	= 13 = 6	3.0		G = 0 $G' = 0$			G = Y =	0.0	G = (
Duration of An	alysis, T = 0.28		7.5	\dashv	1 -	0		1 - 0			1	- 0		_			ıth		110.0	1 4 = 0)
	Capacity, Cont		elav. a	and	LOS	Determ	nina	ation			电影				усіс	Leng	, ,		110.0		
			,,,	E			T		٧	VB	- ha	X			NB	i heret	201/220/			SB	
		l	_T	Th	1	RT		LT	T	Н	R	RT.	L	T	TH		R	Т	LT	TH	RT
Adjusted Flow	Rate, v	1	60	98	1	126		52	12	282	9	1	10	02	58				30	52	
Lane Group C	apacity, c	2	25	217	77	1029	9	97	19	934	91	14	14	19	213	3			148	213	
v/c Ratio, X		0.7	71	0.45	5 (0.12	0.	54	0.6	66	0.1	0	0.6	8	0.27	,			0.20	0.24	
Total Green R	atio, g/C	0.1	13	0.65	5 (0.65	0.0	05	0.5	58	0.5	8	0.1	2	0.12				0.12	0.12	
Uniform Delay	, d ₁	46	.1	9.5		7.3	50	0.6	15	.9	10.	4	46.	5	44.2				43.8	44.0	
Progression Fa	actor, PF	1.0	000	1.00	00 1	1.000	1.0	000	1.0	000	1.0	000	1.0	00	1.00	0			1.000	1.000	
Delay Calibrati	ion, k	0.2	27	0.11		0.11	0.	14	0.2	24	0.1	1	0.2	5	0.11				0.11	0.11	
Incremental De	- 2	10	0.0	0.1		0.1	5	5.8	0	.9	0.	0	12	.3	0.7				0.7	0.6	
Initial Queue D	elay, d ₃	0.	0	0.0		0.0	0.	.0	0.	0	0.0)	0.0)	0.0				0.0	0.0	
Control Delay		56	6.1	9.7	7	7.4	56	6.4	16	6.8	10	.5	58	.8	44.9	9			44.5	44.6	
Lane Group LO	OS	E		Α		Α	E		В		В		Ε		D				D	D	
Approach Dela	ıy		15.	3				17.8	8					53	.7					14.6	
Approach LOS			В					В						D)					D	
Intersection De		19.4	4				$X_C = 0.$.67	7			Inte	ersec	tion L	os				В		

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					HCS	+™ D	ET	AILE	D	REF	POF										
General Infor	rmation									Site I			ion								
Analyst Agency or Co Date Performe Time Period	MYC . TTG								1	Inters Area Jurisc Analy Projec	ection Type diction	on e on Year	U A W T	ll oth Vicom otal	er ar nico (unty	eas Count	ty, M	witch MD Shore			8-5 April 16 (5 (6 (6 (6 (6 (6 (6 (6 (6 (6 (6 (6 (6 (6
Volume and	Timing Input																				
				E	ЕВ					WB					1	ΝB				SB	•
			LT		TH	RT		LT		TH		RT		LT		TH		RT	LT	TH	RT
Number of La	nes, N ₁		1		?	1		1		2	4	1		1		1			1	1	
Lane Group			L	-	210	R		L	_	T	_	R	_	L	\rightarrow	T	\perp		L	T	
Volume, V (vp % Heavy Vehi			96		210	186)	89	4	1016)	64	\dashv	124		74	+		65	101	-
Peak-Hour Fa			0.94		94	0.94		2 0.94	-	8 0.94	-	2 0.94	-	2 0.94		2 94	+		2 0.94	0.94	
	or Actuated (A)		0.94 A		4	0.94 A	0.	0.94 A	\dashv	0.94 A	-1	A.94	-1	A.94		94 4	╁		0.94 A	0.94 A	
Start-up Lost	` '		2.0		.0	2.0		2.0	-	2.0	\dashv	2.0	\dashv	2.0	\rightarrow	.0	+		2.0	2.0	
	ffective Green,	e	2.0		.0	2.0		2.0	\dashv	2.0		2.0	_	2.0		.0	+		2.0	2.0	
Arrival Type, A			3		3	3		3		3		3		3	_	3	\top		3	3	
Unit Extension			3.0	3	0	3.0		3.0		3.0		3.0		3.0	3	.0			3.0	3.0	
Filtering/Meter	ring, I		1.00	0 1.	000	1.00	0	1.000		1.000) 1	1.000)	1.000	1.	000			1.000	1.000	
Initial Unmet D			0.0		.0	0.0		0.0		0.0		0.0	_	0.0		.0	\perp		0.0	0.0	
Ped / Bike / R	TOR Volumes		0)	0		0	4	0	_	0	_	0		0	_		0	0	
Lane Width			12.0 N	\neg	2.0	12.0		12.0	4	12.0		12.0	_	10.0		1.0	 		10.0	11.0	
	Parking / Grade / Parking)	N		N	4	0	4	N	4	N	()	1	V	N	0	N
	Parking Maneuvers, Nm										4		4		_		_				-
Buses Stoppin Min. Time for I		0		3.2	0		0		3.2		0	+	0		0			0	0		
	EB Only		& RT		WB C	\nl\	\neg	04	1	3.2	,	S Pei			0	3.2		1	07	3.2	0
Phasing	G = 9.0	G =			6 = 8		\dashv	G = C			_	= 16			G = (G =	07	G = 0	
Timing	Y = 7.5	Y =			' = 6			Y = 0			-	= 6	.0		' = C			Y =		Y = (
Duration of An	alysis, T = 0.25	;												_	_		gth,	C =	110.0		
Lane Group C	Capacity, Cont	rol De	elay, a	and L	os D	eterm	nina	ation													
				EB						VB					NE					SB	
		\neg	.Т	TH	_	RT	1	LT		Ή	R		F.		Th		R	Т	LT	TH	RT
Adjusted Flow Lane Group Ca			02	1287		98	-	95	_	81	68		13		79				69	107	
	apacity, c	_	45	2025	_	57	-	29		95	94		17		26				178	262	
v/c Ratio, X	-ti10	0.7		0.64	_	21	+		0.5		0.0		0.7		0.30				0.39	0.41	
Total Green Ra		0.0		0.60		60	0.0		0.6		0.6		0.1		0.15				0.15	0.15	
Uniform Delay		49		14.0	_	8	+		13.		9.4		45.		42.0				42.6	42.7	
Progression Fa	PROCESSES OF THE STATE OF THE S	_	000	1.000	-	000	-			000	1.0		1.0		1.00				1.000	1.000	
Delay Calibrati		0.2		0.22	0.		0.2		0.1		0.1		0.3		0.11	_			0.11	0.11	
Incremental De			1.3	0.7).1	+-	9.7	0.		0.0		17.		0.7				1.4	1.0	
Initial Queue D	elay, d ₃	0.		0.0	0.		0.		0.0		0.0	_	0.0		0.0	_			0.0	0.0	
Control Delay		_	3.5	14.6	_	.9	-	9.7	13		9.4	4	62.	.6	42.	7			44.0	43.7	
Lane Group LC		E		В		1	E		В		Α		Ε		D				D	D	
Approach Dela			17	2				17.	6					55.	1				4	13.8	
Approach LOS			В					В						Е						D	
Intersection De	ersection Delay			3				$X_C = C$	0.67	7			Inte	ersec	tion	LOS				С	

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		WO-WAY STOP				CALLS A CATALOGICAL		TO AUTO SOLD
General Information	1		Site II	nformati	on	地域和外域	West of the	- 1944年
Analyst Agency/Co. Date Performed Analysis Time Period	MYC TTG 8/27/201 AM Peak		Interse Jurisdi Analys			Run	Switch Rd o County, I	
Project Description Tri-	-County Council/	Shore Transit						
East/West Street: Beave			North/S	South Stree	et: Walstor	Switch Rd		
Intersection Orientation:	North-South		Study F	Period (hrs): 0.25			
Vehicle Volumes an	d Adjustmen	ts	A Translation	1.9264.51		a following		mi ai ai
Major Street		Northbound			STORAGE BAR ARREST MOVE A STEEL STORE	Southbo	und	
Movement	1	2	3		4	5		6
	L	Т	R		L	Т		R
Volume (veh/h)	0	40	74		40	59		0
Peak-Hour Factor, PHF	0.83	0.83	0.83	}	0.83	0.83		0.83
Hourly Flow Rate, HFR (veh/h)	0	48	89		48	71		0
Percent Heavy Vehicles	2				2			
Median Type				Undivide	ed			
RT Channelized			0					0
Lanes	0	1	0		0	1		1
Configuration	LTR				LT			R
Upstream Signal		0				0		
Minor Street		Eastbound				Westbou	ınd	
Movement	7	8	9		10	11		12
	L	Т	R		L	Т		R
Volume (veh/h)	0	0	0		80	0		17
Peak-Hour Factor, PHF	0.83	0.83	0.83		0.83	0.83		0.83
Hourly Flow Rate, HFR (veh/h)	0	0	0		96	0		20
Percent Heavy Vehicles	2	2	2		2	2		2
Percent Grade (%)		0				0		
Flared Approach		N				N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	1	0		0	1		0
Configuration		LTR				LTR		
Delay, Queue Length, ar	nd Level of Serv	rice	C. AMP. Chi. Q.				128 Fall Tail	
Approach	Northbound	Southbound	and the second second	Westboun	d		Eastbound	1
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LT		LTR	+ -		LTR	12
v (veh/h)	0	48		116			0	
C (m) (veh/h)	1529	1447		713	-		"	
							-	
//c	0.00	0.03		0.16				
95% queue length	0.00	0.10		0.58				
Control Delay (s/veh)	7.4	7.6		11.0				
_OS	Α	Α		В				
Approach Delay (s/veh)				11.0				
Approach LOS				В				

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	T\	NO-WAY STOR	CONTR	OL SUM	MARY			
General Information	n		Site I	nformati	on		Viet tracking	
Analyst Agency/Co. Date Performed Analysis Time Period	MYC TTG 8/27/2010 PM Peak		Interse Jurisd Analys			Run	Switch Rd	
Project Description Tri		Shore Transit						
East/West Street: Beav					et: Walston	Switch Rd		
Intersection Orientation:		massing a vigorial and a subject to the	Study	Period (hrs	s): 0.25			200
Vehicle Volumes ar	nd Adjustmen							
Major Street		Northbound				Southbo	ound	
Movement	1	2	3		4	5		6
Volume (voh/h)	0	68	R 33		L	T		0 0
Volume (veh/h) Peak-Hour Factor, PHF	0.92	0.92	0.92	,	19 	66 0.92	,	0.92
Hourly Flow Rate, HFR (veh/h)	0.32	73	35		20	71		0.92
Percent Heavy Vehicles	2				2			
Median Type				Undivide				
RT Channelized			0					0
Lanes	0	1	0		0	1		1
Configuration	LTR				LT			R
Upstream Signal		0				0		
Minor Street		Eastbound				Westbo	und	
Movement	7	8	9		10	11		12
	L	Т	R		L	Т		R
Volume (veh/h)	0	0	0		100	0		53
Peak-Hour Factor, PHF	0.92	0.92	0.92	2	0.92	0.92		0.92
Hourly Flow Rate, HFR (veh/h)	0	0	0		108	0		57
Percent Heavy Vehicles	2	2	2		2	2		2
Percent Grade (%)		0				0		
Flared Approach		N				N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	1	0		0	1		0
Configuration		LTR				LTR		
Delay, Queue Length, a	nd Level of Serv	ice	killat As				er Varazine i Rochtlerez	等 不是是表
Approach	Northbound	Southbound		Westboun	d		Eastbound	d
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LT		LTR			LTR	
v (veh/h)	0	20		165			0	
C (m) (veh/h)				813				
v/c	0.00 0.0			0.20				
95% queue length	0.00	0.04		0.76				
Control Delay (s/veh)				10.6				
LOS	A	A		В			1	
Approach Delay (s/veh)				10.6				
			70.0		-			

Approach LOS

В

	T\	WO-WAY STOP	CONTRO	LSUMI	MARY				
General Information	n		Site Inf	ormatic	n	93-45-			
Analyst Agency/Co. Date Performed Analysis Time Period	MYC TTG 8/27/2010 AM Peak		Intersect Jurisdict Analysis	ion		Run	Switch R		ver
Project Description Tri	-County Council/	Shore Transit							
East/West Street: Beave			North/So	uth Street	: Walstor	Switch Rd			
Intersection Orientation:	North-South		Study Pe	riod (hrs):	0.25				
Vehicle Volumes an	nd Adjustmen	ts		and the gold		事人 法私	Trans.		
Major Street		Northbound				Southbo	ound		
Movement	1	2	3		4	5		6	
	L	Т	R		L	Т		R	
Volume (veh/h)	100	40	74		40	59		10	
Peak-Hour Factor, PHF	0.83	0.83	0.83		0.83	0.83	1	0.83	
Hourly Flow Rate, HFR (veh/h)	120	48	89		48	71		12	
Percent Heavy Vehicles	2				2				
Median Type				Undivided	1				
RT Channelized			0					0	
Lanes	0	1	0		0	1		1	
Configuration	LTR				LT			R	
Upstream Signal		0				0			
Minor Street		Eastbound				Westbo	und		
Movement	7	8	9		10	11		12	
	L	Т	R		L	T		R	
Volume (veh/h)	1	0	24		80	0		17	
Peak-Hour Factor, PHF	0.83	0.83	0.83		0.83	0.83		0.83	
Hourly Flow Rate, HFR (veh/h)	1	0	28		96	0		20	
Percent Heavy Vehicles	2	2	2		2	2		2	
Percent Grade (%)		0				0			
Flared Approach		N				N			
Storage		0				0			
RT Channelized			0					0	
Lanes	0	1	0		0	1		0	
Configuration		LTR				LTR			
Delay, Queue Length, ar	nd Level of Serv	rice							
Approach	Northbound	Southbound	W	estbound			Eastbou	nd	
Movement	1	4	7	8	9	10	1 11	-	12
Lane Configuration	LTR	LT		LTR			LTR		
v (veh/h)	120	48		116			29		
C (m) (veh/h)	1514	1447		458			947	_	
v/c	0.08	0.03		0.25			0.03		
95% queue length	0.08	0.10		0.23			_		
							0.09		
Control Delay (s/veh)	7.6	7.6		15.5			8.9		
LOS	Α	Α		С			A		
Approach Delay (s/veh)				15.5			8.9		
1 1 0 0		i I		_					- 1

Approach LOS

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	T	WO-WAY STOP	CONTRO	OL SUM	MARY			
General Information	n		Site Ir	nformati	ion			14-140
Analyst Agency/Co. Date Performed	MYC TTG 8/27/2011		Interse Jurisdio Analysi			Run	Switch Rd & o County, M	
Analysis Time Period	PM Peak							
Project Description Tri		Shore Transit	'					
East/West Street: Beav					et: Walston	Switch Rd		
Intersection Orientation:	North-South		Study P	Period (hrs	s): 0.25			
Vehicle Volumes ar	id Adjustmen							
Major Street		Northbound				Southbo	und	
Movement	1	2	3		4	5		6
	L	T	R		L	T		R
Volume (veh/h)	27	68	33		19	66		2
Peak-Hour Factor, PHF Hourly Flow Rate, HFR (veh/h)	0.92	0.92 73	0.92		0.92 20	0.92 71		0.92 2
Percent Heavy Vehicles	2				2			
Median Type				Undivide				
RT Channelized			0	Onarrac				0
Lanes	0	1	0		0	1		1
Configuration	LTR				LT			R
Upstream Signal	2,77	0				0		11
Minor Street		Eastbound				Westbo	ınd	
Movement	7	8	9		10	11	unu	12
moromone	L	T	R		L	T		R
Volume (veh/h)	9	0	92		100	0		53
Peak-Hour Factor, PHF	0.92	0.92	0.92		0.92	0.92		0.92
Hourly Flow Rate, HFR (veh/h)	9	0	99		108	0		57
Percent Heavy Vehicles	2	2	2		2	2		2
Percent Grade (%)		0				0		
Flared Approach		N				N		
Storage		0				0		
RT Channelized			0					0
Lanes	0	1	0		0	1		0
Configuration		LTR				LTR		
Delay, Queue Length, a	nd Level of Serv	rice					17.11.25.1.20	
Approach	Northbound	Southbound	\	Vestboun	d	100000000000000000000000000000000000000	Eastbound	
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LT		LTR			LTR	
v (veh/h)	29	20		165			108	
C (m) (veh/h)	1527	1483		658			942	
//c	0.02	0.01		0.25			0.11	
	0.02	0.04				-		
95% queue length				0.99	-		0.39	
Control Delay (s/veh)	7.4	7.5		12.3	-		9.3	
LOS	Α	Α		В			Α	
Approach Delay (s/veh)				12.3			9.3	
Approach LOC	t and the second			D		1	A	

Approach LOS

В

Α

General Information

Project Description Tri-County Council - US 50 & Walston Switch Rd - Existing AM

,												
Average Back of Queue												
		EB			WB			NB			SB	
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane Group	L	T	R	L	T	R	L	T		L	T	
Initial Queue/Lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Flow Rate/Lane Group	87	981	126	52	1282	69	102	46		26	49	
Satflow/Lane	1770	1759	1583	1770	1759	1583	1261	1801		1264	1801	
Capacity/Lane Group	145	2177	1029	97	2086	986	149	213		149	213	
Flow Ratio	0.0	0.3	0.1	0.0	0.4	0.0	0.1	0.0		0.0	0.0	
v/c Ratio	0.60	0.45	0.12	0.54	0.61	0.07	0.68	0.22		0.17	0.23	
I Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		1.000	1.000	
Arrival Type	3	3	3	3	3	3	3	3		3	3	
Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
PF Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Q1	2.6	7.8	1.5	1.5	12.6	0.8	3.0	1.3		0.7	1.4	
kв	0.2	0.8	0.8	0.2	0.8	0.8	0.2	0.3		0.2	0.3	
Q2	0.3	0.7	0.1	0.2	1.3	0.1	0.5	0.1		0.1	0.1	
Q Average	2.9	8.5	1.6	1.8	13.8	0.9	3.5	1.4		0.8	1.4	
Percentile Back of Queue	(95th p	ercen	tile)							1		
fB%	2.0	1.9	2.0	2.0	1.8	2.1	2.0	2.1		2.1	2.1	
Back of Queue	5.9	15.9	3.2	3.6	24.6	1.8	7.0	2.8		1.6	3.0	
Queue Storage Ratio												
Queue Spacing	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0		25.0	25.0	
Queue Storage	0	0	0	0	0	0	0	0		0	0	
Average Queue Storage Ratio												
95% Queue Storage Ratio												
		-					4			-		4

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General Information

Project Description Tri-County Council - US 50 & Walston Switch Rd - Existing PM

<u>'</u>												
Average Back of Queue												
		EB	T		WB			NB			SB	
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane Group	L	T	R	L	T	R	L	T		L	T	
Initial Queue/Lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Flow Rate/Lane Group	81	1287	198	95	1081	64	132	76		49	97	
Satflow/Lane	1770	1759	1583	1770	1759	1583	1207	1801		1230	1801	
Capacity/Lane Group	145	2025	957	129	1995	943	176	262		179	262	
Flow Ratio	0.0	0.4	0.1	0.1	0.3	0.0	0.1	0.0		0.0	0.1	
v/c Ratio	0.56	0.64	0.21	0.74	0.54	0.07	0.75	0.29		0.27	0.37	
I Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		1.000	1.000	
Arrival Type	3	3	3	3	3	3	3	3		3	3	
Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
PF Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Q1	2.4	13.2	2.7	2.8	10.3	0.8	3.9	2.1		1.3	2.7	
kв	0.2	0.8	0.8	0.2	0.8	0.8	0.3	0.3		0.3	0.3	
Q2	0.3	1.4	0.2	0.6	0.9	0.1	0.7	0.1		0.1	0.2	
Q Average	2.7	14.6	2.9	3.4	11.3	0.9	4.6	2.2		1.4	2.9	
Percentile Back of Queue	(95th p	ercen	tile)									
fB%	2.0	1.8	2.0	2.0	1.8	2.1	2.0	2.0		2.1	2.0	
Back of Queue	5.4	25.8	5.9	6.8	20.5	1.8	9.0	4.5		3.0	5.8	
Queue Storage Ratio												
Queue Spacing	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0		25.0	25.0	
Queue Storage	0	0	0	0	0	0	0	0		0	0	
Average Queue Storage Ratio												
95% Queue Storage Ratio												

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General Information

Project Description Tri-County Council - US 50 & Walston Switch Rd - Total AM

Average Back of Queue												
		EB			WB			NB			SB	
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane Group	L	T	R	L	T	R	L	T		L	T	
Initial Queue/Lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Flow Rate/Lane Group	160	981	126	52	1282	91	102	58		30	52	
Satflow/Lane	1770	1759	1583	1770	1759	1583	1257	1801		1250	1801	
Capacity/Lane Group	225	2177	1029	97	1934	914	149	213		148	213	
Flow Ratio	0.1	0.3	0.1	0.0	0.4	0.1	0.1	0.0		0.0	0.0	
v/c Ratio	0.71	0.45	0.12	0.54	0.66	0.10	0.68	0.27		0.20	0.24	
I Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		1.000	1.000	
Arrival Type	3	3	3	3	3	3	3	3		3	3	
Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
PF Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Q1	4.7	7.8	1.5	1.5	14.1	1.2	3.0	1.6		0.8	1.4	
kв	0.3	0.8	0.8	0.2	0.8	0.7	0.2	0.3		0.2	0.3	
Q2	0.7	0.7	0.1	0.2	1.5	0.1	0.5	0.1		0.1	0.1	
Q Average	5.4	8.5	1.6	1.8	15.6	1.3	3.5	1.7		0.9	1.5	
Percentile Back of Queue	(95th p	ercen	tile)							*		etrosul t
fB%	1.9	1.9	2.0	2.0	1.8	2.1	2.0	2.0		2.1	2.1	
Back of Queue	10.5	15.9	3.2	3.6	27.3	2.7	7.0	3.5		1.8	3.2	
Queue Storage Ratio	, de ja											
Queue Spacing	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0		25.0	25.0	
Queue Storage	0	0	0	0	0	0	0	0		0	0	
Average Queue Storage Ratio												
95% Queue Storage Ratio												

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General Information

Project Description Tri-County Council - US 50 & Walston Switch Rd - Total PM

Average Back of Queue												
		EB			WB			NB			SB	
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Lane Group	L	T	R	L	T	R	L	T		L	T	
Initial Queue/Lane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Flow Rate/Lane Group	102	1287	198	95	1081	68	132	79		69	107	
Satflow/Lane	1770	1759	1583	1770	1759	1583	1196	1801		1227	1801	
Capacity/Lane Group	145	2025	957	129	1995	943	174	262		178	262	
Flow Ratio	0.1	0.4	0.1	0.1	0.3	0.0	0.1	0.0		0.1	0.1	
v/c Ratio	0.70	0.64	0.21	0.74	0.54	0.07	0.76	0.30		0.39	0.41	
I Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		1.000	1.000	
Arrival Type	3	3	3	3	3	3	3	3		3	3	
Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
PF Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Q1	3.0	13.2	2.7	2.8	10.3	0.9	3.9	2.2		1.9	3.0	
kв	0.2	0.8	0.8	0.2	0.8	0.8	0.3	0.3		0.3	0.3	
Q2	0.5	1.4	0.2	0.6	0.9	0.1	0.7	0.1		0.2	0.2	
Q Average	3.6	14.6	2.9	3.4	11.3	0.9	4.6	2.3		2.1	3.2	
Percentile Back of Queue	(95th	ercen	tile)									
fB%	2.0	1.8	2.0	2.0	1.8	2.1	2.0	2.0		2.0	2.0	
Back of Queue	7.1	25.8	5.9	6.8	20.5	1.9	9.1	4.7		4.2	6.4	
Queue Storage Ratio												
Queue Spacing	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0		25.0	25.0	
Queue Storage	0	0	0	0	0	0	0	0		0	0	
Average Queue Storage Ratio												
95% Queue Storage Ratio												

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	Maryland	State Hi	ghway A	dministr	ation Q	Maryland State Highway Administration Queuing Analysis Formula	sis Formu	la	
Maximum C	Maximum Calculated Queue (Feet) =	Turning Volun	Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds) 3600 (Seconds per hour)	our) x Lane Use Factor x 3600 (Seconds per hour)	x Cycle Length (Seconds)	x 25 Feet per Vehicle x 1.4 Surge Factor	de x 1.4 Surge	Factor
1. US 50 & Wa	1. US 50 & Walston Switch Rd	Available Storage	Maximum Queue	Veh / Hour La	Lane Use Factor	Cycle Length (seconds)	Seconds / Hour	Feet / Vehicle	Surge
Existing AM									
	EB US 50 Left	400	87	81	-	110	3600	25	-
	WB US 50 Left	440	51	48	-	110	3600	25	-
	NB Walston Switch Rd Left	210	102	96	-	110	3600	25	-
	SB Walston Switch Rd Left		26	24	-	110	3600	25	-
Existing PM									
	EB US 50 Left	400	81	92	-	110	3600	25	-
	WB US 50 Left	440	95	88	-	110	3600	25	-
	NB Walston Switch Rd Left	210	133	124	-	110	3600	25	-
	SB Walston Switch Rd Left	•	49	46	-	110	3600	25	-
Total AM									
	EB US 50 Left	400	159	149	-	110	3600	25	-
	WB US 50 Left	440	51	48	-	110	3600	25	-
	NB Walston Switch Rd Left	210	102	92	-	110	3600	25	-
	SB Walston Switch Rd Left		30	28	-	110	3600	25	-
Existing PM									
	EB US 50 Left	400	103	96	-	110	3600	25	-
	WB US 50 Left	440	92	88	-	110	3600	25	-
	NB Walston Switch Rd Left	210	133	124	-	110	3600	25	-
	SB Walston Switch Rd Left		70	65	-	110	3600	25	-

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