

TRAFFIC IMPACT STUDY

MIDDELTON HOLDINGS PROPERTY

Fast-food Restaurant with Drive-thru
City of Aberdeen, Maryland

March, 2022

Prepared For:
Middelton Holdings, LLC

Prepared By:
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INTRODUCTION

Traffic Concepts, Inc. conducted a traffic impact study for Middleton Holdings Property, LLC. The property address is 999 Middleton Road Aberdeen, Maryland and the site is labeled Lot 2 on the site concept plan. As shown on Exhibit 1, the site is situated on the northeast quadrant of MD 22 (Aberdeen Thruway) and Middleton Road. Lot 2 is positioned next to or to the east of the existing Starbucks store.

Project Description

The proposed use is a 2,437 gsf fast-food restaurant with drive through window. The access to Lot 2 is from the existing access road that intersects with Middleton Road and currently provides access to the Starbuck's store. This roadway will be extended by the developer to provide access to Lot 2. Under this plan, the roadway would terminate on Lot 2.

Scope of Services & Study Methodology

The traffic impact study requirements are outlined in Chapter 302: Adequate Public Facilities. A scoping meeting for this project was held on Thursday, February 24 at the City Administrative offices. Details of the scope of service are provided below and the scoping letter is provided in Appendix IV.

Key Intersections

- MD 22 @ Middleton Road
- Middleton Road @ private site road
- Beards Hill Road @ Middleton Road (Roundabout)
- Beards Hill Road @ Maxa Road
- Beards Hill Road @ MD 462 (Paradise Road)

Study Time Periods & Analysis Methodology

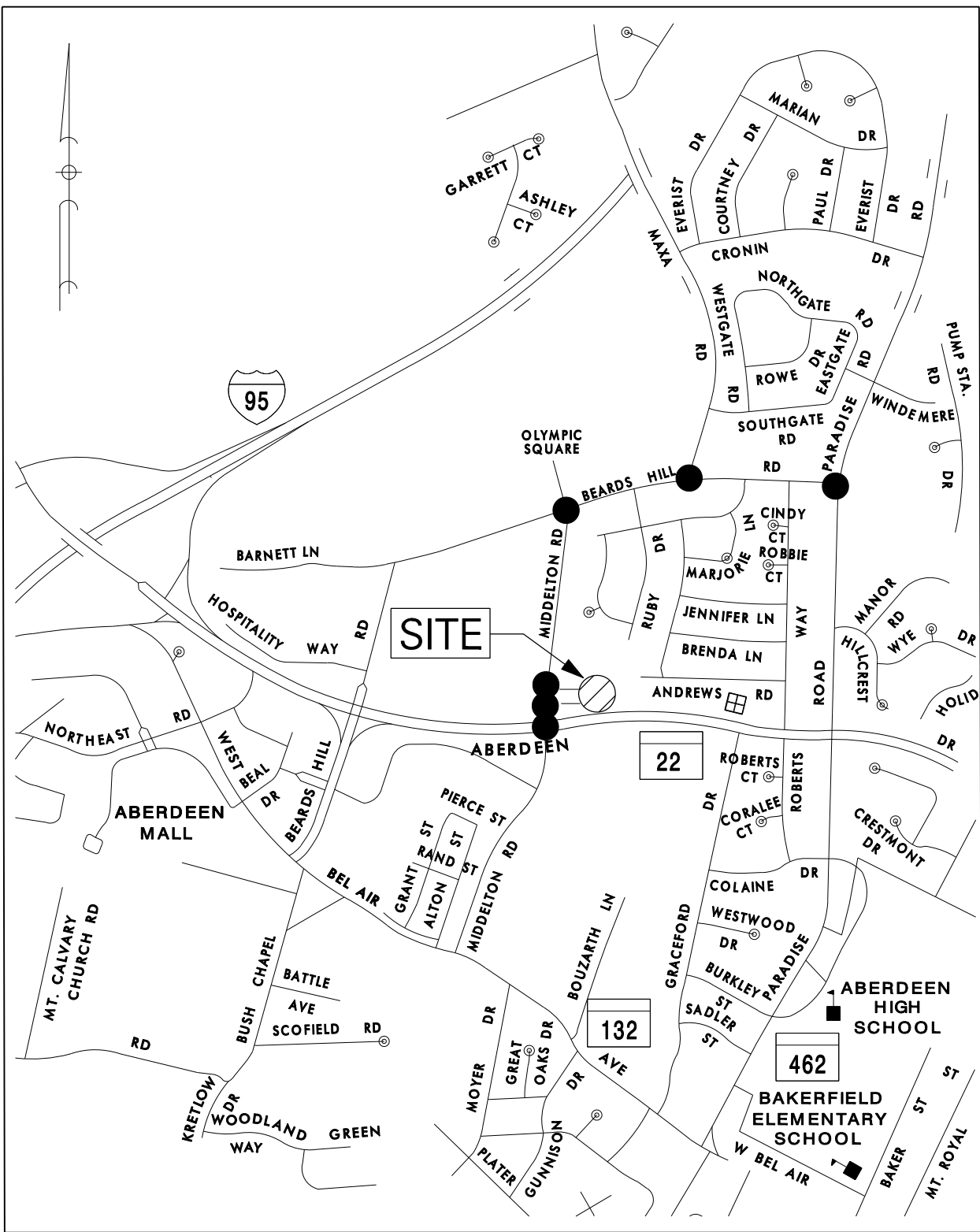
The key intersections were analyzed during the weekday morning (7:00 AM - 9:00 AM) and evening (4:00 PM – 6:00 PM) peak hours using the following methods:

All intersections:	Critical Lane Volume Method
Unsignalized Intersections:	Highway Capacity Software
Roundabouts:	Sidra Software
Queuing:	MDOT SHA 95 th Percentile Back of Queue Method

Study Format

The study was conducted with three traffic conditions that include an analysis of the key intersections using the existing traffic volumes, the background traffic volumes, and the future traffic volumes. The background and the future site generated trips were determined with data contained in the Institute of Transportation Engineers', Trip Generation Manual, 11th Edition (ITE Manual). Each traffic condition including the total future traffic volumes are described in the following formula:

$$\textit{Total Future Traffic} = (\textit{Existing Traffic} + \textit{Growth in Existing Traffic} + \textit{Approved Development Traffic} + \textit{Site Generated Traffic})$$



● - Intersection Studied

NOT TO SCALE

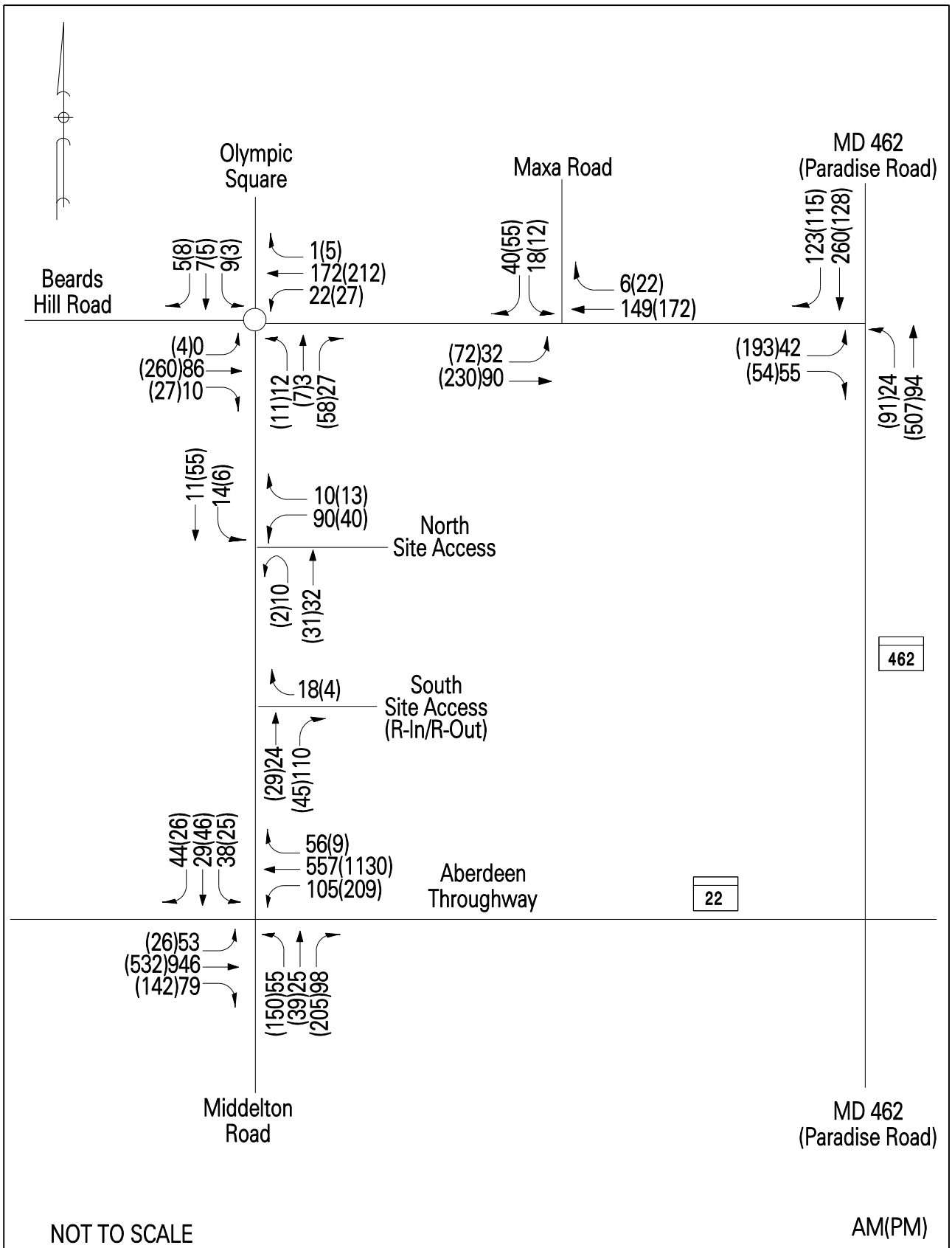
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EXHIBIT 1
 Site Location

EXISTING CONDITION

The existing traffic condition establishes the baseline intersection levels of service using intersection turning movement volumes that were counted at the key intersections. The intersection turning movement counts were conducted in March 2022, under normal traffic conditions and when public schools were open.

The intersection lane configurations are shown on Exhibit 2 and the peak hour intersection volumes are shown on Exhibit 3. The intersection condition diagrams and existing intersection data are included in Appendix III.



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EXHIBIT 3
Existing Traffic Volumes

BACKGROUND CONDITION

The background condition evaluates the key intersections with the existing intersection volumes and with the background peak hour trips. The background volumes are comprised of trips generated by a traffic growth rate and trips generated by nearby developments that are approved, but are not yet completed.

Growth Rates

According to City officials, a 2.0 percent growth rate was applied to the MD 22 traffic volumes and a 1.0 percent growth rates was applied to the MD 462 volumes. The growth rates were applied to the peak hour volumes over the 1.5-year project build-out period. The peak hour trips generated by the growth rates are shown on Exhibit 4.

Background Developments

Officials from the City of Aberdeen identified two background “pipeline” projects that are located within the or near the study area and that could impact the key intersections. The locations of these developments are shown on Exhibit 5. The background development trips shown below were generated with the *ITE Manual 11th Edition*, unless otherwise noted. The ITE data are included in Appendix II.

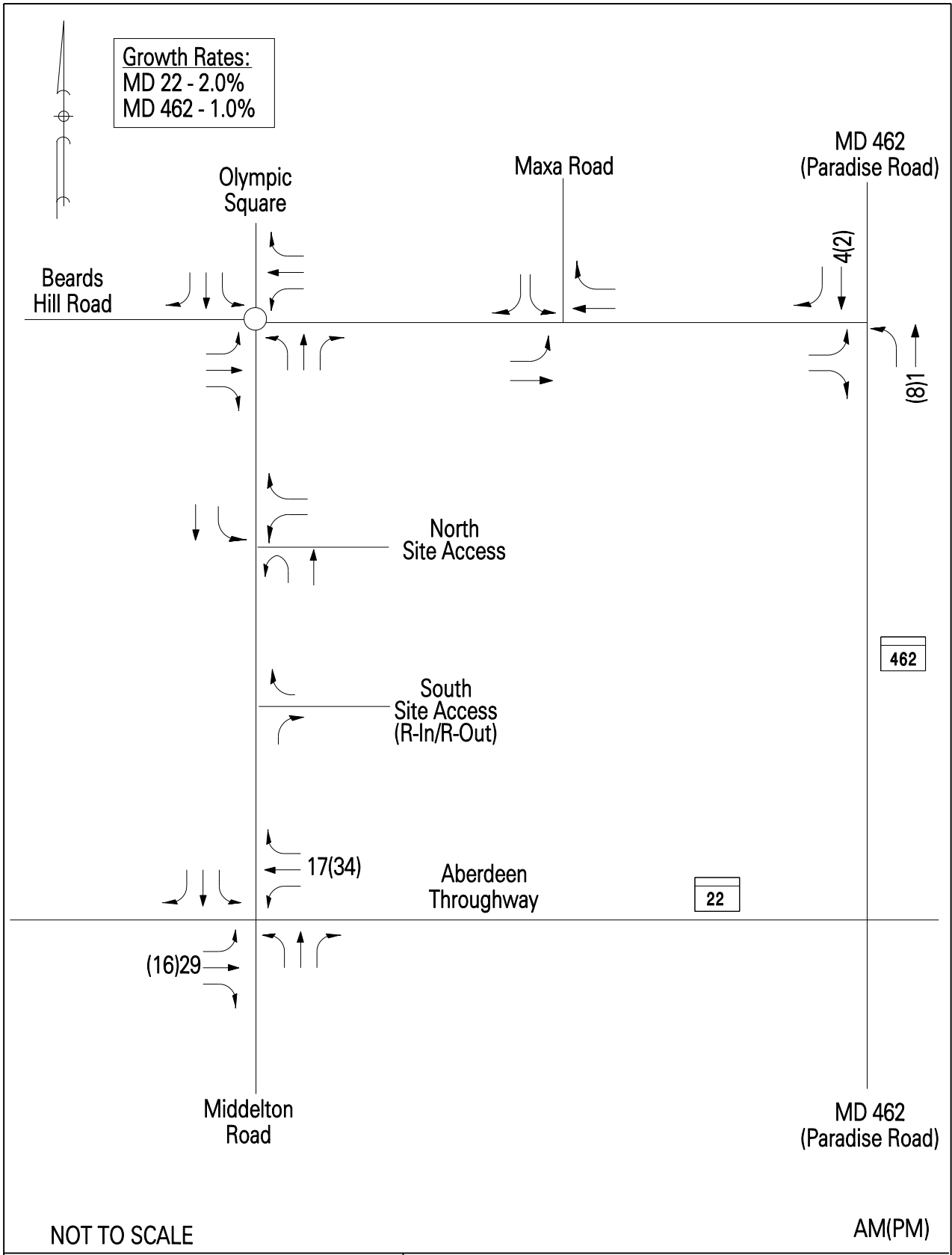
BACKGROUND DEVELOPMENTS

	AM		PM	
	<u>IN</u>	<u>OUT</u>	<u>IN</u>	<u>OUT</u>
1. Beards Hill Apartments ITE Land Use Code 221 230 units	22	61	62	39
2. Upper Chesapeake Medical Center (Aberdeen Corporate Park) Hospital/Medical Office Total Trips*	337	109	135	348

* These trips were approved by City of Aberdeen and are contained in the Aberdeen Corporate Park Trip Generation Letter. Excerpts from this study are included in Appendix II.

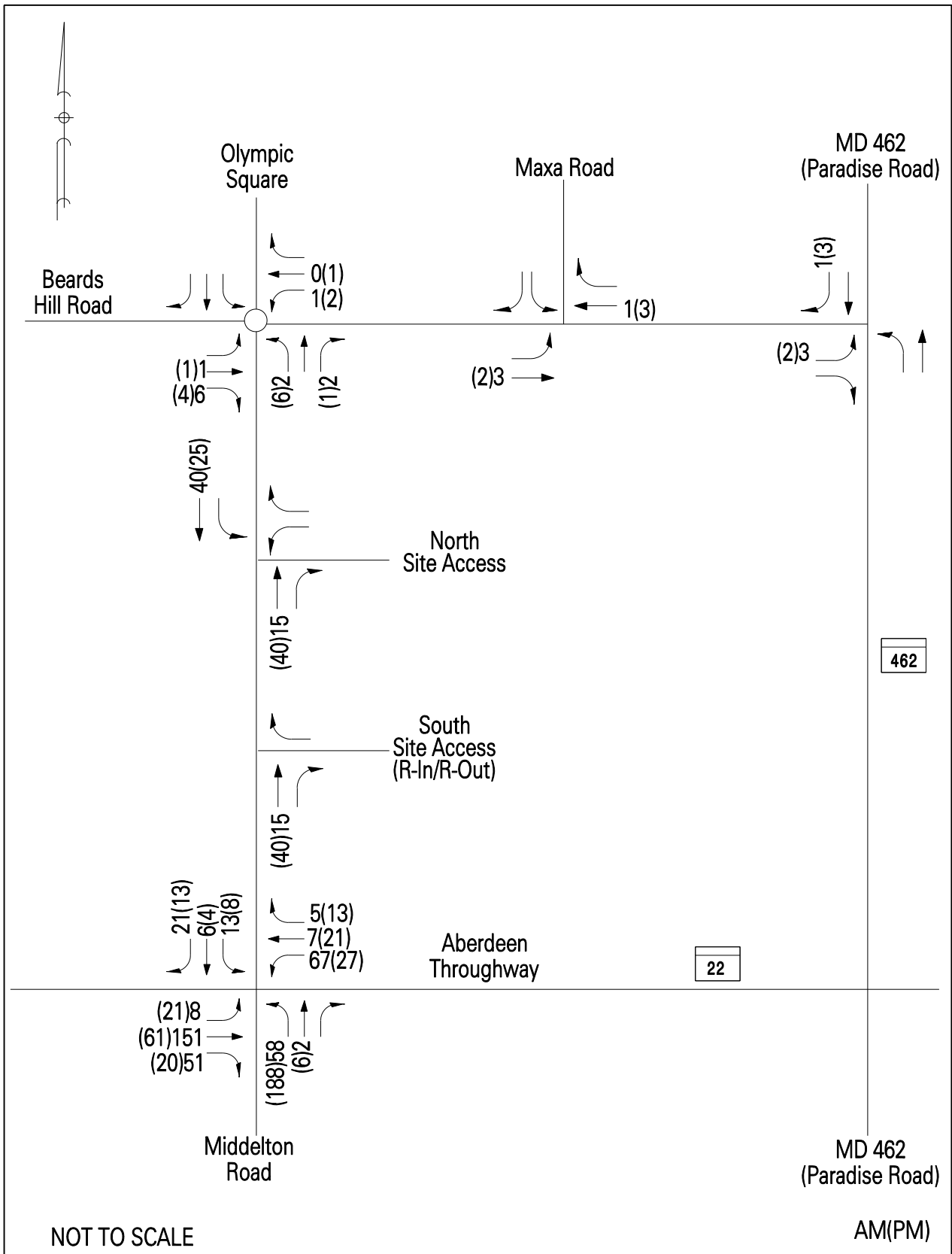
Trip Distribution & Assignment

The background development trips were distributed and assigned to the key intersections using the previously approved trip distribution patterns. The distribution and assignment for each background development are provided in Appendix II and the combined background peak hour trips are shown on Exhibit 6. The growth rates and background trips were then added to the existing traffic volumes to obtain total background traffic volumes, as shown on Exhibit 7.



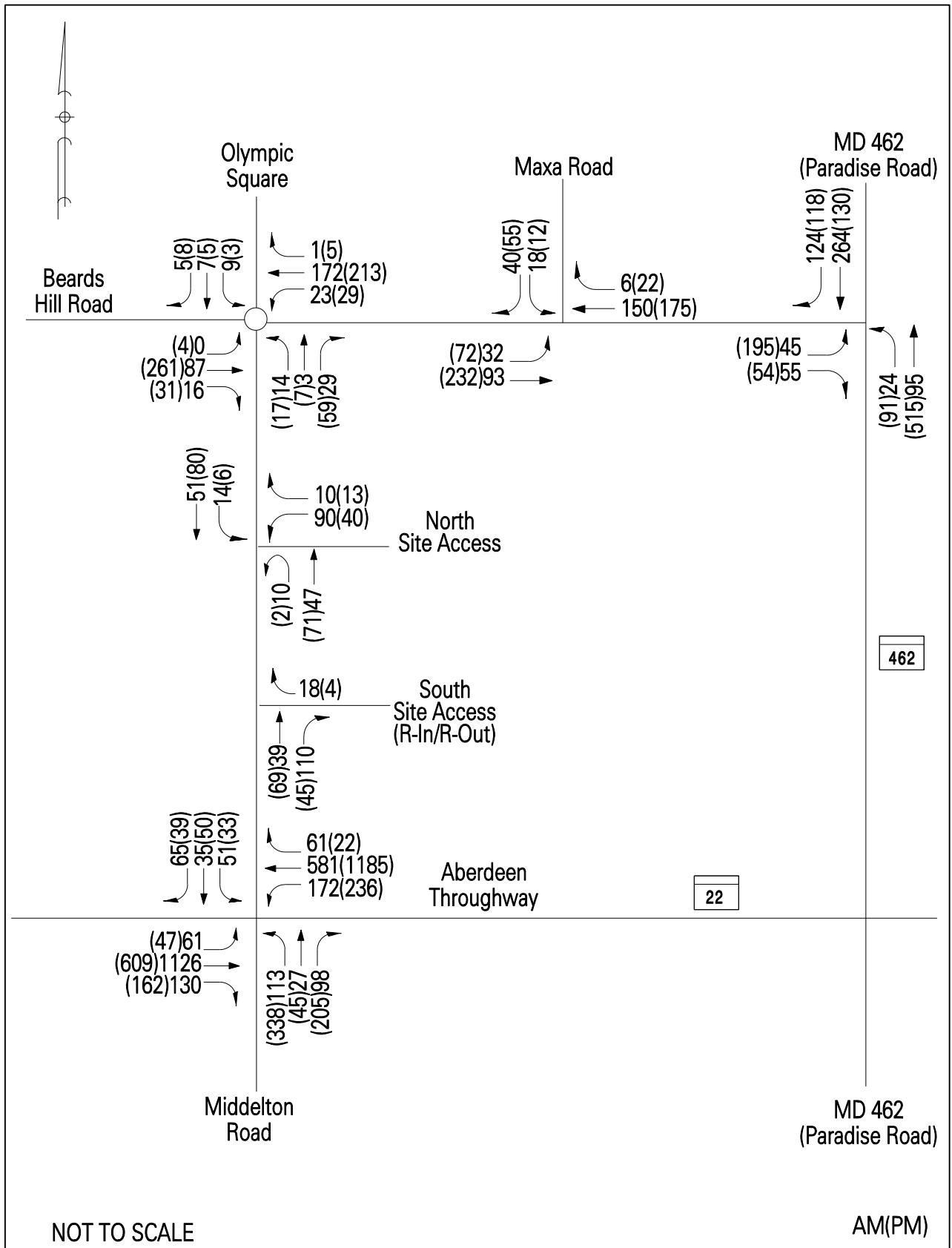
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EXHIBIT 4
Projected Growth Rates
(For 1.5 Years)



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EXHIBIT 6
 Background Traffic Volumes



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EXHIBIT 7
Total Background Traffic Volumes

FUTURE CONDITION

The new site generated peak hour trips shown below were generated using the Institute of Transportation Engineers' (ITE), Trip Generation Manual, 11th Edition. The ITE trip calculations are included in the scope of services letter provided in Appendix IV.

	AM		PM	
	<u>IN</u>	<u>OUT</u>	<u>IN</u>	<u>OUT</u>
Fast Food Restaurant with Drive-thru				
ITE Land Use Code 934				
2.437 ksf	56	53	42	39
<u>Less ITE Pass-by*</u>	<u>- 28</u>	<u>- 27</u>	<u>- 23</u>	<u>- 21</u>
Net New Trips	28	26	19	18

* ITE Pass-by rates for LUC 934 applied (AM peak = 50%; PM peak = 55%)

The trip distribution pattern shown on Exhibit 8 was determined with the existing traffic flows along area roadways and with the surrounding land use pattern. The total future traffic volumes are obtained by adding the new site trips to the total background traffic volumes, as shown on Exhibit 9.

ITE Land Use Data

Fast-Food Restaurant with Drive-Through Window (934) Independent Variable: 1000 Sq. Ft. GFA

Weekday ADT = 455

Average Rate: 467.48

Fitted Curve Equation: Not Given

Calculated Trip Ends: Average Rate: 1139 (Total)

Time Period: Weekday AM

Average Rate: 44.61

Fitted Curve Equation: Not Given

Directional Distribution: 51% entering, 49% exiting

Calculated Trip Ends: Average Rate: 109 (Total), 55 (Entry), 54 (Exit)

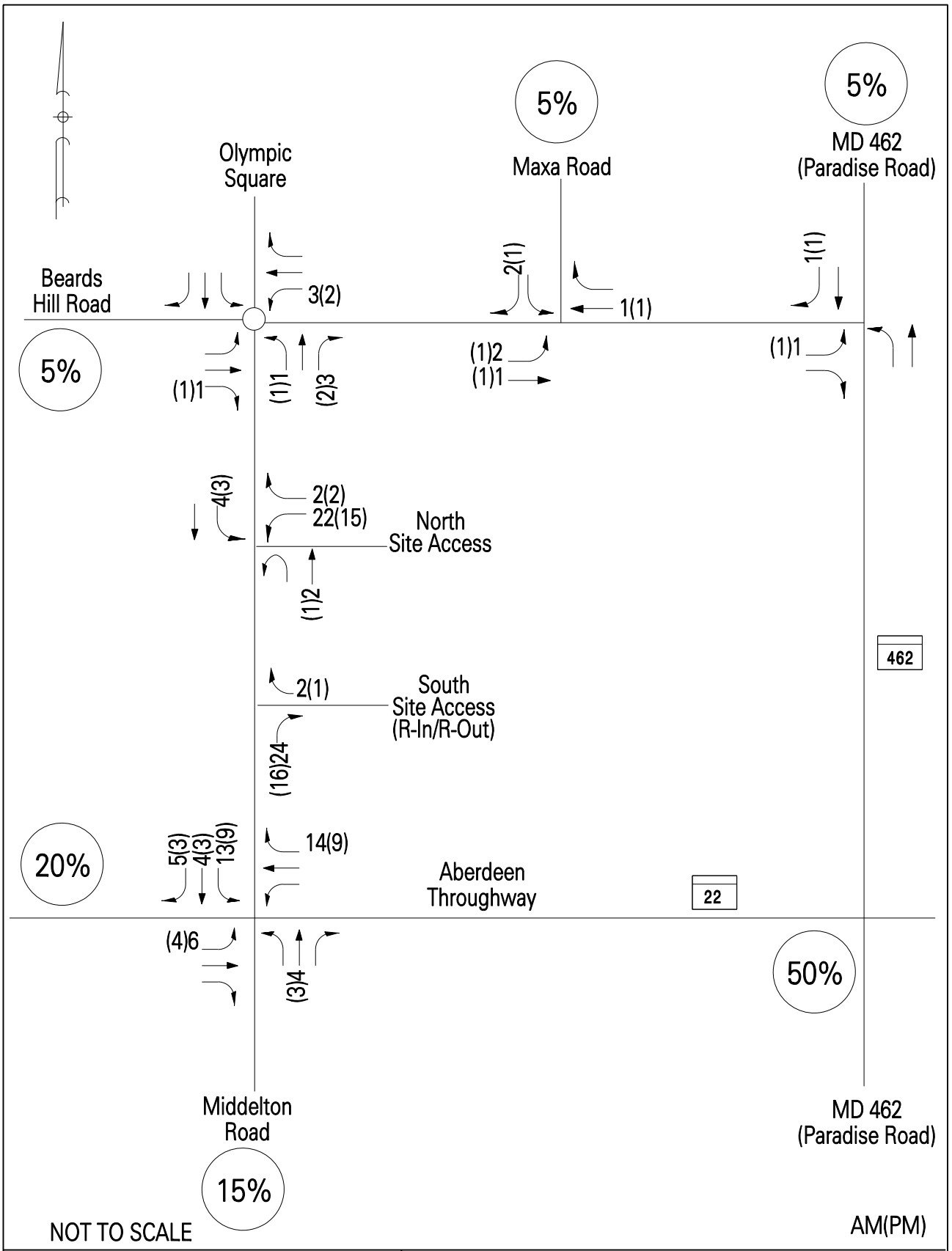
Time Period: Weekday PM

Average Rate: 33.03

Fitted Curve Equation: Not Given

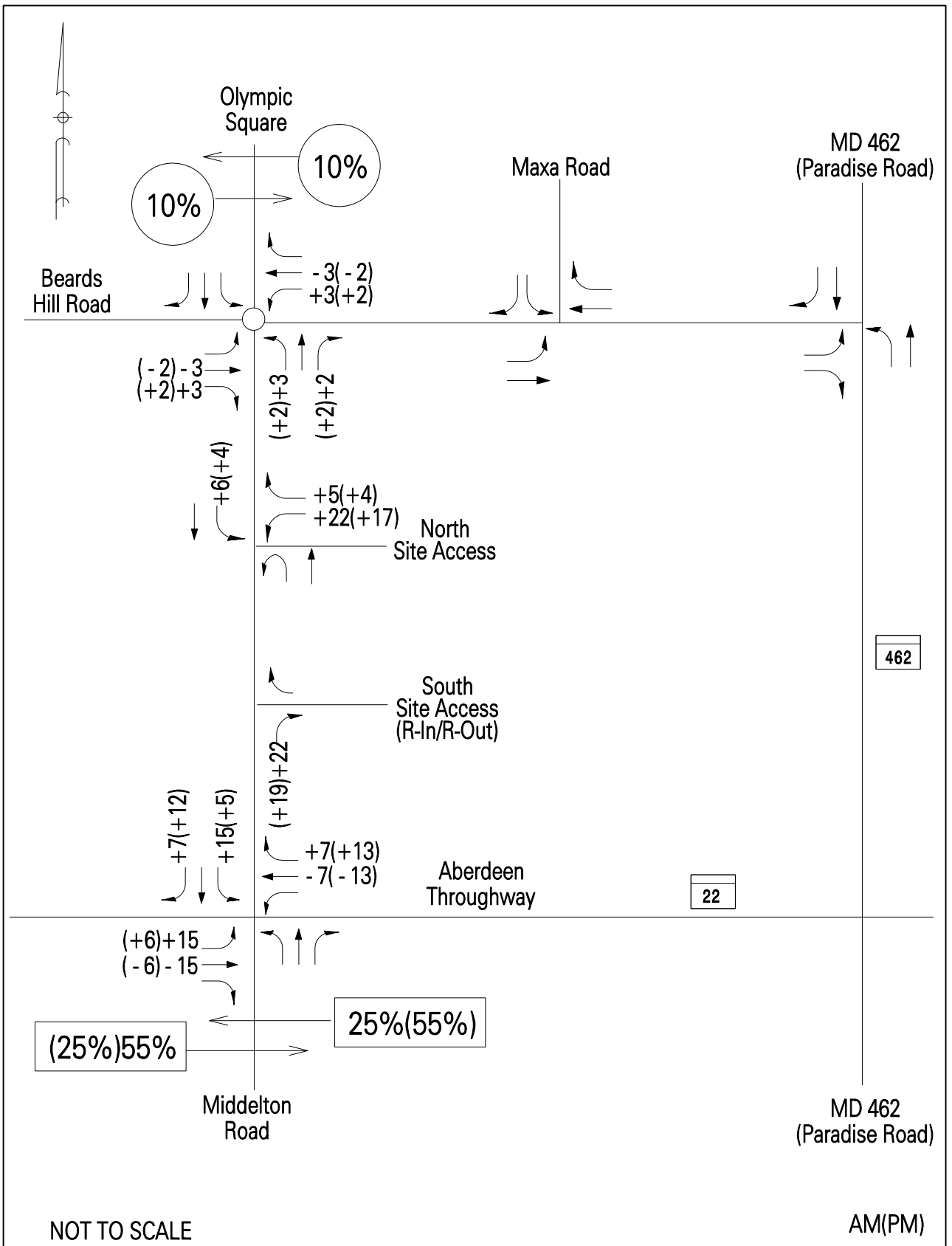
Directional Distribution: 52% entering, 48% exiting

Calculated Trip Ends: Average Rate: 80 (Total), 41 (Entry), 39 (Exit)



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EXHIBIT 8
 Site Generated Traffic - New Trips

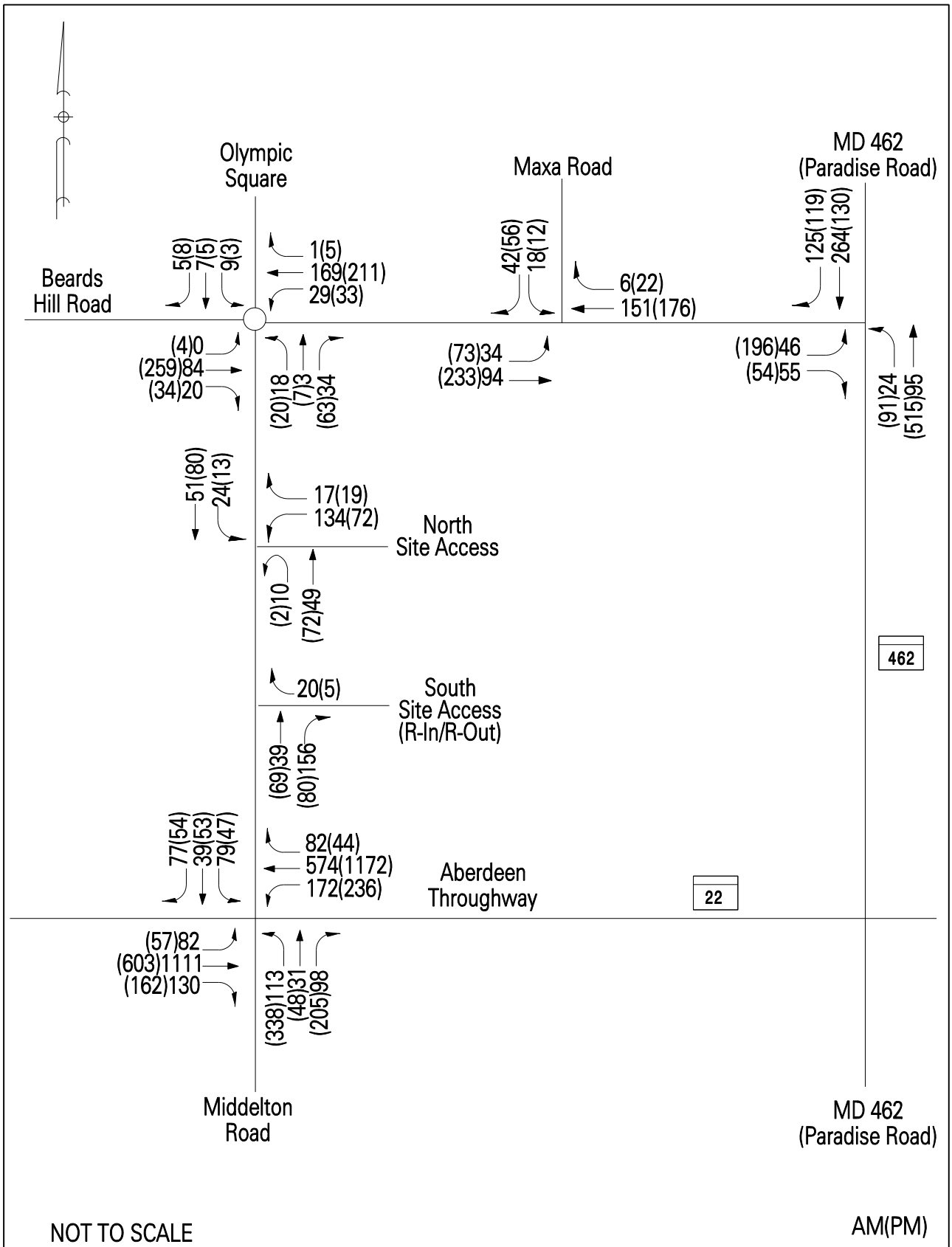


NOT TO SCALE

AM(PM)

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EXHIBIT 9
 Site Generated Traffic - Pass-by Trips



NOT TO SCALE

AM(PM)

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EXHIBIT 10
Total Future Traffic Volumes

INTERSECTION CAPACITY ANALYSIS

The key intersections were analyzed during the existing, background, and future traffic conditions. The level of service results are listed in the following tables and the detailed calculations are included in Appendix I.

CRITICAL LANE VOLUME ANALYSIS – AM PEAK HOUR			
KEY INTERSECTIONS	EXISTING CLV / LOS	BACKGROUND CLV / LOS	FUTURE CLV / LOS
MD 22 @ Middelton Road	604 / A	806 / A	818 / A
MD 462 @ Beards Hill Road	449 / A	457 / A	459 / A
Beards Hill Road @ Maxa Road	245 / A	246 / A	251 / A
Middelton Rd @ Site Access (North)	157 / A	176 / A	238 / A
Middelton Rd @ Starbucks Access	152 / A	167 / A	215 / A
CRITICAL LANE VOLUME ANALYSIS – PM PEAK HOUR			
KEY INTERSECTIONS	EXISTING CLV / LOS	BACKGROUND CLV / LOS	FUTURE CLV / LOS
MD 22 @ Middelton Road	663 / A	840 / A	865 / A
MD 462 @ Beards Hill Road	882 / A	892 / A	893 / A
Beards Hill Road @ Maxa Road	376 / A	378 / A	381 / A
Middelton Rd @ Site Access (North)	117 / A	142 / A	187 / A
Middelton Rd @ Starbucks Access	78 / A	118 / A	154 / A

HIGHWAY CAPACITY MANUAL: SIGNAL CONTROL - AM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE Delay / LOS
MD 22 @ Middelton Road	28.7 / C	33.5 / C	33.6 / C
HIGHWAY CAPACITY MANUAL: SIGNAL CONTROL - PM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE Delay / LOS
MD 22 @ Middelton Road	42.9 / D	44.8 / D	44.8 / D

HIGHWAY CAPACITY MANUAL: STOP CONTROL - AM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE Delay / LOS
MD 462 @ Beards Hill Road			
EB – Left & Right	11.3 / B	11.4 / B	11.4 / B
NB – Left/Thru	8.2 / A	8.2 / A	8.2 / A
Beards Hill Road @ Maxa Road			
EB – Left/Thru	7.6 / A	7.6 / A	7.6 / A
SB – Left/Right	9.8 / A	9.9 / A	9.9 / A
Middelton Rd @ Site Access (North)			
WB – Left/Right	9.7 / A	10.2 / B	10.9 / B
NB – U-Turn/Thru/Right	7.3 / A	7.3 / A	7.3 / A
SB – Left/Thru	7.3 / A	7.3 / A	7.4 / A
Middelton Rd @ Starbucks Access			
WB – Right	8.8 / A	8.9 / A	9.0 / A
HIGHWAY CAPACITY MANUAL: STOP CONTROL - PM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE Delay / LOS
MD 462 @ Beards Hill Road			
EB – Left & Right	37.3 / E	39.5 / E	40.0 / E
NB – Left/Thru	7.9 / A	7.9 / A	8.0 / A
Beards Hill Road @ Maxa Road			
EB – Left/Thru	7.8 / A	7.8 / A	7.8 / A
SB – Left/Right	10.5 / B	10.5 / B	10.5 / B
Middelton Rd @ Site Access (North)			
WB – Left/Right	9.3 / A	9.8 / A	10.2 / B
NB – U-Turn/Thru/Right	7.3 / A	7.4 / A	7.4 / A
SB – Left/Thru	7.3 / A	7.4 / A	7.4 / A
Middelton Rd @ Starbucks Access			
WB – Right	8.6 / A	8.8 / A	8.9 / A

SIDRA ROUNDABOUT ANALYSIS – AM PEAK HOUR			
KEY INTERSECTION	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE Delay / LOS
Beards Hill Road @ Middelton Road	3.7 / A	3.8 / A	3.8 / A
SIDRA ROUNDABOUT ANALYSIS – PM PEAK HOUR			
KEY INTERSECTION	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE Delay / LOS
Beards Hill Road @ Middelton Road	4.6 / A	4.6 / A	4.7 / A

QUEUING ANALYSIS

Queuing analyses were conducted along the exclusive left turn lanes at all signalized intersections. This analysis was conducted with the background and future traffic volumes. The analysis was conducted using the HCM 95th percentile back-of-queue methodology. The analysis worksheets are provided Appendix I.

	BACKGROUND 95 TH Percentile Queue (ft) AM(PM)	FUTURE 95 TH Percentile Queue (ft) AM(PM)	Storage (ft)	SITE ADDS (ft)
MD 22 @ Middelton Rd				
EB Left	78(72)	106(88)	350	*
WB Left	233(322)	233(322)	700	*
NB Left/Thru	98(272)	103(273)	**	*
SB Left	70(50)	111(72)	150	*

* The site does not add to the vehicle queue and/or the existing storage is sufficient to support the projected queue.

** The NB approach provides a left turn lane and a shared through/left turn lane that provides continuous storage for the left turn movement.

CONCLUSIONS AND RECOMMENDATIONS

The study results show the proposed development will have a minimal impact on the surrounding key intersections and at the proposed site access road.

Critical Lane Volume Analysis

All key intersections would operate with acceptable “A” levels of service when analyzed using the CLV method.

Highway Capacity Manual – Signalized Intersections

The HCM analyses determined that all signalized key intersections would operate at acceptable “D” or better overall levels of service (LOS) at the projected future build-out conditions. Furthermore, the HCM 95th Percentile Back-of-Queue analyses finds the existing left turn lane storage is adequate to handle the future traffic volumes that include the new site generated peak hour trips.

Highway Capacity Manual – Unsignalized Intersections

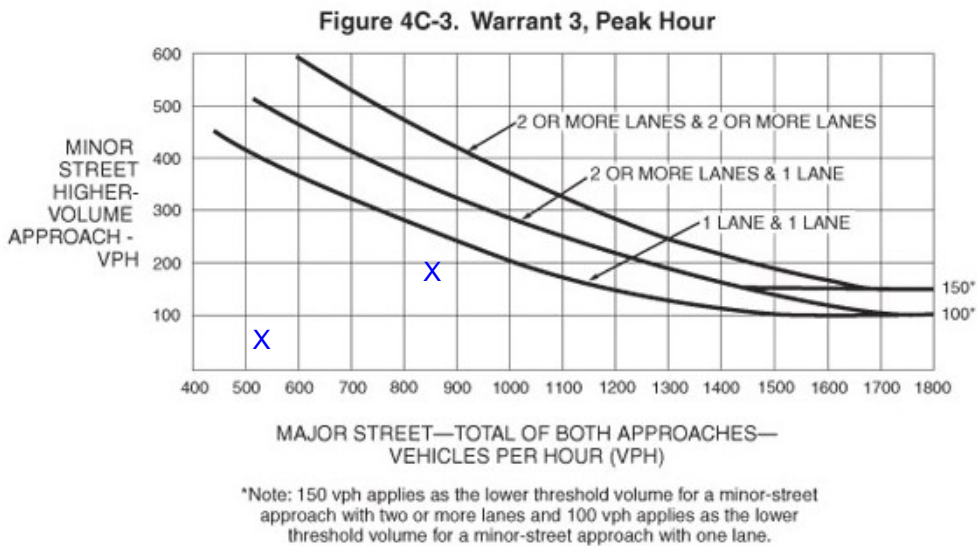
The HCM analysis results determined all unsignalized intersections are projected to operate at “B” or better levels of service, with the exception of the MD 462 (Paradise Road) at Beards Hill Road intersection.

MD 462 at Beards Hill Road (Unsignalized) – During the AM peak hour, the HCM unsignalized analysis shows this intersection operates at “B” or better levels of service. During the PM peak hour, the Beards Hill approach operates at an “E” level of service from existing through projected future traffic conditions. This approach condition is the result of the eastbound Beards Hill Rd left turn delay

The approach level of service and seconds of delay shown on the table below highlights the difference between the background and the future intersection volumes. The impact of the site is an increase of 0.5 seconds.

MD 462 @ Beards Hill				
	Existing Approach Delay (LOS)	Background Approach Delay (LOS)	Future Approach Delay (LOS)	Site Impact (sec/veh)
EB Beards Hill Rd – AM	11.3 (B)	11.4 (B)	11.4 (B)	0.0
EB Beards Hill Rd - PM	37.3 (E)	39.5 (E)	40.0 (E)	0.5

The eastbound Beards Hill Road left turn delay cannot be improved with other geometric road improvements. The MD 462 shared left/through approach operates with a level of service “A condition. We then tested the intersection volumes to determine if this intersection is a candidate for traffic signal control. Therefore, a peak hour warrant was conducted and showed the intersection volume are not sufficiently high enough to meet the required threshold. The future peak hour volumes are shown in the following chart.



Total Future AM Peak Hour Volume: 508(46)
Total Future PM Peak Hour Volume: 855(196)

Existing Site Access Operation

The access to Lot 2 is from the existing (north) access road that currently serves the Starbucks store. The Starbucks access along Middeltown Road was also included in the analysis to understand the overall traffic flow conditions along MD 22 and Middeltown Road. The new site generated trips can also have access from this south Starbucks entrance. Peak hour field observations and video of the entire study periods show no evidence of vehicles stacking along MD 22 waiting to turn onto Middeltown Rd and into the Starbucks entrance. The video does not show vehicle stacking along northbound Middeltown Road waiting to turn into the north access road. Finally, the video does not show vehicle delay along southbound Middeltown Road turning into the north access road. The Starbucks drive-through is heavily used however the peak hour traffic flows unobstructed to and from the existing Starbucks site.

The HCM unsignalized analysis results confirm the video and field observations. The HCM results determined that the Starbucks access (south) and the north access road are projected to operate at “B” or better levels of service. The HCM analysis shows queue-free conditions along Middleton Road at both access intersections.

Based on the findings of this study, we respectfully recommend approval of this development from a traffic impact standpoint.

APPENDIX I
INTERSECTION CAPACITY
CALCULATIONS

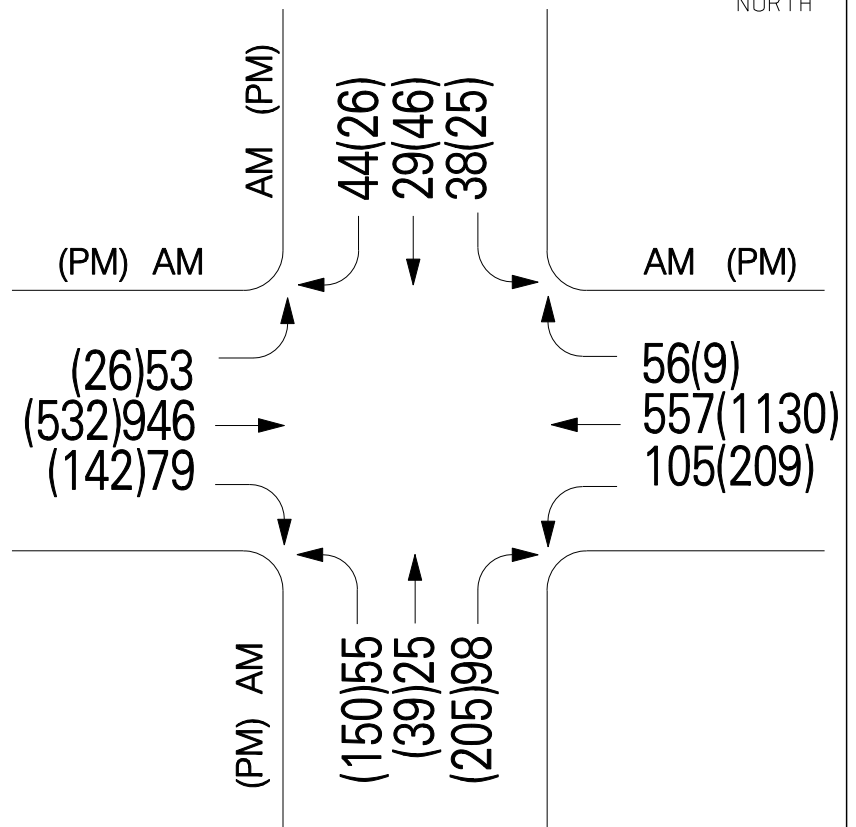
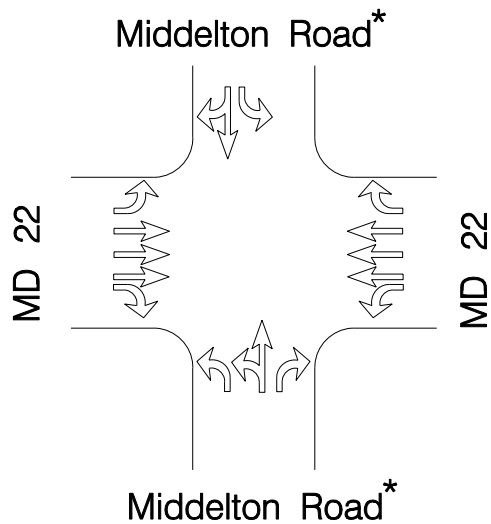
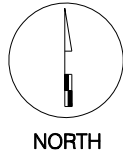
APPENDIX I-A
CRITICAL LANE VOLUME
CALCULATIONS

TRAFFIC VOLUMES



LANE CONFIGURATION

* SPLIT PHASED



		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =					CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(55 + 25)	*	0.6	=	48*	A 604	
	SB	(44 + 29)	*	1	=	73*		
	EB	946	*	0.4	+ 105 * 1 =	483*		
	WB	557	*	0.4	+ 53 * 1 =	276		
PM	NB	(150 + 39)	*	0.6	=	113*	A 663	
	SB	(26 + 46)	*	1	=	72*		
	EB	532	*	0.4	+ 209 * 1 =	422		
	WB	1130	*	0.4	+ 26 * 1 =	478*		

CRITICAL LANE ANALYSIS

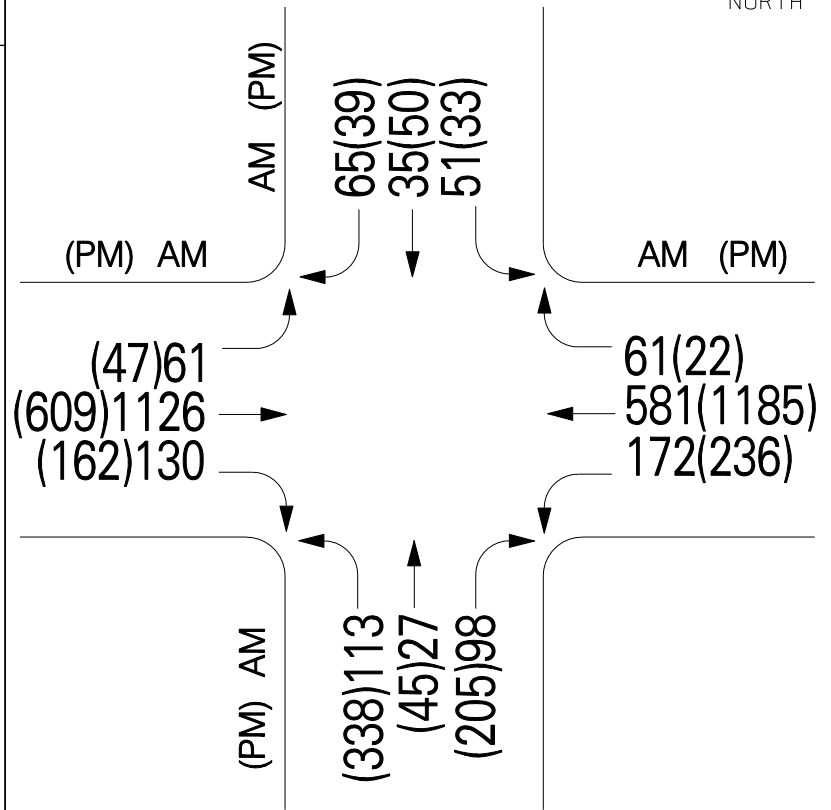
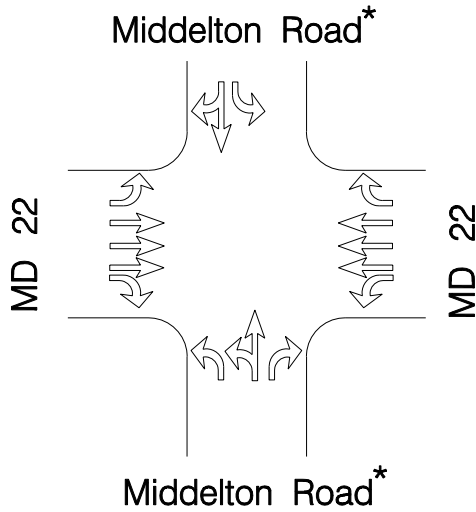
Prepared By: J. CAREY Condition: EXISTING

TRAFFIC VOLUMES



LANE CONFIGURATION

* SPLIT PHASED



		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =					CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(113 + 27)	*	0.6	=	84*		
	SB	(65 + 35)	*	1	=	100*		
	EB	1126	*	0.4	+ 172	* 1 =	622*	A 806
	WB	581	*	0.4	+ 61	* 1 =	293	
PM	NB	(338 + 45)	*	0.6	=	230*		
	SB	(39 + 50)	*	1	=	89*		
	EB	609	*	0.4	+ 236	* 1 =	480	A 840
	WB	1185	*	0.4	+ 47	* 1 =	521*	

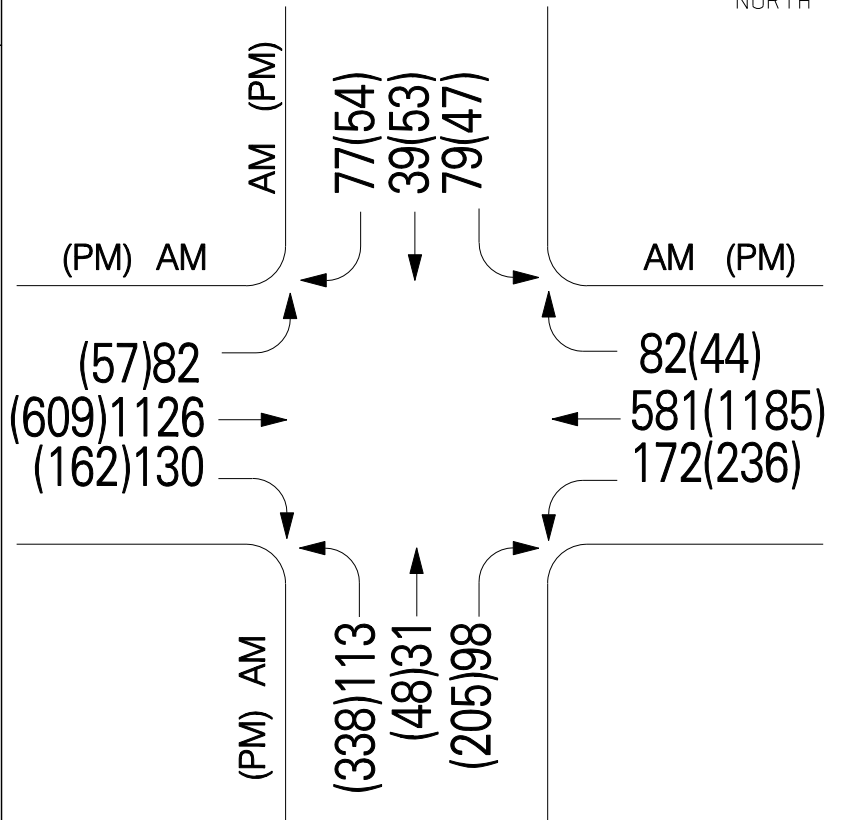
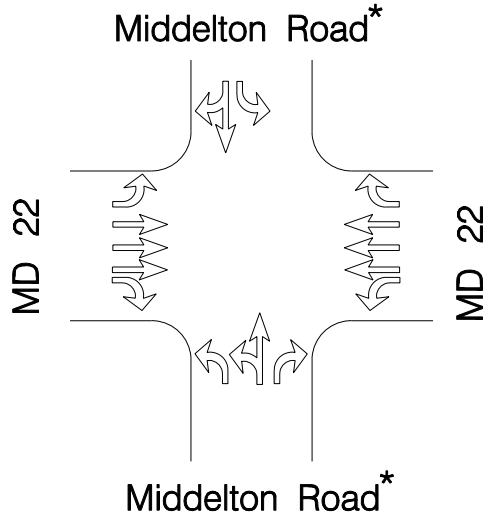
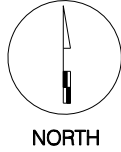
CRITICAL LANE ANALYSIS

TRAFFIC VOLUMES



LANE CONFIGURATION

* SPLIT PHASED



	TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =							CRITICAL LANE VOLUME	LEVEL OF SERVICE		
AM	NB	(113 + 31)	*	0.6	=			86*	A 818		
	SB	(77 + 39)	*	1	=			116*			
	EB	1111	*	0.4	+	172	*	1		=	616*
	WB	574	*	0.4	+	82	*	1		=	312
PM	NB	(338 + 48)	*	0.6	=			232*	A 865		
	SB	(54 + 53)	*	1	=			107*			
	EB	603	*	0.4	+	236	*	1		=	477
	WB	1172	*	0.4	+	57	*	1		=	526*

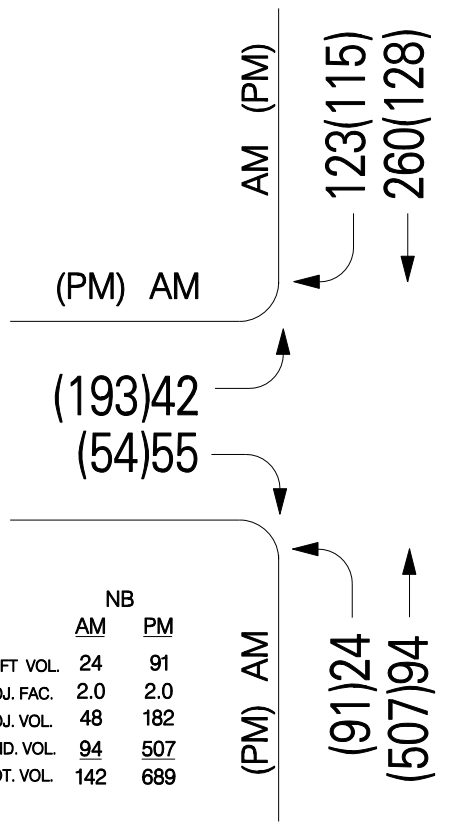
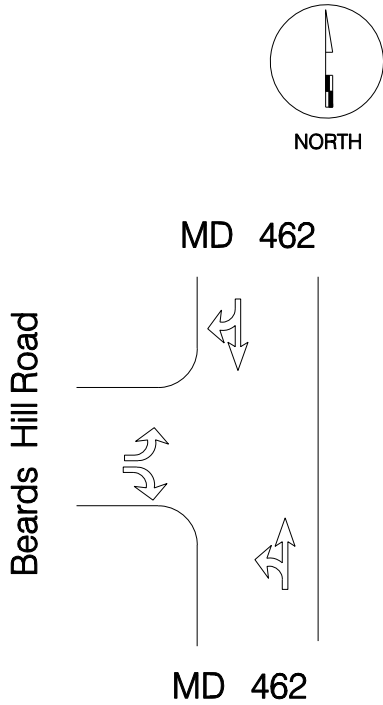
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE



NORTH

LANE CONFIGURATION



	NB	
	AM	PM
LEFT VOL.	24	91
ADJ. FAC.	2.0	2.0
ADJ. VOL.	48	182
SHD. VOL.	94	507
TOT. VOL.	142	689

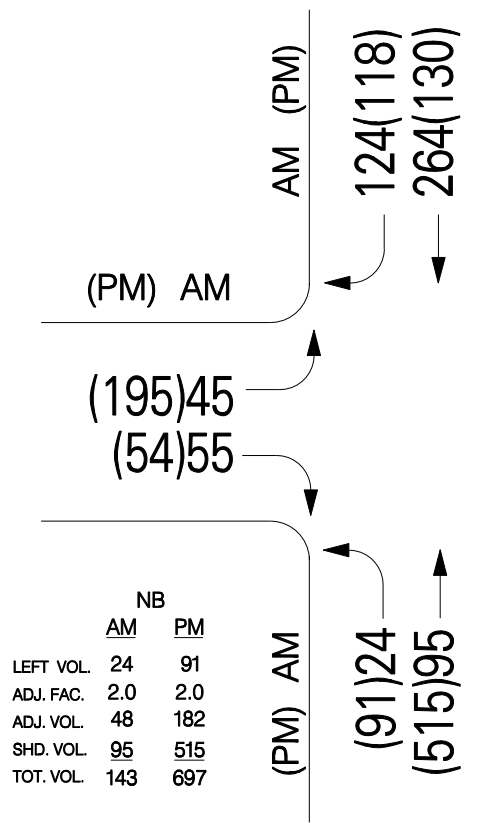
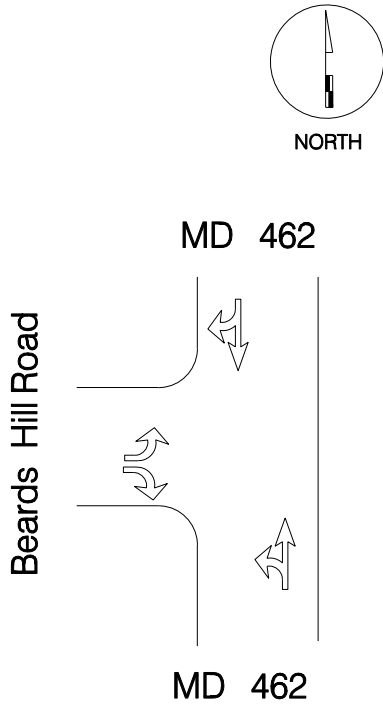
	TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =					CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	142	*	1	=	142	A 449
	SB	(260 + 123)	*	1	+ 24 * 1 =	407*	
	EB	42	*	1	=	42*	
	WB				—	—	
PM	NB	689	*	1	=	689*	A 882
	SB	(128 + 115)	*	1	+ 91 * 1 =	334	
	EB	193	*	1	=	193*	
	WB				—	—	

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING



LANE CONFIGURATION



		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =				CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	143	*	1	=	143	A 457
	SB	(264 + 124)	*	1	+ 24 * 1 =	412*	
	EB	45	*	1	=	45*	
	WB	—				—	
PM	NB	697	*	1	=	697*	A 892
	SB	(130 + 118)	*	1	+ 91 * 1 =	339	
	EB	195	*	1	=	195*	
	WB	—				—	

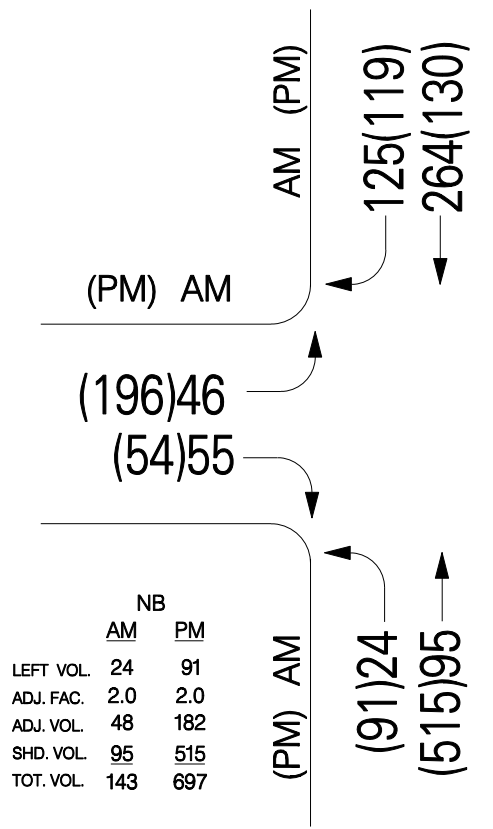
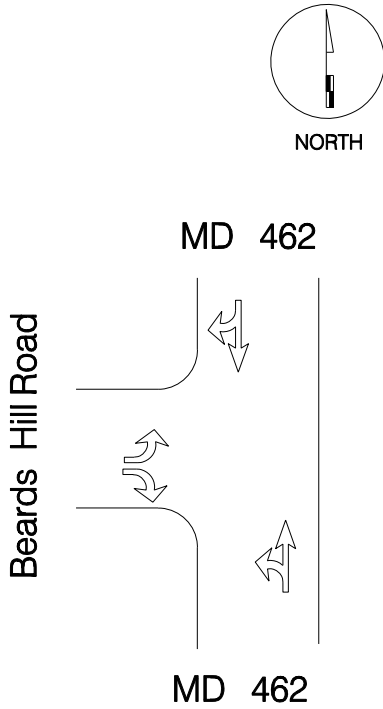
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND



NORTH

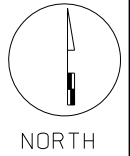
LANE CONFIGURATION



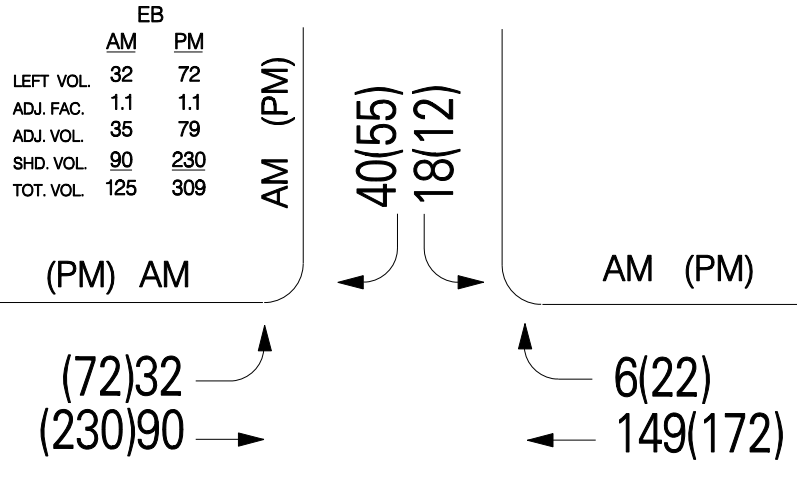
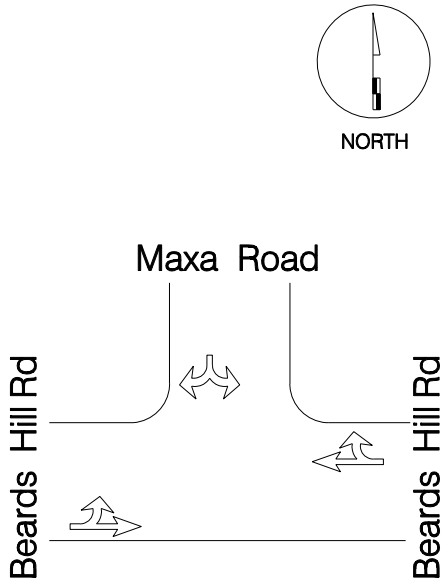
		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =					CRITICAL LANE VOLUME	LEVEL OF SERVICE			
AM	NB	143	*	1		*	=	143	A 459		
	SB	(264 + 125)	*	1	+	24	*	1		=	413*
	EB	46	*	1			=	46*			
	WB				—			—			
PM	NB	697	*	1			=	697*	A 893		
	SB	(130 + 119)	*	1	+	91	*	1		=	340
	EB	196	*	1			=	196*			
	WB				—			—			

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE



LANE CONFIGURATION



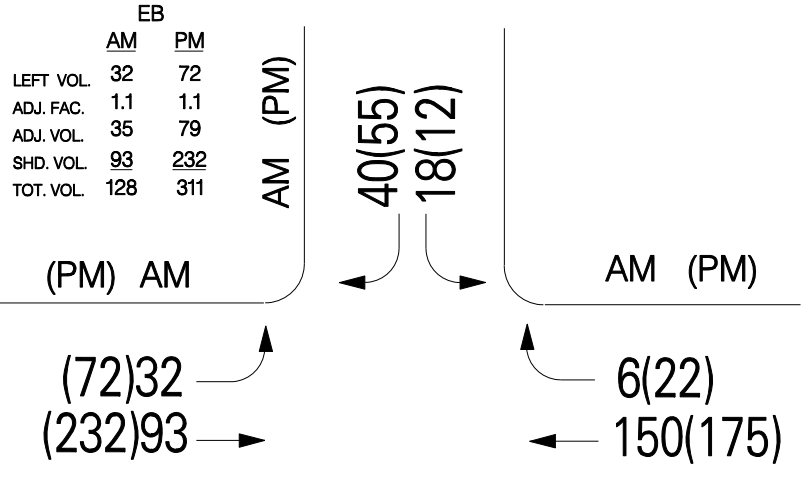
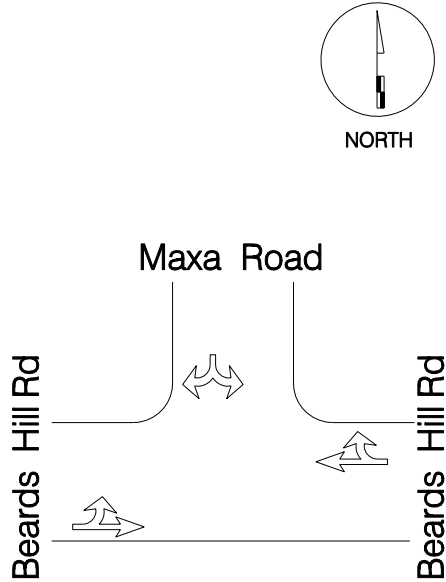
		TOTAL VOLUME * LUF	+	OPPOSING LEFTS * LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	—		—		—	
	SB	(40 + 18) * 1			=	58*	
	EB	125 * 1			=	125	A
	WB	(149 + 6) * 1	+	32 * 1	=	187*	245
PM	NB	—		—		—	
	SB	(55 + 12) * 1			=	67*	
	EB	309 * 1			=	309*	A
	WB	(172 + 22) * 1	+	72 * 1	=	266	376

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING



LANE CONFIGURATION



	TOTAL VOLUME * LUF		+	OPPOSING LEFTS * LUF =		CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	—		—		—	A 246
	SB	(40 + 18)	*	1	=	58*	
	EB	128	*	1	=	128	
	WB	(150 + 6)	*	1	+ 32 * 1 =	188*	
PM	NB	—		—		—	A 378
	SB	(55 + 12)	*	1	=	67*	
	EB	311	*	1	=	311*	
	WB	(175 + 22)	*	1	+ 72 * 1 =	269	

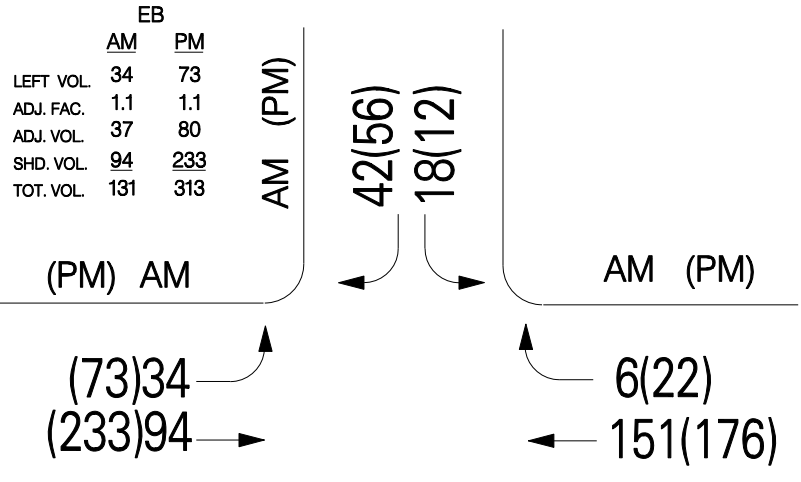
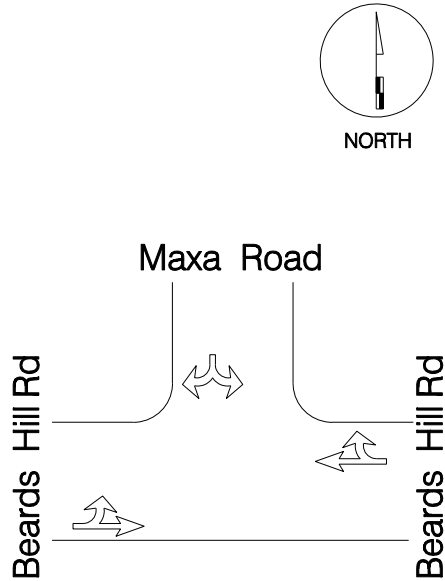
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND



NORTH

LANE CONFIGURATION



	TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =							CRITICAL LANE VOLUME	LEVEL OF SERVICE	
AM	NB	—							—	
	SB	(42 + 18)	*	1			=	60*		
	EB	131	*	1			=	131	A	
	WB	(151 + 6)	*	1	+	34	*	1	=	191*
PM	NB	—							—	
	SB	(56 + 12)	*	1			=	68*		
	EB	313	*	1			=	313*	A	
	WB	(176 + 22)	*	1	+	73	*	1	=	271

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE

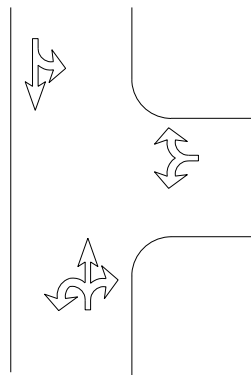
TRAFFIC VOLUMES



LANE CONFIGURATION

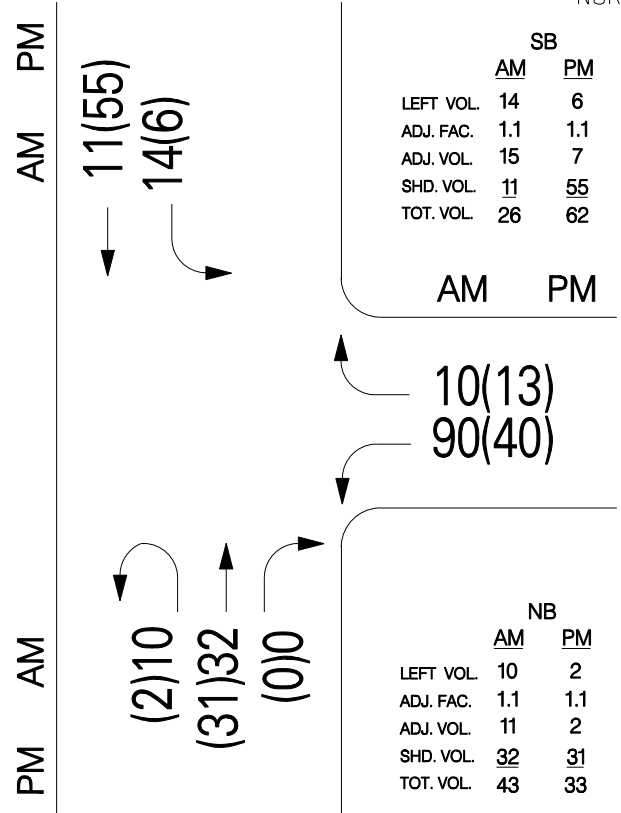


Middelton Road



Site Access (N)

Middelton Road



	SB	
	AM	PM
LEFT VOL.	14	6
ADJ. FAC.	1.1	1.1
ADJ. VOL.	15	7
SHD. VOL.	11	55
TOT. VOL.	26	62

	AM	PM
	10(13)	90(40)

	NB	
	AM	PM
LEFT VOL.	10	2
ADJ. FAC.	1.1	1.1
ADJ. VOL.	11	2
SHD. VOL.	32	31
TOT. VOL.	43	33

		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =						CRITICAL LANE VOLUME	LEVEL OF SERVICE		
AM	NB	43	*	1	+	14	*	1	=	57*	A 157
	SB	26	*	1	+	10	*	1	=	36	
	EB	—						—			
	WB	(90 + 10)	*	1					1	=	
PM	NB	33	*	1	+	6	*	1	=	39	A 117
	SB	62	*	1	+	2	*	1	=	64*	
	EB	—						—			
	WB	(40 + 13)	*	1				*	=	53*	

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING

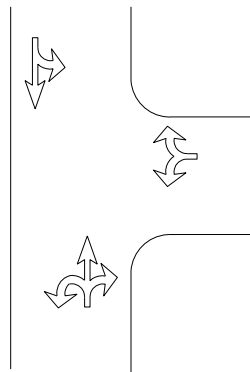
TRAFFIC VOLUMES



LANE CONFIGURATION



Middelton Road



Site Access (N)

Middelton Road

AM PM

51(80)

14(6)

	SB	
	AM	PM
LEFT VOL.	14	6
ADJ. FAC.	1.1	1.1
ADJ. VOL.	15	7
SHD. VOL.	51	80
TOT. VOL.	66	87

AM PM

10(13)
90(40)

PM AM

(2)10

(71)47

(0)0

	NB	
	AM	PM
LEFT VOL.	10	2
ADJ. FAC.	1.1	1.1
ADJ. VOL.	11	2
SHD. VOL.	47	71
TOT. VOL.	58	73

		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =						CRITICAL LANE VOLUME	LEVEL OF SERVICE		
AM	NB	58	*	1	+	14	*	1	=	72	A 176
	SB	66	*	1	+	10	*	1	=	76*	
	EB				—					—	
	WB	(90 + 10)	*	1					1	=	
PM	NB	73	*	1	+	6	*	1	=	79	A 142
	SB	87	*	1	+	2	*	1	=	89*	
	EB				—					—	
	WB	(40 + 13)	*	1				*		=	

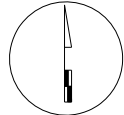
CRITICAL LANE ANALYSIS

TRAFFIC VOLUMES



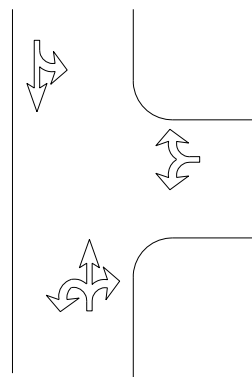
NORTH

LANE CONFIGURATION



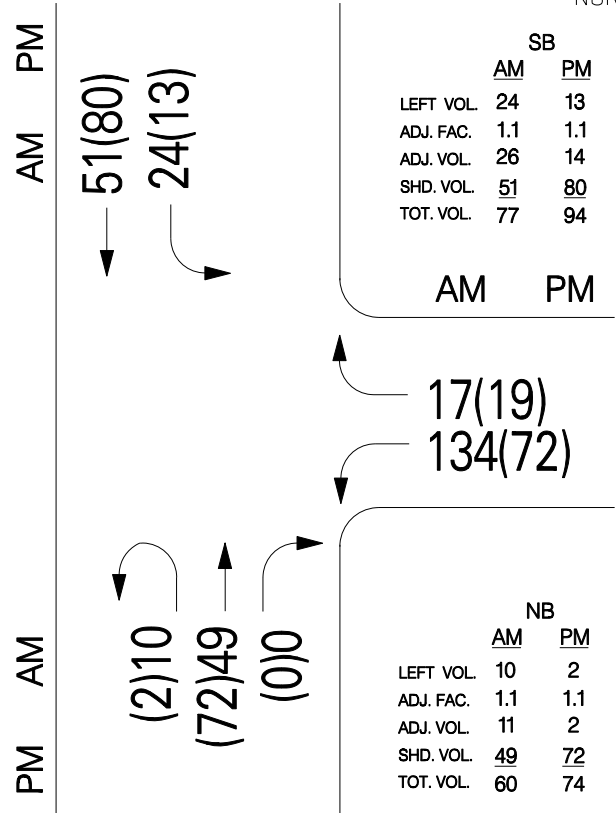
NORTH

Middelton Road



Site Access (N)

Middelton Road



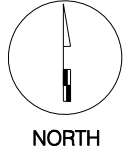
		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =							CRITICAL LANE VOLUME	LEVEL OF SERVICE	
AM	NB	60	*	1	+	24	*	1	=	84	A 238
	SB	77	*	1	+	10	*	1	=	87*	
	EB	—							—		
	WB	(134 + 17)	*	1					1	=	
PM	NB	74	*	1	+	13	*	1	=	87	A 187
	SB	94	*	1	+	2	*	1	=	96*	
	EB	—							—		
	WB	(72 + 19)	*	1			*		=	91*	

CRITICAL LANE ANALYSIS

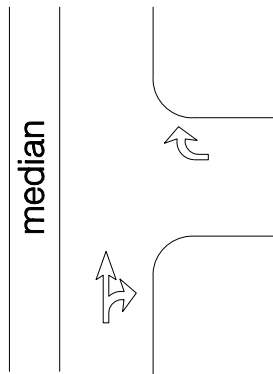
Prepared By: J. CAREY Condition: FUTURE



LANE CONFIGURATION



Middelton Road



Middelton Road

PM AM

(29)24
(45)110

AM PM

18(4)

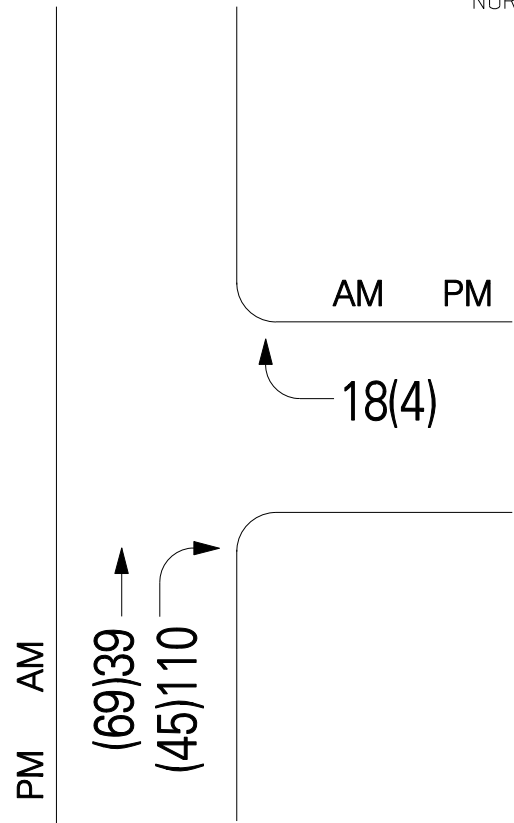
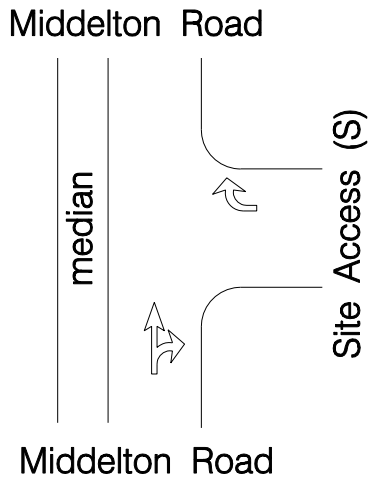
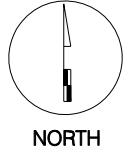
TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =				CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(24 + 110) * 1	=	134*	A 152
	SB	—		—	
	EB	—		—	
	WB	18 * 1	=	18*	
PM	NB	(29 + 45) * 1	=	74*	A 78
	SB	—		—	
	EB	—		—	
	WB	4 * 1	=	4*	

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING



LANE CONFIGURATION

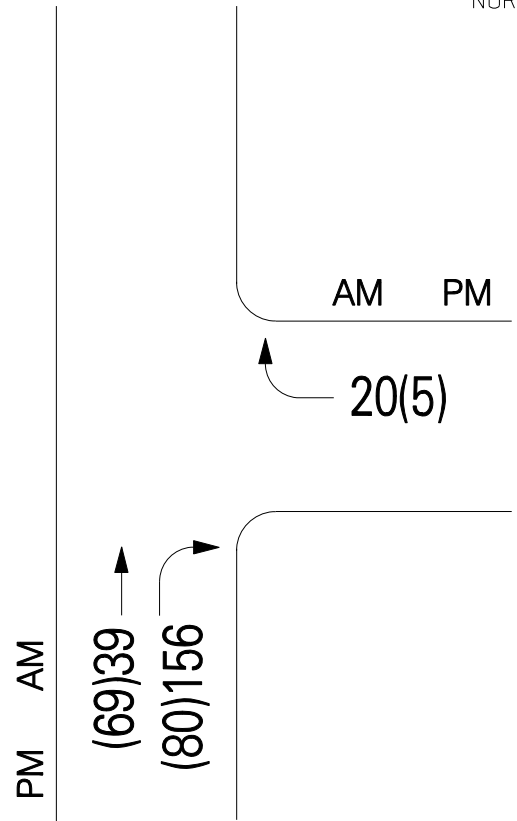
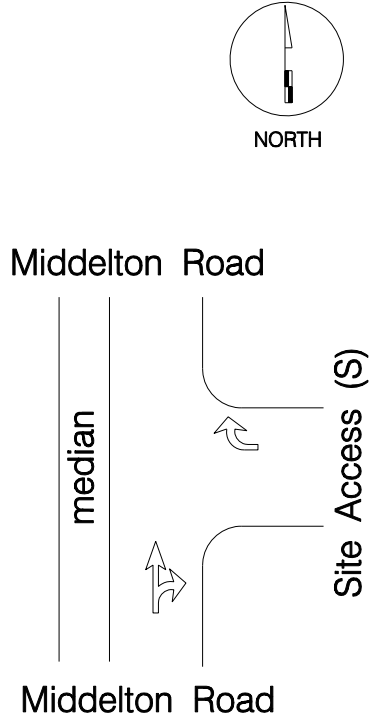


TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =				CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(39 + 110)	* 1 =	149*	A 167
	SB		—	—	
	EB		—	—	
	WB	18	* 1 =	18*	
PM	NB	(69 + 45)	* 1 =	114*	A 118
	SB		—	—	
	EB		—	—	
	WB	4	* 1 =	4*	

CRITICAL LANE ANALYSIS



LANE CONFIGURATION



TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =				CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(39 + 156) * 1	=	195*	A 215
	SB	—		—	
	EB	—		—	
	WB	20 * 1	=	20*	
PM	NB	(69 + 80) * 1	=	149*	A 154
	SB	—		—	
	EB	—		—	
	WB	5 * 1	=	5*	

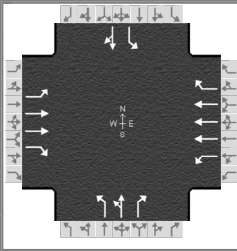
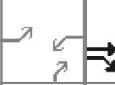


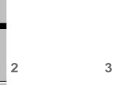

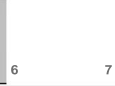
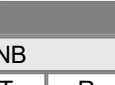
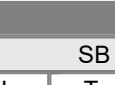
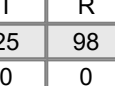
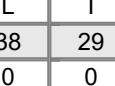
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE

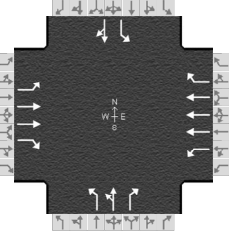
APPENDIX I-B

HCM REPORTS –
SIGNALIZED INTERSECTIONS

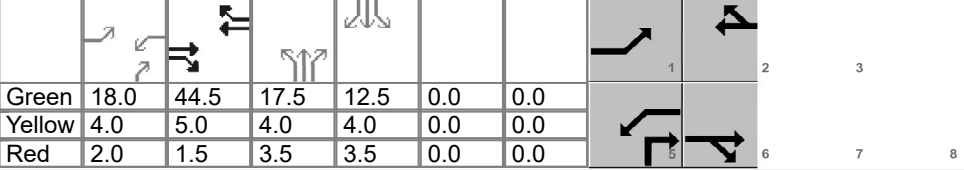
HCS7 Signalized Intersection Input Data

General Information						Intersection Information										
Agency	Traffic Concepts, Inc.					Duration, h	0.250									
Analyst	J. Carey	Analysis Date	Mar 11, 2022			Area Type	Other									
Jurisdiction	City of Aberdeen, MD		Time Period	Existing AM		PHF	0.92									
Urban Street			Analysis Year	2022		Analysis Period	1 > 4:30									
Intersection	MD 22 at Middelton Rd		File Name	MD 22 at Middelton Rd - Ex AM.xus												
Project Description	3863															
Demand Information				EB			WB			NB			SB			
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h				53	946	79	105	557	56	55	25	98	38	29	44	
Signal Information																
Cycle, s	120.0	Reference Phase	2													
Offset, s	0	Reference Point	End	Green	18.0	44.5	17.5	12.5	0.0	0.0						
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	5.0	4.0	4.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	1.5	3.5	3.5	0.0	0.0						
Traffic Information				EB			WB			NB			SB			
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h				53	946	79	105	557	56	55	25	98	38	29	44	
Initial Queue (Q _b), veh/h				0	0	0	0	0	0	0	0	0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h				1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Parking (N _m), man/h				None			None			None			None			
Heavy Vehicles (P _{HV}), %				2	2	2	2	2	2	2	2	2	2	2		
Ped / Bike / RTOR, /h				0	0	0	0	0	0	0	0	0	0	0	0	
Buses (N _b), buses/h				0	0	0	0	0	0	0	0	0	0	0	0	
Arrival Type (AT)				3	4	4	3	4	4	3	3	3	3	3	3	
Upstream Filtering (I)				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Lane Width (W), ft				11.0	11.0	11.0	12.0	12.0	12.0	11.0	11.0	11.0	11.0	11.0		
Turn Bay Length, ft				350	0	275	700	0	200	0	0	300	150	0		
Grade (P _g), %				0			0			0			0			
Speed Limit, mi/h				40	40	40	40	40	40	40	40	40	25	25	25	
Phase Information				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Maximum Green (G _{max}) or Phase Split, s				24.0	51.0	24.0	51.0		25.0			20.0				
Yellow Change Interval (Y), s				4.0	5.0	4.0	5.0		4.0			4.0				
Red Clearance Interval (R _c), s				2.0	1.5	2.0	1.5		3.5			3.5				
Minimum Green (G _{min}), s				5	25	5	25		5			5				
Start-Up Lost Time (lt), s				2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Extension of Effective Green (e), s				4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Passage (PT), s				2.0	2.0	2.0	2.0		2.0			2.0				
Recall Mode				Off	Min	Off	Min		Off			Off				
Dual Entry				No	Yes	No	Yes		Yes			Yes				
Walk (Walk), s					0.0		0.0		0.0			0.0				
Pedestrian Clearance Time (PC), s					0.0		0.0		0.0			0.0				
Multimodal Information				EB			WB			NB			SB			
85th % Speed / Rest in Walk / Corner Radius				0	No	25	0	No	25	0	No	25	0	No	25	
Walkway / Crosswalk Width / Length, ft				9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0	
Street Width / Island / Curb				0	0	No	0	0	No	0	0	No	0	0	No	
Width Outside / Bike Lane / Shoulder, ft				12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	
Pedestrian Signal / Occupied Parking				No	0.50	No	0.50	No	0.50	No	0.50	No	0.50			

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	Traffic Concepts, Inc.			Duration, h	0.250	
Analyst	J. Carey	Analysis Date	Mar 11, 2022	Area Type	Other	
Jurisdiction	City of Aberdeen, MD	Time Period	Existing AM	PHF	0.92	
Urban Street		Analysis Year	2022	Analysis Period	1 > 4:30	
Intersection	MD 22 at Middelton Rd	File Name	MD 22 at Middelton Rd - Ex AM.xus			
Project Description	3863					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	53	946	79	105	557	56	55	25	98	38	29	44

Signal Information																	
Cycle, s	120.0	Reference Phase	2	Green	18.0	44.5	17.5	12.5	0.0	0.0							
Offset, s	0	Reference Point	End	Yellow	4.0	5.0	4.0	4.0	0.0	0.0							
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	1.5	3.5	3.5	0.0	0.0							
Force Mode	Fixed	Simult. Gap N/S	On														

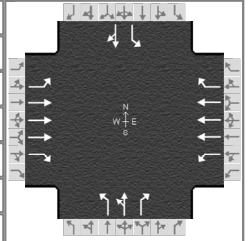
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	3.0	2.0	3.0		9.0		10.0
Phase Duration, s	24.0	51.0	24.0	51.0		25.0		20.0
Change Period, (Y+R _c), s	6.0	6.5	6.0	6.5		7.5		7.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.2		3.3
Queue Clearance Time (g _s), s	5.3		8.8			7.8		7.2
Green Extension Time (g _e), s	0.0	0.0	0.1	0.0		0.2		0.1
Phase Call Probability	1.00		1.00			1.00		1.00
Max Out Probability	0.00		0.00			0.00		0.10

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	58	1028	86	114	605	61	34	53	107	41	79	
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1781	1585	1781	1698	1585	1781	1827	1585	1781	1687	
Queue Service Time (g _s), s	3.3	27.2	3.4	6.8	8.2	2.3	2.0	3.0	5.8	2.5	5.2	
Cycle Queue Clearance Time (g _c), s	3.3	27.2	3.4	6.8	8.2	2.3	2.0	3.0	5.8	2.5	5.2	
Green Ratio (g/C)	0.17	0.39	0.39	0.17	0.39	0.39	0.16	0.16	0.33	0.12	0.12	
Capacity (c), veh/h	297	1380	614	297	1974	614	289	297	522	215	204	
Volume-to-Capacity Ratio (X)	0.194	0.745	0.140	0.384	0.307	0.099	0.118	0.178	0.204	0.192	0.389	
Back of Queue (Q), ft/ln (95 th percentile)	66.9	400	59	137.2	140.5	41.1	39.2	61.6	99.8	51.9	102.5	
Back of Queue (Q), veh/ln (95 th percentile)	2.6	15.7	2.3	5.4	5.5	1.6	1.5	2.4	3.9	2.0	4.0	
Queue Storage Ratio (RQ) (95 th percentile)	0.19	0.00	0.21	0.20	0.00	0.21	0.00	0.00	0.33	0.35	0.00	
Uniform Delay (d ₁), s/veh	43.1	25.0	18.6	44.5	20.2	18.3	42.9	43.3	28.9	47.5	48.7	
Incremental Delay (d ₂), s/veh	0.1	3.7	0.5	0.3	0.4	0.3	0.1	0.1	0.1	0.2	0.5	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	43.2	28.7	19.1	44.8	20.6	18.7	43.0	43.4	29.0	47.6	49.1	
Level of Service (LOS)	D	C	B	D	C	B	D	D	C	D	D	
Approach Delay, s/veh / LOS	28.7		C	24.0		C	35.4		D	48.6		D
Intersection Delay, s/veh / LOS	28.7						C					

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS				
Bicycle LOS Score / LOS				

HCS7 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	Traffic Concepts, Inc.			Duration, h	0.250		
Analyst	J. Carey	Analysis Date	Mar 11, 2022	Area Type	Other		
Jurisdiction	City of Aberdeen, MD	Time Period	Existing PM	PHF	0.98		
Urban Street		Analysis Year	2022	Analysis Period	1 > 4:30		
Intersection	MD 22 at Middleton Rd	File Name	MD 22 at Middleton Rd - Ex PM.xus				
Project Description	3683						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	26	532	142	209	1130	9	150	39	205	25	46	26

Signal Information				Signal Timing (s)										
Cycle, s	150.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	22.0	6.0	33.5	30.5	24.5	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	5.0	4.0	4.0	0.0				
				Red	2.0	2.0	1.5	3.5	3.5	0.0				

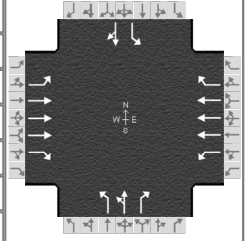
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	26	532	142	209	1130	9	150	39	205	25	46	26
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2	2	2	2	2	2	2	2	2	2	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	4	3	4	4	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	11.0	11.0	11.0	12.0	12.0	12.0	11.0	11.0	11.0	11.0	11.0	
Turn Bay Length, ft	350	0	275	700	0	200	0	0	300	150	0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s	28.0	40.0	40.0	52.0		38.0	
Yellow Change Interval (Y), s	4.0	5.0	4.0	5.0		4.0		4.0
Red Clearance Interval (R _c), s	2.0	1.5	2.0	1.5		3.5		3.5
Minimum Green (G _{min}), s	5	25	5	25		5		5
Start-Up Lost Time (lt), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (PT), s	2.0	2.0	2.0	2.0		2.0		2.0
Recall Mode	Off	Min	Off	Min		Off		Off
Dual Entry	No	Yes	No	Yes		Yes		Yes
Walk (Walk), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (PC), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Mar 11, 2022	Area Type	Other
Jurisdiction	City of Aberdeen, MD	Time Period	Existing PM	PHF	0.98
Urban Street		Analysis Year	2022	Analysis Period	1 > 4:30
Intersection	MD 22 at Middleton Rd	File Name	MD 22 at Middleton Rd - Ex PM.xus		
Project Description	3683				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	26	532	142	209	1130	9	150	39	205	25	46	26

Signal Information				Signal Timing (s)									
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	22.0	6.0	33.5	30.5	24.5	0.0			
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	5.0	4.0	4.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	1.5	3.5	3.5	0.0			

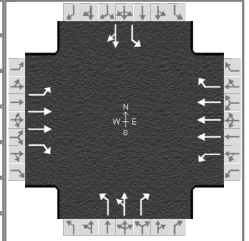
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	3.0	2.0	3.0		9.0		10.0
Phase Duration, s	28.0	40.0	40.0	52.0		38.0		32.0
Change Period, (Y+R _c), s	6.0	6.5	6.0	6.5		7.5		7.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.2		3.3
Queue Clearance Time (g _s), s	3.9		17.5			14.4		7.4
Green Extension Time (g _e), s	0.0	0.0	0.3	0.0		0.7		0.1
Phase Call Probability	1.00		1.00			1.00		1.00
Max Out Probability	0.00		0.00			0.00		0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	27	543	145	213	1153	9	87	106	209	26	73	
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1698	1585	1781	1698	1585	1781	1815	1585	1781	1756	
Queue Service Time (g _s), s	1.9	12.8	10.7	15.5	28.1	0.5	6.1	7.3	12.4	1.8	5.4	
Cycle Queue Clearance Time (g _c), s	1.9	12.8	10.7	15.5	28.1	0.5	6.1	7.3	12.4	1.8	5.4	
Green Ratio (g/C)	0.16	0.24	0.24	0.24	0.32	0.32	0.22	0.22	0.46	0.18	0.18	
Capacity (c), veh/h	285	1206	375	428	1613	502	386	393	724	315	310	
Volume-to-Capacity Ratio (X)	0.093	0.450	0.386	0.499	0.715	0.018	0.226	0.269	0.289	0.081	0.237	
Back of Queue (Q), ft/ln (95 th percentile)	39.1	228.5	197	284.7	424	9.4	123.4	150.9	208.5	37.6	111.4	
Back of Queue (Q), veh/ln (95 th percentile)	1.5	9.0	7.8	11.2	16.7	0.4	4.9	5.9	8.2	1.5	4.4	
Queue Storage Ratio (RQ) (95 th percentile)	0.11	0.00	0.72	0.41	0.00	0.05	0.00	0.00	0.69	0.25	0.00	
Uniform Delay (d ₁), s/veh	53.7	44.3	42.8	49.2	38.5	29.8	48.4	48.9	25.5	51.6	53.1	
Incremental Delay (d ₂), s/veh	0.1	1.2	3.0	0.3	2.7	0.1	0.1	0.1	0.1	0.0	0.1	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	53.8	45.5	45.8	49.5	41.2	29.8	48.5	49.0	25.6	51.6	53.2	
Level of Service (LOS)	D	D	D	D	D	C	D	D	C	D	D	
Approach Delay, s/veh / LOS	45.9		D	42.4		D	36.7		D	52.8		D
Intersection Delay, s/veh / LOS	42.9						D					

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS				
Bicycle LOS Score / LOS				

HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Mar 11, 2022	Area Type	Other
Jurisdiction	City of Aberdeen, MD	Time Period	Background AM	PHF	0.92
Urban Street		Analysis Year	2024	Analysis Period	1 > 4:30
Intersection	MD 22 at Middleton Rd	File Name	MD 22 at Middleton Rd - Back AM.xus		
Project Description	3863				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	61	1126	130	172	581	61	113	27	98	51	35	65

Signal Information				Signal Timing (s)													
Cycle, s	120.0	Reference Phase	2														
Offset, s	0	Reference Point	End	Green	18.0	44.5	17.5	12.5	0.0	0.0							
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	5.0	4.0	4.0	0.0	0.0							
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	1.5	3.5	3.5	0.0	0.0							

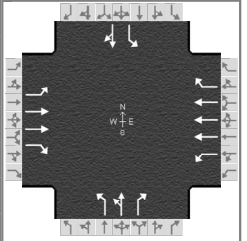
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	61	1126	130	172	581	61	113	27	98	51	35	65
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2	2	2	2	2	2	2	2	2	2	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	4	3	4	4	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	11.0	11.0	11.0	12.0	12.0	12.0	11.0	11.0	11.0	11.0	11.0	
Turn Bay Length, ft	350	0	275	700	0	200	0	0	300	150	0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	24.0	51.0	24.0	51.0		25.0		20.0
Yellow Change Interval (Y), s	4.0	5.0	4.0	5.0		4.0		4.0
Red Clearance Interval (R _c), s	2.0	1.5	2.0	1.5		3.5		3.5
Minimum Green (G _{min}), s	5	25	5	25		5		5
Start-Up Lost Time (lt), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (PT), s	2.0	2.0	2.0	2.0		2.0		2.0
Recall Mode	Off	Min	Off	Min		Off		Off
Dual Entry	No	Yes	No	Yes		Yes		Yes
Walk (Walk), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (PC), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Mar 11, 2022	Area Type	Other
Jurisdiction	City of Aberdeen, MD	Time Period	Background AM	PHF	0.92
Urban Street		Analysis Year	2024	Analysis Period	1 > 4:30
Intersection	MD 22 at Middleton Rd	File Name	MD 22 at Middleton Rd - Back AM.xus		
Project Description	3863				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	61	1126	130	172	581	61	113	27	98	51	35	65

Signal Information				Signal Timing (s)										
Cycle, s	120.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	18.0	44.5	17.5	12.5	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	5.0	4.0	4.0	0.0	0.0				
				Red	2.0	1.5	3.5	3.5	0.0	0.0				

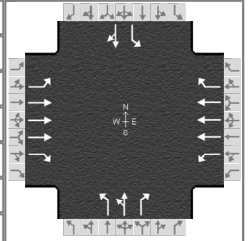
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	3.0	2.0	3.0		9.0		10.0
Phase Duration, s	24.0	51.0	24.0	51.0		25.0		20.0
Change Period, (Y+R _c), s	6.0	6.5	6.0	6.5		7.5		7.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.1		3.3
Queue Clearance Time (g _s), s	5.9		13.7			7.8		9.3
Green Extension Time (g _e), s	0.1	0.0	0.1	0.0		0.3		0.1
Phase Call Probability	1.00		1.00			1.00		1.00
Max Out Probability	0.00		0.28			0.00		1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	66	1224	141	187	632	66	70	82	107	55	109	
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1781	1585	1781	1698	1585	1781	1813	1585	1781	1674	
Queue Service Time (g _s), s	3.9	36.8	5.9	11.7	8.6	2.6	4.1	4.8	5.8	3.4	7.3	
Cycle Queue Clearance Time (g _c), s	3.9	36.8	5.9	11.7	8.6	2.6	4.1	4.8	5.8	3.4	7.3	
Green Ratio (g/C)	0.17	0.39	0.39	0.17	0.39	0.39	0.16	0.16	0.33	0.12	0.12	
Capacity (c), veh/h	297	1380	614	297	1974	614	289	295	522	215	202	
Volume-to-Capacity Ratio (X)	0.223	0.887	0.230	0.630	0.320	0.108	0.242	0.279	0.204	0.258	0.537	
Back of Queue (Q), ft/ln (95 th percentile)	77.5	537.1	100.3	233	147.2	45	82.4	97.4	99.8	70.3	145.4	
Back of Queue (Q), veh/ln (95 th percentile)	3.1	21.1	3.9	9.2	5.8	1.8	3.2	3.8	3.9	2.8	5.7	
Queue Storage Ratio (RQ) (95 th percentile)	0.22	0.00	0.36	0.33	0.00	0.22	0.00	0.00	0.33	0.47	0.00	
Uniform Delay (d ₁), s/veh	43.3	27.5	19.2	46.6	20.3	18.4	43.8	44.1	28.9	47.9	49.6	
Incremental Delay (d ₂), s/veh	0.1	8.7	0.9	3.2	0.4	0.4	0.2	0.2	0.1	0.2	1.5	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	43.4	36.2	20.1	49.8	20.8	18.7	44.0	44.3	29.0	48.1	51.1	
Level of Service (LOS)	D	D	C	D	C	B	D	D	C	D	D	
Approach Delay, s/veh / LOS	35.0		C	26.8		C	37.9		D	50.1		D
Intersection Delay, s/veh / LOS	33.5						C					

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS				
Bicycle LOS Score / LOS				

HCS7 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	Traffic Concepts, Inc.			Duration, h	0.250		
Analyst	J. Carey	Analysis Date	Mar 11, 2022	Area Type	Other		
Jurisdiction	City of Aberdeen, MD	Time Period	Background PM	PHF	0.98		
Urban Street		Analysis Year	2024	Analysis Period	1 > 4:30		
Intersection	MD 22 at Middleton Rd	File Name	MD 22 at Middleton Rd - Back PM.xus				
Project Description	3863						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	47	609	162	236	1185	22	338	45	205	33	50	39

Signal Information				Signal Timing (s)										
Cycle, s	150.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	22.0	6.0	33.5	30.5	24.5	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	5.0	4.0	4.0	0.0				
				Red	2.0	2.0	1.5	3.5	3.5	0.0				

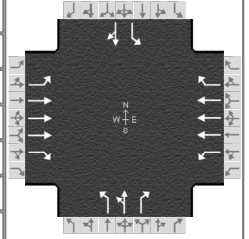
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	47	609	162	236	1185	22	338	45	205	33	50	39
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2	2	2	2	2	2	2	2	2	2	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	4	3	4	4	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	11.0	11.0	11.0	12.0	12.0	12.0	11.0	11.0	11.0	11.0	11.0	
Turn Bay Length, ft	350	0	275	700	0	200	0	0	300	150	0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
	Maximum Green (G _{max}) or Phase Split, s	28.0	40.0	40.0	52.0		38.0	
Yellow Change Interval (Y), s	4.0	5.0	4.0	5.0		4.0		4.0
Red Clearance Interval (R _c), s	2.0	1.5	2.0	1.5		3.5		3.5
Minimum Green (G _{min}), s	5	25	5	25		5		5
Start-Up Lost Time (lt), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (PT), s	2.0	2.0	2.0	2.0		2.0		2.0
Recall Mode	Off	Min	Off	Min		Off		Off
Dual Entry	No	Yes	No	Yes		Yes		Yes
Walk (Walk), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (PC), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Mar 11, 2022	Area Type	Other
Jurisdiction	City of Aberdeen, MD	Time Period	Background PM	PHF	0.98
Urban Street		Analysis Year	2024	Analysis Period	1 > 4:30
Intersection	MD 22 at Middleton Rd	File Name	MD 22 at Middleton Rd - Back PM.xus		
Project Description	3863				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	47	609	162	236	1185	22	338	45	205	33	50	39

Signal Information				Signal Timing (s)											
Cycle, s	150.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
		Green		22.0	6.0	33.5	30.5	24.5	0.0						
		Yellow		4.0	4.0	5.0	4.0	4.0	0.0						
		Red		2.0	2.0	1.5	3.5	3.5	0.0						

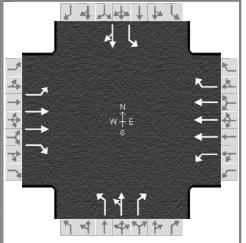
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	3.0	2.0	3.0		9.0		10.0
Phase Duration, s	28.0	40.0	40.0	52.0		38.0		32.0
Change Period, (Y+R _c), s	6.0	6.5	6.0	6.5		7.5		7.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.1		3.3
Queue Clearance Time (g _s), s	5.5		19.8			16.6		8.8
Green Extension Time (g _e), s	0.0	0.0	0.4	0.0		1.0		0.2
Phase Call Probability	1.00		1.00			1.00		1.00
Max Out Probability	0.00		0.00			0.00		0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	48	621	165	241	1209	22	197	194	209	34	91	
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1698	1585	1781	1698	1585	1781	1802	1585	1781	1734	
Queue Service Time (g _s), s	3.5	15.0	12.4	17.8	30.1	1.3	14.6	14.2	12.4	2.4	6.8	
Cycle Queue Clearance Time (g _c), s	3.5	15.0	12.4	17.8	30.1	1.3	14.6	14.2	12.4	2.4	6.8	
Green Ratio (g/C)	0.16	0.24	0.24	0.24	0.32	0.32	0.22	0.22	0.46	0.18	0.18	
Capacity (c), veh/h	285	1206	375	428	1613	502	386	391	724	315	306	
Volume-to-Capacity Ratio (X)	0.168	0.515	0.441	0.563	0.749	0.045	0.509	0.497	0.289	0.107	0.297	
Back of Queue (Q), ft/ln (95 th percentile)	71.6	258.8	221.4	321.4	450.8	23.1	272	268.5	208.5	49.8	139.3	
Back of Queue (Q), veh/ln (95 th percentile)	2.8	10.2	8.7	12.7	17.7	0.9	10.7	10.6	8.2	2.0	5.5	
Queue Storage Ratio (RQ) (95 th percentile)	0.20	0.00	0.81	0.46	0.00	0.12	0.00	0.00	0.69	0.33	0.00	
Uniform Delay (d ₁), s/veh	54.4	45.0	43.4	50.1	39.1	30.0	51.7	51.6	25.5	51.8	53.7	
Incremental Delay (d ₂), s/veh	0.1	1.6	3.7	1.1	3.2	0.2	0.5	0.4	0.1	0.1	0.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	54.5	46.6	47.2	51.2	42.3	30.1	52.2	51.9	25.6	51.9	53.9	
Level of Service (LOS)	D	D	D	D	D	C	D	D	C	D	D	
Approach Delay, s/veh / LOS	47.2		D	43.6		D	42.8		D	53.3		D
Intersection Delay, s/veh / LOS	44.8						D					

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS				
Bicycle LOS Score / LOS				

HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Mar 11, 2022	Area Type	Other
Jurisdiction	City of Aberdeen, MD	Time Period	Future AM	PHF	0.92
Urban Street		Analysis Year	2024	Analysis Period	1 > 4:30
Intersection	MD 22 at Middleton Rd	File Name	MD 22 at Middleton Rd - Fu AM.xus		
Project Description	3863				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	82	1111	130	172	574	82	113	31	98	79	39	77

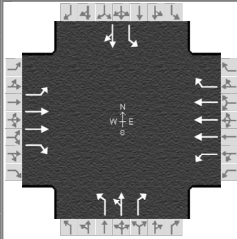
Signal Information				Signal Timing (s)								Signal Phases						
Cycle, s	120.0	Reference Phase	2	Green	18.0	44.5	17.5	12.5	0.0	0.0	1	2	3	4	5	6	7	8
Offset, s	0	Reference Point	End	Yellow	4.0	5.0	4.0	4.0	0.0	0.0								
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	1.5	3.5	3.5	0.0	0.0								
Force Mode	Fixed	Simult. Gap N/S	On															

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	82	1111	130	172	574	82	113	31	98	79	39	77
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2	2	2	2	2	2	2	2	2	2	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	4	3	4	4	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	11.0	11.0	11.0	12.0	12.0	12.0	11.0	11.0	11.0	11.0	11.0	
Turn Bay Length, ft	350	0	275	700	0	200	0	0	300	150	0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	25	25	25




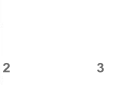
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	24.0	51.0	24.0	51.0		25.0		20.0
Yellow Change Interval (Y), s	4.0	5.0	4.0	5.0		4.0		4.0
Red Clearance Interval (R _c), s	2.0	1.5	2.0	1.5		3.5		3.5
Minimum Green (G _{min}), s	5	25	5	25		5		5
Start-Up Lost Time (lt), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (PT), s	2.0	2.0	2.0	2.0		2.0		2.0
Recall Mode	Off	Min	Off	Min		Off		Off
Dual Entry	No	Yes	No	Yes		Yes		Yes
Walk (Walk), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (PC), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	Traffic Concepts, Inc.			Duration, h	0.250		
Analyst	J. Carey	Analysis Date	Mar 11, 2022	Area Type	Other		
Jurisdiction	City of Aberdeen, MD		Time Period	Future AM	PHF		0.92
Urban Street		Analysis Year	2024	Analysis Period	1 > 4:30		
Intersection	MD 22 at Middleton Rd		File Name	MD 22 at Middleton Rd - Fu AM.xus			
Project Description	3863						

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	82	1111	130	172	574	82	113	31	98	79	39	77

Signal Information													
Cycle, s	120.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	18.0	44.5	17.5	12.5	0.0	0.0	1	2	3
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	5.0	4.0	4.0	0.0	0.0	4	5	6
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	1.5	3.5	3.5	0.0	0.0	7	8	9

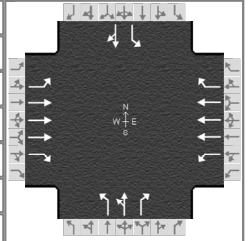
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	3.0	2.0	3.0		9.0		10.0
Phase Duration, s	24.0	51.0	24.0	51.0		25.0		20.0
Change Period, (Y+R _c), s	6.0	6.5	6.0	6.5		7.5		7.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.1		3.3
Queue Clearance Time (g _s), s	7.3		13.7			7.8		10.6
Green Extension Time (g _e), s	0.1	0.0	0.1	0.0		0.3		0.1
Phase Call Probability	1.00		1.00			1.00		1.00
Max Out Probability	0.00		0.28			0.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	89	1208	141	187	624	89	70	87	107	86	126	
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1781	1585	1781	1698	1585	1781	1816	1585	1781	1671	
Queue Service Time (g _s), s	5.3	35.9	5.9	11.7	8.5	3.5	4.1	5.0	5.8	5.3	8.6	
Cycle Queue Clearance Time (g _c), s	5.3	35.9	5.9	11.7	8.5	3.5	4.1	5.0	5.8	5.3	8.6	
Green Ratio (g/C)	0.17	0.39	0.39	0.17	0.39	0.39	0.16	0.16	0.33	0.12	0.12	
Capacity (c), veh/h	297	1380	614	297	1974	614	289	295	522	215	202	
Volume-to-Capacity Ratio (X)	0.300	0.875	0.230	0.630	0.316	0.145	0.242	0.293	0.204	0.399	0.625	
Back of Queue (Q), ft/ln (95 th percentile)	105.6	522.5	100.3	233	145.2	61.3	82.4	102.7	99.8	111	177.5	
Back of Queue (Q), veh/ln (95 th percentile)	4.2	20.6	3.9	9.2	5.7	2.4	3.2	4.0	3.9	4.4	7.0	
Queue Storage Ratio (RQ) (95 th percentile)	0.30	0.00	0.36	0.33	0.00	0.31	0.00	0.00	0.33	0.74	0.00	
Uniform Delay (d ₁), s/veh	43.9	27.3	19.2	46.6	20.3	18.6	43.8	44.2	28.9	48.7	50.2	
Incremental Delay (d ₂), s/veh	0.2	8.0	0.9	3.2	0.4	0.5	0.2	0.2	0.1	0.4	4.5	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	44.1	35.3	20.1	49.8	20.7	19.1	44.0	44.4	29.0	49.2	54.6	
Level of Service (LOS)	D	D	C	D	C	B	D	D	C	D	D	
Approach Delay, s/veh / LOS	34.3		C	26.6		C	38.1		D	52.4		D
Intersection Delay, s/veh / LOS	33.6						C					

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS				
Bicycle LOS Score / LOS				

HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Mar 11, 2022	Area Type	Other
Jurisdiction	City of Aberdeen, MD	Time Period	Future PM	PHF	0.98
Urban Street		Analysis Year	2024	Analysis Period	1 > 4:30
Intersection	MD 22 at Middleton Rd	File Name	MD 22 at Middleton Rd - Fu PM.xus		
Project Description	3863				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	57	603	162	236	1172	44	338	48	205	47	53	54

Signal Information				Signal Timing (s)																				
Cycle, s	150.0	Reference Phase	2	Green	22.0	6.0	33.5	30.5	24.5	0.0	Yellow	4.0	4.0	5.0	4.0	4.0	0.0	Red	2.0	2.0	1.5	3.5	3.5	0.0
Offset, s	0	Reference Point	End	Diagram																				
Uncoordinated	No	Simult. Gap E/W	On	Diagram																				
Force Mode	Fixed	Simult. Gap N/S	On	Diagram																				

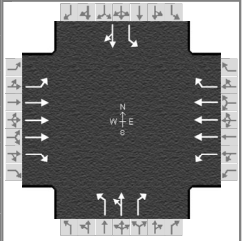
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	57	603	162	236	1172	44	338	48	205	47	53	54
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2	2	2	2	2	2	2	2	2	2	2	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	4	3	4	4	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	11.0	11.0	11.0	12.0	12.0	12.0	11.0	11.0	11.0	11.0	11.0	
Turn Bay Length, ft	350	0	275	700	0	200	0	0	300	150	0	
Grade (P _g), %	0			0			0			0		
Speed Limit, mi/h	40	40	40	40	40	40	40	40	40	25	25	25

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	28.0	40.0	40.0	52.0		38.0		32.0
Yellow Change Interval (Y), s	4.0	5.0	4.0	5.0		4.0		4.0
Red Clearance Interval (R _c), s	2.0	1.5	2.0	1.5		3.5		3.5
Minimum Green (G _{min}), s	5	25	5	25		5		5
Start-Up Lost Time (lt), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (PT), s	2.0	2.0	2.0	2.0		2.0		2.0
Recall Mode	Off	Min	Off	Min		Off		Off
Dual Entry	No	Yes	No	Yes		Yes		Yes
Walk (Walk), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (PC), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Mar 11, 2022	Area Type	Other
Jurisdiction	City of Aberdeen, MD	Time Period	Future PM	PHF	0.98
Urban Street		Analysis Year	2024	Analysis Period	1 > 4:30
Intersection	MD 22 at Middleton Rd	File Name	MD 22 at Middleton Rd - Fu PM.xus		
Project Description	3863				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	57	603	162	236	1172	44	338	48	205	47	53	54

Signal Information													
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	22.0	6.0	33.5	30.5	24.5	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	5.0	4.0	4.0	0.0			
				Red	2.0	2.0	1.5	3.5	3.5	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	3.0	2.0	3.0		9.0		10.0
Phase Duration, s	28.0	40.0	40.0	52.0		38.0		32.0
Change Period, (Y+R _c), s	6.0	6.5	6.0	6.5		7.5		7.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.1		3.3
Queue Clearance Time (g _s), s	6.3		19.8			16.6		10.4
Green Extension Time (g _e), s	0.1	0.0	0.4	0.0		1.0		0.2
Phase Call Probability	1.00		1.00			1.00		1.00
Max Out Probability	0.00		0.00			0.00		0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	58	615	165	241	1196	45	197	197	209	48	109	
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1698	1585	1781	1698	1585	1781	1803	1585	1781	1715	
Queue Service Time (g _s), s	4.3	14.8	12.4	17.8	29.6	2.6	14.6	14.4	12.4	3.4	8.4	
Cycle Queue Clearance Time (g _c), s	4.3	14.8	12.4	17.8	29.6	2.6	14.6	14.4	12.4	3.4	8.4	
Green Ratio (g/C)	0.16	0.24	0.24	0.24	0.32	0.32	0.22	0.22	0.46	0.18	0.18	
Capacity (c), veh/h	285	1206	375	428	1613	502	386	391	724	315	303	
Volume-to-Capacity Ratio (X)	0.204	0.510	0.441	0.563	0.741	0.089	0.509	0.505	0.289	0.152	0.360	
Back of Queue (Q), ft/ln (95 th percentile)	87.4	256	221.4	321.4	444.3	46.9	272	272.4	208.5	71.6	169.6	
Back of Queue (Q), veh/ln (95 th percentile)	3.4	10.1	8.7	12.7	17.5	1.8	10.7	10.7	8.2	2.8	6.7	
Queue Storage Ratio (RQ) (95 th percentile)	0.25	0.00	0.81	0.46	0.00	0.23	0.00	0.00	0.69	0.48	0.00	
Uniform Delay (d ₁), s/veh	54.7	45.0	43.4	50.1	38.9	30.3	51.7	51.7	25.5	52.2	54.3	
Incremental Delay (d ₂), s/veh	0.1	1.5	3.7	1.1	3.1	0.4	0.5	0.4	0.1	0.1	0.3	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	54.8	46.5	47.2	51.2	42.0	30.7	52.2	52.1	25.6	52.3	54.6	
Level of Service (LOS)	D	D	D	D	D	C	D	D	C	D	D	
Approach Delay, s/veh / LOS	47.2		D	43.2		D	42.9		D	53.9		D
Intersection Delay, s/veh / LOS	44.8						D					

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS				
Bicycle LOS Score / LOS				

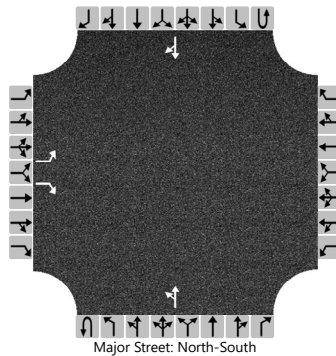
APPENDIX I-C

HCM REPORTS –
UNSIGNALIZED INTERSECTIONS

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	MD 462 at Beards Hill Rd		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Beards Hill Rd		
Analysis Year	2022			North/South Street	MD 462		
Time Analyzed	Existing AM Peak			Peak Hour Factor	0.97		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	3683						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R						LT						TR
Volume (veh/h)		42		55						24	94				260	123
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No															
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

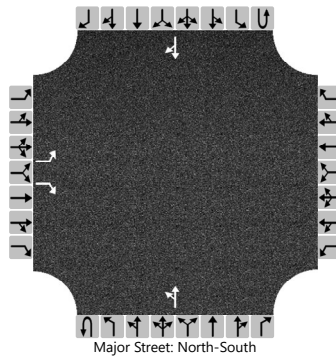
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		43		57						25						
Capacity, c (veh/h)		534		710						1164						
v/c Ratio		0.08		0.08						0.02						
95% Queue Length, Q ₉₅ (veh)		0.3		0.3						0.1						
Control Delay (s/veh)		12.3		10.5						8.2						
Level of Service (LOS)		B		B						A						
Approach Delay (s/veh)	11.3								1.8							
Approach LOS	B															

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	MD 462 at Beards Hill Rd		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Beards Hill Rd		
Analysis Year	2024			North/South Street	MD 462		
Time Analyzed	Background AM Peak			Peak Hour Factor	0.97		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	3683						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R						LT						TR
Volume (veh/h)		45		55						24	95				264	124
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No															
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

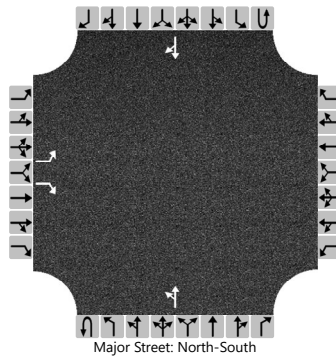
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		46		57						25						
Capacity, c (veh/h)		530		706						1159						
v/c Ratio		0.09		0.08						0.02						
95% Queue Length, Q ₉₅ (veh)		0.3		0.3						0.1						
Control Delay (s/veh)		12.4		10.5						8.2						
Level of Service (LOS)		B		B						A						
Approach Delay (s/veh)	11.4								1.8							
Approach LOS	B															

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	MD 462 at Beards Hill Rd		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Beards Hill Rd		
Analysis Year	2024			North/South Street	MD 462		
Time Analyzed	Future AM Peak			Peak Hour Factor	0.97		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	3683						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R						LT						TR
Volume (veh/h)		46		55						24	95				264	125
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No															
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

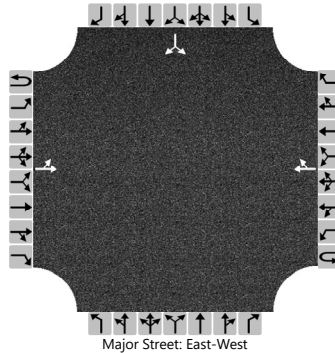
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		47		57						25						
Capacity, c (veh/h)		530		705						1158						
v/c Ratio		0.09		0.08						0.02						
95% Queue Length, Q ₉₅ (veh)		0.3		0.3						0.1						
Control Delay (s/veh)		12.5		10.5						8.2						
Level of Service (LOS)		B		B						A						
Approach Delay (s/veh)	11.4								1.8							
Approach LOS	B															

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	Beards Hill Rd at Maxa Rd		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Beards Hill Rd		
Analysis Year	2022			North/South Street	Maxa Rd		
Time Analyzed	Existing AM			Peak Hour Factor	0.97		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		32	90				149	6						18		40
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.42		6.22
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.52		3.32

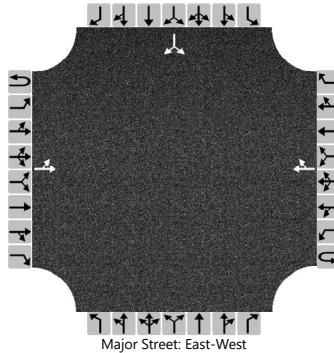
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		33														60	
Capacity, c (veh/h)		1419														803	
v/c Ratio		0.02														0.07	
95% Queue Length, Q ₉₅ (veh)		0.1														0.2	
Control Delay (s/veh)		7.6														9.8	
Level of Service (LOS)		A														A	
Approach Delay (s/veh)		2.1												9.8			
Approach LOS														A			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey	Intersection	Beards Hill Rd at Maxa Rd				
Agency/Co.	Traffic Concepts, Inc.	Jurisdiction	Aberdeen, MD				
Date Performed	3/11/2022	East/West Street	Beards Hill Rd				
Analysis Year	2024	North/South Street	Maxa Rd				
Time Analyzed	Background AM	Peak Hour Factor	0.97				
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25				
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		32	93				150	6						18		40
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.42		6.22
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.52		3.32

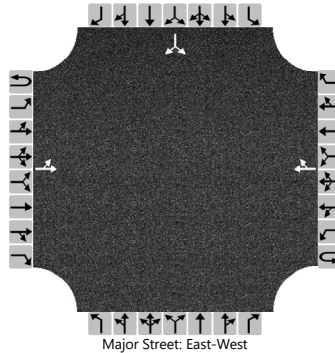
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		33													60	
Capacity, c (veh/h)		1418													801	
v/c Ratio		0.02													0.07	
95% Queue Length, Q ₉₅ (veh)		0.1													0.2	
Control Delay (s/veh)		7.6													9.9	
Level of Service (LOS)		A													A	
Approach Delay (s/veh)	2.1												9.9			
Approach LOS													A			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	Beards Hill Rd at Maxa Rd		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Beards Hill Rd		
Analysis Year	2024			North/South Street	Maxa Rd		
Time Analyzed	Future AM			Peak Hour Factor	0.97		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		34	94				151	6						18		42
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.42		6.22
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.52		3.32

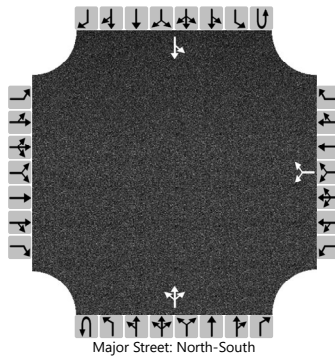
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		35														62
Capacity, c (veh/h)		1417														800
v/c Ratio		0.02														0.08
95% Queue Length, Q ₉₅ (veh)		0.1														0.3
Control Delay (s/veh)		7.6														9.9
Level of Service (LOS)		A														A
Approach Delay (s/veh)	2.2												9.9			
Approach LOS													A			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey	Intersection	Middlton Rd at Site (N)				
Agency/Co.	Traffic Concepts, Inc.	Jurisdiction	Aberdeen, MD				
Date Performed	3/11/2022	East/West Street	Site Access (N)				
Analysis Year	2022	North/South Street	Middlton Rd				
Time Analyzed	Existing AM	Peak Hour Factor	0.90				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				LTR			LT		
Volume (veh/h)						90		10		10	32	0		14	11	
Percent Heavy Vehicles (%)						2		2		2				2		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2			4.1					4.1		
Critical Headway (sec)						7.12		6.22			4.12					4.12		
Base Follow-Up Headway (sec)						3.5		3.3			2.2					2.2		
Follow-Up Headway (sec)						3.52		3.32			2.22					2.22		

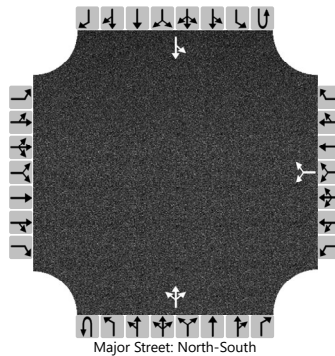
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						111					11					16		
Capacity, c (veh/h)						883					1607					1575		
v/c Ratio						0.13					0.01					0.01		
95% Queue Length, Q ₉₅ (veh)						0.4					0.0					0.0		
Control Delay (s/veh)						9.7					7.3					7.3		
Level of Service (LOS)						A					A					A		
Approach Delay (s/veh)					9.7				1.8				4.1					
Approach LOS					A													

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	Middelton Rd at Site (N)		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Site Access (N)		
Analysis Year	2024			North/South Street	Middelton Rd		
Time Analyzed	Background AM			Peak Hour Factor	0.90		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				LTR			LT		
Volume (veh/h)						90		10		10	47	0		14	51	
Percent Heavy Vehicles (%)						2		2		2				2		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2			4.1				4.1	
Critical Headway (sec)						7.12		6.22			4.12				4.12	
Base Follow-Up Headway (sec)						3.5		3.3			2.2				2.2	
Follow-Up Headway (sec)						3.52		3.32			2.22				2.22	

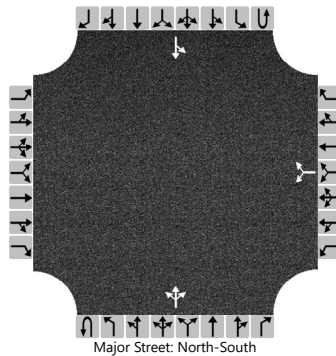
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						111				11					16	
Capacity, c (veh/h)						810				1548					1554	
v/c Ratio						0.14				0.01					0.01	
95% Queue Length, Q ₉₅ (veh)						0.5				0.0					0.0	
Control Delay (s/veh)						10.2				7.3					7.3	
Level of Service (LOS)						B				A					A	
Approach Delay (s/veh)					10.2				1.3				1.6			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey	Intersection	Middlton Rd at Site (N)				
Agency/Co.	Traffic Concepts, Inc.	Jurisdiction	Aberdeen, MD				
Date Performed	3/11/2022	East/West Street	Site Access (N)				
Analysis Year	2024	North/South Street	Middlton Rd				
Time Analyzed	Future AM	Peak Hour Factor	0.90				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0		0	1	0		0	1	0
Configuration							LR				LTR			LT		
Volume (veh/h)						134		17		10	49	0		24	51	
Percent Heavy Vehicles (%)						2		2		2				2		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2		4.1				4.1		
Critical Headway (sec)						7.12		6.22		4.12				4.12		
Base Follow-Up Headway (sec)						3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)						3.52		3.32		2.22				2.22		

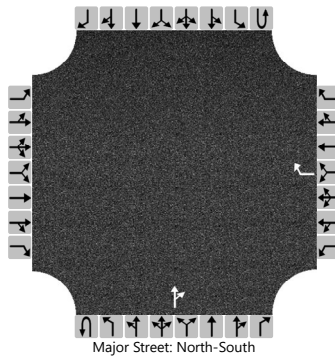
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						168				11				27		
Capacity, c (veh/h)						781				1548				1551		
v/c Ratio						0.21				0.01				0.02		
95% Queue Length, Q ₉₅ (veh)						0.8				0.0				0.1		
Control Delay (s/veh)						10.9				7.3				7.4		
Level of Service (LOS)						B				A				A		
Approach Delay (s/veh)					10.9				1.3				2.4			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey	Intersection	Middelton Rd at Site (S)				
Agency/Co.	Traffic Concepts, Inc.	Jurisdiction	Aberdeen, MD				
Date Performed	3/11/2022	East/West Street	Site Access (S)				
Analysis Year	2022	North/South Street	Middelton Rd				
Time Analyzed	Existing AM	Peak Hour Factor	0.90				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes	0	0	0		0	0	1		0	0	1	0	0	0	0	0
Configuration								R				TR				
Volume (veh/h)								18			24	110				
Percent Heavy Vehicles (%)								2								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized					No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)									6.2								
Critical Headway (sec)									6.22								
Base Follow-Up Headway (sec)									3.3								
Follow-Up Headway (sec)									3.32								

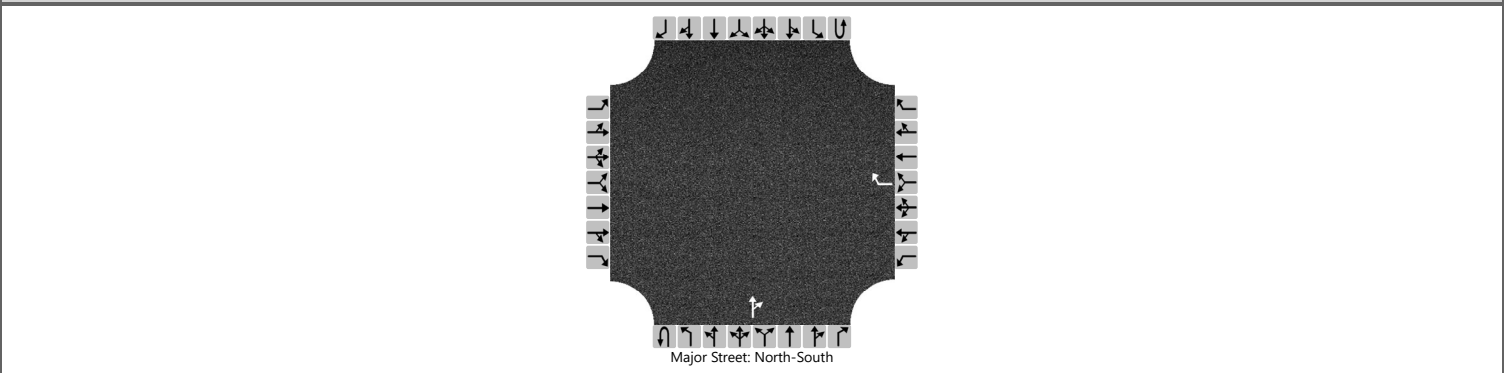
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)									20								
Capacity, c (veh/h)									971								
v/c Ratio									0.02								
95% Queue Length, Q ₉₅ (veh)									0.1								
Control Delay (s/veh)									8.8								
Level of Service (LOS)									A								
Approach Delay (s/veh)					8.8												
Approach LOS					A												

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	Middelton Rd at Site (S)		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Site Access (S)		
Analysis Year	2024			North/South Street	Middelton Rd		
Time Analyzed	Background AM			Peak Hour Factor	0.90		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	1	0	0	0	0	0
Configuration								R				TR				
Volume (veh/h)								18			39	110				
Percent Heavy Vehicles (%)								2								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized					No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)								6.2								
Critical Headway (sec)								6.22								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.32								

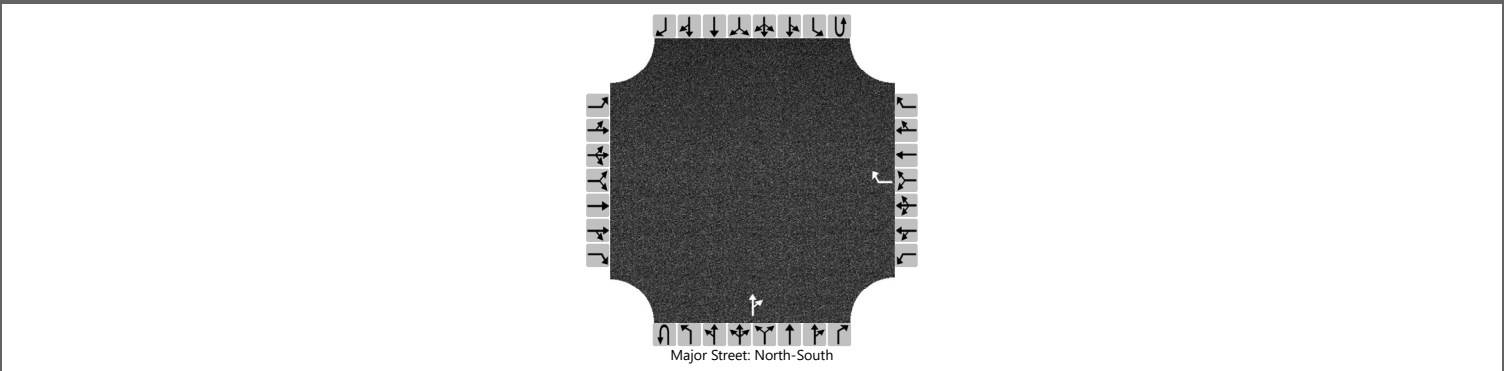
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								20								
Capacity, c (veh/h)								950								
v/c Ratio								0.02								
95% Queue Length, Q ₉₅ (veh)								0.1								
Control Delay (s/veh)								8.9								
Level of Service (LOS)								A								
Approach Delay (s/veh)					8.9											
Approach LOS					A											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey	Intersection	Middelton Rd at Site (S)				
Agency/Co.	Traffic Concepts, Inc.	Jurisdiction	Aberdeen, MD				
Date Performed	3/11/2022	East/West Street	Site Access (S)				
Analysis Year	2024	North/South Street	Middelton Rd				
Time Analyzed	Future AM	Peak Hour Factor	0.90				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes	0	0	0		0	0	1		0	0	1	0	0	0	0	0
Configuration								R				TR				
Volume (veh/h)								20			39	156				
Percent Heavy Vehicles (%)								2								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized					No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)								6.2								
Critical Headway (sec)								6.22								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.32								

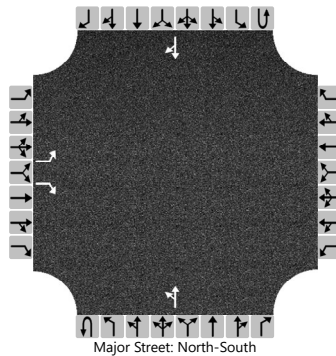
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								22								
Capacity, c (veh/h)								920								
v/c Ratio								0.02								
95% Queue Length, Q ₉₅ (veh)								0.1								
Control Delay (s/veh)								9.0								
Level of Service (LOS)								A								
Approach Delay (s/veh)					9.0											
Approach LOS					A											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	MD 462 at Beards Hill Rd		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Beards Hill Rd		
Analysis Year	2022			North/South Street	MD 462		
Time Analyzed	Existing PM Peak			Peak Hour Factor	0.97		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	3683						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0	
Configuration		L		R						LT						TR	
Volume (veh/h)		193		54						91	507				128	115	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized		No															
Median Type Storage		Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

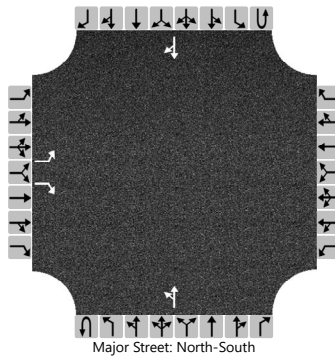
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		199		56						94							
Capacity, c (veh/h)		277		850						1315							
v/c Ratio		0.72		0.07						0.07							
95% Queue Length, Q ₉₅ (veh)		5.0		0.2						0.2							
Control Delay (s/veh)		45.1		9.5						7.9							
Level of Service (LOS)		E		A						A							
Approach Delay (s/veh)		37.3								1.9							
Approach LOS		E								A							

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	MD 462 at Beards Hill Rd		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Beards Hill Rd		
Analysis Year	2024			North/South Street	MD 462		
Time Analyzed	Background PM Peak			Peak Hour Factor	0.97		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	3683						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0	
Configuration		L		R						LT						TR	
Volume (veh/h)		195		54						91	515				130	118	
Percent Heavy Vehicles (%)		2		2						2							
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized		No															
Median Type Storage		Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

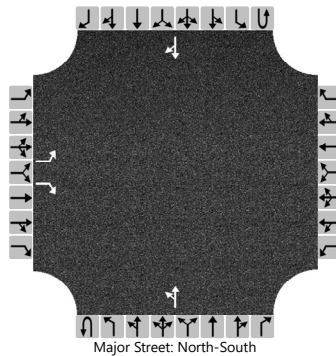
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		201		56						94						
Capacity, c (veh/h)		273		847						1309						
v/c Ratio		0.74		0.07						0.07						
95% Queue Length, Q ₉₅ (veh)		5.3		0.2						0.2						
Control Delay (s/veh)		47.9		9.6						8.0						
Level of Service (LOS)		E		A						A						
Approach Delay (s/veh)		39.5								1.9						
Approach LOS		E								A						

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	MD 462 at Beards Hill Rd		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Beards Hill Rd		
Analysis Year	2024			North/South Street	MD 462		
Time Analyzed	Future PM Peak			Peak Hour Factor	0.97		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	3683						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R						LT						TR
Volume (veh/h)		196		54						91	515				130	119
Percent Heavy Vehicles (%)		2		2						2						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.42		6.22						4.12						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.52		3.32						2.22						

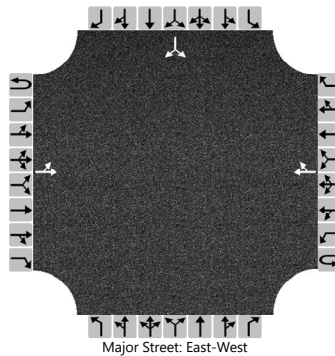
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		202		56						94						
Capacity, c (veh/h)		272		846						1308						
v/c Ratio		0.74		0.07						0.07						
95% Queue Length, Q ₉₅ (veh)		5.4		0.2						0.2						
Control Delay (s/veh)		48.4		9.6						8.0						
Level of Service (LOS)		E		A						A						
Approach Delay (s/veh)		40.0								1.9						
Approach LOS		E								A						

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	Beards Hill Rd at Maxa Rd		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Beards Hill Rd		
Analysis Year	2022			North/South Street	Maxa Rd		
Time Analyzed	Existing PM			Peak Hour Factor	0.94		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		72	230				172	22						12		55
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.42		6.22
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.52		3.32

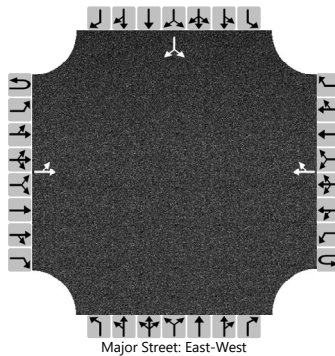
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		77													71		
Capacity, c (veh/h)		1365													726		
v/c Ratio		0.06													0.10		
95% Queue Length, Q ₉₅ (veh)		0.2													0.3		
Control Delay (s/veh)		7.8													10.5		
Level of Service (LOS)		A													B		
Approach Delay (s/veh)		2.2												10.5			
Approach LOS														B			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	Beards Hill Rd at Maxa Rd		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Beards Hill Rd		
Analysis Year	2024			North/South Street	Maxa Rd		
Time Analyzed	Background PM			Peak Hour Factor	0.94		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		72	232				175	22						12		55
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.42		6.22
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.52		3.32

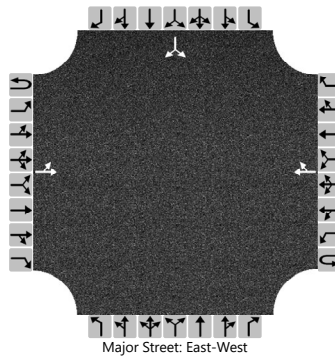
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		77													71	
Capacity, c (veh/h)		1361													722	
v/c Ratio		0.06													0.10	
95% Queue Length, Q ₉₅ (veh)		0.2													0.3	
Control Delay (s/veh)		7.8													10.5	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	2.2												10.5			
Approach LOS													B			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	Beards Hill Rd at Maxa Rd		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Beards Hill Rd		
Analysis Year	2024			North/South Street	Maxa Rd		
Time Analyzed	Future PM			Peak Hour Factor	0.94		
Intersection Orientation	East-West			Analysis Time Period (hrs)	0.25		
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		73	233				176	22						12		56
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.42		6.22
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.52		3.32

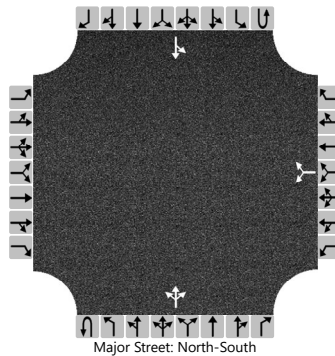
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		78														72	
Capacity, c (veh/h)		1360														721	
v/c Ratio		0.06														0.10	
95% Queue Length, Q ₉₅ (veh)		0.2														0.3	
Control Delay (s/veh)		7.8														10.5	
Level of Service (LOS)		A														B	
Approach Delay (s/veh)		2.3												10.5			
Approach LOS														B			

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	Middleton Rd at Site (N)		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Site Access (N)		
Analysis Year	2022			North/South Street	Middleton Rd		
Time Analyzed	Existing PM			Peak Hour Factor	0.90		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0		0	1	0		0	1	0
Configuration							LR				LTR			LT		
Volume (veh/h)						40		13		2	31	0		6	55	
Percent Heavy Vehicles (%)						2		2		2				2		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2		4.1				4.1		
Critical Headway (sec)						7.12		6.22		4.12				4.12		
Base Follow-Up Headway (sec)						3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)						3.52		3.32		2.22				2.22		

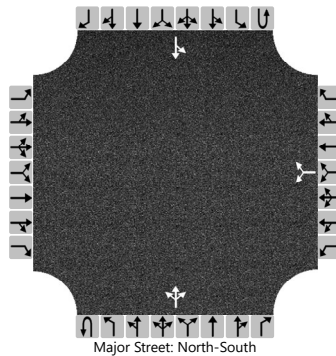
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						59				2				7		
Capacity, c (veh/h)						898				1542				1577		
v/c Ratio						0.07				0.00				0.00		
95% Queue Length, Q ₉₅ (veh)						0.2				0.0				0.0		
Control Delay (s/veh)						9.3				7.3				7.3		
Level of Service (LOS)						A				A				A		
Approach Delay (s/veh)					9.3				0.5				0.7			
Approach LOS					A											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	Middelton Rd at Site (N)		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Site Access (N)		
Analysis Year	2024			North/South Street	Middelton Rd		
Time Analyzed	Background PM			Peak Hour Factor	0.90		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				LTR			LT		
Volume (veh/h)						40		13		2	71	0		6	80	
Percent Heavy Vehicles (%)						2		2		2				2		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2			4.1				4.1	
Critical Headway (sec)						7.12		6.22			4.12				4.12	
Base Follow-Up Headway (sec)						3.5		3.3			2.2				2.2	
Follow-Up Headway (sec)						3.52		3.32			2.22				2.22	

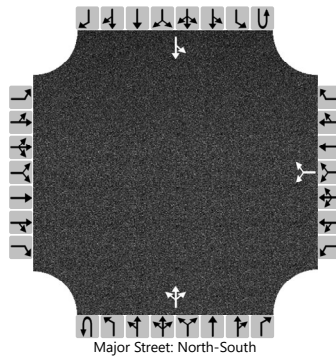
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						59				2					7	
Capacity, c (veh/h)						814				1507					1519	
v/c Ratio						0.07				0.00					0.00	
95% Queue Length, Q ₉₅ (veh)						0.2				0.0					0.0	
Control Delay (s/veh)						9.8				7.4					7.4	
Level of Service (LOS)						A				A					A	
Approach Delay (s/veh)					9.8				0.2				0.5			
Approach LOS					A											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	Middelton Rd at Site (N)		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Site Access (N)		
Analysis Year	2024			North/South Street	Middelton Rd		
Time Analyzed	Future PM			Peak Hour Factor	0.90		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				LTR			LT		
Volume (veh/h)						72		19		2	72	0		13	80	
Percent Heavy Vehicles (%)						2		2		2				2		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2			4.1				4.1		
Critical Headway (sec)						7.12		6.22			4.12				4.12		
Base Follow-Up Headway (sec)						3.5		3.3			2.2				2.2		
Follow-Up Headway (sec)						3.52		3.32			2.22				2.22		

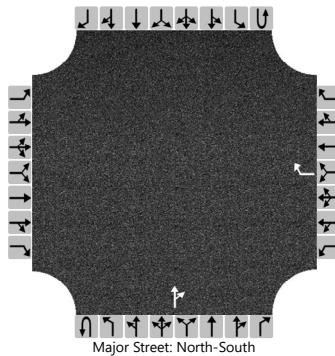
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						101				2				14		
Capacity, c (veh/h)						788				1507				1518		
v/c Ratio						0.13				0.00				0.01		
95% Queue Length, Q ₉₅ (veh)						0.4				0.0				0.0		
Control Delay (s/veh)						10.2				7.4				7.4		
Level of Service (LOS)						B				A				A		
Approach Delay (s/veh)					10.2				0.2				1.1			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	Middelton Rd at Site (S)		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Site Access (S)		
Analysis Year	2022			North/South Street	Middelton Rd		
Time Analyzed	Existing PM			Peak Hour Factor	0.90		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes	0	0	0		0	0	1		0	0	1	0	0	0	0	0
Configuration								R				TR				
Volume (veh/h)								4			29	45				
Percent Heavy Vehicles (%)								2								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized					No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)								6.2								
Critical Headway (sec)								6.22								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.32								

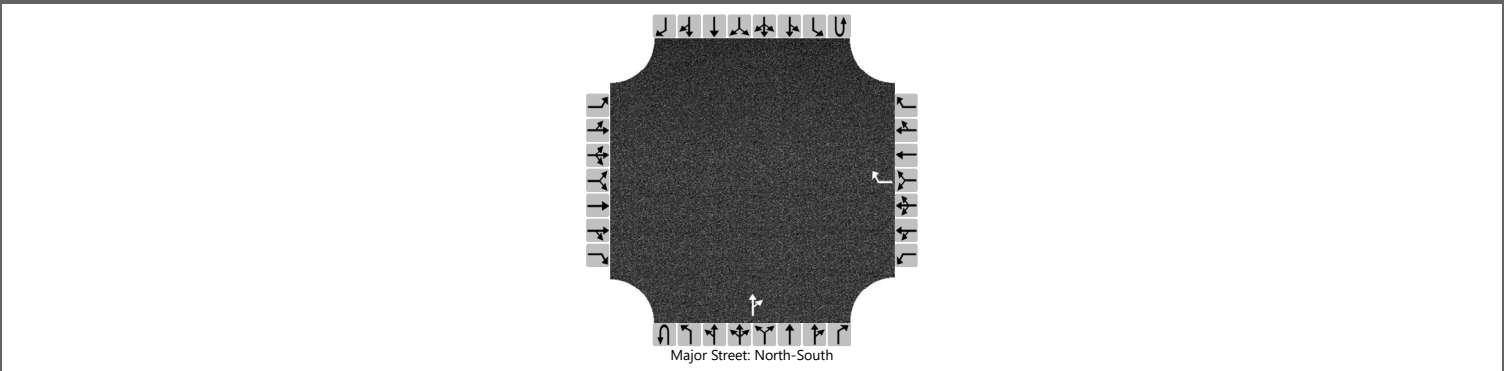
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								4								
Capacity, c (veh/h)								1009								
v/c Ratio								0.00								
95% Queue Length, Q ₉₅ (veh)								0.0								
Control Delay (s/veh)								8.6								
Level of Service (LOS)								A								
Approach Delay (s/veh)					8.6											
Approach LOS					A											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey			Intersection	Middelton Rd at Site (S)		
Agency/Co.	Traffic Concepts, Inc.			Jurisdiction	Aberdeen, MD		
Date Performed	3/11/2022			East/West Street	Site Access (S)		
Analysis Year	2024			North/South Street	Middelton Rd		
Time Analyzed	Background PM			Peak Hour Factor	0.90		
Intersection Orientation	North-South			Analysis Time Period (hrs)	0.25		
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes	0	0	0		0	0	1		0	0	1	0	0	0	0	0
Configuration								R				TR				
Volume (veh/h)								4			69	45				
Percent Heavy Vehicles (%)								2								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized					No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)								6.2								
Critical Headway (sec)								6.22								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.32								

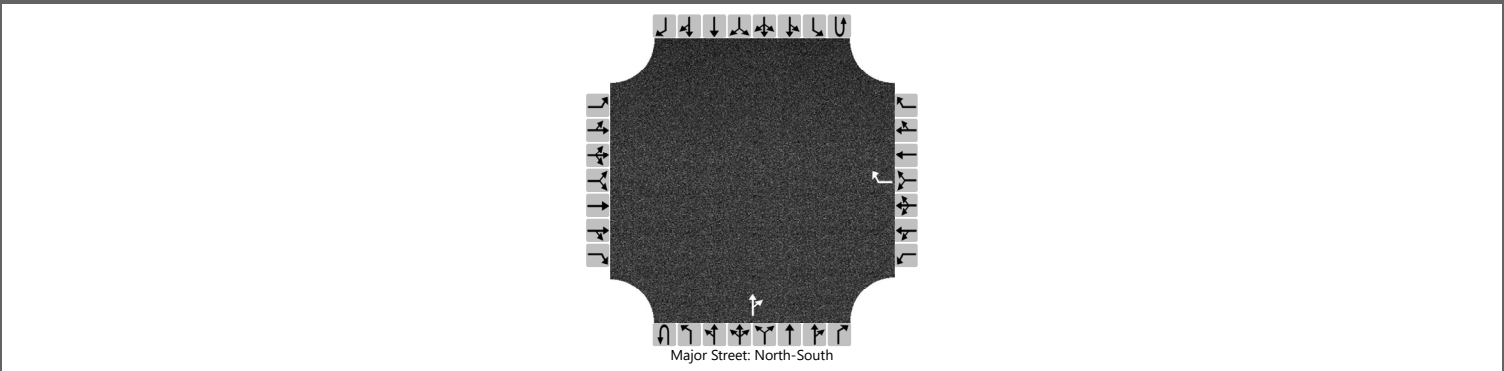
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								4								
Capacity, c (veh/h)								954								
v/c Ratio								0.00								
95% Queue Length, Q ₉₅ (veh)								0.0								
Control Delay (s/veh)								8.8								
Level of Service (LOS)								A								
Approach Delay (s/veh)					8.8											
Approach LOS					A											

HCS7 Two-Way Stop-Control Report

General Information				Site Information			
Analyst	J. Carey	Intersection	Middelton Rd at Site (S)				
Agency/Co.	Traffic Concepts, Inc.	Jurisdiction	Aberdeen, MD				
Date Performed	3/11/2022	East/West Street	Site Access (S)				
Analysis Year	2024	North/South Street	Middelton Rd				
Time Analyzed	Future PM	Peak Hour Factor	0.90				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	3863						

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1		0	0	1	0	0	0	0
Configuration								R				TR				
Volume (veh/h)								5			69	80				
Percent Heavy Vehicles (%)								2								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized					No											
Median Type Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)								6.2								
Critical Headway (sec)								6.22								
Base Follow-Up Headway (sec)								3.3								
Follow-Up Headway (sec)								3.32								

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								6								
Capacity, c (veh/h)								930								
v/c Ratio								0.01								
95% Queue Length, Q ₉₅ (veh)								0.0								
Control Delay (s/veh)								8.9								
Level of Service (LOS)								A								
Approach Delay (s/veh)					8.9											
Approach LOS					A											

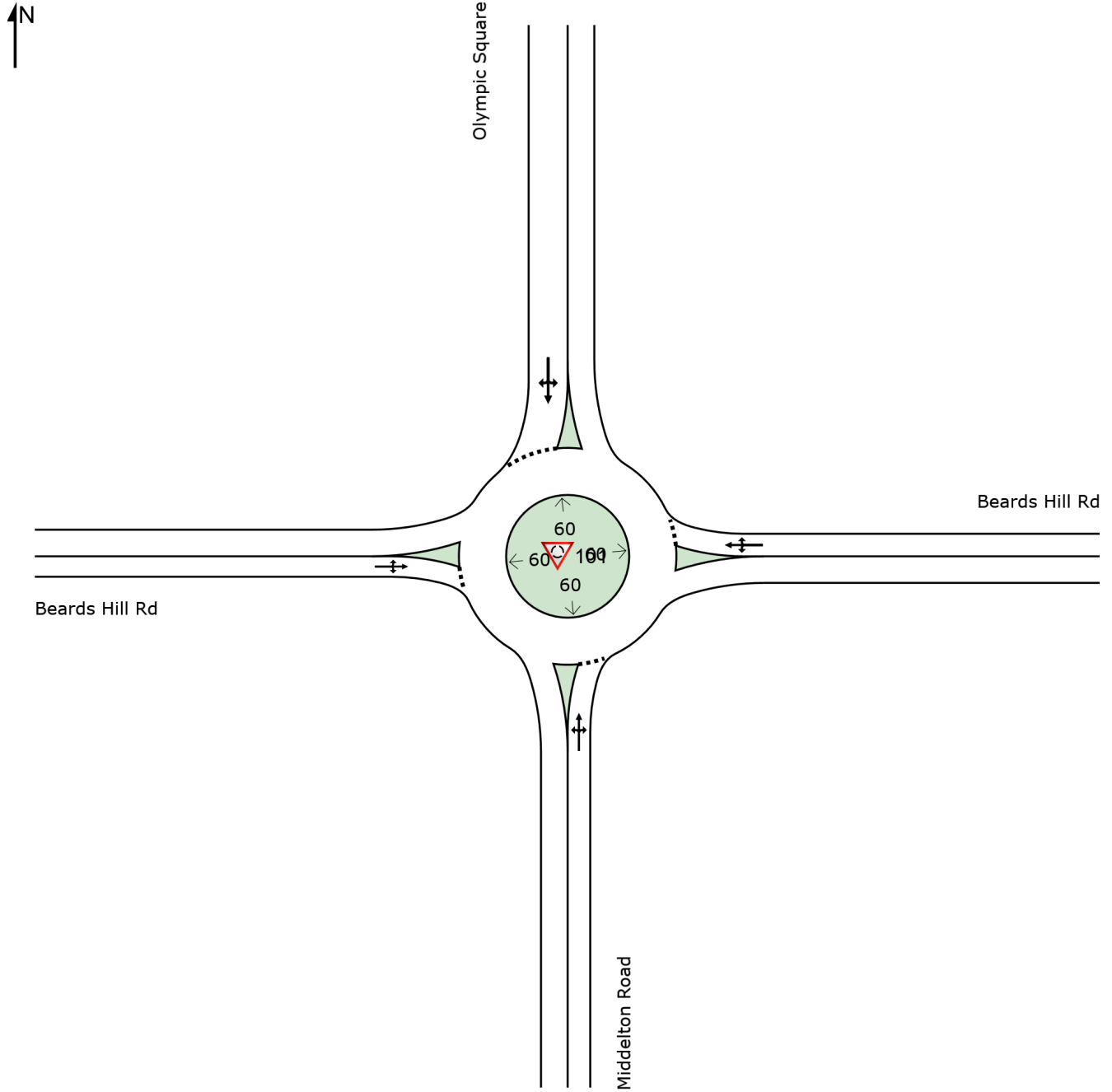
APPENDIX I-D
SIDRA ROUNDABOUT
REPORTS

SITE LAYOUT

Site: 101 [Existing AM (Site Folder: Beards Hill Rd at Middleton Rd)]

Beards Hill Rd at Middleton Rd - Olympic Square
Site Category: (None)
Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT FLOWS FOR SITE (INPUT)

Approach movement input flow rates (veh/h)

All Movement Classes

▼ Site: 101 [Existing AM (Site Folder: Beards Hill Rd at Middleton Rd)]

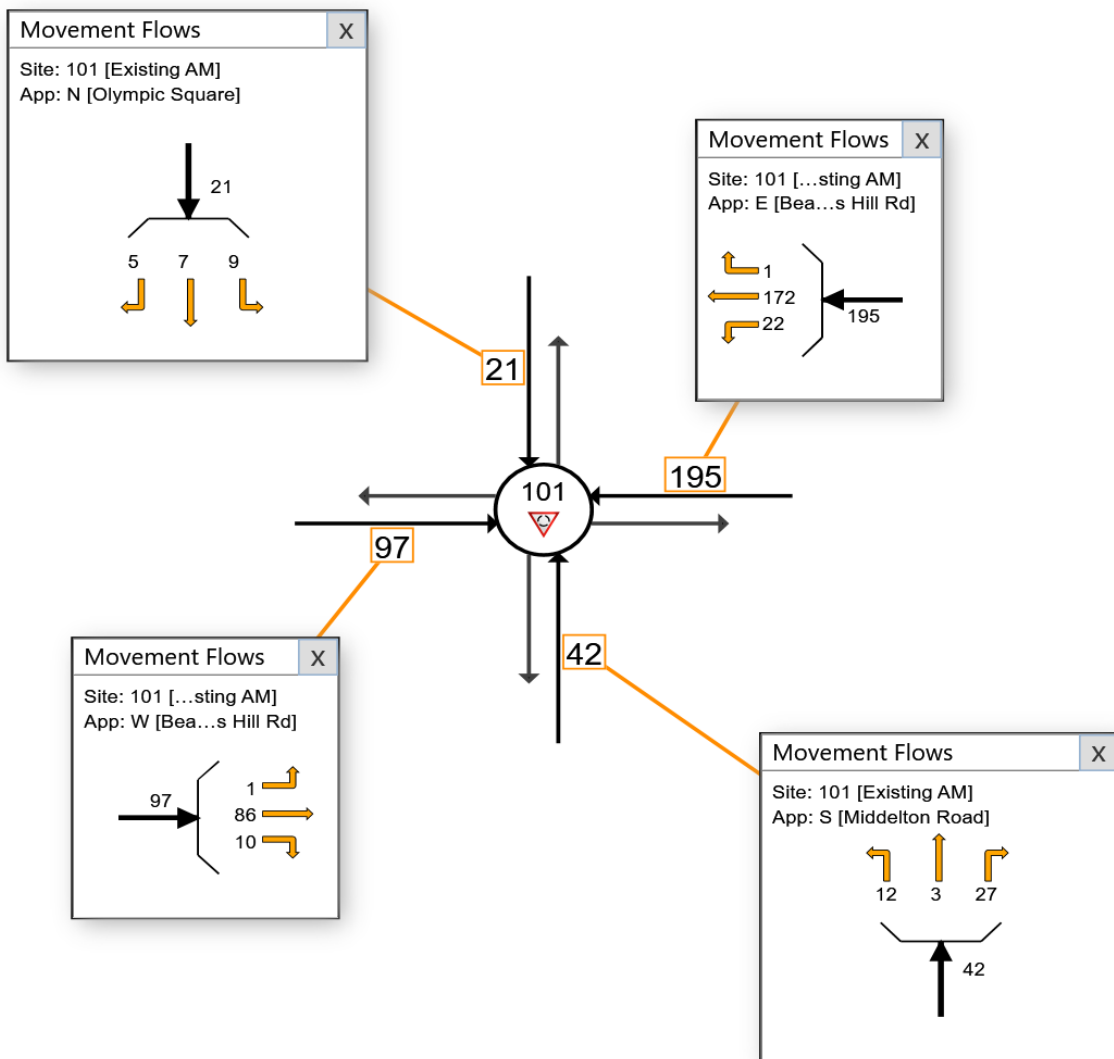
Beards Hill Rd at Middleton Rd - Olympic Square

Site Category: (None)

Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones. Click and drag popup boxes to move to preferred positions.

Close All Popups



MOVEMENT SUMMARY

Site: 101 [Existing AM (Site Folder: Beards Hill Rd at Middleton Rd)]

Beards Hill Rd at Middleton Rd - Olympic Square
 Site Category: (None)
 Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] ft				
South: Middleton Road														
3	L2	12	2.0	13	2.0	0.038	3.3	LOS A	0.2	4.0	0.23	0.10	0.23	34.2
8	T1	3	2.0	3	2.0	0.038	3.3	LOS A	0.2	4.0	0.23	0.10	0.23	34.4
18	R2	27	2.0	29	2.0	0.038	3.3	LOS A	0.2	4.0	0.23	0.10	0.23	33.6
Approach		42	2.0	46	2.0	0.038	3.3	LOS A	0.2	4.0	0.23	0.10	0.23	33.8
East: Beards Hill Rd														
1	L2	22	2.0	24	2.0	0.160	4.0	LOS A	0.8	19.7	0.09	0.02	0.09	34.2
6	T1	172	2.0	187	2.0	0.160	4.0	LOS A	0.8	19.7	0.09	0.02	0.09	34.3
16	R2	1	2.0	1	2.0	0.160	4.0	LOS A	0.8	19.7	0.09	0.02	0.09	33.6
Approach		195	2.0	212	2.0	0.160	4.0	LOS A	0.8	19.7	0.09	0.02	0.09	34.3
North: Olympic Square														
7	L2	9	2.0	10	2.0	0.021	3.5	LOS A	0.1	2.2	0.35	0.19	0.35	33.7
4	T1	7	2.0	8	2.0	0.021	3.5	LOS A	0.1	2.2	0.35	0.19	0.35	33.9
14	R2	5	2.0	5	2.0	0.021	3.5	LOS A	0.1	2.2	0.35	0.19	0.35	33.1
Approach		21	2.0	23	2.0	0.021	3.5	LOS A	0.1	2.2	0.35	0.19	0.35	33.6
West: Beards Hill Rd														
5	L2	1	2.0	1	2.0	0.081	3.4	LOS A	0.4	9.2	0.14	0.05	0.14	34.7
2	T1	86	2.0	93	2.0	0.081	3.4	LOS A	0.4	9.2	0.14	0.05	0.14	34.9
12	R2	10	2.0	11	2.0	0.081	3.4	LOS A	0.4	9.2	0.14	0.05	0.14	34.1
Approach		97	2.0	105	2.0	0.081	3.4	LOS A	0.4	9.2	0.14	0.05	0.14	34.8
All Vehicles		355	2.0	386	2.0	0.160	3.7	LOS A	0.8	19.7	0.14	0.05	0.14	34.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: M:\3800\3863\study\HCM & Sidra from 3601\Beards Hill Rd at Middleton Rd - Olympic Square.sip9

MOVEMENT FLOWS FOR SITE (INPUT)

Approach movement input flow rates (veh/h)

All Movement Classes

▼ Site: 101 [Existing PM (Site Folder: Beards Hill Rd at Middleton Rd)]

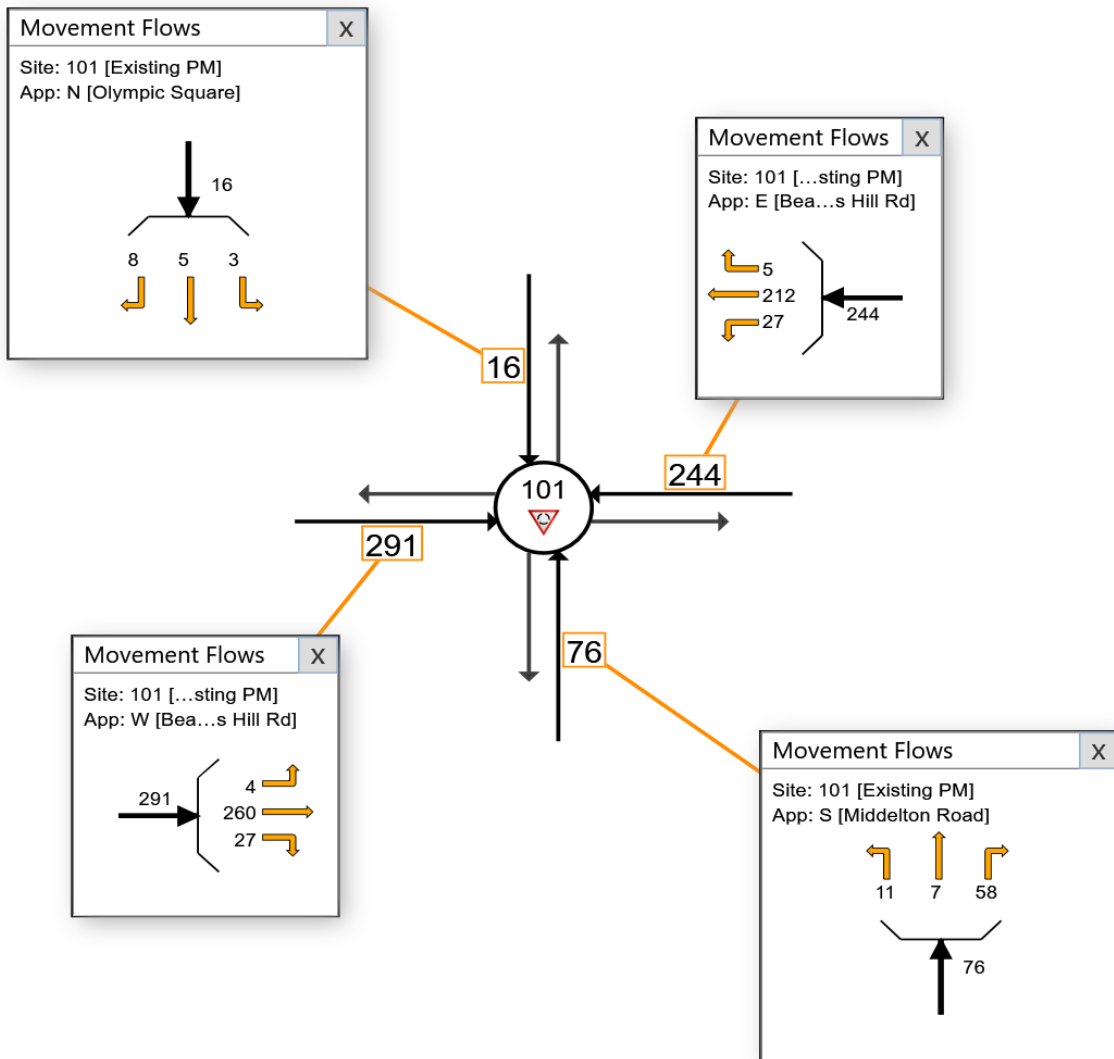
Beards Hill Rd at Middleton Rd - Olympic Square

Site Category: (None)

Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones. Click and drag popup boxes to move to preferred positions.

Close All Popups



MOVEMENT SUMMARY

Site: 101 [Existing PM (Site Folder: Beards Hill Rd at Middleton Rd)]

Beards Hill Rd at Middleton Rd - Olympic Square
 Site Category: (None)
 Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] ft				
South: Middleton Road														
3	L2	11	2.0	12	2.0	0.081	4.3	LOS A	0.3	8.7	0.41	0.29	0.41	34.0
8	T1	7	2.0	8	2.0	0.081	4.3	LOS A	0.3	8.7	0.41	0.29	0.41	34.1
18	R2	58	2.0	62	2.0	0.081	4.3	LOS A	0.3	8.7	0.41	0.29	0.41	33.4
Approach		76	2.0	82	2.0	0.081	4.3	LOS A	0.3	8.7	0.41	0.29	0.41	33.6
East: Beards Hill Rd														
1	L2	27	2.0	29	2.0	0.199	4.4	LOS A	1.0	25.6	0.12	0.03	0.12	34.0
6	T1	212	2.0	228	2.0	0.199	4.4	LOS A	1.0	25.6	0.12	0.03	0.12	34.1
16	R2	5	2.0	5	2.0	0.199	4.4	LOS A	1.0	25.6	0.12	0.03	0.12	33.4
Approach		244	2.0	262	2.0	0.199	4.4	LOS A	1.0	25.6	0.12	0.03	0.12	34.1
North: Olympic Square														
7	L2	3	2.0	3	2.0	0.017	3.7	LOS A	0.1	1.7	0.38	0.22	0.38	34.2
4	T1	5	2.0	5	2.0	0.017	3.7	LOS A	0.1	1.7	0.38	0.22	0.38	34.3
14	R2	8	2.0	9	2.0	0.017	3.7	LOS A	0.1	1.7	0.38	0.22	0.38	33.5
Approach		16	2.0	17	2.0	0.017	3.7	LOS A	0.1	1.7	0.38	0.22	0.38	33.9
West: Beards Hill Rd														
5	L2	4	2.0	4	2.0	0.241	4.8	LOS A	1.3	32.3	0.16	0.06	0.16	34.0
2	T1	260	2.0	280	2.0	0.241	4.8	LOS A	1.3	32.3	0.16	0.06	0.16	34.1
12	R2	27	2.0	29	2.0	0.241	4.8	LOS A	1.3	32.3	0.16	0.06	0.16	33.4
Approach		291	2.0	313	2.0	0.241	4.8	LOS A	1.3	32.3	0.16	0.06	0.16	34.1
All Vehicles		627	2.0	674	2.0	0.241	4.6	LOS A	1.3	32.3	0.18	0.08	0.18	34.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT FLOWS FOR SITE (INPUT)

Approach movement input flow rates (veh/h)

All Movement Classes

▼ Site: 101 [Background AM (Site Folder: Beards Hill Rd at Middleton Rd)]

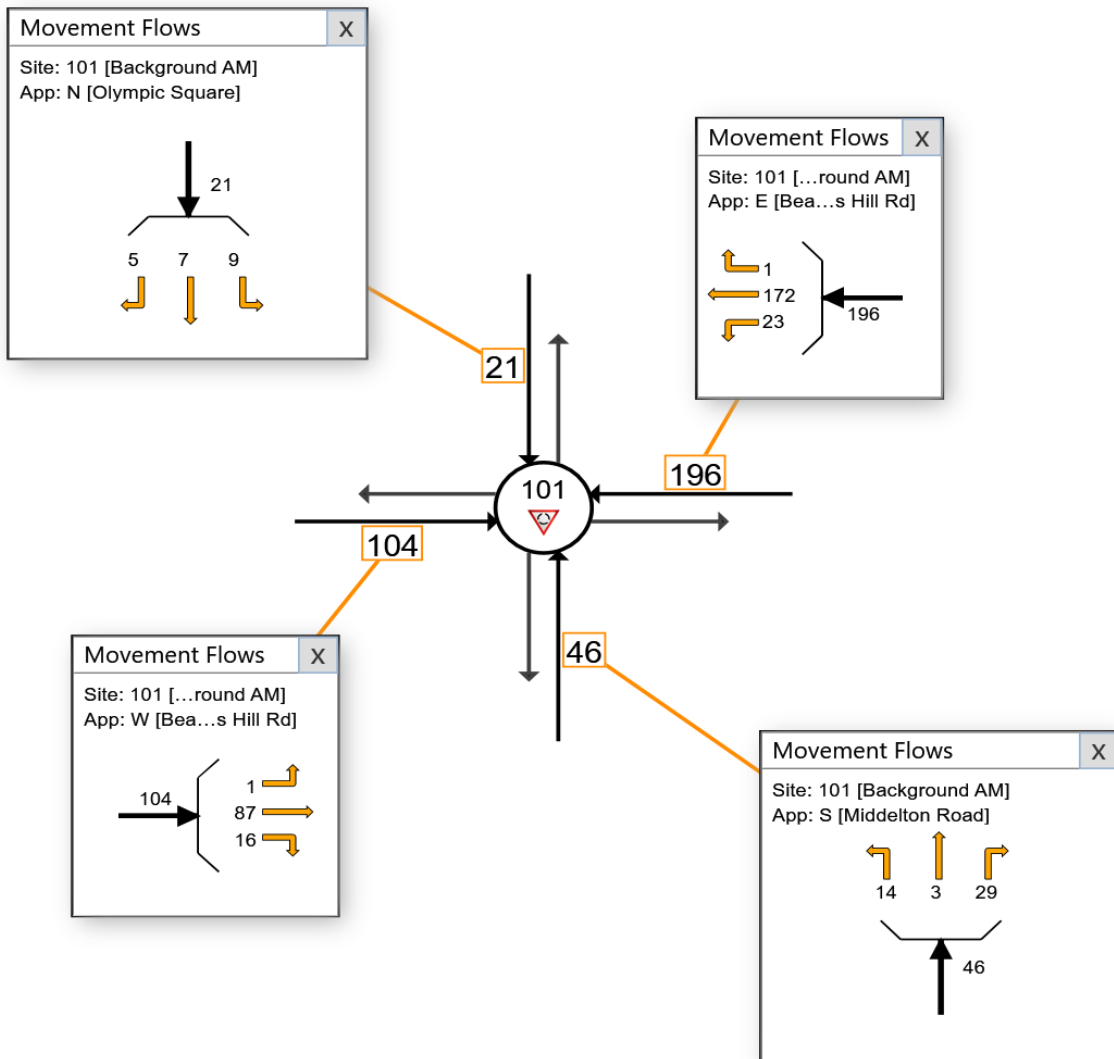
Beards Hill Rd at Middleton Rd - Olympic Square

Site Category: (None)

Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones. Click and drag popup boxes to move to preferred positions.

Close All Popups



MOVEMENT SUMMARY

Site: 101 [Background AM (Site Folder: Beards Hill Rd at Middleton Rd)]

Beards Hill Rd at Middleton Rd - Olympic Square
 Site Category: (None)
 Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] ft				
South: Middleton Road														
3	L2	14	2.0	15	2.0	0.041	3.3	LOS A	0.2	4.4	0.24	0.11	0.24	34.1
8	T1	3	2.0	3	2.0	0.041	3.3	LOS A	0.2	4.4	0.24	0.11	0.24	34.3
18	R2	29	2.0	32	2.0	0.041	3.3	LOS A	0.2	4.4	0.24	0.11	0.24	33.6
Approach		46	2.0	50	2.0	0.041	3.3	LOS A	0.2	4.4	0.24	0.11	0.24	33.8
East: Beards Hill Rd														
1	L2	23	2.0	25	2.0	0.161	4.0	LOS A	0.8	19.8	0.10	0.03	0.10	34.1
6	T1	172	2.0	187	2.0	0.161	4.0	LOS A	0.8	19.8	0.10	0.03	0.10	34.3
16	R2	1	2.0	1	2.0	0.161	4.0	LOS A	0.8	19.8	0.10	0.03	0.10	33.6
Approach		196	2.0	213	2.0	0.161	4.0	LOS A	0.8	19.8	0.10	0.03	0.10	34.3
North: Olympic Square														
7	L2	9	2.0	10	2.0	0.021	3.6	LOS A	0.1	2.2	0.35	0.20	0.35	33.7
4	T1	7	2.0	8	2.0	0.021	3.6	LOS A	0.1	2.2	0.35	0.20	0.35	33.9
14	R2	5	2.0	5	2.0	0.021	3.6	LOS A	0.1	2.2	0.35	0.20	0.35	33.1
Approach		21	2.0	23	2.0	0.021	3.6	LOS A	0.1	2.2	0.35	0.20	0.35	33.6
West: Beards Hill Rd														
5	L2	1	2.0	1	2.0	0.087	3.5	LOS A	0.4	9.9	0.15	0.05	0.15	34.7
2	T1	87	2.0	95	2.0	0.087	3.5	LOS A	0.4	9.9	0.15	0.05	0.15	34.9
12	R2	16	2.0	17	2.0	0.087	3.5	LOS A	0.4	9.9	0.15	0.05	0.15	34.1
Approach		104	2.0	113	2.0	0.087	3.5	LOS A	0.4	9.9	0.15	0.05	0.15	34.7
All Vehicles		367	2.0	399	2.0	0.161	3.8	LOS A	0.8	19.8	0.15	0.05	0.15	34.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT FLOWS FOR SITE (INPUT)

Approach movement input flow rates (veh/h)

All Movement Classes

Site: 101 [Background PM (Site Folder: Beards Hill Rd at Middleton Rd)]

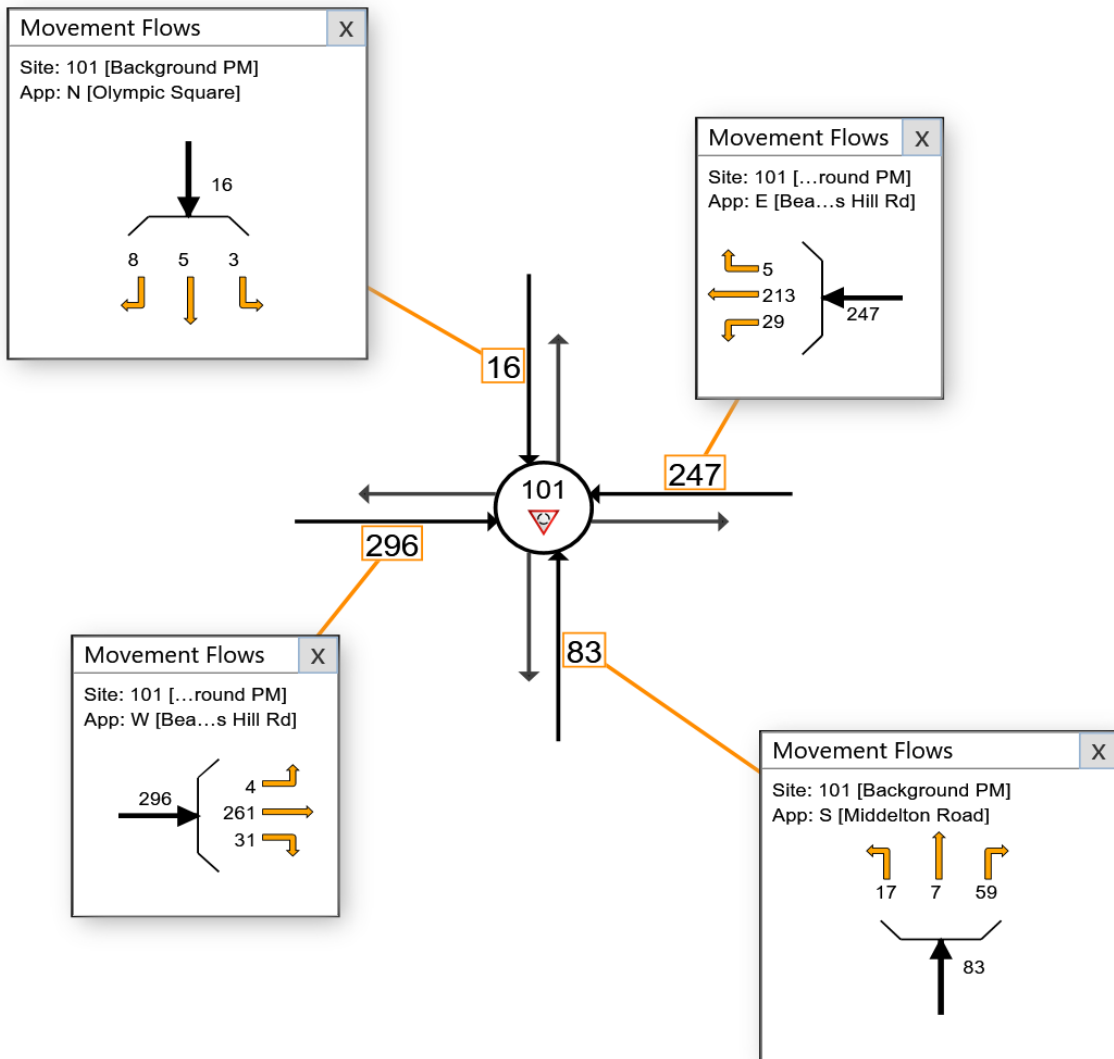
Beards Hill Rd at Middleton Rd - Olympic Square

Site Category: (None)

Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones. Click and drag popup boxes to move to preferred positions.

Close All Popups



MOVEMENT SUMMARY

Site: 101 [Background PM (Site Folder: Beards Hill Rd at Middleton Rd)]

Beards Hill Rd at Middleton Rd - Olympic Square
 Site Category: (None)
 Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] ft				
South: Middleton Road														
3	L2	17	2.0	18	2.0	0.089	4.4	LOS A	0.4	9.5	0.42	0.29	0.42	33.8
8	T1	7	2.0	8	2.0	0.089	4.4	LOS A	0.4	9.5	0.42	0.29	0.42	34.0
18	R2	59	2.0	63	2.0	0.089	4.4	LOS A	0.4	9.5	0.42	0.29	0.42	33.2
Approach		83	2.0	89	2.0	0.089	4.4	LOS A	0.4	9.5	0.42	0.29	0.42	33.4
East: Beards Hill Rd														
1	L2	29	2.0	31	2.0	0.203	4.5	LOS A	1.0	26.1	0.14	0.04	0.14	33.9
6	T1	213	2.0	229	2.0	0.203	4.5	LOS A	1.0	26.1	0.14	0.04	0.14	34.1
16	R2	5	2.0	5	2.0	0.203	4.5	LOS A	1.0	26.1	0.14	0.04	0.14	33.4
Approach		247	2.0	266	2.0	0.203	4.5	LOS A	1.0	26.1	0.14	0.04	0.14	34.1
North: Olympic Square														
7	L2	3	2.0	3	2.0	0.017	3.7	LOS A	0.1	1.7	0.39	0.23	0.39	34.1
4	T1	5	2.0	5	2.0	0.017	3.7	LOS A	0.1	1.7	0.39	0.23	0.39	34.3
14	R2	8	2.0	9	2.0	0.017	3.7	LOS A	0.1	1.7	0.39	0.23	0.39	33.5
Approach		16	2.0	17	2.0	0.017	3.7	LOS A	0.1	1.7	0.39	0.23	0.39	33.9
West: Beards Hill Rd														
5	L2	4	2.0	4	2.0	0.245	4.9	LOS A	1.3	33.1	0.17	0.06	0.17	33.9
2	T1	261	2.0	281	2.0	0.245	4.9	LOS A	1.3	33.1	0.17	0.06	0.17	34.1
12	R2	31	2.0	33	2.0	0.245	4.9	LOS A	1.3	33.1	0.17	0.06	0.17	33.4
Approach		296	2.0	318	2.0	0.245	4.9	LOS A	1.3	33.1	0.17	0.06	0.17	34.0
All Vehicles		642	2.0	690	2.0	0.245	4.6	LOS A	1.3	33.1	0.19	0.09	0.19	33.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT FLOWS FOR SITE (INPUT)

Approach movement input flow rates (veh/h)

All Movement Classes

Site: 101 [Future AM (Site Folder: Beards Hill Rd at Middleton Rd)]

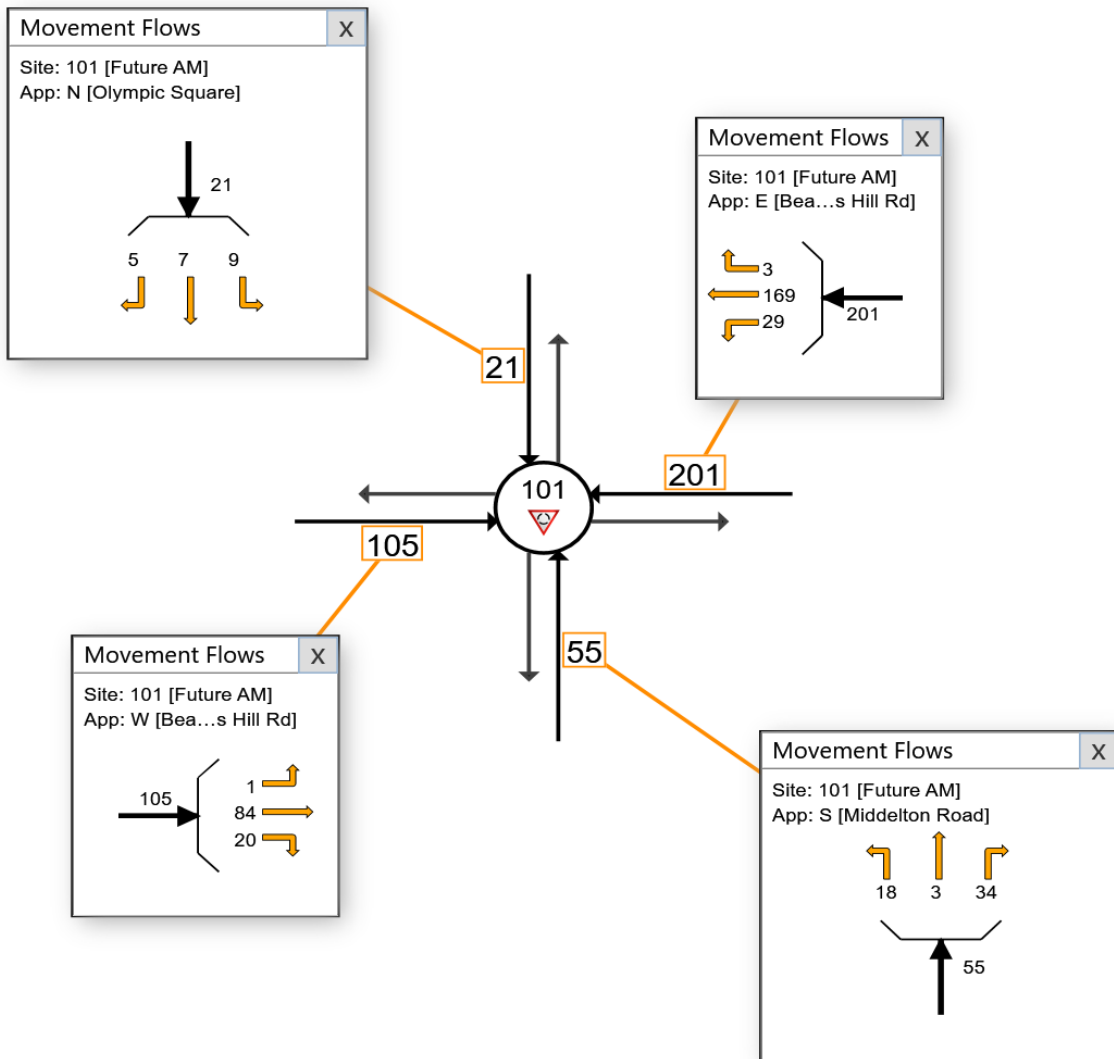
Beards Hill Rd at Middleton Rd - Olympic Square

Site Category: (None)

Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones. Click and drag popup boxes to move to preferred positions.

Close All Popups



MOVEMENT SUMMARY

Site: 101 [Future AM (Site Folder: Beards Hill Rd at Middleton Rd)]

Beards Hill Rd at Middleton Rd - Olympic Square
 Site Category: (None)
 Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] ft				
South: Middleton Road														
3	L2	18	2.0	20	2.0	0.049	3.4	LOS A	0.2	5.3	0.23	0.10	0.23	34.1
8	T1	3	2.0	3	2.0	0.049	3.4	LOS A	0.2	5.3	0.23	0.10	0.23	34.2
18	R2	34	2.0	37	2.0	0.049	3.4	LOS A	0.2	5.3	0.23	0.10	0.23	33.5
Approach		55	2.0	60	2.0	0.049	3.4	LOS A	0.2	5.3	0.23	0.10	0.23	33.7
East: Beards Hill Rd														
1	L2	29	2.0	32	2.0	0.166	4.1	LOS A	0.8	20.5	0.11	0.03	0.11	34.1
6	T1	169	2.0	184	2.0	0.166	4.1	LOS A	0.8	20.5	0.11	0.03	0.11	34.2
16	R2	3	2.0	3	2.0	0.166	4.1	LOS A	0.8	20.5	0.11	0.03	0.11	33.5
Approach		201	2.0	218	2.0	0.166	4.1	LOS A	0.8	20.5	0.11	0.03	0.11	34.2
North: Olympic Square														
7	L2	9	2.0	10	2.0	0.022	3.6	LOS A	0.1	2.2	0.36	0.20	0.36	33.7
4	T1	7	2.0	8	2.0	0.022	3.6	LOS A	0.1	2.2	0.36	0.20	0.36	33.8
14	R2	5	2.0	5	2.0	0.022	3.6	LOS A	0.1	2.2	0.36	0.20	0.36	33.1
Approach		21	2.0	23	2.0	0.022	3.6	LOS A	0.1	2.2	0.36	0.20	0.36	33.6
West: Beards Hill Rd														
5	L2	1	2.0	1	2.0	0.089	3.5	LOS A	0.4	10.0	0.16	0.06	0.16	34.7
2	T1	84	2.0	91	2.0	0.089	3.5	LOS A	0.4	10.0	0.16	0.06	0.16	34.8
12	R2	20	2.0	22	2.0	0.089	3.5	LOS A	0.4	10.0	0.16	0.06	0.16	34.1
Approach		105	2.0	114	2.0	0.089	3.5	LOS A	0.4	10.0	0.16	0.06	0.16	34.7
All Vehicles		382	2.0	415	2.0	0.166	3.8	LOS A	0.8	20.5	0.16	0.06	0.16	34.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT FLOWS FOR SITE (INPUT)

Approach movement input flow rates (veh/h)

All Movement Classes

Site: 101 [Future PM (Site Folder: Beards Hill Rd at Middleton Rd)]

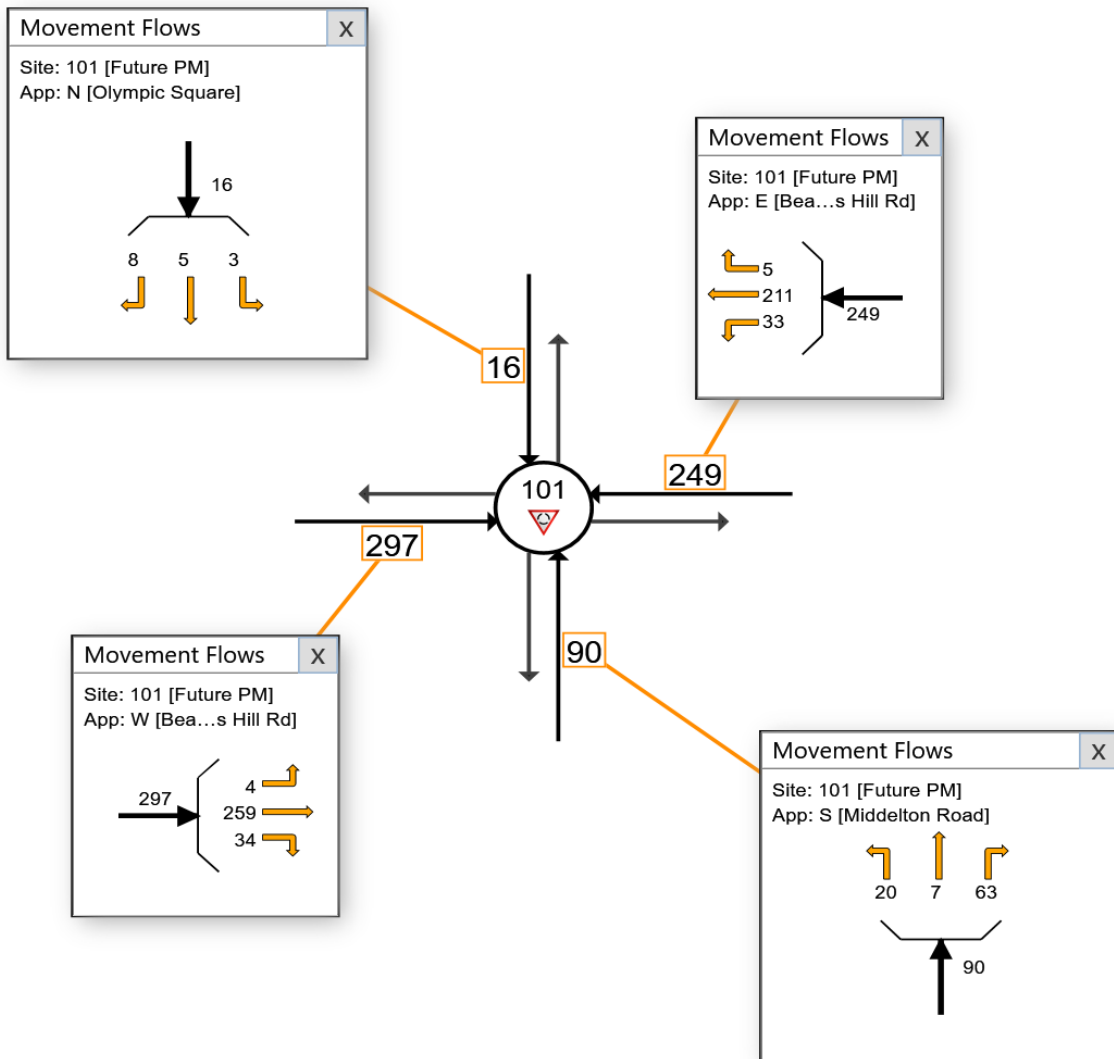
Beards Hill Rd at Middleton Rd - Olympic Square

Site Category: (None)

Roundabout

Use the button below to open or close all popup boxes. Click value labels to open selected ones. Click and drag popup boxes to move to preferred positions.

Close All Popups



MOVEMENT SUMMARY

Site: 101 [Future PM (Site Folder: Beards Hill Rd at Middleton Rd)]

Beards Hill Rd at Middleton Rd - Olympic Square
 Site Category: (None)
 Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] ft				
South: Middleton Road														
3	L2	20	2.0	22	2.0	0.096	4.4	LOS A	0.4	10.4	0.42	0.29	0.42	33.7
8	T1	7	2.0	8	2.0	0.096	4.4	LOS A	0.4	10.4	0.42	0.29	0.42	33.9
18	R2	63	2.0	68	2.0	0.096	4.4	LOS A	0.4	10.4	0.42	0.29	0.42	33.2
Approach		90	2.0	97	2.0	0.096	4.4	LOS A	0.4	10.4	0.42	0.29	0.42	33.3
East: Beards Hill Rd														
1	L2	33	2.0	35	2.0	0.205	4.5	LOS A	1.0	26.4	0.15	0.05	0.15	33.9
6	T1	211	2.0	227	2.0	0.205	4.5	LOS A	1.0	26.4	0.15	0.05	0.15	34.0
16	R2	5	2.0	5	2.0	0.205	4.5	LOS A	1.0	26.4	0.15	0.05	0.15	33.3
Approach		249	2.0	268	2.0	0.205	4.5	LOS A	1.0	26.4	0.15	0.05	0.15	34.0
North: Olympic Square														
7	L2	3	2.0	3	2.0	0.017	3.7	LOS A	0.1	1.7	0.39	0.23	0.39	34.1
4	T1	5	2.0	5	2.0	0.017	3.7	LOS A	0.1	1.7	0.39	0.23	0.39	34.3
14	R2	8	2.0	9	2.0	0.017	3.7	LOS A	0.1	1.7	0.39	0.23	0.39	33.5
Approach		16	2.0	17	2.0	0.017	3.7	LOS A	0.1	1.7	0.39	0.23	0.39	33.9
West: Beards Hill Rd														
5	L2	4	2.0	4	2.0	0.247	4.9	LOS A	1.3	33.4	0.18	0.07	0.18	33.9
2	T1	259	2.0	278	2.0	0.247	4.9	LOS A	1.3	33.4	0.18	0.07	0.18	34.1
12	R2	34	2.0	37	2.0	0.247	4.9	LOS A	1.3	33.4	0.18	0.07	0.18	33.4
Approach		297	2.0	319	2.0	0.247	4.9	LOS A	1.3	33.4	0.18	0.07	0.18	34.0
All Vehicles		652	2.0	701	2.0	0.247	4.7	LOS A	1.3	33.4	0.21	0.10	0.21	33.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

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Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

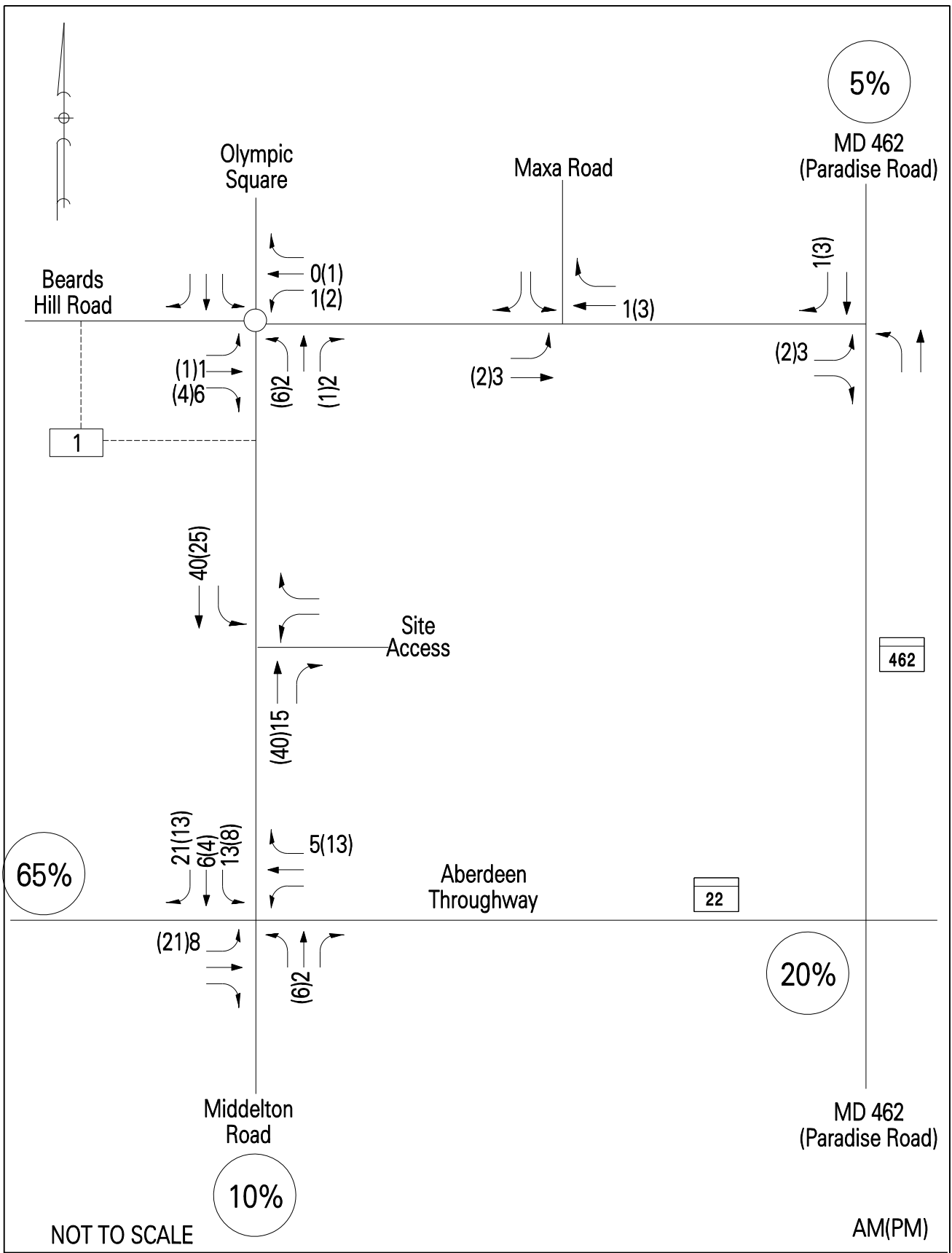
Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX II

BAGKROUND
TRAFFIC DATA



TRAFFIC CONCEPTS, INC.
 7525 Connelley Drive
 Suite B
 Hanover, Maryland 21076
 410-760-2911

BACKGROUND 1
Beards Hill Apartments

NOTE: COPIED FROM BEARDS HILL APTS TIS

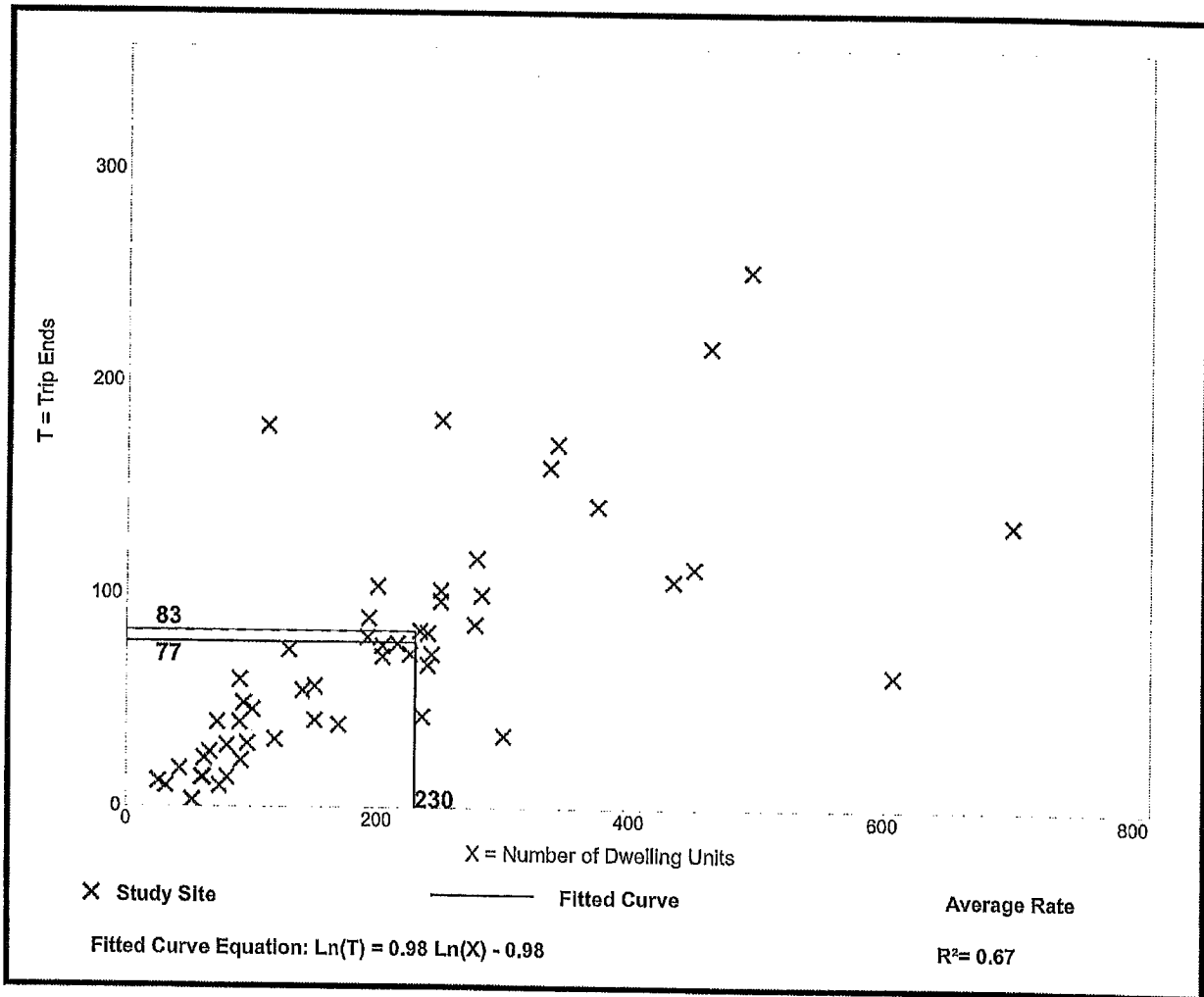
Multifamily Housing (Mid-Rise) (221)

Vehicle Trip Ends vs: Dwelling Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 53
 Avg. Num. of Dwelling Units: 207
 Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.06 - 1.61	0.19

Data Plot and Equation



Trip Generation Manual, 10th Edition • Institute of Transportation Engineers

83 TOTAL 22 IN / 61 OUT

NOTE: COPIED FROM BEARDS HILL APTS TIS

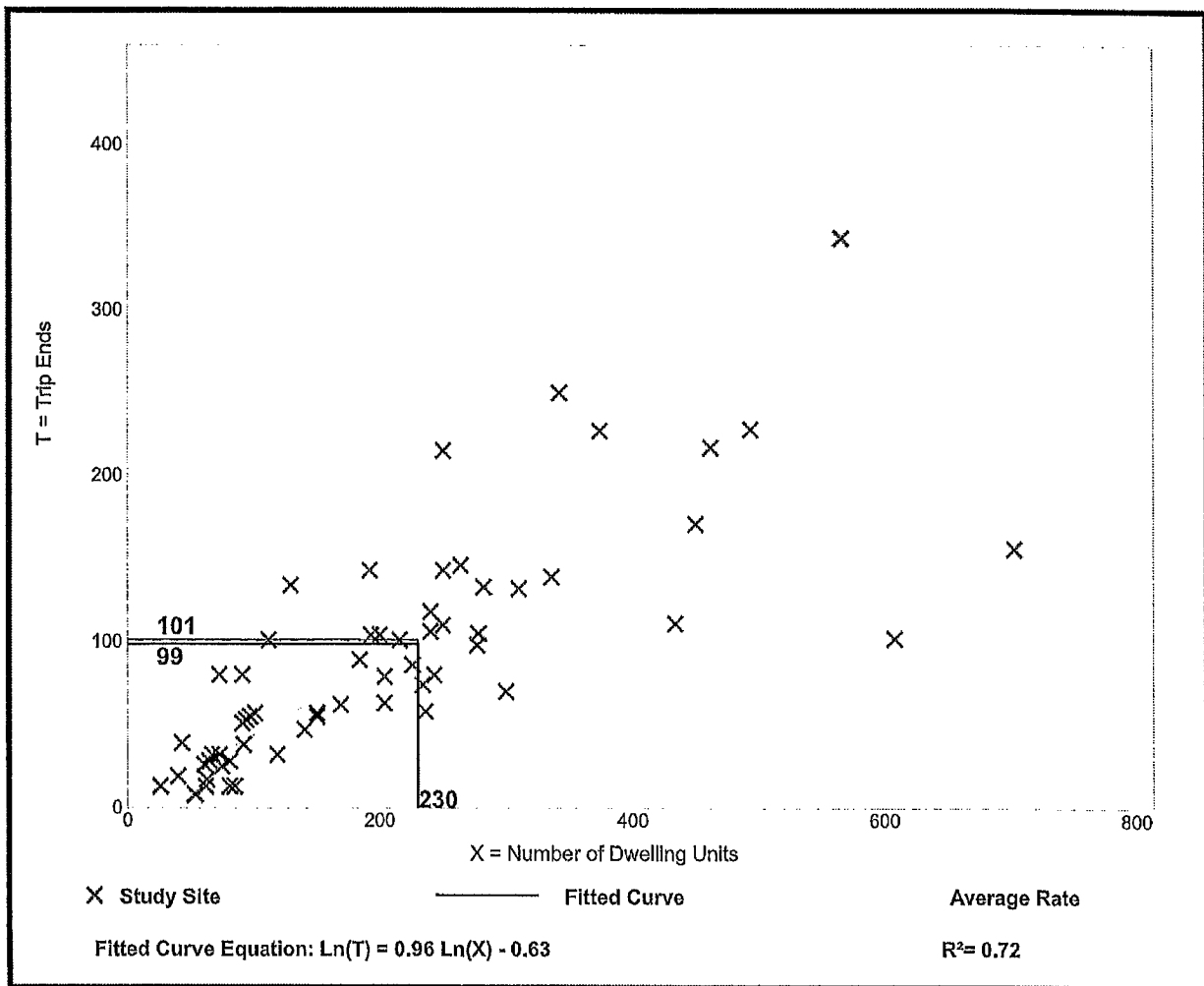
Multifamily Housing (Mid-Rise) (221)

Vehicle Trip Ends vs: Dwelling Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 60
 Avg. Num. of Dwelling Units: 208
 Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.11	0.19

Data Plot and Equation



Trip Generation Manual, 10th Edition • Institute of Transportation Engineers

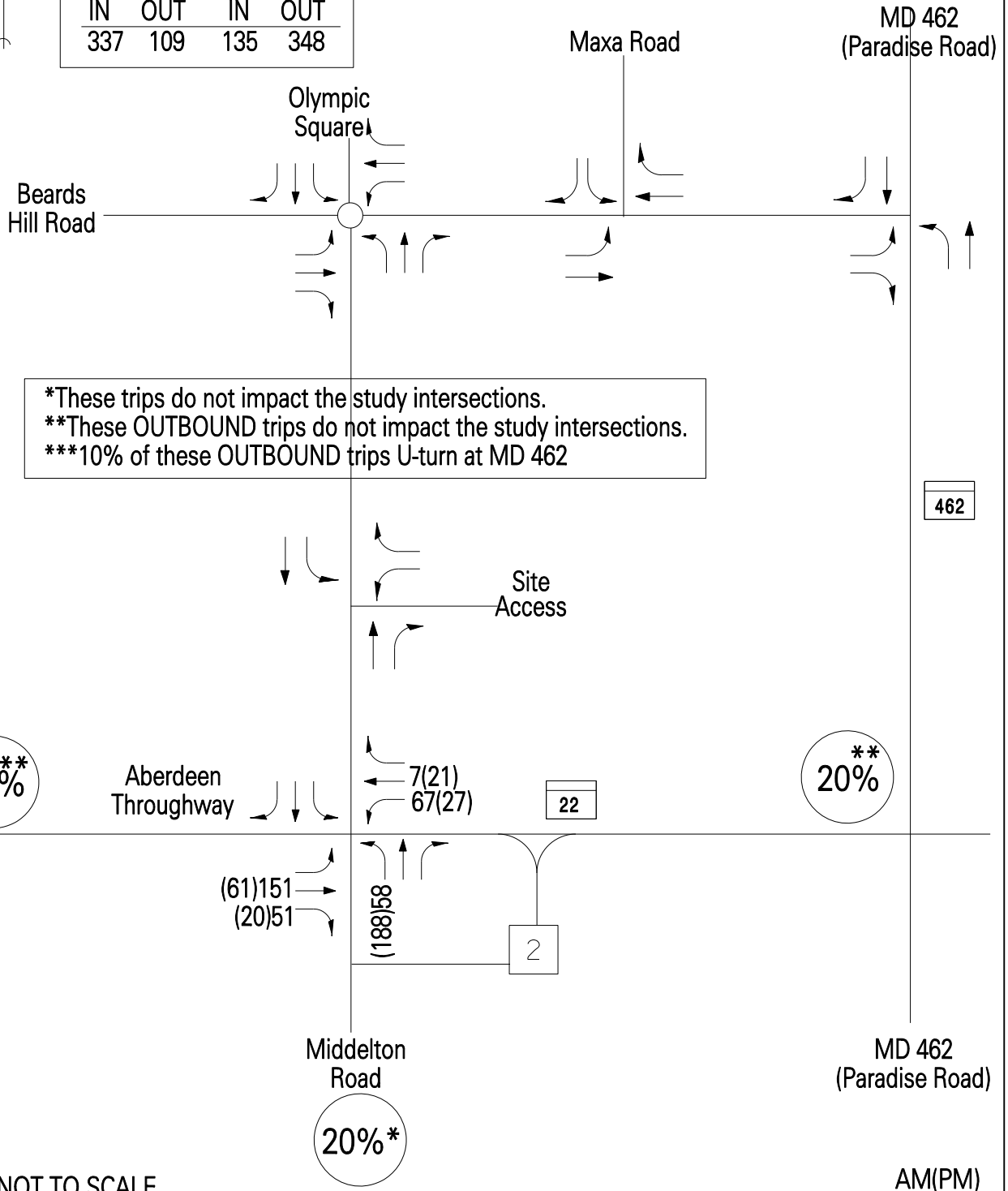
101 TOTAL 62 IN / 39 OUT



TRIPS APPROVED IN
2018 TRIP GENERATION
LETTER FOR
ABERDEEN CORP PARK

AM		PM	
IN	OUT	IN	OUT
337	109	135	348

NOTE: DISTRIBUTION APPROVED
IN 2018 ACCESS STUDY FOR
ABERDEEN CORP PARK
(SEE ATTACHED EXCERPTS)



*These trips do not impact the study intersections.
**These OUTBOUND trips do not impact the study intersections.
***10% of these OUTBOUND trips U-turn at MD 462

TRAFFIC CONCEPTS, INC.
7525 Connelley Drive
Suite B
Hanover, Maryland 21076
410-760-2911

BACKGROUND 2
Upper Chesapeake Medical Center

TRAFFIC CONCEPTS, INC.

Traffic Impact Studies • Feasibility • Traffic Signal Design • Traffic Counts • Expert Testimony

September 11, 2018

Ms. Phyllis G. Grover
 Director of Planning and Community Development
 City of Aberdeen
 60 N. Parke Street
 Aberdeen, MD 21001

RE: Aberdeen Corporate Park- MD 22 (Aberdeen Thruway)
 Trip Generation Analysis
 SHA Tracking No: 16APHA007XX
 T/C 3291

Dear Ms. Grover:

The Aberdeen Corporate Park project developer, Upper Chesapeake Medical Center, proposes to modify the office/commercial center land use that was approved in 2009 to a medical office and hospital facility. Therefore, Traffic Concepts, Inc. has conducted a peak hour trip generation analysis. The analysis will determine if the number of peak hour trips generated by the new site plan will exceed the number of peak hour trips that were stated in the 2009 Traffic Impact Study and approved by the City of Aberdeen. A traffic study may be required if the proposed new trips are greater than the originally approved peak hour trips.

The peak hour trip generation analysis includes all trips that enter and exit the site, which includes the pass-by trips. The trip generation table shown below identifies the peak hour trips that were approved in the 2009 Aberdeen Corporate Park Traffic Impact Study.

TRIP GENERATION

	MORNING PEAK HOUR			EVENING PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Aberdeen Corporate Park						
250,000 sq.ft. General Office	343	47	390	61	298	359
12,000 sq.ft. High Turnover Restaurant	72	66	138	79	55	134
Pass-by trips (PM-43%)				34	24	68
Net Restaurant trips	72	66	138	45	31	76
				140	353	493
Net Increased Trips	415	113	528	106	329	435

Source: 2009 Traffic Impact Study & ITE Manual 8th Edition

2018 Proposed Uses

The developer proposes to utilize the existing 93,000 gsf building as a medical office building. Additionally, a new building will be constructed that is planned as a two story hospital. The following information provides specific details of the proposed uses planned in the new building.

The first floor will contain an emergency department with 25 beds with an additional 20 beds for 48 hour observation and inpatient care. This floor will also provide space for inpatient support services such as a laboratory, pharmacy, and imaging. Other accessory uses will include administrative offices, conference rooms, and an ambulance drop-off space. Patient surgical facilities will not be provided at this facility.

The second floor will contain an inpatient behavioral health hospital with 40 beds. Additionally, the basement area of the building will contain the building mechanicals, storage space, and space for a kitchen and cafeteria.

The peak hour trip generation for the new uses as described above were determined with the Institute of Transportation Engineers, Trip Generation Manual, 10th Edition (ITE).

TRIP GENERATION RATES

<u>Land Use/Land Use Code</u>	<u>Formula</u>	<u>Inbound/Outbound</u>
Medical Office (LUC 720)	$LN(AM\ Trips)=0.89 \times LN(ksf)+1.31$ Average Rate = 2.78	78%/22%
	$PM\ Trips=3.39(ksf)+2.02$ Average Rate = 3.46	28%/72%

<u>Land Use/Land Use Code</u>	<u>Formula</u>	<u>Trips</u>
Hospital (LUC 610)	$AM\ Trips=1.77(beds)+36.61$ Average Rate = 1.84	72%/28%
	$PM\ Trips=2.08(beds)-104.00$ Avg. Rate=1.89	28%.72%

	<u>AM</u>			<u>PM</u>		
	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>
Medical Office						
ITE Land Use Code 720						
93ksf	202	57	259	90	232	322
Hospital						
ITE Land Use Code 610						
85 Beds	135	52	187	45	116	161
New Site Generated Trips	337	109	446	135	348	483

NEW
 MEDICAL
 CENTER
 TRIPS

Conclusions

The trip generation analysis was conducted using the ITE, Trip Generation Manual that is required for use in trip generation studies by the MDOT SHA and all local jurisdictions in Maryland. As shown below, the analysis finds the newly proposed site plan would generate fewer peak hour trips than originally approved. Therefore, the peak hour impact at the site access points and at the surrounding intersections is less than stated in the 2009 Traffic Impact Study.

	AM Peak Hour	PM Peak Hour
Original Approved Site Generated Trips	528	493
New Site Generated Trips	<u>446</u>	<u>483</u>
Difference	- 82	-10

Additionally, a new right-in/right-out access approved by MDOT SHA onto MD 22 will improve access to the property. The new access will reduce the right turning traffic at the MD 22 @ Middleton Road intersection. The new MD 22 access also will reduce right out traffic flows from McHenry Road (site access road) onto Middleton Road and will reduce left turn movements from Middleton Road onto McHenry Road.

Based on the peak hour trip information provided in this letter, we request this project be approved from a traffic impact standpoint. Please contact me if you have any questions or if you require additional information.

Sincerely,

TRAFFIC CONCEPTS, INC.



Mark Keeley, PTP

Project Manager

MKeeley@traffic-concepts.com

cc: Mr. Philip D Crocker, Senior Project Manager, Upper Chesapeake Medical Center
Mr. Paul Muddiman, Vice President, Morris & Ritchie Associates, Inc.

Attachments: ITE Trip Generation Worksheets

APPENDIX III

**TRAFFIC
COUNT DATA**

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: MD 22 (ABERDEEN THRUWAY) @ MIDDLETON ROAD

JURISDICTION: CITY OF ABERDEEN

COUNT BY: CAMERA

DATE: MARCH 3, 2022

WEATHER: CLEAR

DAY: THURSDAY

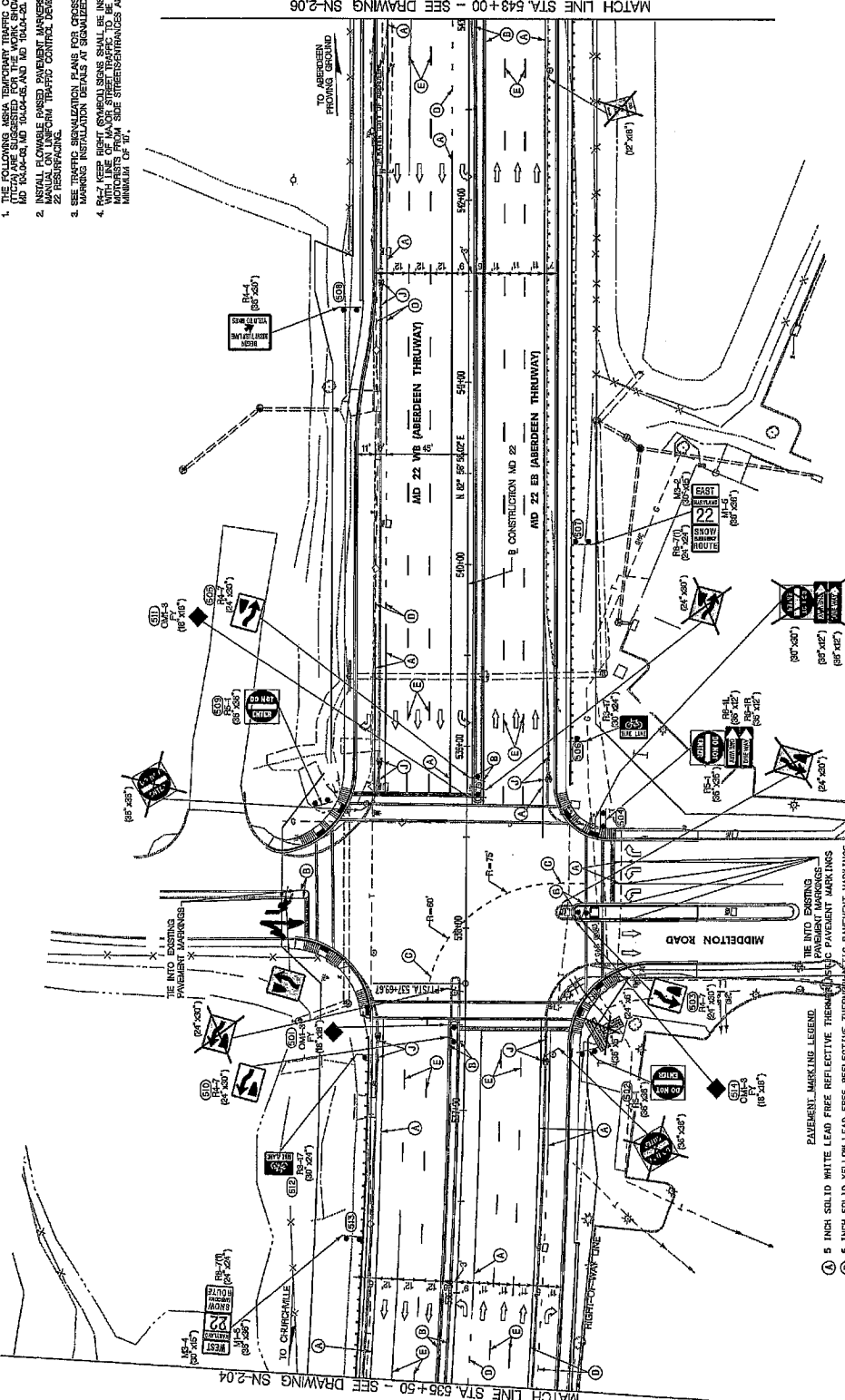
TIME	MIDDLETON RD NORTHBOUND			MIDDLETON RD SOUTHBOUND			MD 22 EASTBOUND				MD 22 WESTBOUND				TOTAL
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	UTRN	LEFT	THRU	RIGHT	UTRN	
AM															
7:00-7:15	11	4	15	15	1	5	8	220	18	0	18	139	3	0	457
7:15-7:30	7	6	22	11	11	10	18	267	16	0	27	156	14	0	565
7:30-7:45	17	6	16	10	7	12	12	233	18	0	22	142	18	0	513
7:45-8:00	17	3	32	9	5	9	10	248	28	0	28	142	15	0	546
8:00-8:15	14	10	28	8	6	13	13	198	17	0	26	117	9	1	460
8:15-8:30	18	5	21	11	7	6	7	208	22	0	23	106	7	1	442
8:30-8:45	18	6	21	15	5	10	17	159	25	0	32	125	11	1	445
8:45-9:00	26	10	22	13	10	10	14	210	27	0	42	146	6	0	536
AM PEAK HR 7:15-8:15 TOTALS	55	25	98	38	29	44	53	946	79	0	103	557	56	2	PHF 0.92
PM															
4:00-4:15	39	7	49	6	12	2	7	150	32	0	49	263	8	0	624
4:15-4:30	35	8	42	13	7	9	8	154	35	0	61	263	6	0	641
4:30-4:45	35	10	59	7	13	6	2	131	34	1	57	293	1	0	649
4:45-5:00	43	9	52	3	15	4	4	106	34	4	47	289	1	0	611
5:00-5:15	37	12	52	2	11	7	6	141	39	1	44	285	1	0	638
5:15-5:30	40	11	43	5	15	7	7	144	40	1	51	220	4	0	588
5:30-5:45	34	11	60	10	9	7	1	129	45	0	53	222	3	0	584
5:45-6:00	29	7	48	4	4	3	3	118	36	0	42	171	8	0	473
PM PEAK HR 4:15-5:15 TOTALS	150	39	205	25	46	26	20	532	142	6	209	1130	9	0	PHF 0.98

TRAFFIC CONCEPTS, INC.
 7525 CONNELLEY DRIVE, SUITE B
 HANOVER, MARYLAND 21076
 410 760 2911 (FAX) 410 760 2915
 E-MAIL TRAFFIC@TRAFFIC-CONCEPTS.COM

M:13863

GENERAL NOTES:

1. THE FOLLOWING ASHA TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATIONS SHALL BE USED UNLESS OTHERWISE NOTED ON THIS PLAN: MD 104J-III, MD 104K-III, MD 104L-III, MD 104M-III, MD 104N-III, MD 104O-III, MD 104P-III, MD 104Q-III, MD 104R-III, MD 104S-III, MD 104T-III, MD 104U-III, MD 104V-III, MD 104W-III, MD 104X-III, MD 104Y-III, MD 104Z-III, MD 104AA-III, MD 104AB-III, MD 104AC-III, MD 104AD-III, MD 104AE-III, MD 104AF-III, MD 104AG-III, MD 104AH-III, MD 104AI-III, MD 104AJ-III, MD 104AK-III, MD 104AL-III, MD 104AM-III, MD 104AN-III, MD 104AO-III, MD 104AP-III, MD 104AQ-III, MD 104AR-III, MD 104AS-III, MD 104AT-III, MD 104AU-III, MD 104AV-III, MD 104AW-III, MD 104AX-III, MD 104AY-III, MD 104AZ-III, MD 104BA-III, MD 104BB-III, MD 104BC-III, MD 104BD-III, MD 104BE-III, MD 104BF-III, MD 104BG-III, MD 104BH-III, MD 104BI-III, MD 104BJ-III, MD 104BK-III, MD 104BL-III, MD 104BM-III, MD 104BN-III, MD 104BO-III, MD 104BP-III, MD 104BQ-III, MD 104BR-III, MD 104BS-III, MD 104BT-III, MD 104BU-III, MD 104BV-III, MD 104BW-III, MD 104BX-III, MD 104BY-III, MD 104BZ-III, MD 104CA-III, MD 104CB-III, MD 104CC-III, MD 104CD-III, MD 104CE-III, MD 104CF-III, MD 104CG-III, MD 104CH-III, MD 104CI-III, MD 104CJ-III, MD 104CK-III, MD 104CL-III, MD 104CM-III, MD 104CN-III, MD 104CO-III, MD 104CP-III, MD 104CQ-III, MD 104CR-III, MD 104CS-III, MD 104CT-III, MD 104CU-III, MD 104CV-III, MD 104CW-III, MD 104CX-III, MD 104CY-III, MD 104CZ-III, MD 104DA-III, MD 104DB-III, MD 104DC-III, MD 104DD-III, MD 104DE-III, MD 104DF-III, MD 104DG-III, MD 104DH-III, MD 104DI-III, MD 104DJ-III, MD 104DK-III, MD 104DL-III, MD 104DM-III, MD 104DN-III, MD 104DO-III, MD 104DP-III, MD 104DQ-III, MD 104DR-III, MD 104DS-III, MD 104DT-III, MD 104DU-III, MD 104DV-III, MD 104DW-III, MD 104DX-III, MD 104DY-III, MD 104DZ-III, MD 104EA-III, MD 104EB-III, MD 104EC-III, MD 104ED-III, MD 104EE-III, MD 104EF-III, MD 104EG-III, MD 104EH-III, MD 104EI-III, MD 104EJ-III, MD 104EK-III, MD 104EL-III, MD 104EM-III, MD 104EN-III, MD 104EO-III, MD 104EP-III, MD 104EQ-III, MD 104ER-III, MD 104ES-III, MD 104ET-III, MD 104EU-III, MD 104EV-III, MD 104EW-III, MD 104EX-III, MD 104EY-III, MD 104EZ-III, MD 104FA-III, MD 104FB-III, MD 104FC-III, MD 104FD-III, MD 104FE-III, MD 104FF-III, MD 104FG-III, MD 104FH-III, MD 104FI-III, MD 104FJ-III, MD 104FK-III, MD 104FL-III, MD 104FM-III, MD 104FN-III, MD 104FO-III, MD 104FP-III, MD 104FQ-III, MD 104FR-III, MD 104FS-III, MD 104FT-III, MD 104FU-III, MD 104FV-III, MD 104FW-III, MD 104FX-III, MD 104FY-III, MD 104FZ-III, MD 104GA-III, MD 104GB-III, MD 104GC-III, MD 104GD-III, MD 104GE-III, MD 104GF-III, MD 104GG-III, MD 104GH-III, MD 104GI-III, MD 104GJ-III, MD 104GK-III, MD 104GL-III, MD 104GM-III, MD 104GN-III, MD 104GO-III, MD 104GP-III, MD 104GQ-III, MD 104GR-III, MD 104GS-III, MD 104GT-III, MD 104GU-III, MD 104GV-III, MD 104GW-III, MD 104GX-III, MD 104GY-III, MD 104GZ-III, MD 104HA-III, MD 104HB-III, MD 104HC-III, MD 104HD-III, MD 104HE-III, MD 104HF-III, MD 104HG-III, MD 104HH-III, MD 104HI-III, MD 104HJ-III, MD 104HK-III, MD 104HL-III, MD 104HM-III, MD 104HN-III, MD 104HO-III, MD 104HP-III, MD 104HQ-III, MD 104HR-III, MD 104HS-III, MD 104HT-III, MD 104HU-III, MD 104HV-III, MD 104HW-III, MD 104HX-III, MD 104HY-III, MD 104HZ-III, MD 104IA-III, MD 104IB-III, MD 104IC-III, MD 104ID-III, MD 104IE-III, MD 104IF-III, MD 104IG-III, MD 104IH-III, MD 104II-III, MD 104IJ-III, MD 104IK-III, MD 104IL-III, MD 104IM-III, MD 104IN-III, MD 104IO-III, MD 104IP-III, MD 104IQ-III, MD 104IR-III, MD 104IS-III, MD 104IT-III, MD 104IU-III, MD 104IV-III, MD 104IW-III, MD 104IX-III, MD 104IY-III, MD 104IZ-III, MD 104JA-III, MD 104JB-III, MD 104JC-III, MD 104JD-III, MD 104JE-III, MD 104JF-III, MD 104JG-III, MD 104JH-III, MD 104JI-III, MD 104JJ-III, MD 104JK-III, MD 104JL-III, MD 104JM-III, MD 104JN-III, MD 104JO-III, MD 104JP-III, MD 104JQ-III, MD 104JR-III, MD 104JS-III, MD 104JT-III, MD 104JU-III, MD 104JV-III, MD 104JW-III, MD 104JX-III, MD 104JY-III, MD 104JZ-III, MD 104KA-III, MD 104KB-III, MD 104KC-III, MD 104KD-III, MD 104KE-III, MD 104KF-III, MD 104KG-III, MD 104KH-III, MD 104KI-III, MD 104KJ-III, MD 104KK-III, MD 104KL-III, MD 104KM-III, MD 104KN-III, MD 104KO-III, MD 104KP-III, MD 104KQ-III, MD 104KR-III, MD 104KS-III, MD 104KT-III, MD 104KU-III, MD 104KV-III, MD 104KW-III, MD 104KX-III, MD 104KY-III, MD 104KZ-III, MD 104LA-III, MD 104LB-III, MD 104LC-III, MD 104LD-III, MD 104LE-III, MD 104LF-III, MD 104LG-III, MD 104LH-III, MD 104LI-III, MD 104LJ-III, MD 104LK-III, MD 104LL-III, MD 104LM-III, MD 104LN-III, MD 104LO-III, MD 104LP-III, MD 104LQ-III, MD 104LR-III, MD 104LS-III, MD 104LT-III, MD 104LU-III, MD 104LV-III, MD 104LW-III, MD 104LX-III, MD 104LY-III, MD 104LZ-III, MD 104MA-III, MD 104MB-III, MD 104MC-III, MD 104MD-III, MD 104ME-III, MD 104MF-III, MD 104MG-III, MD 104MH-III, MD 104MI-III, MD 104MJ-III, MD 104MK-III, MD 104ML-III, MD 104MM-III, MD 104MN-III, MD 104MO-III, MD 104MP-III, MD 104MQ-III, MD 104MR-III, MD 104MS-III, MD 104MT-III, MD 104MU-III, MD 104MV-III, MD 104MW-III, MD 104MX-III, MD 104MY-III, MD 104MZ-III, MD 104NA-III, MD 104NB-III, MD 104NC-III, MD 104ND-III, MD 104NE-III, MD 104NF-III, MD 104NG-III, MD 104NH-III, MD 104NI-III, MD 104NJ-III, MD 104NK-III, MD 104NL-III, MD 104NM-III, MD 104NN-III, MD 104NO-III, MD 104NP-III, MD 104NQ-III, MD 104NR-III, MD 104NS-III, MD 104NT-III, MD 104NU-III, MD 104NV-III, MD 104NW-III, MD 104NX-III, MD 104NY-III, MD 104NZ-III, MD 104OA-III, MD 104OB-III, MD 104OC-III, MD 104OD-III, MD 104OE-III, MD 104OF-III, MD 104OG-III, MD 104OH-III, MD 104OI-III, MD 104OJ-III, MD 104OK-III, MD 104OL-III, MD 104OM-III, MD 104ON-III, MD 104OO-III, MD 104OP-III, MD 104OQ-III, MD 104OR-III, MD 104OS-III, MD 104OT-III, MD 104OU-III, MD 104OV-III, MD 104OW-III, MD 104OX-III, MD 104OY-III, MD 104OZ-III, MD 104PA-III, MD 104PB-III, MD 104PC-III, MD 104PD-III, MD 104PE-III, MD 104PF-III, MD 104PG-III, MD 104PH-III, MD 104PI-III, MD 104PJ-III, MD 104PK-III, MD 104PL-III, MD 104PM-III, MD 104PN-III, MD 104PO-III, MD 104PP-III, MD 104PQ-III, MD 104PR-III, MD 104PS-III, MD 104PT-III, MD 104PU-III, MD 104PV-III, MD 104PW-III, MD 104PX-III, MD 104PY-III, MD 104PZ-III, MD 104QA-III, MD 104QB-III, MD 104QC-III, MD 104QD-III, MD 104QE-III, MD 104QF-III, MD 104QG-III, MD 104QH-III, MD 104QI-III, MD 104QJ-III, MD 104QK-III, MD 104QL-III, MD 104QM-III, MD 104QN-III, MD 104QO-III, MD 104QP-III, MD 104QQ-III, MD 104QR-III, MD 104QS-III, MD 104QT-III, MD 104QU-III, MD 104QV-III, MD 104QW-III, MD 104QX-III, MD 104QY-III, MD 104QZ-III, MD 104RA-III, MD 104RB-III, MD 104RC-III, MD 104RD-III, MD 104RE-III, MD 104RF-III, MD 104RG-III, MD 104RH-III, MD 104RI-III, MD 104RJ-III, MD 104RK-III, MD 104RL-III, MD 104RM-III, MD 104RN-III, MD 104RO-III, MD 104RP-III, MD 104RQ-III, MD 104RR-III, MD 104RS-III, MD 104RT-III, MD 104RU-III, MD 104RV-III, MD 104RW-III, MD 104RX-III, MD 104RY-III, MD 104RZ-III, MD 104SA-III, MD 104SB-III, MD 104SC-III, MD 104SD-III, MD 104SE-III, MD 104SF-III, MD 104SG-III, MD 104SH-III, MD 104SI-III, MD 104SJ-III, MD 104SK-III, MD 104SL-III, MD 104SM-III, MD 104SN-III, MD 104SO-III, MD 104SP-III, MD 104SQ-III, MD 104SR-III, MD 104SS-III, MD 104ST-III, MD 104SU-III, MD 104SV-III, MD 104SW-III, MD 104SX-III, MD 104SY-III, MD 104SZ-III, MD 104TA-III, MD 104TB-III, MD 104TC-III, MD 104TD-III, MD 104TE-III, MD 104TF-III, MD 104TG-III, MD 104TH-III, MD 104TI-III, MD 104TJ-III, MD 104TK-III, MD 104TL-III, MD 104TM-III, MD 104TN-III, MD 104TO-III, MD 104TP-III, MD 104TQ-III, MD 104TR-III, MD 104TS-III, MD 104TT-III, MD 104TU-III, MD 104TV-III, MD 104TW-III, MD 104TX-III, MD 104TY-III, MD 104TZ-III, MD 104UA-III, MD 104UB-III, MD 104UC-III, MD 104UD-III, MD 104UE-III, MD 104UF-III, MD 104UG-III, MD 104UH-III, MD 104UI-III, MD 104UJ-III, MD 104UK-III, MD 104UL-III, MD 104UM-III, MD 104UN-III, MD 104UO-III, MD 104UP-III, MD 104UQ-III, MD 104UR-III, MD 104US-III, MD 104UT-III, MD 104UU-III, MD 104UV-III, MD 104UW-III, MD 104UX-III, MD 104UY-III, MD 104UZ-III, MD 104VA-III, MD 104VB-III, MD 104VC-III, MD 104VD-III, MD 104VE-III, MD 104VF-III, MD 104VG-III, MD 104VH-III, MD 104VI-III, MD 104VJ-III, MD 104VK-III, MD 104VL-III, MD 104VM-III, MD 104VN-III, MD 104VO-III, MD 104VP-III, MD 104VQ-III, MD 104VR-III, MD 104VS-III, MD 104VT-III, MD 104VU-III, MD 104VV-III, MD 104VW-III, MD 104VX-III, MD 104VY-III, MD 104VZ-III, MD 104WA-III, MD 104WB-III, MD 104WC-III, MD 104WD-III, MD 104WE-III, MD 104WF-III, MD 104WG-III, MD 104WH-III, MD 104WI-III, MD 104WJ-III, MD 104WK-III, MD 104WL-III, MD 104WM-III, MD 104WN-III, MD 104WO-III, MD 104WP-III, MD 104WQ-III, MD 104WR-III, MD 104WS-III, MD 104WT-III, MD 104WU-III, MD 104WV-III, MD 104WW-III, MD 104WX-III, MD 104WY-III, MD 104WZ-III, MD 104XA-III, MD 104XB-III, MD 104XC-III, MD 104XD-III, MD 104XE-III, MD 104XF-III, MD 104XG-III, MD 104XH-III, MD 104XI-III, MD 104XJ-III, MD 104XK-III, MD 104XL-III, MD 104XM-III, MD 104XN-III, MD 104XO-III, MD 104XP-III, MD 104XQ-III, MD 104XR-III, MD 104XS-III, MD 104XT-III, MD 104XU-III, MD 104XV-III, MD 104XW-III, MD 104XX-III, MD 104XY-III, MD 104XZ-III, MD 104YA-III, MD 104YB-III, MD 104YC-III, MD 104YD-III, MD 104YE-III, MD 104YF-III, MD 104YG-III, MD 104YH-III, MD 104YI-III, MD 104YJ-III, MD 104YK-III, MD 104YL-III, MD 104YM-III, MD 104YN-III, MD 104YO-III, MD 104YP-III, MD 104YQ-III, MD 104YR-III, MD 104YS-III, MD 104YT-III, MD 104YU-III, MD 104YV-III, MD 104YW-III, MD 104YX-III, MD 104YY-III, MD 104YZ-III, MD 104ZA-III, MD 104ZB-III, MD 104ZC-III, MD 104ZD-III, MD 104ZE-III, MD 104ZF-III, MD 104ZG-III, MD 104ZH-III, MD 104ZI-III, MD 104ZJ-III, MD 104ZK-III, MD 104ZL-III, MD 104ZM-III, MD 104ZN-III, MD 104ZO-III, MD 104ZP-III, MD 104ZQ-III, MD 104ZR-III, MD 104ZS-III, MD 104ZT-III, MD 104ZU-III, MD 104ZV-III, MD 104ZW-III, MD 104ZX-III, MD 104ZY-III, MD 104ZZ-III.
2. INSTALL REMOVABLE BARRIERS AND TRAFFIC CONTROL DEVICES THROUGHOUT LIMITS OF MD 22 RECONSTRUCTION.
3. SEE TRAFFIC SIGNALIZATION PLANS FOR CROSSWALK AND STOP LINE PAVEMENT MARKING INSTALLATION DETAILS AT SIGNALIZED INTERSECTIONS.
4. WITH LINE OF WORK STREET TRAFFIC TO BE MAINTAINED TO THE MAXIMUM EXTENT POSSIBLE, SIDE STREETS/DRIVES AND SETBACK FROM NEARBY A MINIMUM OF 20'.



MATCH LINE STA. 543+00 - SEE DRAWING SN-2.06

MATCH LINE STA. 635+50 - SEE DRAWING SN-2.04

SIGN LEGEND

EXISTING GROUND MOUNTED SIGN AND SUPPORTS	PROPOSED GROUND MOUNTED SIGN AND SUPPORTS
EXISTING SIGN TO REMAIN	PROPOSED SIGN TO BE REMOVED
TRAFFIC FLOW ARROWS	PAVEMENT MARKING ARROW
SRN NO.	

- PAVEMENT MARKING LEGEND:**
- A 5 INCH SOLID WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS
 - B 5 INCH SOLID YELLOW LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS
 - C 5 INCH SOLID WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS
 - D 5 INCH SOLID WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS
 - E 5 INCH SOLID WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS
 - F 5 INCH SOLID WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS
 - G 5 INCH SOLID WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS
 - H 5 INCH SOLID WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS
 - I 5 INCH SOLID WHITE LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS
 - J 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - K 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - L 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - M 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - N 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - O 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - P 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - Q 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - R 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - S 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - T 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - U 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - V 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - W 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - X 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - Y 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS
 - Z 12 INCH SOLID WHITE PERFORMED THERMOPLASTIC PAVEMENT MARKINGS

SMA

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
OFFICE OF TRAFFIC & SAFETY
TRAFFIC ENGINEERING DESIGN DIVISION
MD 22 @ REARERS HILL ROAD
CAPACITY IMPROVEMENTS

SIGNING AND MARKING PLAN

SCALE: 1" = 40'	DATE: 10/20/2018	SHEET NO. 16 OF 18
DESIGNED BY: G. BUCK	COUNTY: HARFORD	
DRAWN BY: J. JACKSON	LOCALITY: PROXESSVILLE	
CHECKED BY: J. JACKSON	TMS NO. 1000000000	
APP. NO. 1000000000	TOD NO. 1000000000	
PROJECT NO. 1000000000	SEE TITLE SHEET	
CONTRACT NO. 1000000000	CONTRACT NO. 1000000000	

WR&A

WHITMAN, REQUARDT & ASSOCIATES, LLP
801 South Carolina Street, Baltimore, Maryland 21201

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: MD 462 (PARADISE RD.) @ BEARD'S HILL RD.

CITY: ABERDEEN

COUNT BY: CAMERA

DATE: MARCH 3, 2022

WEATHER: CLEAR

DAY: THURSDAY

TIME	MD 462 NORTHBOUND			MD 462 SOUTHBOUND			BEARDS HILL RD EASTBOUND			WESTBOUND			TOTAL
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
AM													
7:00-7:15	4	18			71	30	8		13				144
7:15-7:30	3	35			57	36	9		8				148
7:30-7:45	10	18			66	27	13		18				152
7:45-8:00	7	23			66	30	12		16				154
8:00-8:15	6	21			48	28	25		6				134
8:15-8:30	4	24			53	22	19		12				134
8:30-8:45	11	20			48	20	11		10				120
8:45-9:00	10	31			41	32	13		9				136
PEAK HR 7:00-8:00 TOTALS	24	94			260	123	42		55				PHF 0.97
PM													
4:00-4:15	34	122			33	32	43		7				271
4:15-4:30	23	117			32	33	44		13				262
4:30-4:45	14	143			31	22	48		22				280
4:45-5:00	20	125			32	28	58		12				275
5:00-5:15	8	80			34	29	43		12				206
5:15-5:30	6	83			35	32	42		11				209
5:30-5:45	13	70			38	27	36		20				204
5:45-6:00	11	68			31	27	38		9				184
PEAK HR 4:00-5:00 TOTALS	91	507			128	115	193		54				PHF 0.97

TRAFFIC CONCEPTS, INC.
 7525 CONNELLEY DRIVE, SUITE B
 HANOVER, MARYLAND 21076
 410 760 2911 (FAX) 410 760 2915
 E-MAIL TRAFFIC@TRAFFIC-CONCEPTS.COM

M:\3683



BEARDS HILL ROAD

100' FULL WIDTH TURN LANE

11' 11' 13'



NON SIGNALIZED INTERSECTION

MD 462 (PARADISE ROAD)

12' 12'

NOT TO SCALE

TRAFFIC **C**ONCEPTS, INC.
7525 Connelley Drive, Suite B
Hanover, MD 21076
(410) 760-2911
FAX (410) 760-2915
EMAIL: TRAFFIC-CONCEPTS.COM

DATE: CHKD 11-2019 DRAWN BY JC

EXISTING INTERSECTION CONFIGURATION

MD 462 (PARADISE RD) AT BEARDS HILL RD

CITY OF ABERDEEN, MARYLAND

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: BEARDS HILL RD. @ MAXA RD.

CITY: ABERDEEN, MD

COUNT BY: CAMERA

DATE: MARCH 3, 2022

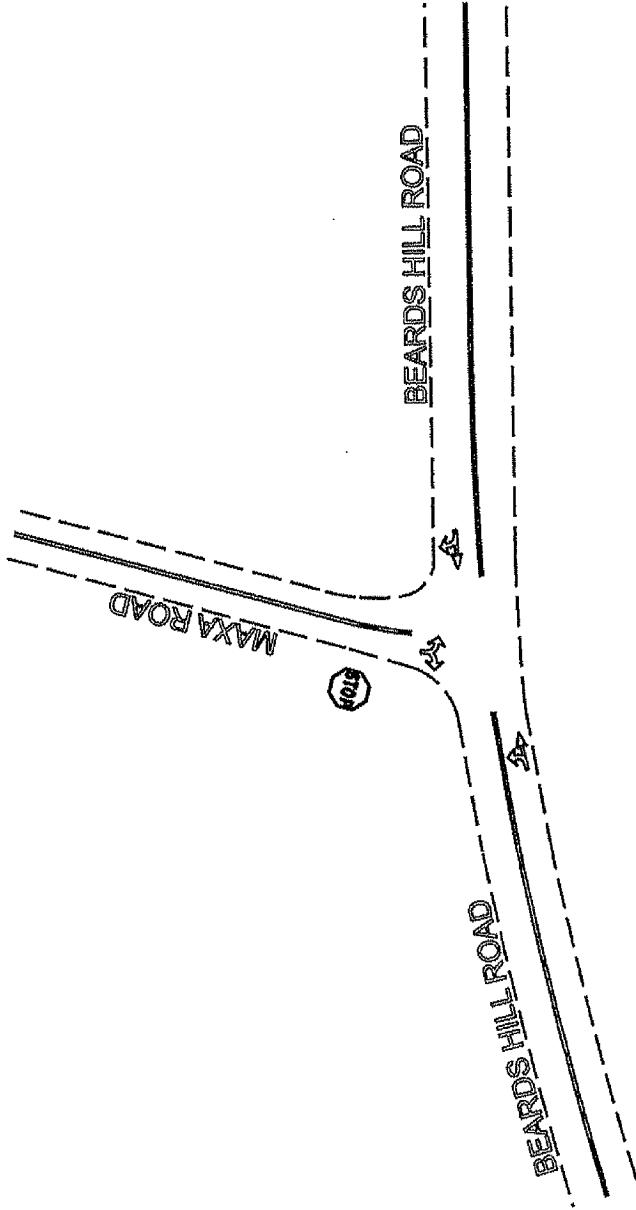
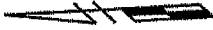
WEATHER: CLEAR

DAY: THURSDAY

TIME	NORTHBOUND			MAXA RD SOUTHBOUND			BEARDS HILL RD EASTBOUND			BEARDS HILL RD WESTBOUND			TOTAL
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
AM													
7:00-7:15				5		11	2	9			33	2	62
7:15-7:30				4		16	6	13			41	1	81
7:30-7:45				7		8	7	25			36	1	84
7:45-8:00				3		7	9	24			37	4	84
8:00-8:15				4		9	10	28			35	0	86
8:15-8:30				4		12	5	22			28	0	71
8:30-8:45				2		9	3	14			26	4	58
8:45-9:00				2		11	5	20			41	3	82
PEAK HR 7:15-8:15 TOTALS				18		40	32	90			149	6	PHF 0.97
PM													
4:00-4:15				2		14	20	46			53	9	144
4:15-4:30				2		9	20	54			45	6	136
4:30-4:45				7		15	14	64			32	2	134
4:45-5:00				1		17	18	66			42	5	149
5:00-5:15				4		18	18	52			33	4	129
5:15-5:30				3		11	18	54			34	2	122
5:30-5:45				1		9	16	55			34	8	123
5:45-6:00				0		15	12	49			31	5	112
PEAK HR 4:00-5:00 TOTALS				12		55	72	230			172	22	PHF 0.94

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 7525 CONNELLEY DRIVE, SUITE B
 HANOVER, MARYLAND 21076
 410 760 2911 (FAX) 410 760 2915
 E-MAIL TRAFFIC@TRAFFIC-CONCEPTS.COM

M:\3863



NOT TO SCALE
TRAFFIC CONCEPTS, INC.

EXISTING INTERSECTION CONFIGURATION
BEARDS HILL ROAD @ MAXXA ROAD
HARFORD COUNTY, MARYLAND

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: BEARDS HILL RD @ MIDDLELTON RD

CITY: ABERDEEN

COUNT BY: CAMERA

DATE: MARCH 3, 2022

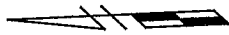
WEATHER: CLEAR

DAY: THURSDAY

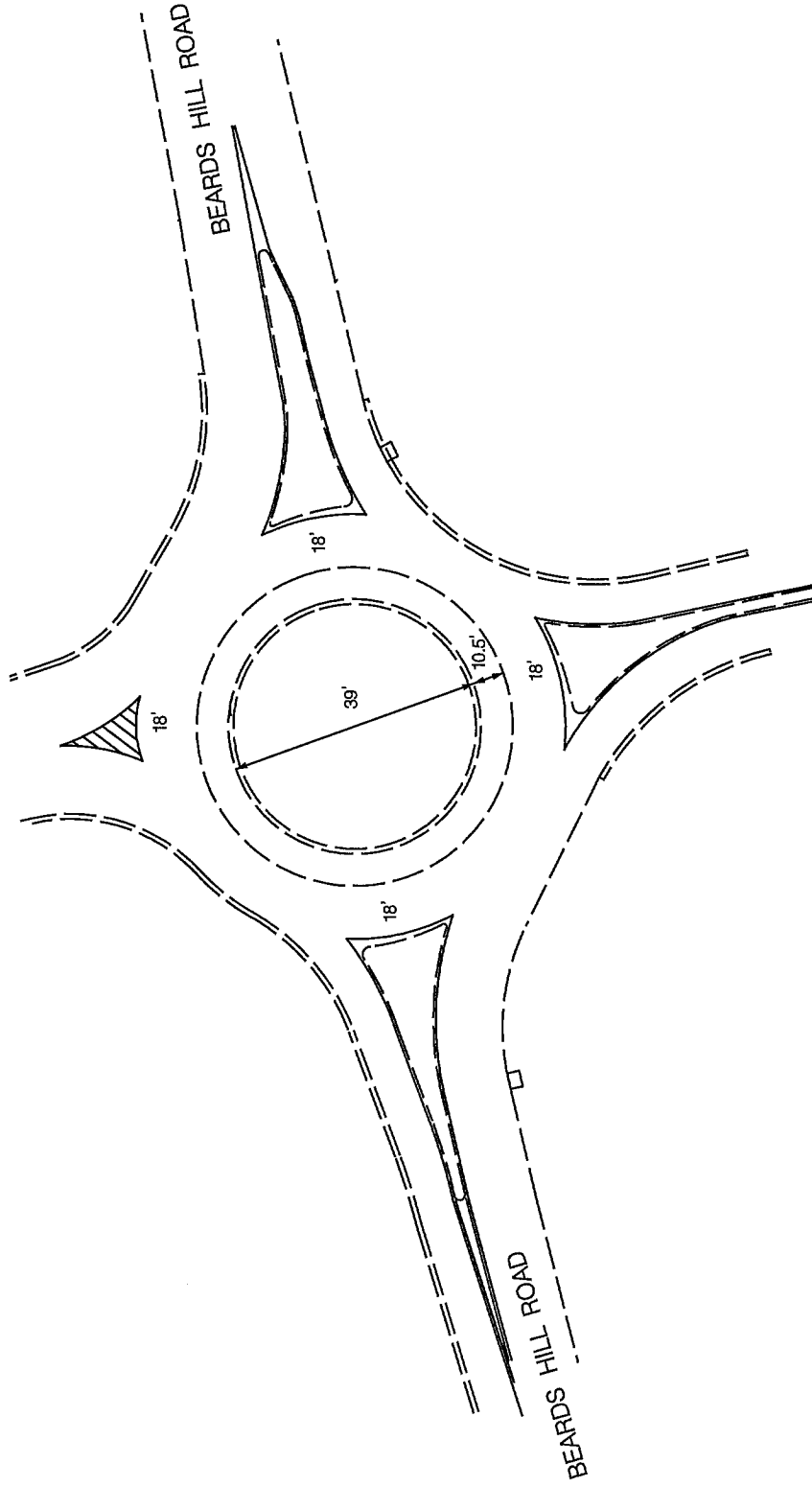
TIME	MIDDLELTON RD NORTHBOUND			OLYMPIC SQ SOUTHBOUND			BEARDS HILL RD EASTBOUND			BEARDS HILL RD WESTBOUND			TOTAL
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
AM													
7:00-7:15	5	1	3	0	4	3	0	6	3	3	43	1	72
7:15-7:30	2	2	3	1	4	2	0	15	5	9	50	0	93
7:30-7:45	2	0	10	5	0	2	0	15	1	4	39	1	79
7:45-8:00	4	0	6	3	1	1	0	26	1	1	43	0	86
8:00-8:15	4	1	8	0	2	0	0	30	3	8	40	0	96
8:15-8:30	1	1	7	1	1	3	1	22	1	8	33	2	81
8:30-8:45	2	0	3	0	1	2	0	16	2	2	35	0	63
8:45-9:00	4	1	5	2	1	0	1	22	2	6	50	1	95
PEAK HR 7:15-8:15 TOTALS	12	3	27	9	7	5	0	86	10	22	172	1	PHF 0.92
PM													
4:00-4:15	3	2	17	1	1	3	1	58	5	6	63	2	162
4:15-4:30	2	3	15	0	1	0	1	61	7	6	57	0	153
4:30-4:45	3	1	15	1	1	2	1	63	7	7	42	0	143
4:45-5:00	3	1	11	1	2	3	1	78	8	8	50	3	169
5:00-5:15	1	2	14	0	0	1	0	62	2	12	33	2	129
5:15-5:30	4	1	11	1	2	3	1	67	5	10	39	2	146
5:30-5:45	4	2	10	1	3	0	0	66	6	5	38	2	137
5:45-6:00	4	1	11	1	1	3	2	53	1	8	41	1	127
PEAK HR 4:00-5:00 TOTALS	11	7	58	3	5	8	4	260	27	27	212	5	PHF 0.93

TRAFFIC CONCEPTS, INC.
 7525 CONNELLEY DRIVE, SUITE B
 HANOVER, MARYLAND 21076
 410 760 2911 (FAX) 410 760 2915
 E-MAIL TRAFFIC@TRAFFIC-CONCEPTS.COM

M:13863



OLYMPIC SQUARE



MIDDLETON ROAD

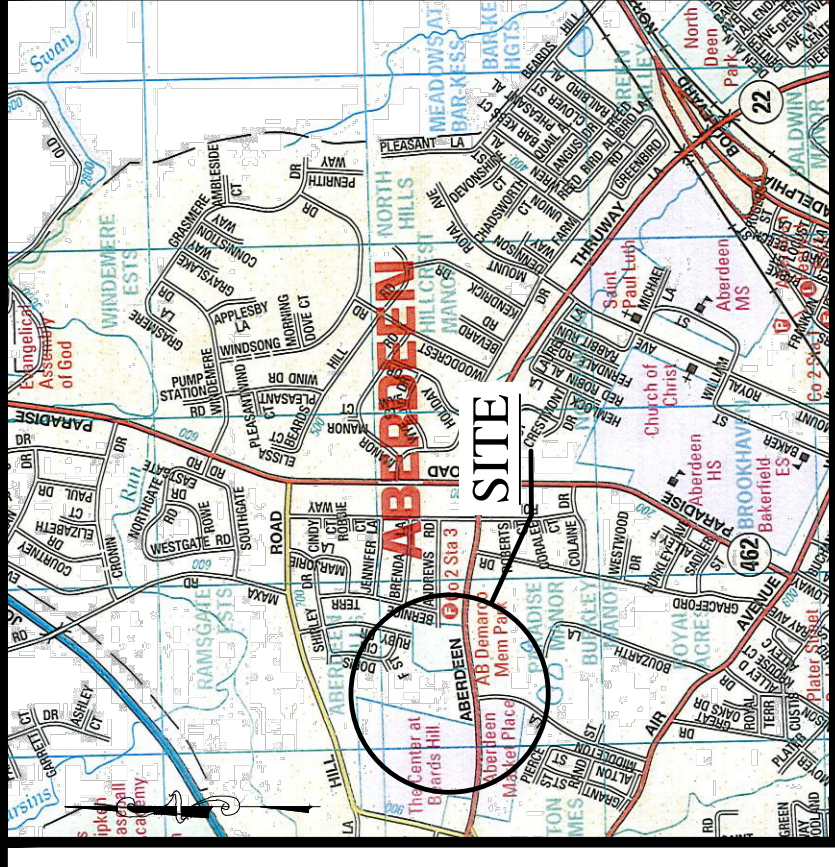
NOT TO SCALE

TRAFFIC CONCEPTS, INC.
7525 Connelley Drive
Suite B
Hanover, MD 21076
410-760-2911
FAX 410-760-2915
EMAIL TRAFFIC@TRAFFIC-CONCEPTS.COM

DATE: NOV., 2019 FILE # 3601

EXISTING INTERSECTION CONFIGURATION
BEARDS HILL ROAD AT
MIDDLETON ROAD / OLYMPIC SQUARE
HARFORD COUNTY, MARYLAND

APPENDIX IV
STUDY PARAMETERS
& SITE DATA



LOCATION MAP
1" = 2000'

WATER USAGE NOTE
CONDITION OF APPROVAL: NO BUILDING PERMIT SHALL BE ISSUED FOR ANY LOT WHEREBY THAT LOTS ANTICIPATED FLOW AT THE TIME OF CONSTRUCTION SHALL BE LESS THAN THE BUILDING SYSTEM WATER AND SEWER SERVICES TO EXCEED ITS RATED CAPACITY.
WATER USAGE MAXIMUM DAILY FLOW RESTAURANT, 25 GAL PER SEATER, DAY, X 55 SEATS, 1375 GPD TOTAL.

FLOOD NOTE
THE PROPERTY SHOWN HEREIN IS LOCATED WITHIN ZONE "X" AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP, COMMUNITY PANEL 124022C018 E, DATED APRIL 18, 2006 OF HARFORD COUNTY, MARYLAND (UNINCORPORATED AREAS). ZONE X IS NOT A FLOODPLAIN.

SITE DATA

- OWNER / DESIG. ENGINEER: MIDDLETON HOLDINGS LLC, 14 BACK RIVER NECK ROAD, MIDDLE RIVER, MARYLAND 21221-3101
- TAX MAP: 202, 1 PARCEL 4, 600, LOT 2
- PROPERTY ADDRESS: #441 MIDDLETON ROAD, ABERDEEN MD 21001
- CURRENT ZONING: B-3 (HIGHWAY COMMERCIAL DISTRICT)
- SITE AREA: 4.844 AC ±
- DEED REFERENCE: J.J.R. 1541/211; PLAT REFERENCE: J.J.R. 206-35

- SITE REQUIREMENTS: SETBACKS: FRONT-5', REAR-25', SIDE-5', CORNER-5'; MAX. BUILDING HEIGHT: 60'
- EXISTING USE OF PROPERTY: RESTAURANT, CAR WASH, & RETAIL
- PROPOSED USE OF PROPERTY: VACANT BUILDING AT 2000 S.F. OF RETAIL SALES AREA, RESTAURANT, UTIL DRIVE-THRU FACILITIES, 1 SPACE PER PATRON SEAT, 1 SPACE PER EMPLOYEE AT LARGEST SHIFT

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CURVE TABLE

CURVE	STARTS	ENDS	ARC LENGTH	CHORD BEARING	CHORD LENGTH	DELTA ANGLE
C1	640.00	116.00	116.00	N 18°20'41" E	154.40	154.40°
C2	910.00	181.00	181.00	N 14°20'41" E	186.18	110°22'54"

PLAN
SCALE: 1"=40'

OWNER
MIDDLETON HOLDINGS LLC
TAX MAP: 202 PARCEL: 600
14 BACK RIVER NECK ROAD
ABERDEEN, MD 21001-3101
DEED REF: J.J.R. 1541/211

APPROVED:
CHAIRMAN, ABERDEEN PLANNING COMMISSION
DATE: _____

APPROVED:
CITY ENGINEER, CITY OF ABERDEEN
DATE: _____

APPROVED:
DIRECTOR OF PUBLIC WORKS, CITY OF ABERDEEN
DATE: _____

APPROVED:
DIRECTOR OF PLANNING AND COMMUNITY DEVELOPMENT
DATE: _____

APPROVED:
MAYOR, CITY OF ABERDEEN
DATE: _____

PROFESSIONAL SURVEYOR CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A LICENSED PROFESSIONAL SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND.

CHARLES DUDLEY CAMPBELL, P.S.
1400 W. BROADWAY
ABERDEEN, MD 21001
LICENSE EXPIRATION: AUGUST 21, 2022

BAY STATE LAND SERVICES
2012 Rock Spring Road
Suite D
Forest Hill, Maryland 21050
Phone: 410-879-4747
Land Planners & Land Surveyors
Environmental Engineers
Fax: 410-400-3949
www.baystatelandservices.com
Geo-Technical, Materials Testing and Inspections

DRAFT PRELIMINARY SITE PLAN
LOT 2
MIDDLETON HOLDINGS PROPERTY
CITY OF ABERDEEN
SECOND ELECTION DISTRICT

NO.	DATE	REVISIONS	DESCRIPTION

HARFORD COUNTY, MARYLAND
DRAWING NO. PP01
SCALE: 1"=40'
DRAWN BY: TRJ
SHEET 1 OF 1
CHECKED BY: BLS
JOB NO: 16044
GDC

TRAFFIC CONCEPTS, INC.

Traffic Impact Studies • Feasibility • Traffic Signal Design • Traffic Counts • Expert Testimony

Meeting Date: March 16, 2022

Project: Middleton Holdings Property, LLC
2,437 sf Popeye's FF with drive thru
T/C 3863

Attendees: Kirk Salvo
Mitch Ensor
Mark Keeley
Rolla Chng, P.E. City Engineer
Phyllis G. Grover, Director of Planning & Community Development

RE: Traffic Impact Study Scoping Meeting
City of Aberdeen, Maryland

SCOPE OF WORK

EXISTING CONDITION

- A) Turning movement counts will be obtained at key intersections during the weekday morning (7:00 AM to 9:00 AM) and afternoon (4:00 PM to 6:00 PM) peak hours. This information is required for intersection capacity analyses. The following intersections will be analyzed.

- B) MD 22 @ Middleton Road
Middleton Road @ private site road
Beards Hill Road @ Middleton Road (Roundabout)
Beards Hill Road @ Maxa Road
Beards Hill Road @ MD 462 (Paradise Road)

BACKGROUND CONDITION

- A) 2.0 percent Growth Rate on MD 22 & 1.0 percent on MD 462
(see #3601 for data)

- B) 1.5 Year Build-out

- C) BACKGROUND
 - 1. #3601 Beards Hill Apartments (Copy from our TIS)

2. #3291 Upper Chesapeake Medical Center (See distribution in #3601)

	AM			PM		
	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>	<u>IN</u>	<u>OUT</u>	<u>TOTAL</u>
Medical Office						
ITE Land Use Code 720						
93ksf	202	57	259	90	232	322
Hospital						
ITE Land Use Code 610						
85 Beds	135	52	187	45	116	161
New Site Generated Trips			446			483

3. Do not include the Fairfield Inn (Hotel) that is shown as a background in #3601

FUTURE CONDITION

- 1. Per the developer: the TIS will include only the FF with a Drive-through (Popeye's)**
- 2. Popeye's is not open in the weekday AM. However, we need to provide AM analysis with and PM. Just copy background condition in future.**

I made this a priority Count since we need to complete the study by March 18. Phyllis will likely give us to the 25th if necessary.