



TRAFFIC IMPACT STUDY

**CARTER FARM TND
TOWN OF CENTREVILLE
QUEEN ANNES COUNTY, MARYLAND
JULY 25, 2022**

**PREPARED FOR:
GREEN DEVELOPMENT, INC.**

**PREPARED BY:
TRAFFIC CONCEPTS, INC.
7525 CONNELLEY DRIVE
SUITE B
HANOVER, MARYLAND 21076
(410) 760-2911
www.traffic-concepts.com**

TC #3027

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EXECUTIVE SUMMARY

The Carter Farm Traditional Neighborhood Development (TND) generates greater than 50 peak hour trips. Therefore, a traffic impact study is required by the Maryland Department of Transportation State Highway Administration (MDOT SHA). This traffic impact study follows the methodology outlined in the *Queen Anne's County Traffic Impact Study Guidelines*.

Proposed Project: The project is a TND that consists of 80 single family units, 46 townhouse units and a small commercial component. The commercial development will include a restaurant (2,800 s.f.), a small office (2,120 s.f.), and a retail building(s) (8,700 s.f.).

Scope of Services & Methodology: The key intersections listed below define the study area. **The intersection counts were conducted at the key intersections when schools were in session.**

MD 213 (Church Hill RD) @ Spaniard Neck RD/Wexford Dr	Commerce Street @ Broadway
MD 304 (Chesterfield Avenue) @ Broadway	N. Liberty Street @ Broadway
MD 304 (Chesterfield Avenue) @ Draper Lane	N. Liberty Street @ Water Street
MD 304 (Chesterfield Avenue) @ Watson Road	Commerce Street @ Water Street
MD 304 (Chesterfield Avenue) @ Proposed Site Accesses	

Analysis Methodology: The key intersections were analyzed with the MDOT SHA Critical Lane Volume (CLV) methodology, which is also required by the Queen Anne’s County Adequate Public Facilities Ordinance.

The CLV methodology uses the through traffic volume and the opposing left turn volume to calculate the intersection critical lane volume. The CLV methodology states 1600 vehicles per hour (vph) is the maximum critical lane capacity of an intersection. The CLV volume or critical trips are associated with a level of service (LOS) scale of “A” through “F” to measures the operation of an intersection. An “A” LOS represent free-flow conditions and an “F” LOS means undue delay at an intersection. An intersection rated as “E” or “F” is considered to have inadequate operations.

Critical Lane Volume	LOS
0-999	A
1000-1149	B
1150-1299	C
1300-1450	D
1451-1600	E
>1600	F

The traffic study is comprised of an Existing, Background, and Future traffic condition. The key intersections are analyzed under each traffic condition, which is explained with the following formula:

$$\text{Total Future Traffic} = (\text{Existing Condition} - \text{current intersection turning movement volumes} + \text{Background Condition} - 2\% \text{ Growth Rate compounder over 5 years} + \text{pipeline development traffic} + \text{Future Condition} - \text{site generated traffic})$$

New Site Generated (Peak Hour) Trips: The new site generated peak hour trips listed below were generated with land use data contained in the *Institute of Transportation Engineers, Trip Generation Manual 11th Edition*.

	AM		PM	
	<u>IN</u>	<u>OUT</u>	<u>IN</u>	<u>OUT</u>
Residential Trips				
ITE Land Use Code 210 80 sfu (ITE LUC 210)	16	45	51	30
ITE Land Use Code 220 46 multi-family units	9	28	25	15
Total Residential Trips	25	73	76	45
Commercial Trips				
ITE Land Use Code 712 2,120 sf Office	3	1	2	3
ITE Land Use Code 822 8,700 sf Retail	15	11	35	36
ITE Land Use Code 932 2,800 sf Restaurant	15	12	15	10
Total Commercial Trips	33	24	52	49

- Note: 1. Internal capture trips are a portion of the new site generated peak hour trips that both begin and end within the development site and do not use the external road system. For example, an internal site trip, is a trip generated by the proposed residential development and ends at the proposed commercial development. However, in order to create a worst-case traffic scenario, the traffic study assumes all new trips use the external road system to access the proposed commercial development.
2. If internal capture trips were included in the analysis, the commercial retail and restaurant trips entering and exiting from the site would be reduced. Additionally, the peak hours of the commercial retail and restaurant uses do not align with the morning school drop-off or the afternoon school pick-up time periods. Thus, the impact of the proposed commercial development during the school drop-off and pick-up time periods is minimal.

CONCLUSION

At the total future build-out condition (2027), the CLV analyses determined that all key intersections would continue to operate at overall acceptable levels of service “A” (free-flow) condition. The MDOT SHA will require an access permit for the proposed site access at MD 304.

Based on the traffic study results, we recommend that this development be approved from a traffic level of service standpoint.

INTRODUCTION

Traffic Concepts, Inc. has prepared a traffic impact study to analyze the peak hour vehicle impact generated by the proposed Carter Farm TND. The site is located within the Town of Centreville along the east side MD 304 (Water Street), and south of Watson Road. See Exhibit 1.

Project Description & Access

The development will create 46 residential multi-family/townhouse units and 80 residential single-family units. The site plan also shows various commercial uses including a small office building (2,120 sf), a restaurant (2,800 sf) and retail space (8,700 sf combined retail). A public access road will be constructed through the property that will intersect MD 304, creating two full-movement site access points. The site will also have a third full-movement access to a parking area that would serve the commercial component.

Scope of Services

The scope of services for this study was developed by the Town of Centreville, with input from the Maryland State Highway Administration (SHA). This letter is included in Appendix III along with the site plan. The key intersections are listed below.

- MD 213 (Church Hill Road) @ Spaniard Neck Road/Wexford Drive
- N. Liberty Street @ Broadway
- N. Liberty Street @ Water Street
- Commerce Street @ Water Street
- Commerce Street @ Broadway
- MD 304 (Chesterfield Avenue) @ Broadway
- MD 304 (Chesterfield Avenue) @ Draper Lane
- MD 304 (Chesterfield Avenue) @ Watson Road
- MD 304 (Chesterfield Avenue) @ Proposed Site Accesses

Study Methodology

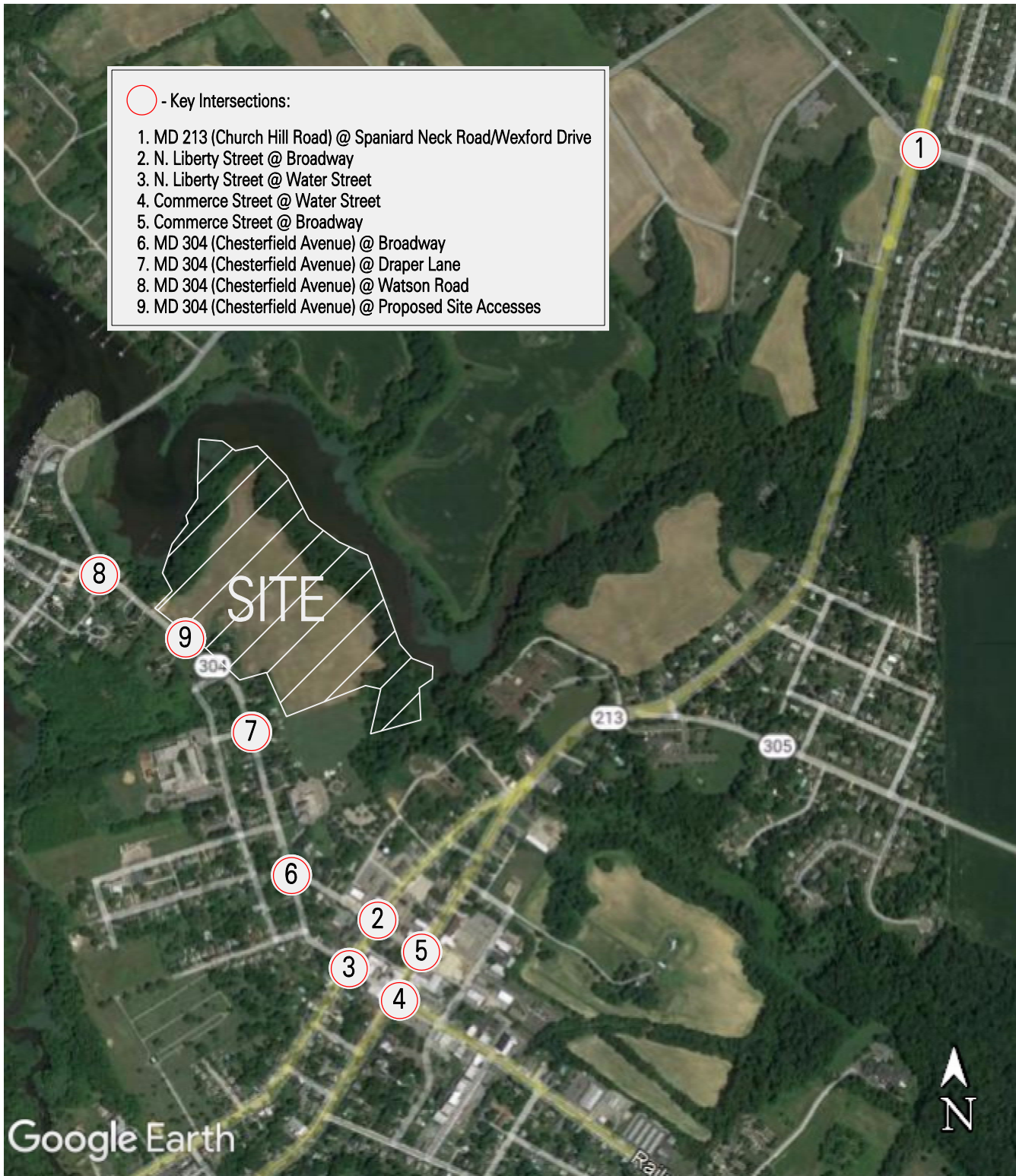
The key intersections were analyzed during the weekday morning (7:00 AM – 9:00 AM) and evening (4:00 PM – 6:00 PM) peak hours. The key intersections were analyzed using the Critical Lane Volume (CLV).

The study was conducted in three traffic conditions that include the existing, background, and future intersection turning movement volumes. The future site generated trips were determined with data contained in the Institute of Transportation Engineers', Trip Generation Manual, 11th Edition (ITE Manual).

The total future traffic volumes are described with the following formula:

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

- - Key Intersections:
1. MD 213 (Church Hill Road) @ Spaniard Neck Road/Wexford Drive
 2. N. Liberty Street @ Broadway
 3. N. Liberty Street @ Water Street
 4. Commerce Street @ Water Street
 5. Commerce Street @ Broadway
 6. MD 304 (Chesterfield Avenue) @ Broadway
 7. MD 304 (Chesterfield Avenue) @ Draper Lane
 8. MD 304 (Chesterfield Avenue) @ Watson Road
 9. MD 304 (Chesterfield Avenue) @ Proposed Site Accesses



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Suite B
Hanover, Maryland 21076
410-760-2911

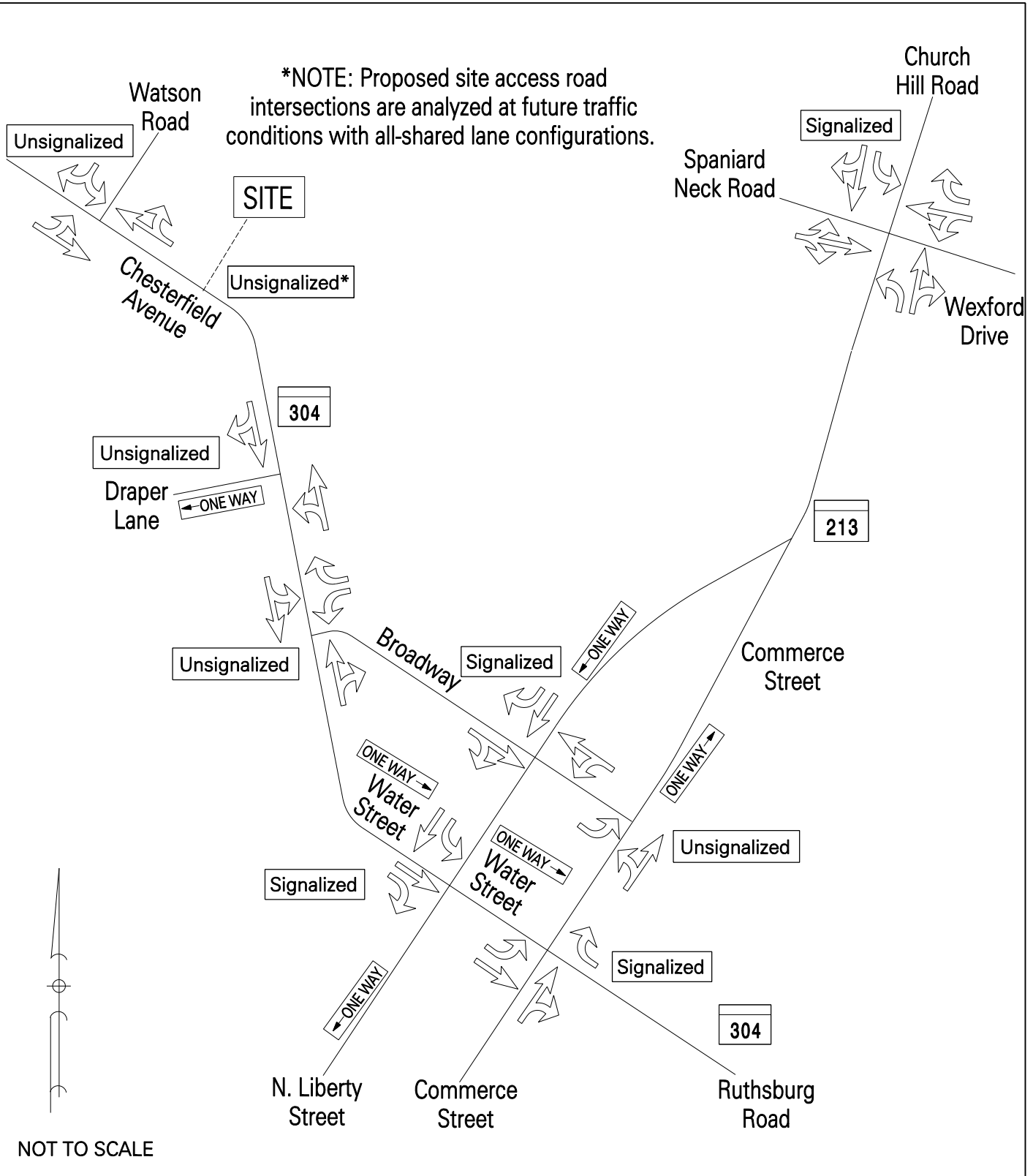
EXHIBIT 1
Site Location Map

EXISTING CONDITION

The existing traffic condition establishes the baseline intersection levels of service at the key intersections. The intersection turning movement counts were conducted on June 1, 2022, while schools were in session.

The key intersection lane configurations are shown on Exhibit 2 and the peak hour counts are shown on Exhibit 3. The existing intersection counts are included in Appendix III.

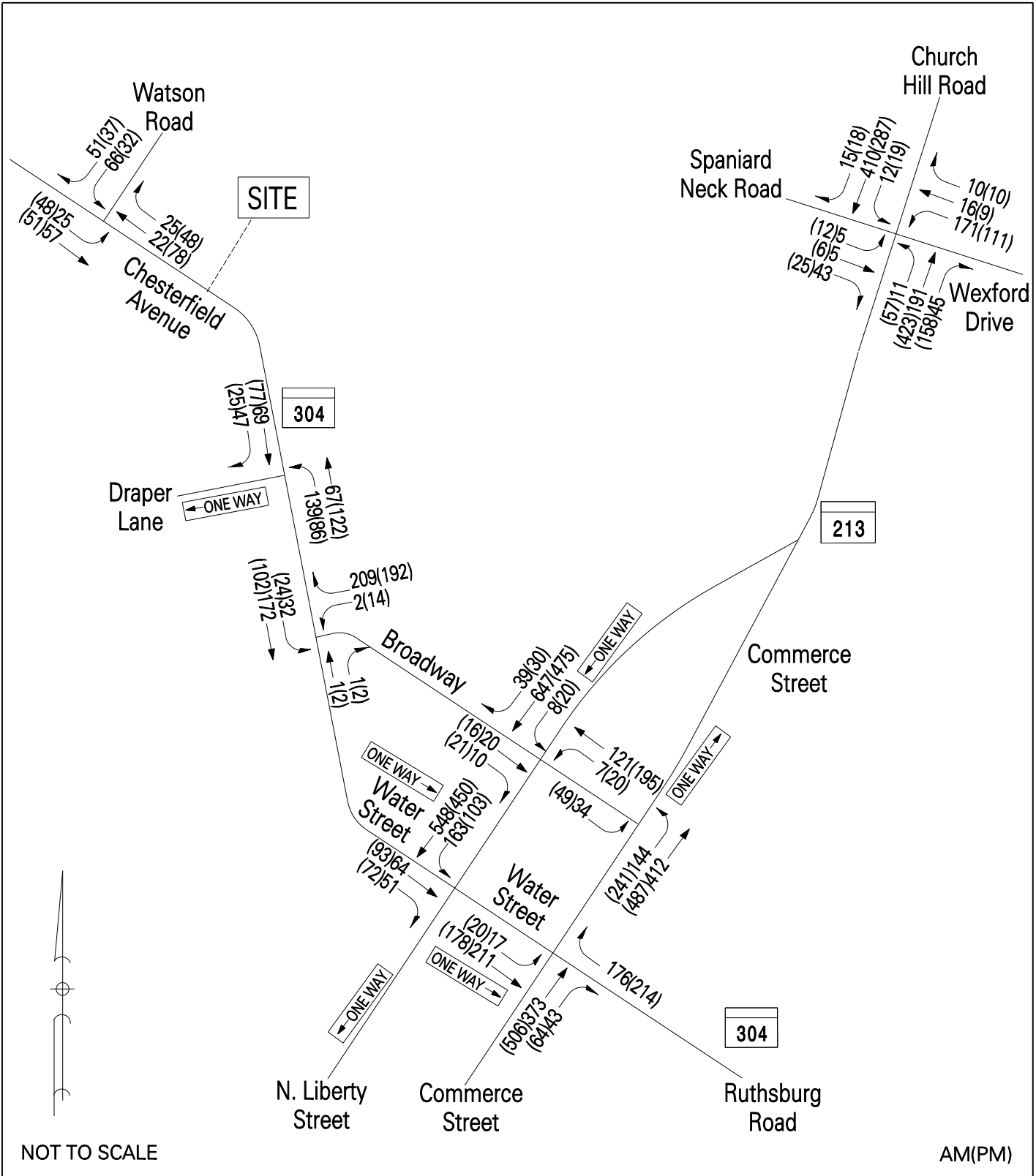
*NOTE: Proposed site access road intersections are analyzed at future traffic conditions with all-shared lane configurations.



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EXHIBIT 2
Lane Configuration



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EXHIBIT 3
 Existing Traffic Volumes

BACKGROUND CONDITION

The background condition evaluates the key intersections using the existing intersection volumes, a projected growth rate, and peak hour trips generated by background or “pipeline” development projects.

Regional Growth Rates

The standard County 2.0 percent growth rate was applied to the existing traffic volumes and was compounded over the 5-year project build-out period. The resulting base (2027) traffic volumes are shown on Exhibit 4.

Background Developments

Background developments are defined as any project that has received preliminary plan approval and construction has not started or the project is fully approved but only partially constructed. Planning and Public Works officials from the Town and County determined that one background development (YMCA) could have a vehicle impact on the study intersections. It should be noted that there is an existing YMCA (located at 123 Coursevall Drive) that is being expanded and relocated. However, to be conservative, all new trips are generated for the new location. The existing and new YMCA locations are shown on Exhibit 5. We have consulted the Institute of Transportation Engineers', Trip Generation Manual, 11th Edition to determine the following trip generation rates for this project.

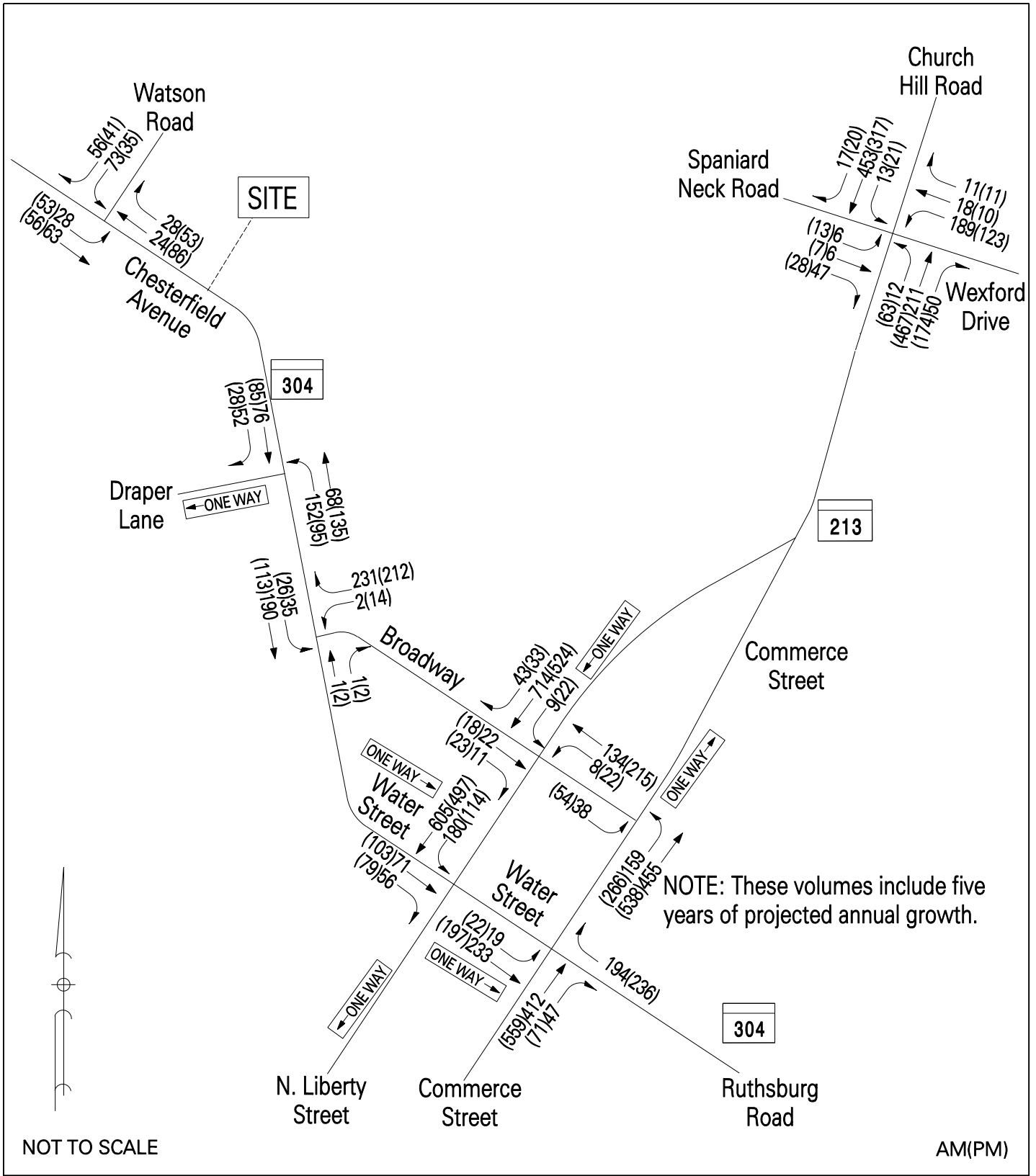
Recreational Community Center (LUC 495)

AM Average Rate: 1.91 (66% IN; 34% OUT)

PM Average Rate: 2.50 (47% IN; 53% OUT)

	AM		PM	
	<u>IN</u>	<u>OUT</u>	<u>IN</u>	<u>OUT</u>
1. YMCA 65.0 ksf*	82	42	76	87

The YMCA trips shown on Exhibit 6 were distributed and assigned to the road network based on the existing traffic pattern and our knowledge of the study area. We then combined the base traffic volumes (2027) with the background traffic volumes to arrive at the total background traffic volumes (Exhibit 7).

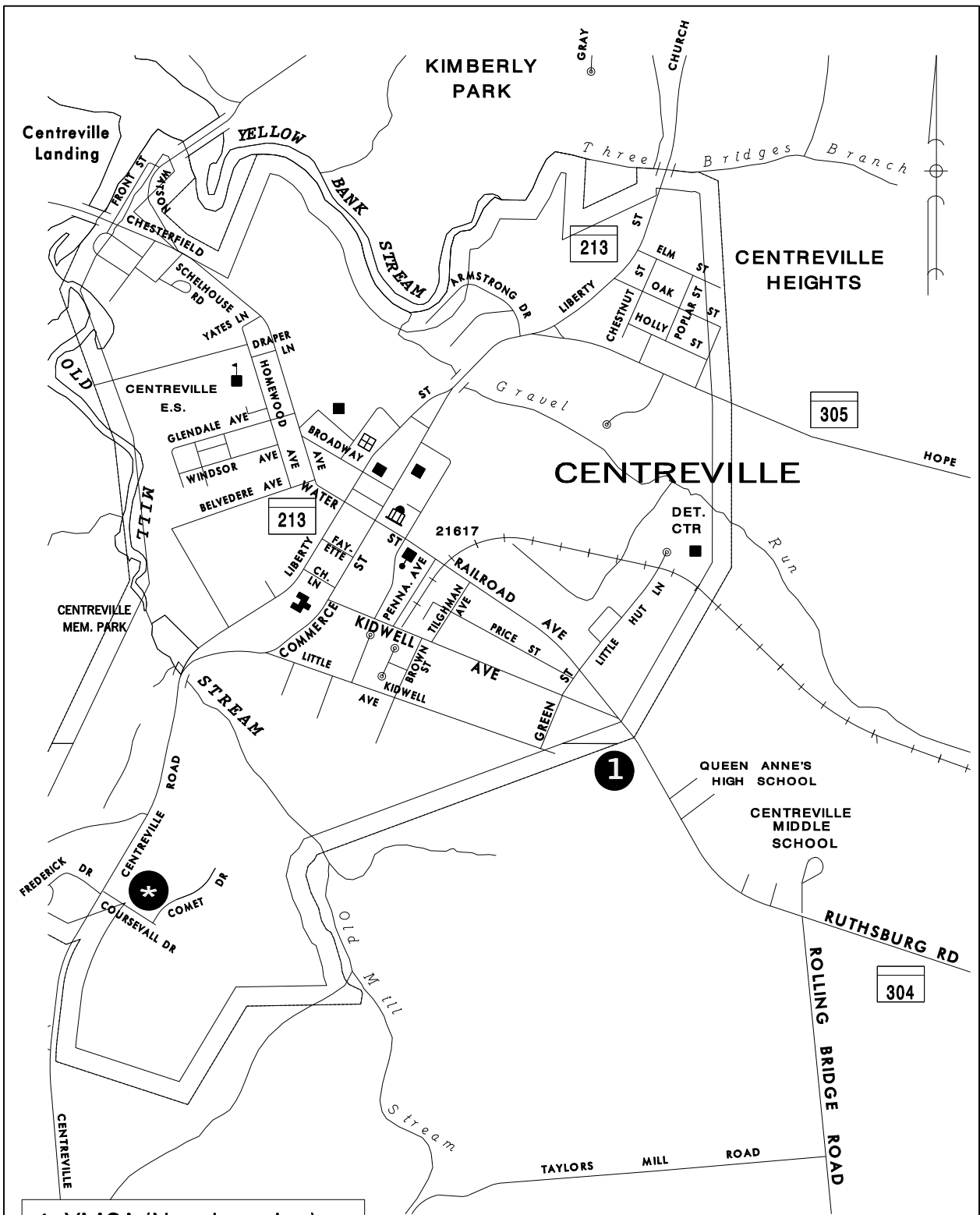


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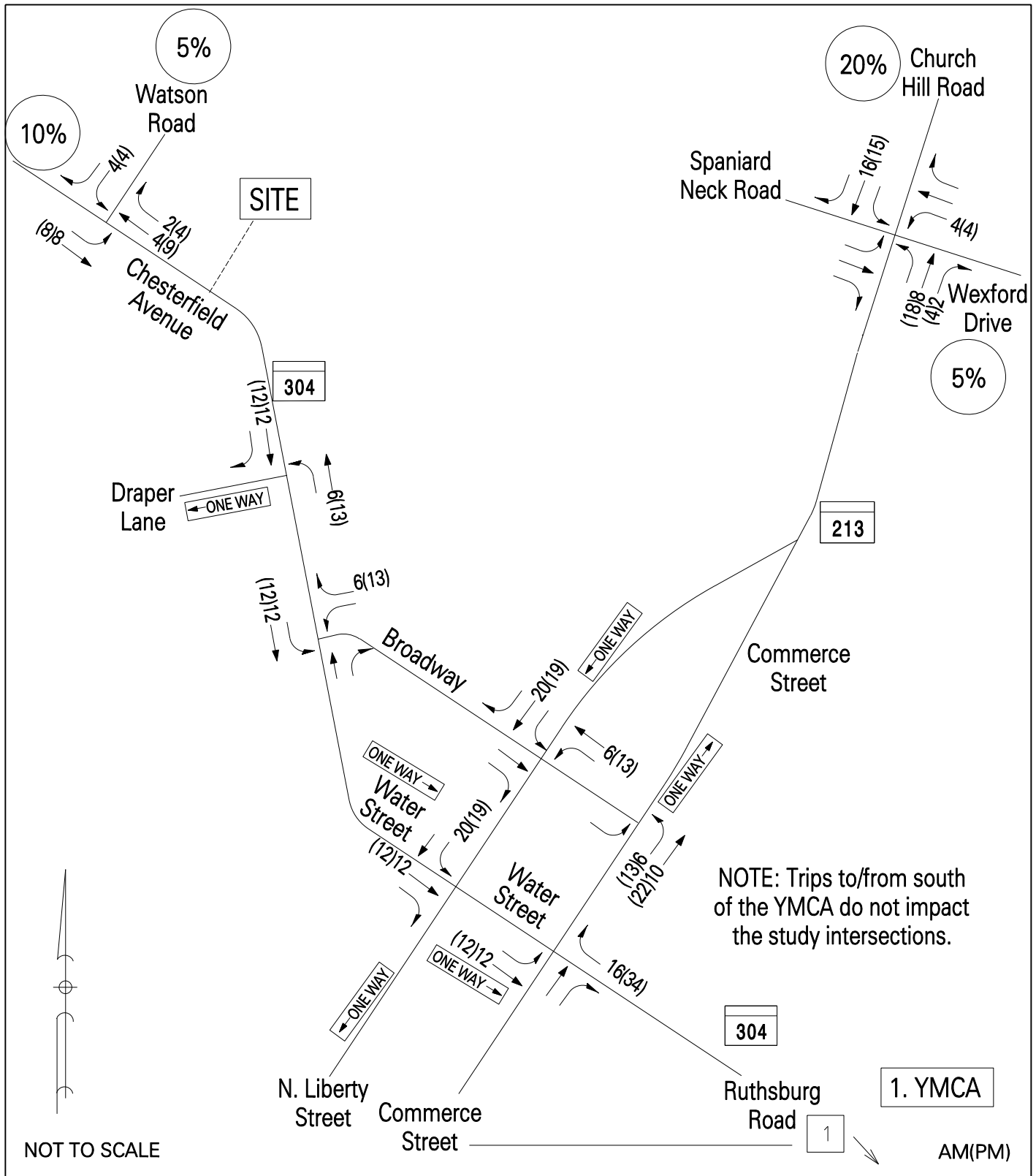
EXHIBIT 4
Base Traffic Volumes (2027)



1. YMCA (New Location)
 * YMCA (Existing Location)

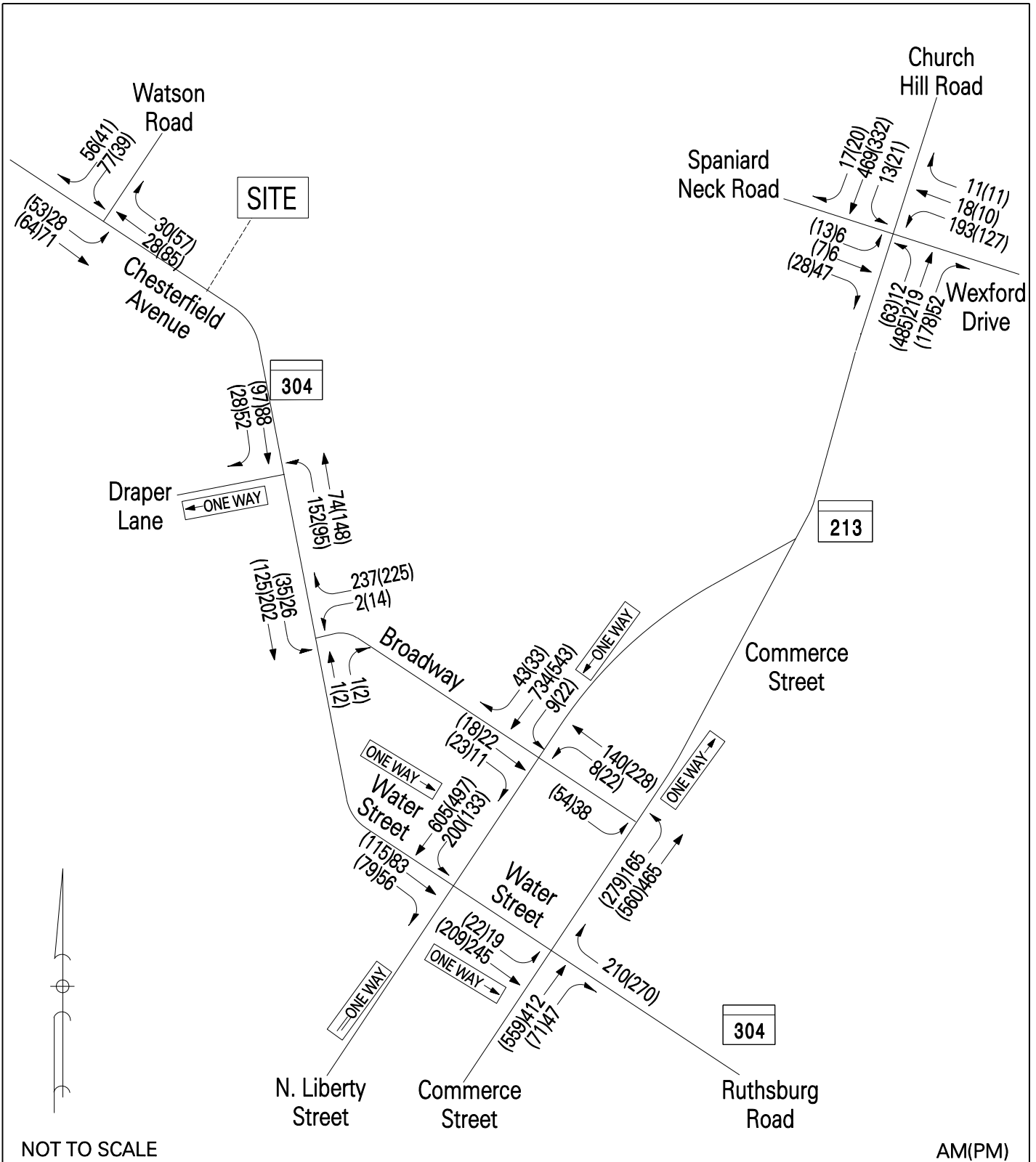
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EXHIBIT 5
 Background Development Location



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EXHIBIT 6
 Background Traffic Volumes (YMCA)



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EXHIBIT 7
 Total Background Traffic Volumes (2027)

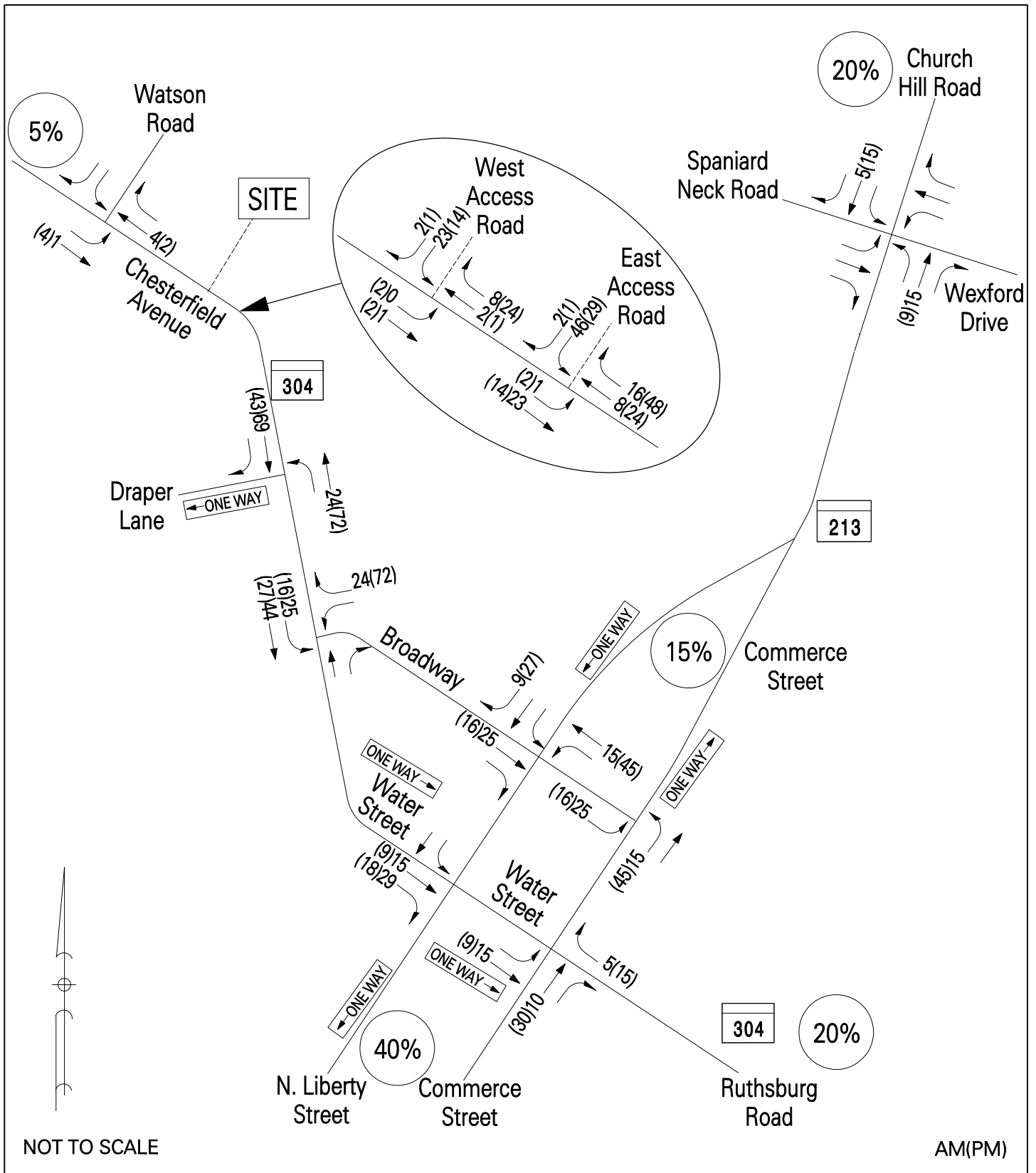
FUTURE CONDITION

The future traffic analysis determines the peak hour vehicle trips generated by the proposed development and the impacts created at the key intersections.

We have consulted the Institute of Transportation Engineers', Trip Generation Manual, 11th Edition to determine trip generation rates for the residential and commercial uses shown on the site plan, with the following results.

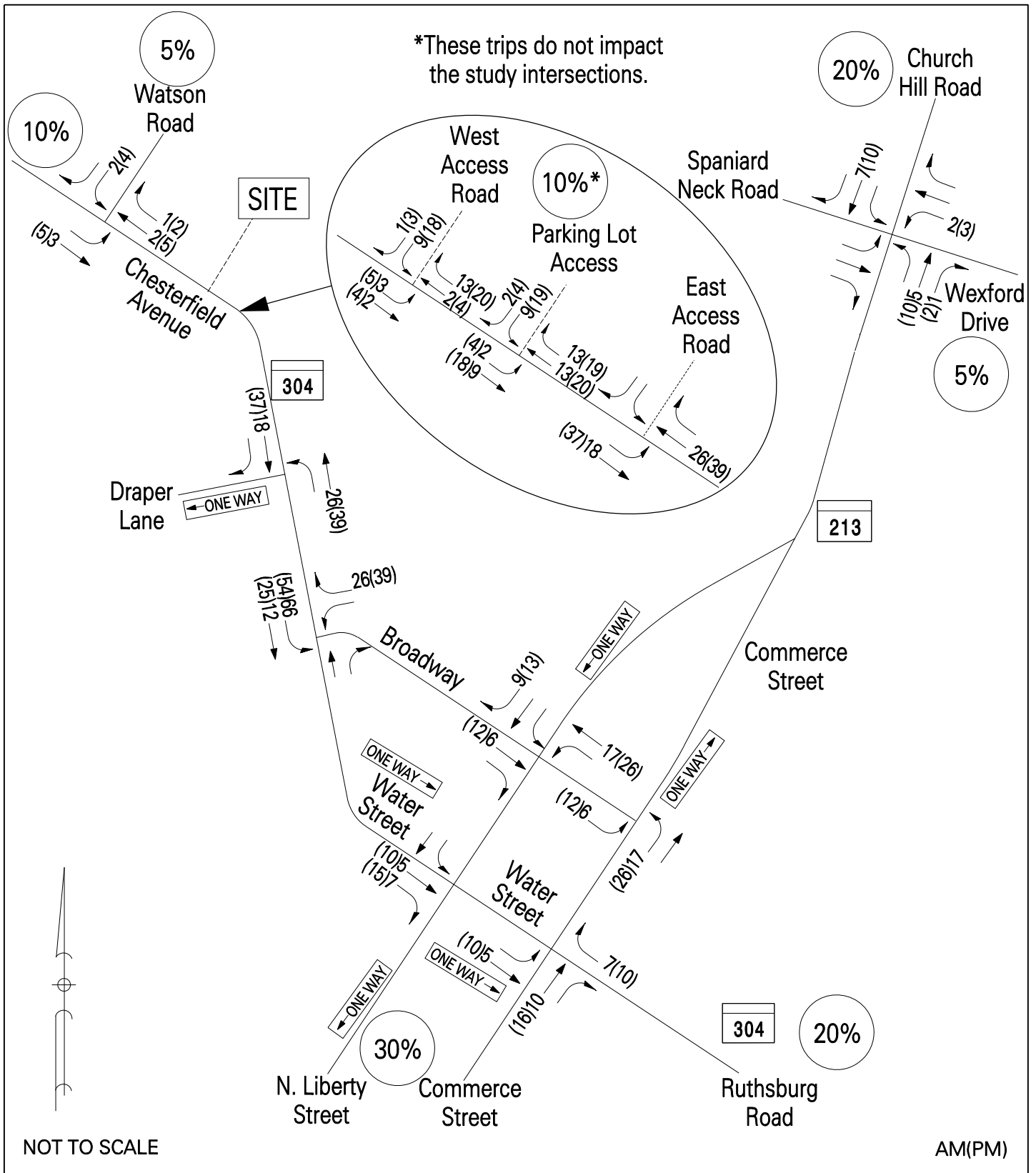
	AM		PM	
	<u>IN</u>	<u>OUT</u>	<u>IN</u>	<u>OUT</u>
Residential Trips				
ITE Land Use Code 210 80 sfu	16	45	51	30
ITE Land Use Code 220 46 multi-family units	9	28	25	15
Total Residential Trips	25	73	76	45
Commercial Trips				
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ITE Land Use Code 822 8,700 sf Retail	15	11	35	36
ITE Land Use Code 932 2,800 sf Restaurant	15	12	15	10
Total Commercial Trips	33	24	52	49

The site generated trips were then distributed and assigned to the road network based on the existing traffic pattern, the location of residential and employment centers, access routes, and our knowledge of the study area. Exhibit 8 shows the residential trips and Exhibit 9 shows the commercial trips. By adding the site-generated trips to total background traffic volumes, we obtain the total future traffic volumes. (See Exhibit 10.)



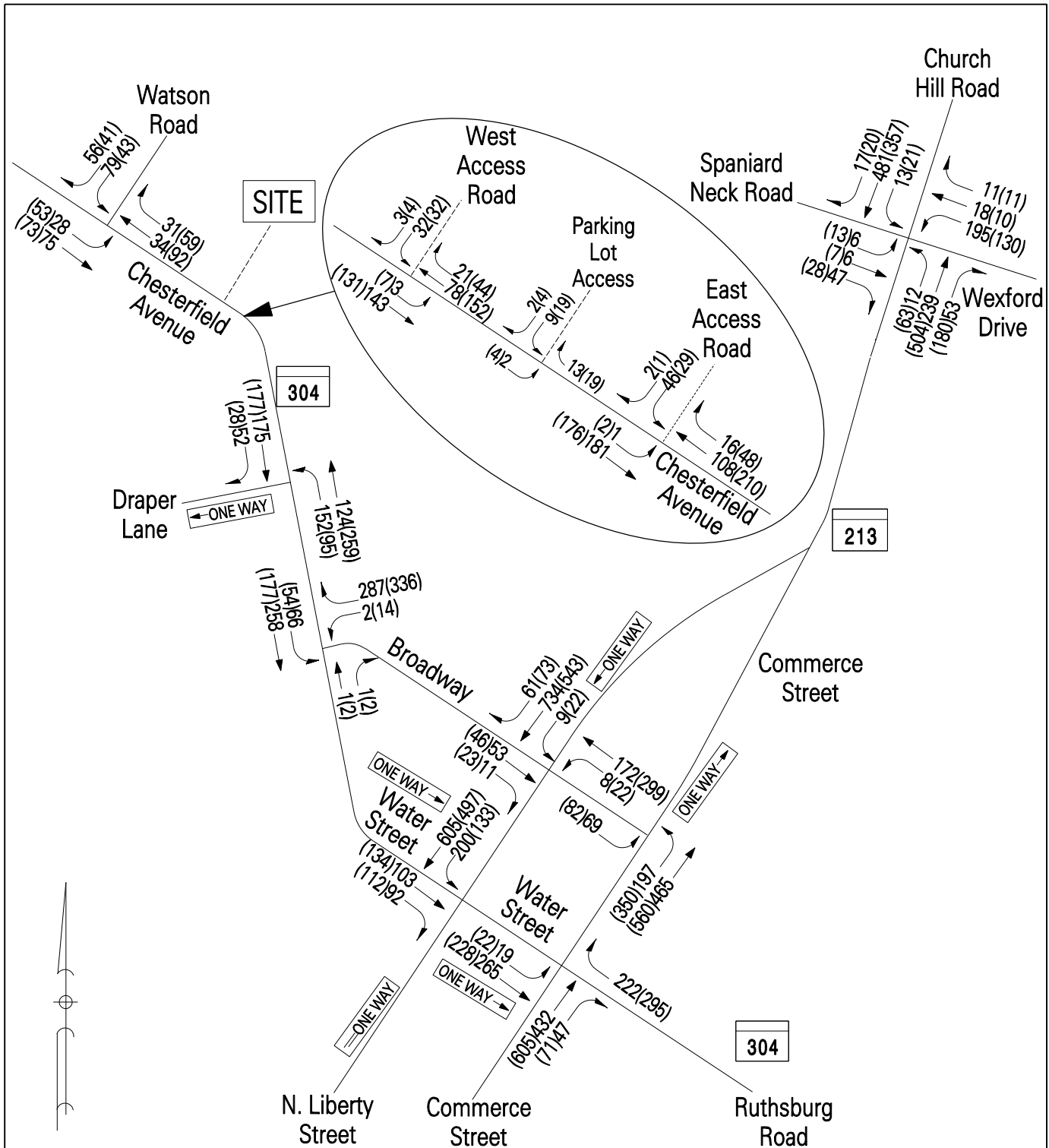
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EXHIBIT 8
 Site Generated Trips - Residential



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EXHIBIT 9
 Site Generated Trips - Commercial



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INTERSECTION CAPACITY ANALYSIS

The key intersections were analyzed during the existing, background, and future traffic conditions using the Critical Lane Volume (CLV) methodology. The results are listed in the following table 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 213 @ Spaniard Neck/Wexford Dr	661 / A	751 / A	765 / A
N. Liberty Street @ Broadway	784 / A	892 / A	976 / A
N. Liberty Street @ Water Street	612 / A	688 / A	708 / A
Commerce Street @ Water Street	627 / A	704 / A	744 / A
Commerce Street @ Broadway	590 / A	668 / A	731 / A
MD 304 @ Broadway	384 / A	443 / A	552 / A
MD 304 @ Draper Lane	255 / A	292 / A	379 / A
MD 304 @ Watson Road	204 / A	235 / A	241 / A
MD 304 @ West Site Access Road	-	-	181 / A
MD 304 @ West Site Access Road	-	-	230 / A
MD 304 @ Parking Lot Access	-	-	286 / A
CRITICAL LANE VOLUME ANALYSIS – PM PEAK HOUR			
KEY INTERSECTIONS	EXISTING CLV / LOS	BACKGROUND CLV / LOS	FUTURE CLV / LOS
MD 213 @ Spaniard Neck/Wexford Dr	655 / A	860 / A	884 / A
N. Liberty Street @ Broadway	712 / A	817 / A	939 / A
N. Liberty Street @ Water Street	543 / A	612 / A	631 / A
Commerce Street @ Water Street	804 / A	866 / A	993 / A
Commerce Street @ Broadway	777 / A	893 / A	992 / A
MD 304 @ Broadway	296 / A	353 / A	518 / A
MD 304 @ Draper Lane	217 / A	253 / A	364 / A
MD 304 @ Watson Road	243 / A	275 / A	288 / A
MD 304 @ West Site Access Road	-	-	239 / A
MD 304 @ West Site Access Road	-	-	290 / A
MD 304 @ Parking Lot Access	-	-	238 / A

CONCLUSIONS AND RECOMMENDATIONS

The study results show that all key intersections are projected to operate at acceptable “A” levels of service or better upon the build out of the proposed Carter Farm, TND. Based on the results of this study, we recommend that this development be approved from a traffic impact standpoint.

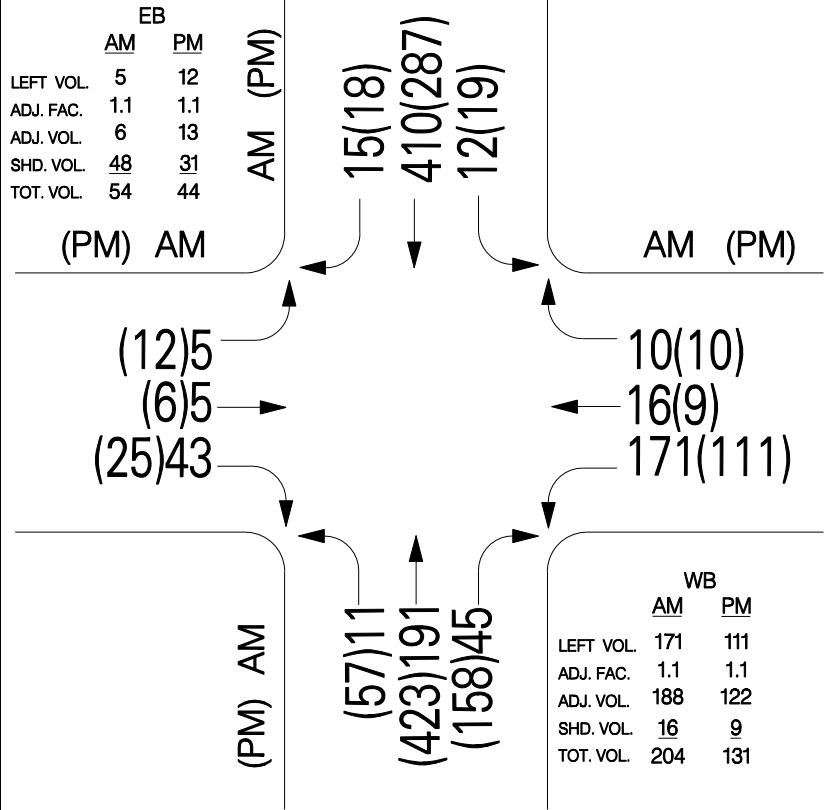
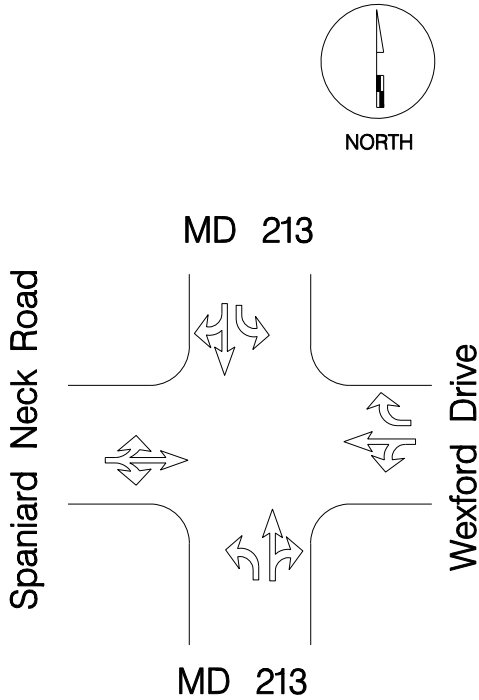


APPENDIX I
CRITICAL LANE ANALYSIS

TRAFFIC VOLUMES



LANE CONFIGURATION



	EB	
	AM	PM
LEFT VOL.	5	12
ADJ. FAC.	1.1	1.1
ADJ. VOL.	6	13
SHD. VOL.	48	31
TOT. VOL.	54	44

	WB	
	AM	PM
LEFT VOL.	171	111
ADJ. FAC.	1.1	1.1
ADJ. VOL.	188	122
SHD. VOL.	16	9
TOT. VOL.	204	131

		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =						CRITICAL LANE VOLUME	LEVEL OF SERVICE		
AM	NB	(191 + 45)	*	1	+	12	*	1	=	248	A 661
	SB	(410 + 15)	*	1	+	11	*	1	=	436*	
	EB	54	*	1	+	171	*	1	=	225*	
	WB	204	*	1	+	5	*	1	=	209	
PM	NB	(423 + 158)	*	1	+	19	*	1	=	600*	A 655
	SB	(287 + 18)	*	1	+	57	*	1	=	362	
	EB	44	*	1	+	111	*	1	=	155*	
	WB	131	*	1	+	12	*	1	=	143	

CRITICAL LANE ANALYSIS

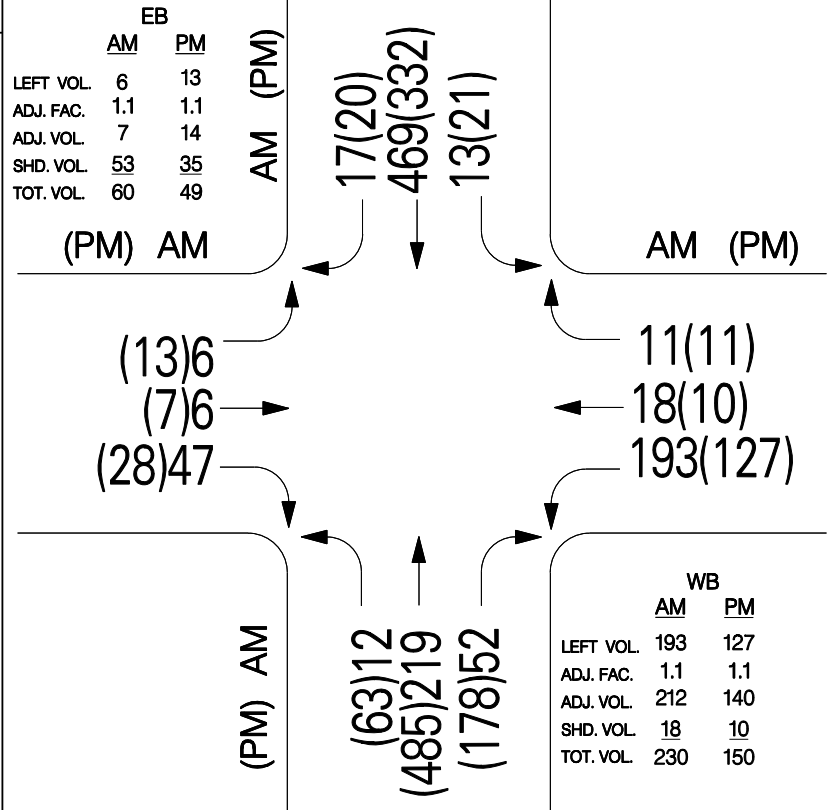
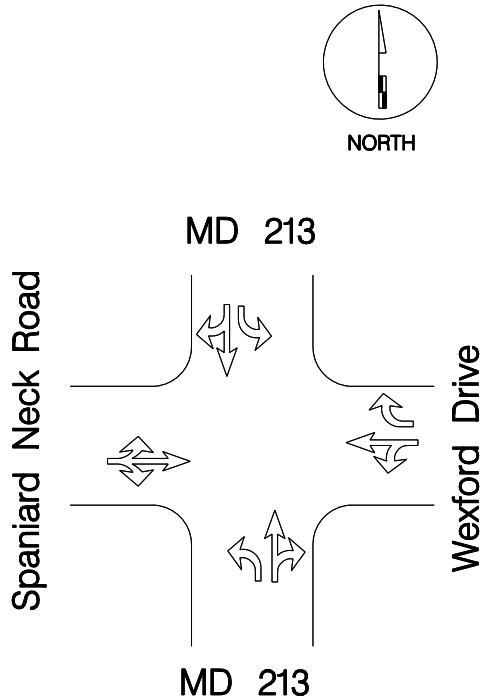
Prepared By: J. CAREY Condition: EXISTING

TRAFFIC VOLUMES



NORTH

LANE CONFIGURATION



	TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =						CRITICAL LANE VOLUME	LEVEL OF SERVICE	
AM	NB	(219 + 52)	*	1	+	13	* 1 =	284	A 751
	SB	(469 + 17)	*	1	+	12	* 1 =	498*	
	EB	60	*	1	+	193	* 1 =	253*	
	WB	230	*	1	+	6	* 1 =	236	
PM	NB	(485 + 178)	*	1	+	21	* 1 =	684*	A 860
	SB	(332 + 20)	*	1	+	63	* 1 =	415	
	EB	49	*	1	+	127	* 1 =	176*	
	WB	150	*	1	+	13	* 1 =	163	

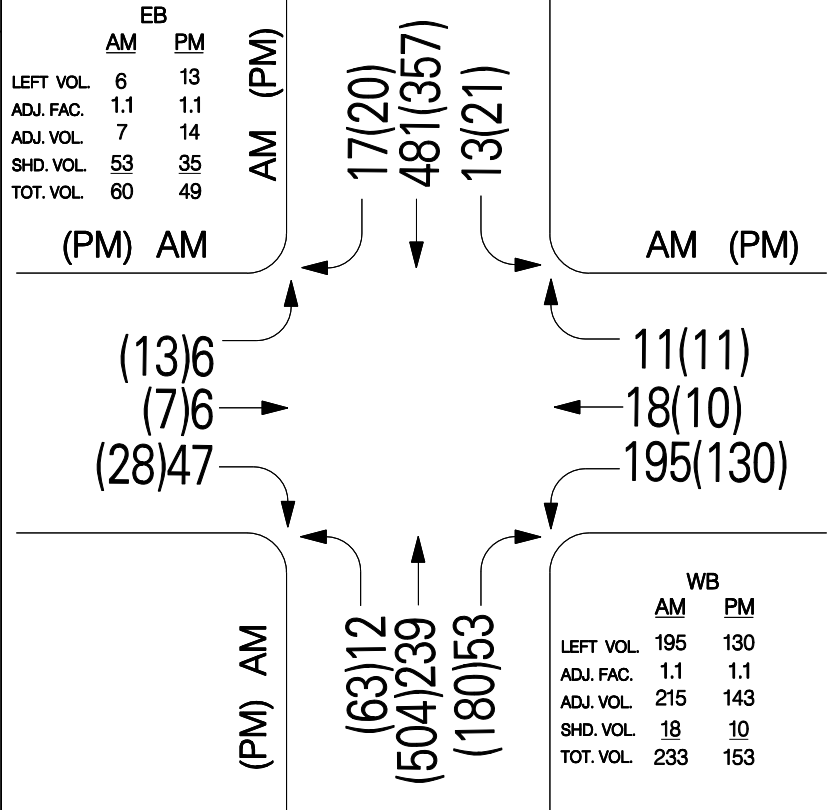
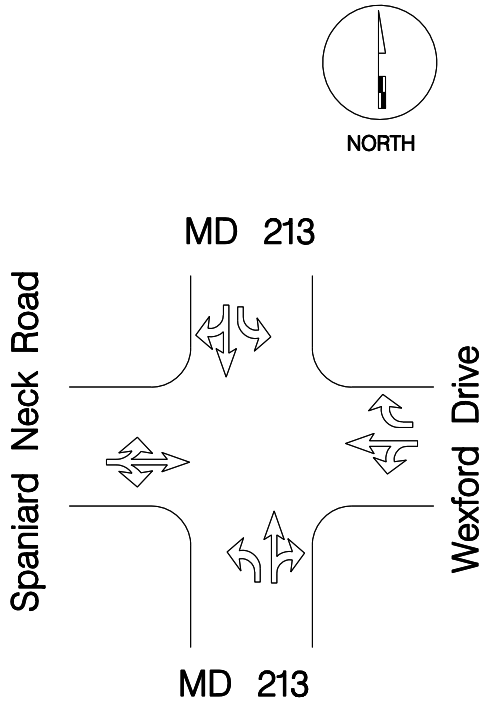
CRITICAL LANE ANALYSIS

TRAFFIC VOLUMES



NORTH

LANE CONFIGURATION



	EB	
	AM	PM
LEFT VOL.	6	13
ADJ. FAC.	1.1	1.1
ADJ. VOL.	7	14
SHD. VOL.	53	35
TOT. VOL.	60	49

	WB	
	AM	PM
LEFT VOL.	195	130
ADJ. FAC.	1.1	1.1
ADJ. VOL.	215	143
SHD. VOL.	18	10
TOT. VOL.	233	153

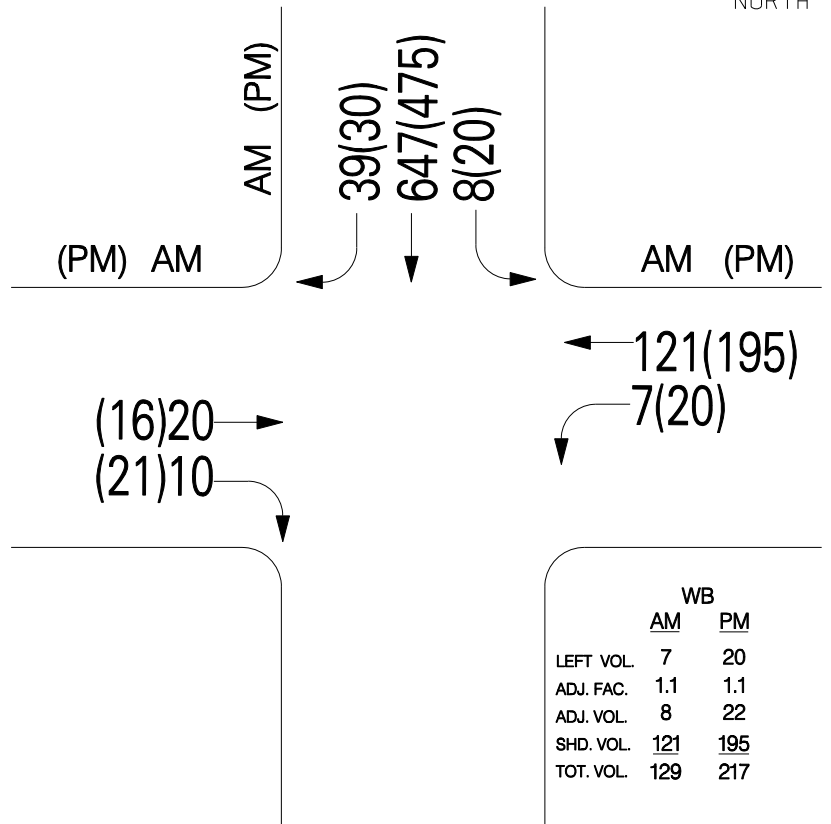
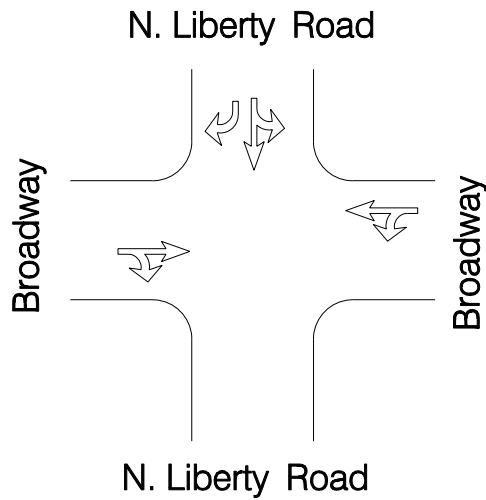
		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =						CRITICAL LANE VOLUME	LEVEL OF SERVICE		
AM	NB	(239 + 53)	*	1	+	13	*	1	=	305	A 765
	SB	(481 + 17)	*	1	+	12	*	1	=	510*	
	EB	60	*	1	+	195	*	1	=	255*	
	WB	233	*	1	+	6	*	1	=	239	
PM	NB	(504 + 180)	*	1	+	21	*	1	=	705*	A 884
	SB	(357 + 20)	*	1	+	63	*	1	=	440	
	EB	49	*	1	+	130	*	1	=	179*	
	WB	153	*	1	+	13	*	1	=	166	

CRITICAL LANE ANALYSIS

TRAFFIC VOLUMES



LANE CONFIGURATION



		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =					CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	—					—	A 784
	SB	(647 + 8)	*	1	=	655*		
	EB	(20 + 10)	*	1	+ 7 * 1 =	37		
	WB	129	*	1	=	129*		
PM	NB	—					—	A 712
	SB	(475 + 20)	*	1	=	495*		
	EB	(16 + 21)	*	1	+ 20 * 1 =	57		
	WB	217	*	1	=	217*		

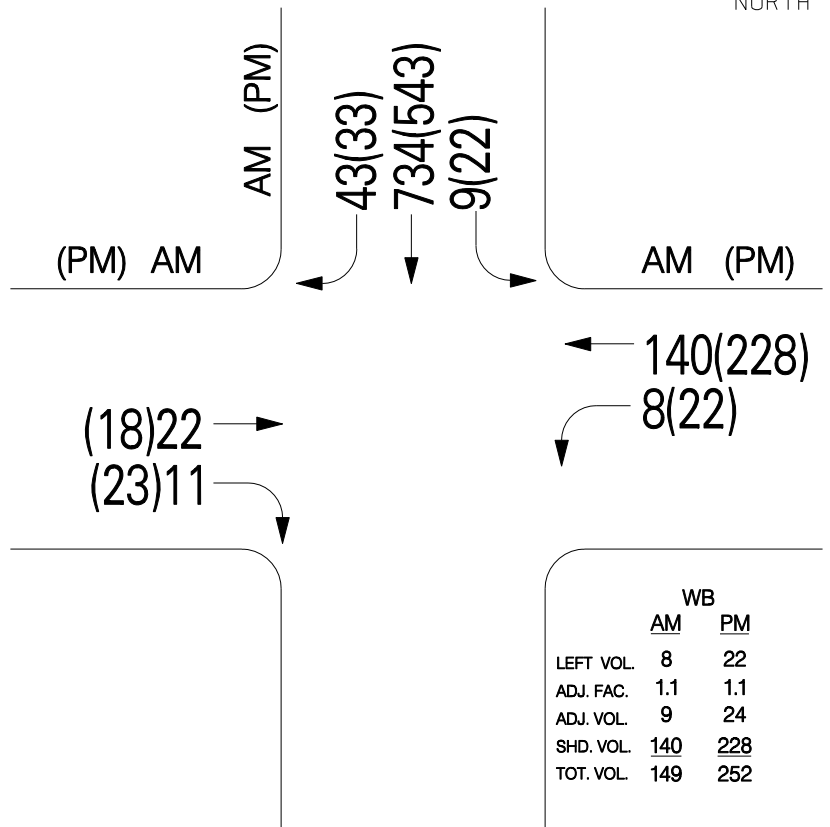
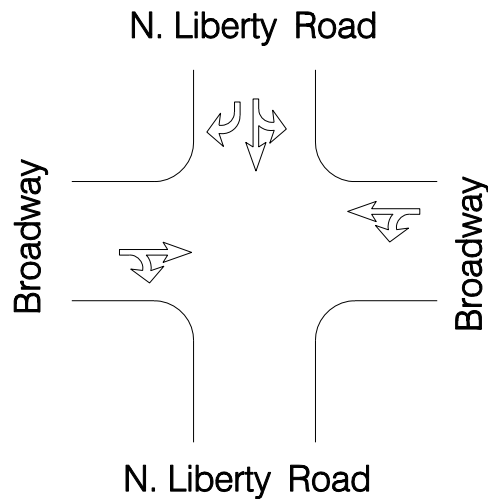
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING

TRAFFIC VOLUMES



LANE CONFIGURATION



	WB	
	AM	PM
LEFT VOL.	8	22
ADJ. FAC.	1.1	1.1
ADJ. VOL.	9	24
SHD. VOL.	140	228
TOT. VOL.	149	252

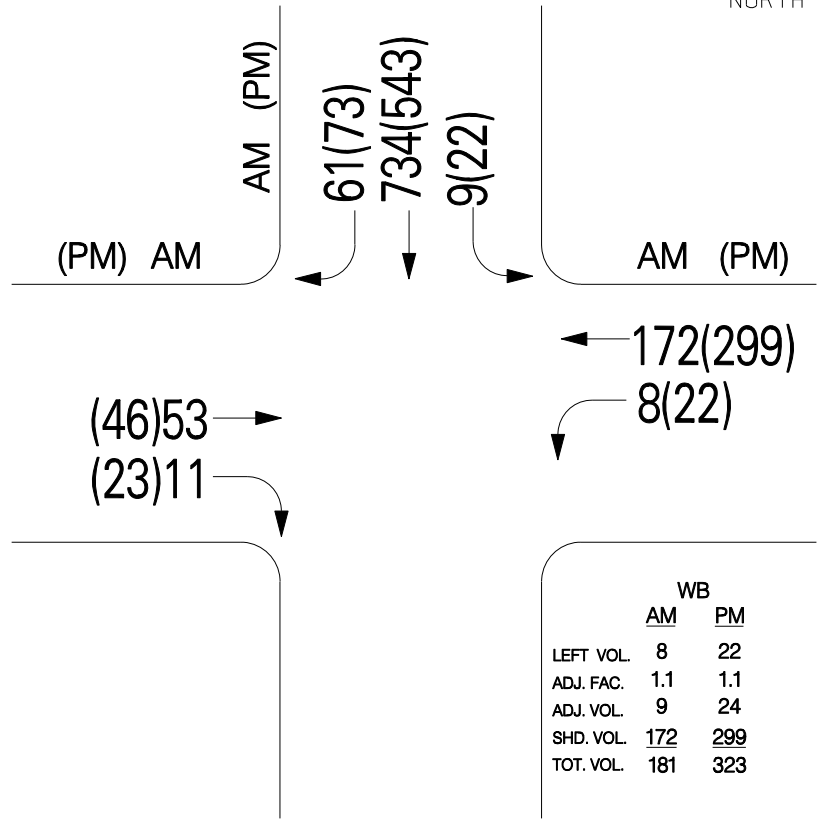
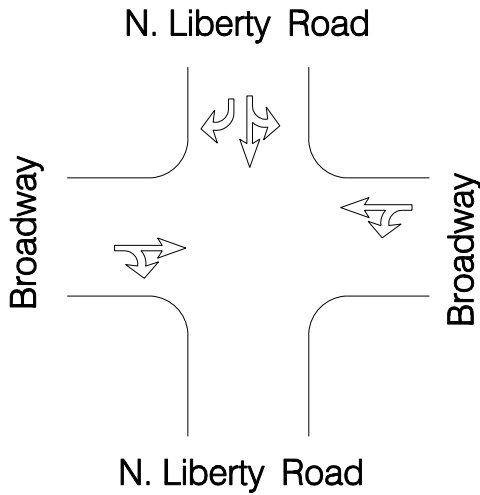
	TOTAL VOLUME * LUF	+	OPPOSING LEFTS * LUF =	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	—		—	
	SB	(734 + 9) * 1	=	743*	
	EB	(22 + 11) * 1	+ 8 * 1 =	41	A
	WB	149 * 1	=	149*	892
PM	NB	—		—	
	SB	(543 + 22) * 1	=	565*	
	EB	(18 + 23) * 1	+ 22 * 1 =	63	A
	WB	252 * 1	=	252*	817

CRITICAL LANE ANALYSIS

TRAFFIC VOLUMES



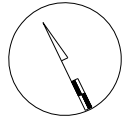
LANE CONFIGURATION



		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =				CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	—				—	
	SB	(734 + 61) * 1			=	795*	
	EB	(53 + 11) * 1	+	8	* 1 =	72	A
	WB	181 * 1			=	181*	976
PM	NB	—				—	
	SB	(543 + 73) * 1			=	616*	
	EB	(46 + 23) * 1	+	22	* 1 =	91	A
	WB	323 * 1			=	323*	939

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE

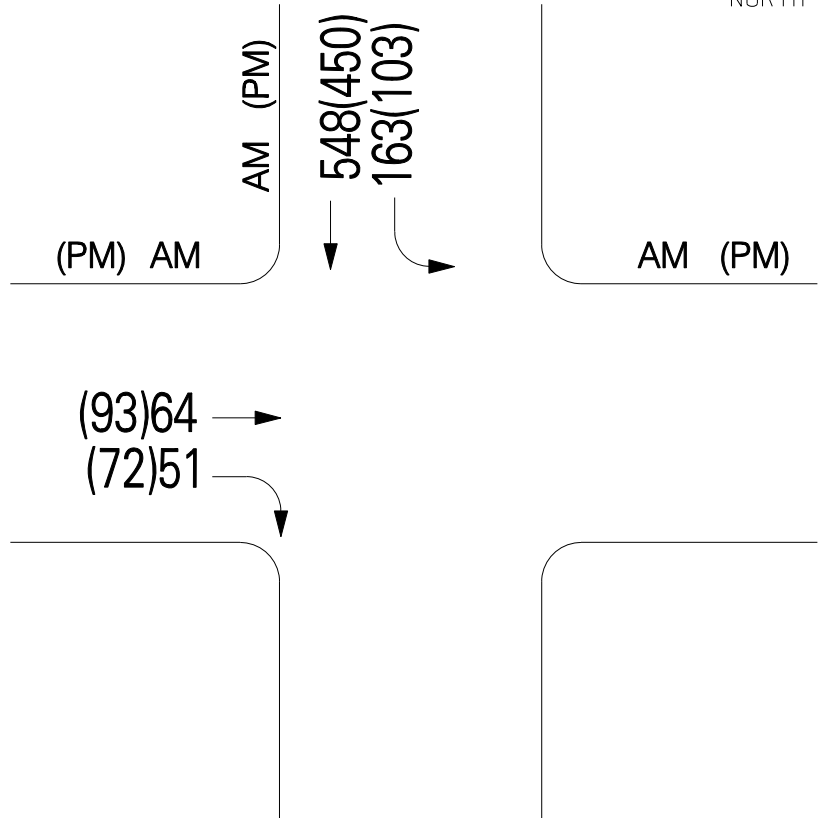
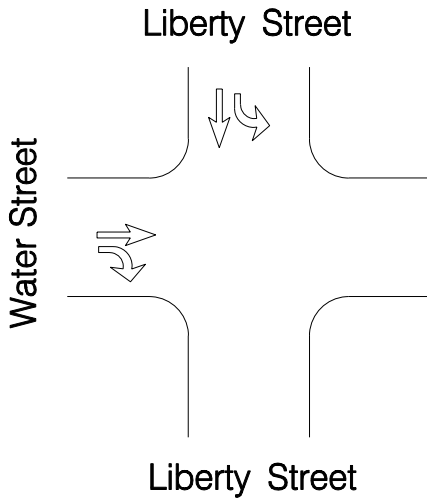


NORTH

LANE CONFIGURATION



NORTH



		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =			CRITICAL LANE VOLUME	LEVEL OF SERVICE	
AM	NB	—			—	A 612	
	SB	548	*	1	=		548*
	EB	64	*	1	=		64*
	WB	—			—		
PM	NB	—			—	A 543	
	SB	450	*	1	=		450*
	EB	93	*	1	=		93*
	WB	—			—		

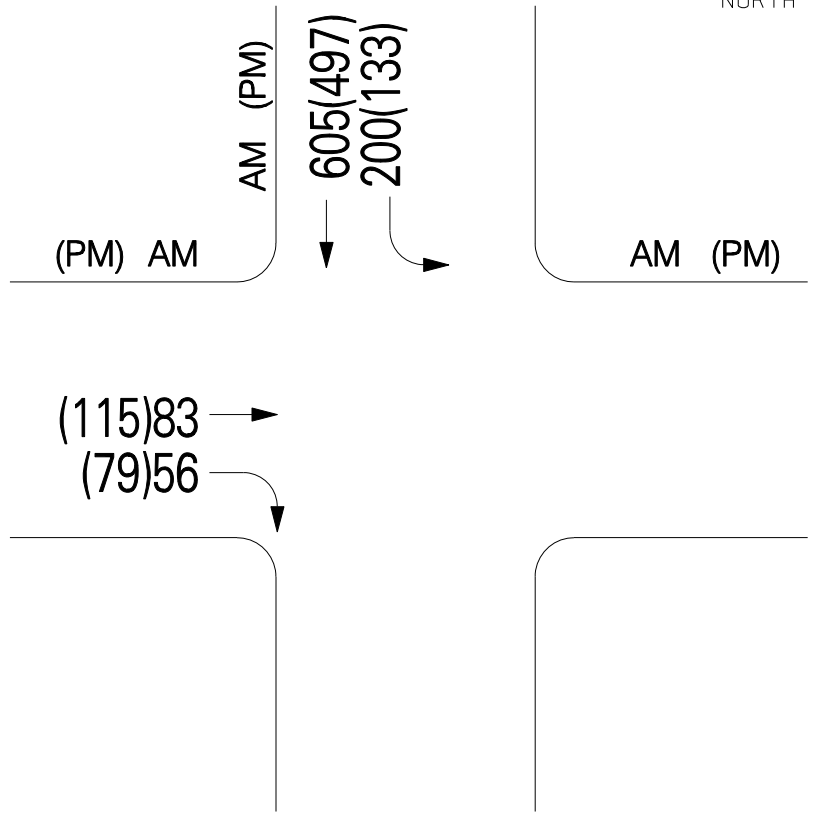
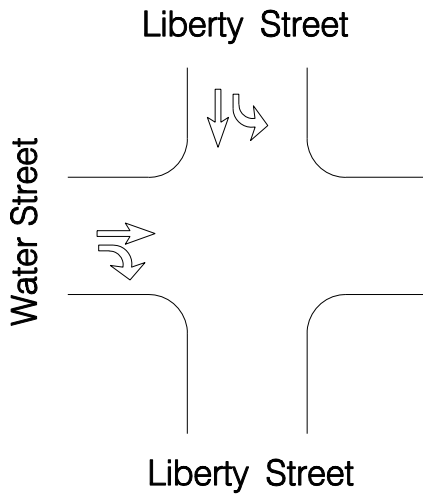
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING

TRAFFIC VOLUMES



LANE CONFIGURATION



	TOTAL VOLUME * LUF	+	OPPOSING LEFTS * LUF =	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB		—	—	A 688
	SB	605	* 1	= 605*	
	EB	83	* 1	= 83*	
	WB		—	—	
PM	NB		—	—	A 612
	SB	497	* 1	= 497*	
	EB	115	* 1	= 115*	
	WB		—	—	

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC VOLUMES

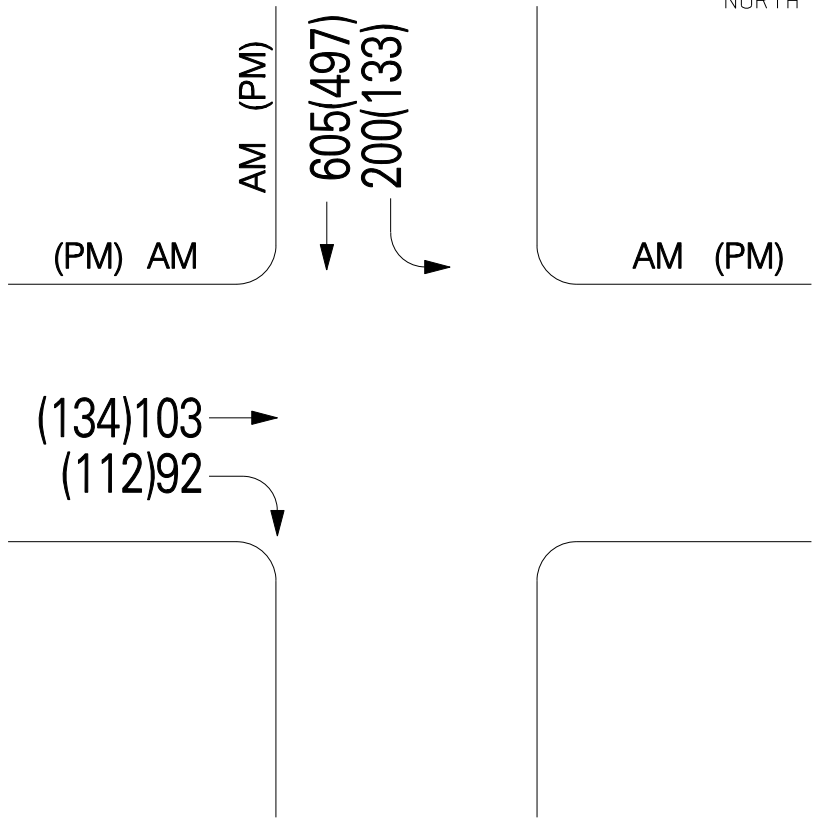
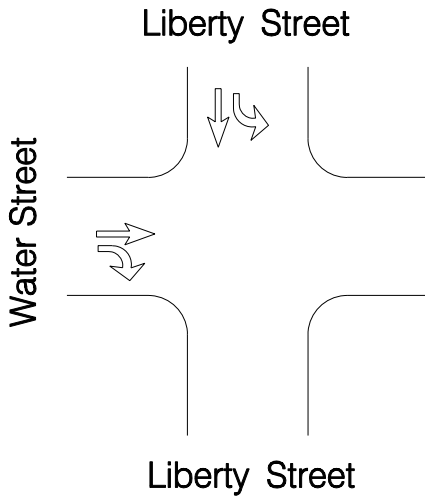


NORTH

LANE CONFIGURATION



NORTH



	TOTAL VOLUME * LUF	+	OPPOSING LEFTS * LUF =	CRITICAL LANE VOLUME	LEVEL OF SERVICE	
AM	NB		—	—	A 708	
	SB	605	* 1	=		605*
	EB	103	* 1	=		103*
	WB			—		—
PM	NB		—	—	A 631	
	SB	497	* 1	=		497*
	EB	134	* 1	=		134*
	WB			—		—

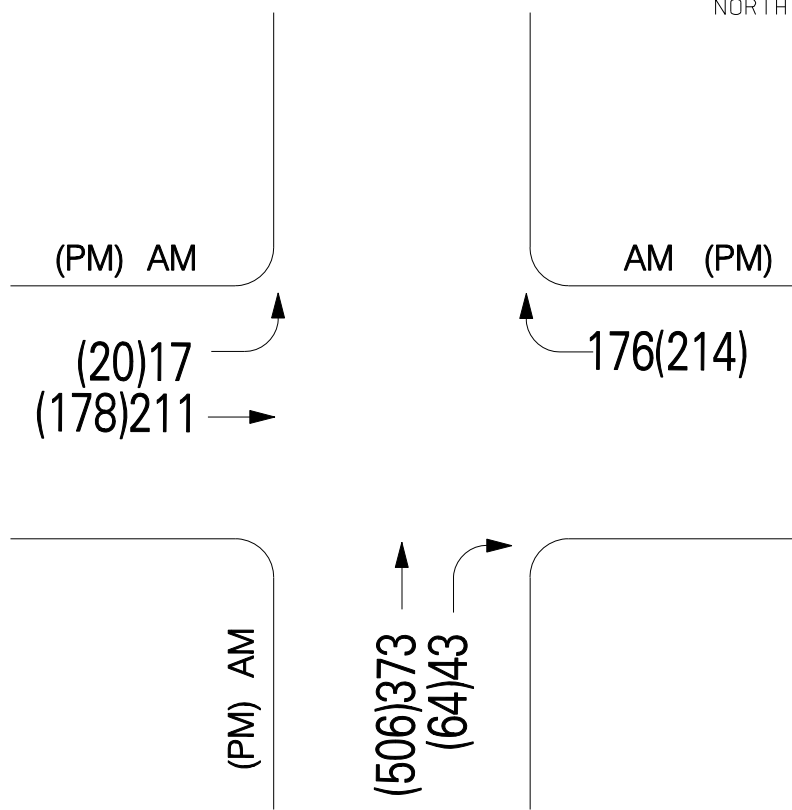
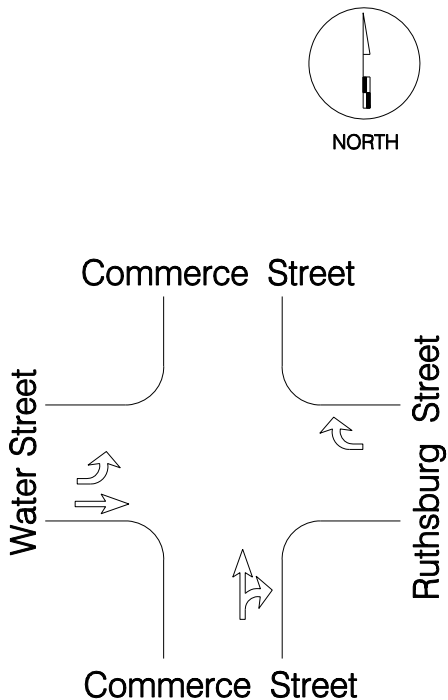
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE

TRAFFIC VOLUMES



LANE CONFIGURATION



		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =				CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(373 + 43)	*	1	=	416*	A 627
	SB				=		
	EB	211	*	1	=	211*	
	WB	176	*	1	+ 17 * 1 =	193	
PM	NB	(506 + 64)	*	1	=	570*	A 804
	SB				=		
	EB	178	*	1	=	178	
	WB	214	*	1	+ 20 * 1 =	234*	

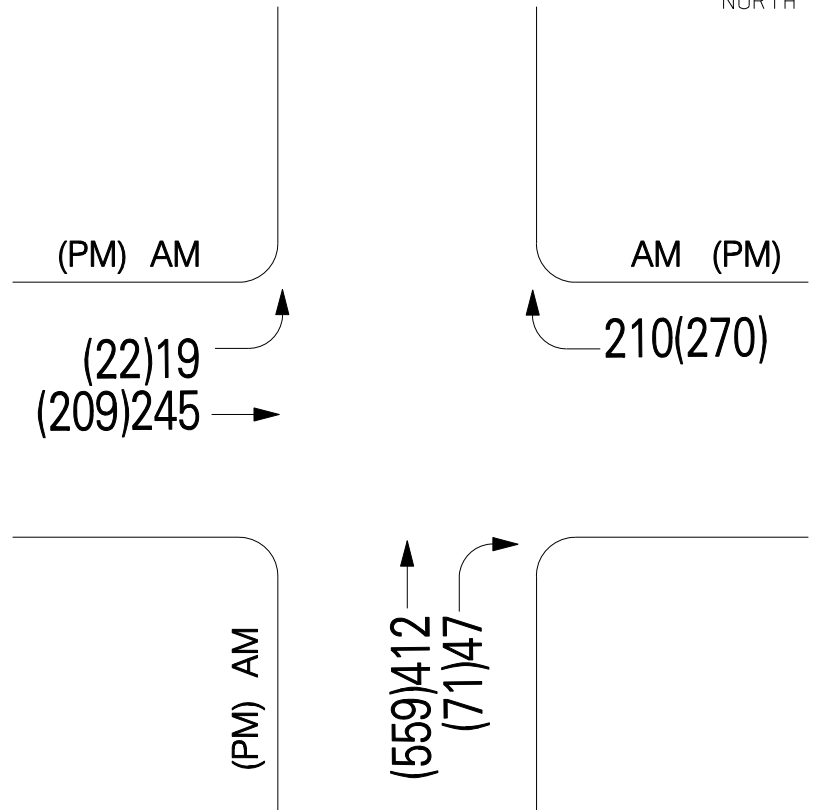
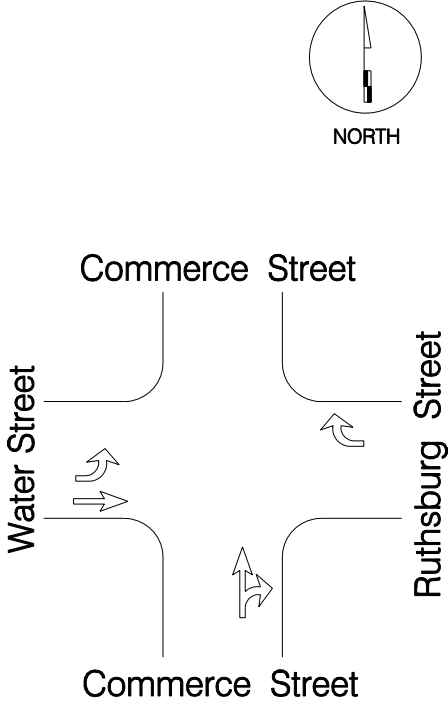
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING

TRAFFIC VOLUMES



LANE CONFIGURATION



	TOTAL VOLUME * LUF		+	OPPOSING LEFTS * LUF =		CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(412 + 47) * 1	=			459*	A 704
	SB		=				
	EB	245 * 1	=			245*	
	WB	210 * 1	+	19 * 1	=	229	
PM	NB	(559 + 71) * 1	=			630*	A 866
	SB		=				
	EB	209 * 1	=			209	
	WB	214 * 1	+	22 * 1	=	236*	

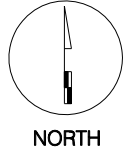
CRITICAL LANE ANALYSIS

TRAFFIC VOLUMES

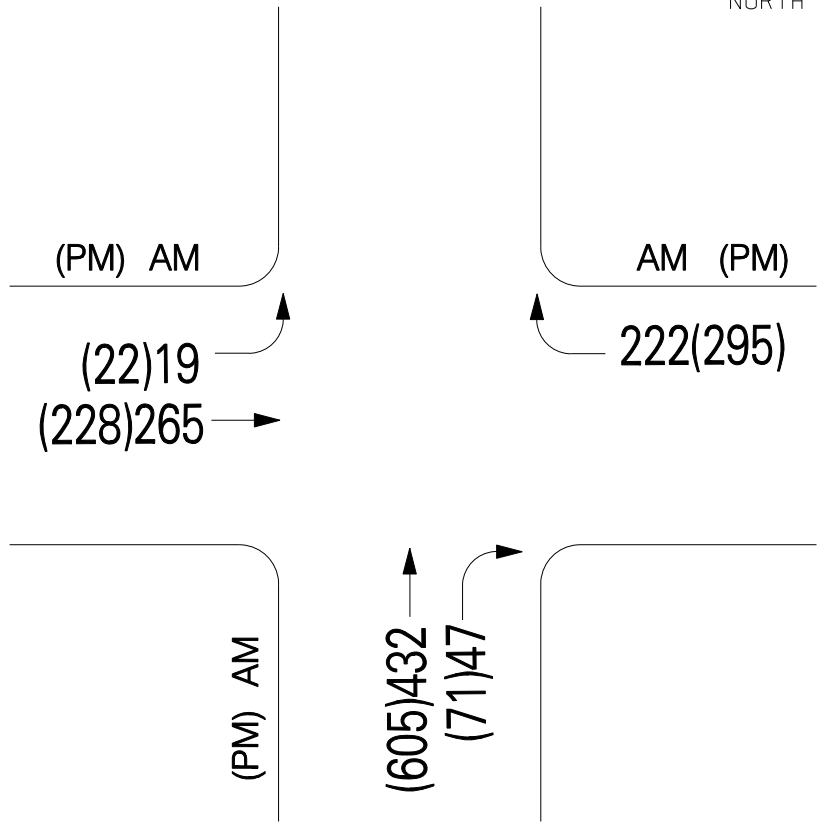
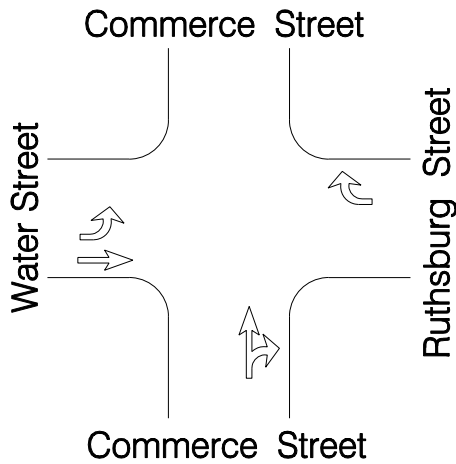


NORTH

LANE CONFIGURATION



NORTH



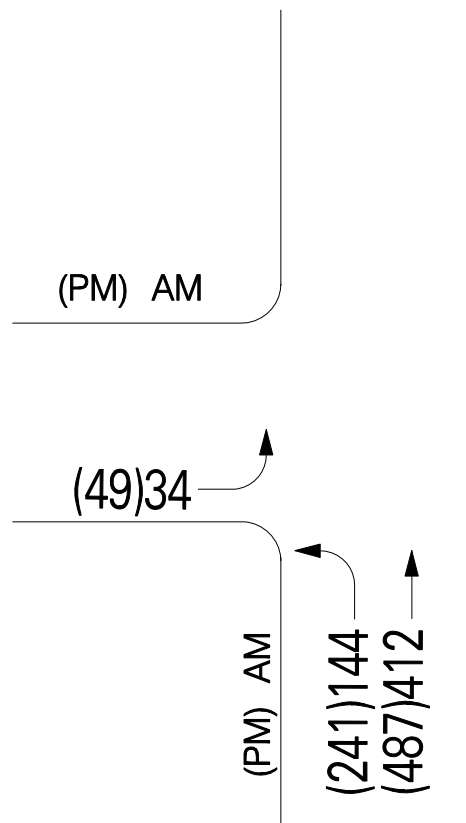
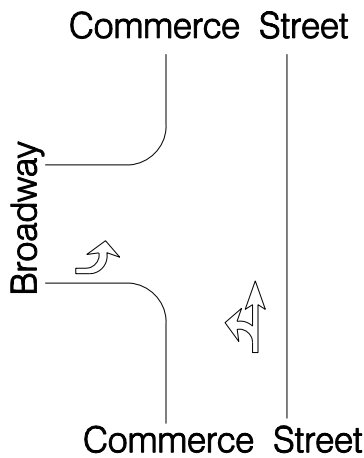
		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =				CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(432 + 47)	*	1	=	479*	A 744
	SB				=		
	EB	265	*	1	=	265*	
	WB	222	*	1	+ 19 * 1 =	241	
PM	NB	(605 + 71)	*	1	=	676*	A 993
	SB				=		
	EB	228	*	1	=	228	
	WB	295	*	1	+ 22 * 1 =	317*	

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	(144 + 412) * 1		=		556*	A 590
	SB		—	=		—	
	EB	34 * 1		=		34*	
	WB		—	=		—	
PM	NB	(241 + 487) * 1		=		728*	A 777
	SB		—	1 =		—	
	EB	49 * 1		=		49*	
	WB		—	=		—	

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING

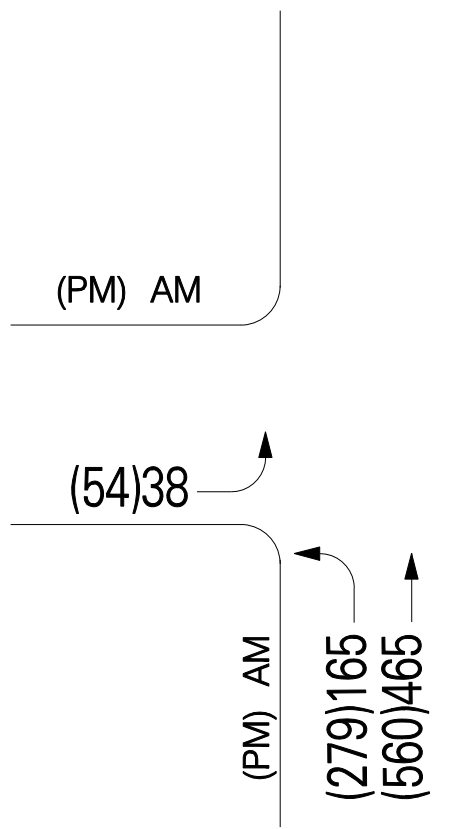
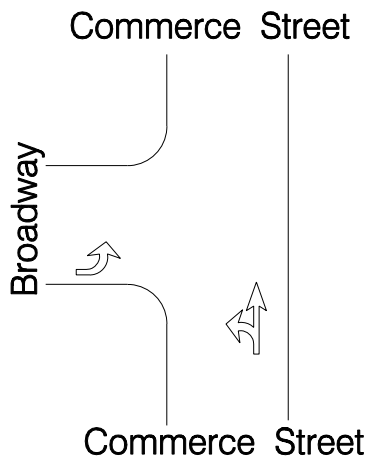


NORTH

LANE CONFIGURATION



NORTH



		TOTAL VOLUME * LUF	+	OPPOSING LEFTS * LUF =	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(165 + 465) * 1		=	630*	A 668
	SB		—	=	—	
	EB	38 * 1		=	668	
	WB		—	=	—	
PM	NB	(279 + 560) * 1		=	839*	A 893
	SB		—	1 =	—	
	EB	54 * 1		=	54*	
	WB		—	=	—	

CRITICAL LANE ANALYSIS

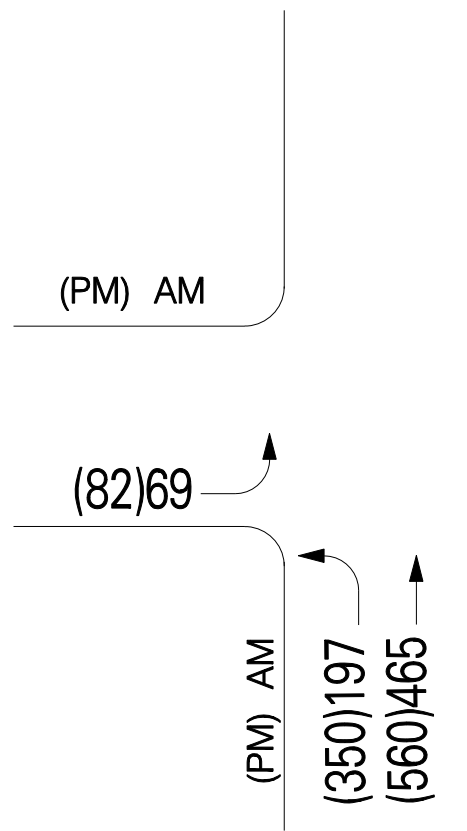
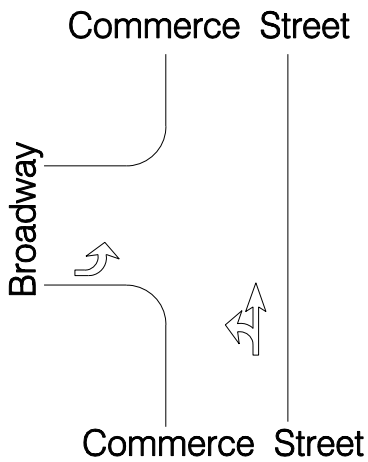


NORTH

LANE CONFIGURATION



NORTH



		TOTAL VOLUME * LUF	+	OPPOSING LEFTS * LUF =	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(197 + 465) * 1		=	662*	A 731
	SB		—	=	—	
	EB	69 * 1		=	69*	
	WB		—		—	
PM	NB	(350 + 560) * 1		=	910*	A 992
	SB		—	1 =	—	
	EB	82 * 1		=	82*	
	WB		—		—	

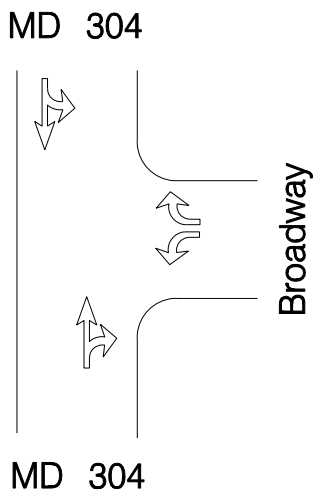
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE

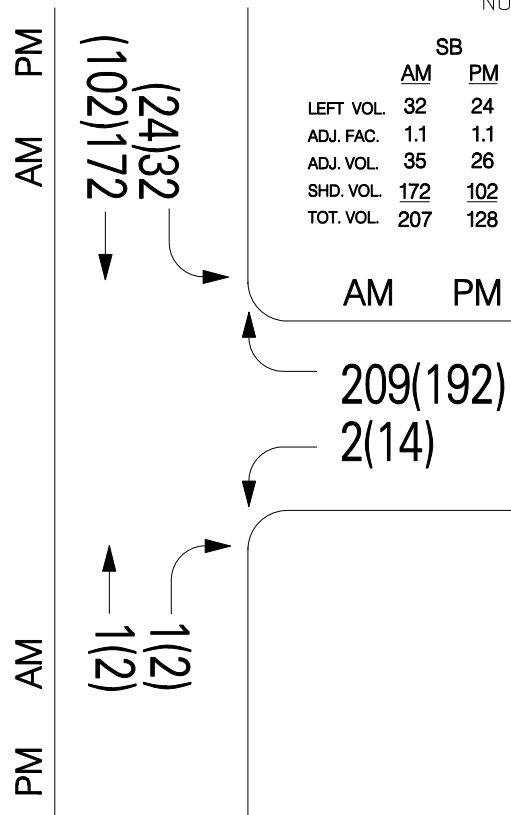
TRAFFIC VOLUMES



LANE CONFIGURATION



	SB	
	AM	PM
LEFT VOL.	32	24
ADJ. FAC.	1.1	1.1
ADJ. VOL.	35	26
SHD. VOL.	172	102
TOT. VOL.	207	128



TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =							CRITICAL LANE VOLUME	LEVEL OF SERVICE			
AM	NB	(1+1)	*	1	+	32	*	1	=	34	A 384
	SB	207	*	1					=	207*	
	EB				—					—	
	WB	(209-32)	*	1					=	177*	
PM	NB	(2+2)	*	1	+	24	*	1	=	28	A 296
	SB	128	*	1					=	128*	
	EB				—					—	
	WB	(192-24)	*	1					=	168*	

CRITICAL LANE ANALYSIS

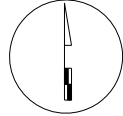
Prepared By: J. CAREY Condition: EXISTING

TRAFFIC VOLUMES



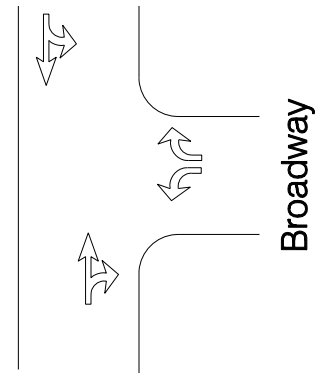
NORTH

LANE CONFIGURATION



NORTH

MD 304



MD 304

Broadway

PM

AM

AM

PM

(125)202

(26)35

(1)2
(1)2

	SB	
	AM	PM
LEFT VOL.	35	26
ADJ. FAC.	1.1	1.1
ADJ. VOL.	39	29
SHD. VOL.	202	125
TOT. VOL.	241	154

AM PM

237(225)
2(14)

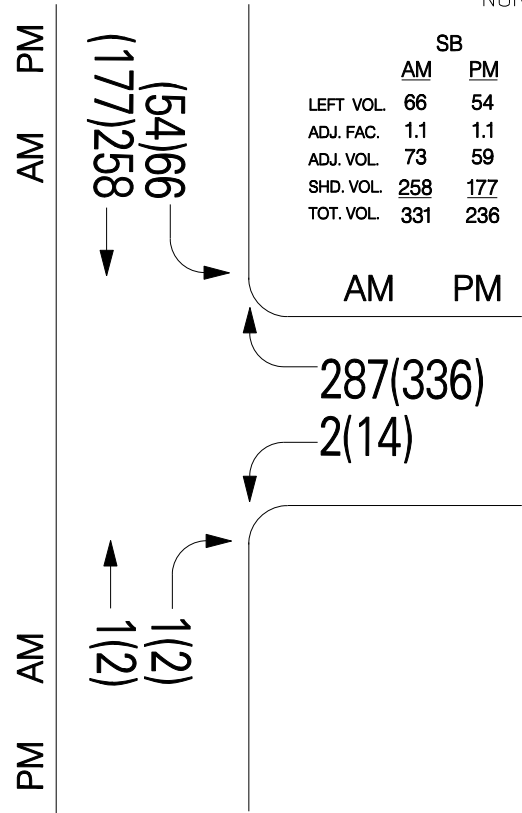
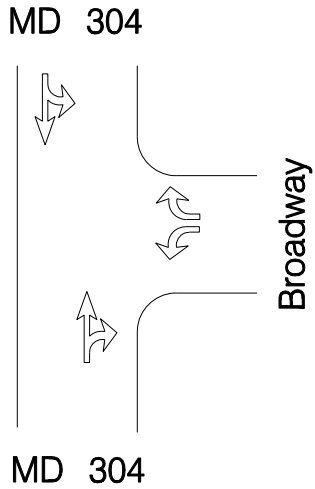
TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =							CRITICAL LANE VOLUME	LEVEL OF SERVICE			
AM	NB	(1+1)	*	1	+	35	*	1	=	37	A 443
	SB	241	*	1					=	241*	
	EB				—					—	
	WB	(237-35)	*	1					=	202*	
PM	NB	(2+2)	*	1	+	26	*	1	=	30	A 353
	SB	154	*	1					=	154*	
	EB				—					—	
	WB	(225-26)	*	1					=	199*	

CRITICAL LANE ANALYSIS

TRAFFIC VOLUMES



LANE CONFIGURATION



	SB	
	AM	PM
LEFT VOL.	66	54
ADJ. FAC.	1.1	1.1
ADJ. VOL.	73	59
SHD. VOL.	<u>258</u>	<u>177</u>
TOT. VOL.	331	236

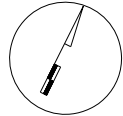
TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =							CRITICAL LANE VOLUME	LEVEL OF SERVICE			
AM	NB	(1+1)	*	1	+	66	*	1	=	68	A 552
	SB	331	*	1					=	331*	
	EB				—					—	
	WB	(287-66)	*	1					=	221*	
PM	NB	(2+2)	*	1	+	54	*	1	=	58	A 518
	SB	236	*	1					=	236*	
	EB				—					—	
	WB	(336-54)	*	1					=	282*	

CRITICAL LANE ANALYSIS

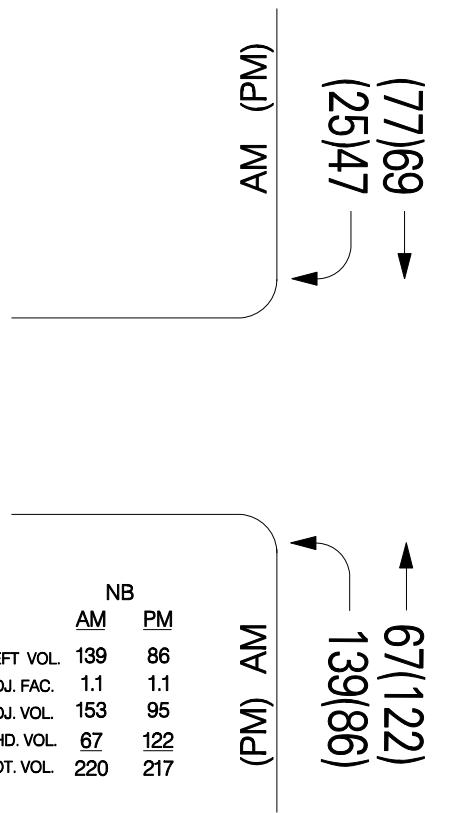
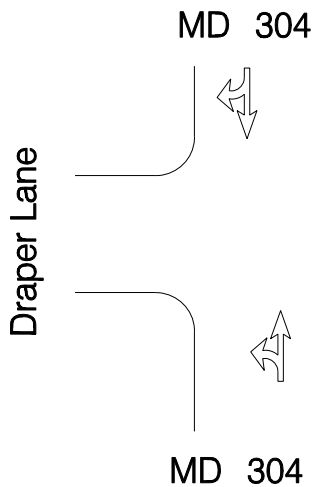


NORTH

LANE CONFIGURATION



NORTH



	NB	
	AM	PM
LEFT VOL.	139	86
ADJ. FAC.	1.1	1.1
ADJ. VOL.	153	95
SHD. VOL.	67	122
TOT. VOL.	220	217

		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =				CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	220	*	1	=	220	
	SB	(47 + 69)	*	1	+ 139 * 1 =	255**	
	EB				—	—	A 255
	WB				—	—	
PM	NB	217	*	1	=	217*	
	SB	(25 + 77)	*	1	+ 86 * 1 =	188	
	EB				—	—	A 217
	WB				—	—	

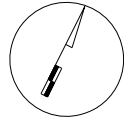
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING

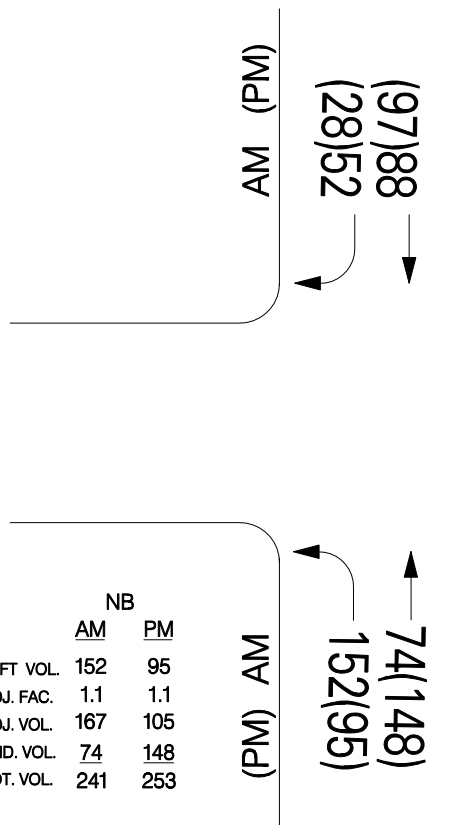
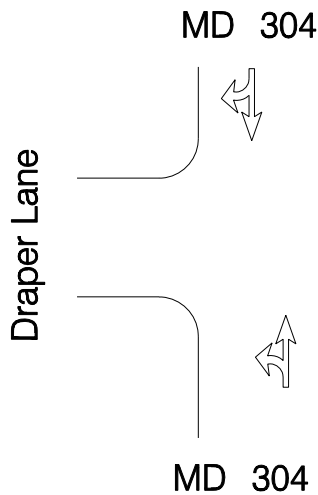


NORTH

LANE CONFIGURATION



NORTH



	AM	PM
LEFT VOL.	152	95
ADJ. FAC.	1.1	1.1
ADJ. VOL.	167	105
SHD. VOL.	74	148
TOT. VOL.	241	253

		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =					CRITICAL LANE VOLUME	LEVEL OF SERVICE	
AM	NB	241	*	1	=	241	A 292		
	SB	(88 + 52)	*	1	+	152		* 1 =	292*
	EB				—				
	WB				—				
PM	NB	253	*	1	=	253*	A 253		
	SB	(28 + 97)	*	1	+	95		* 1 =	220
	EB				—				
	WB				—				

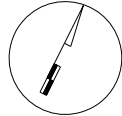
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND

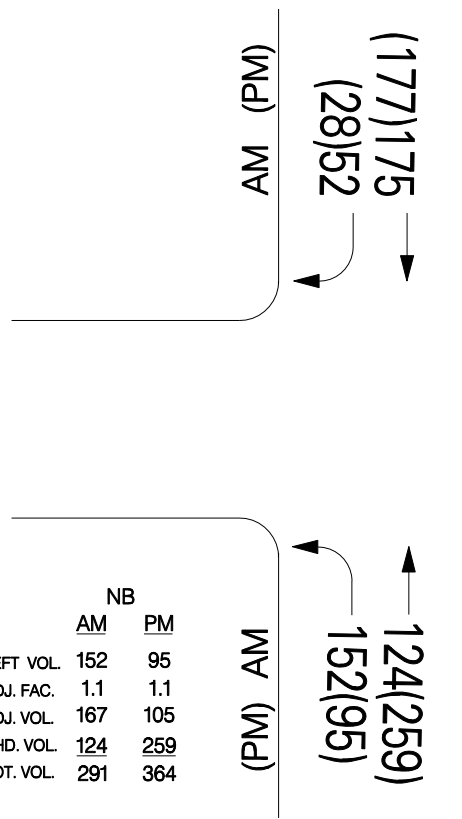
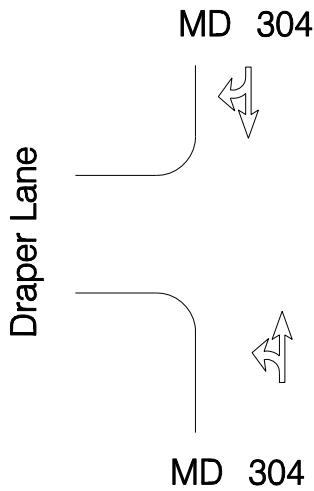


NORTH

LANE CONFIGURATION



NORTH



	AM	PM
LEFT VOL.	152	95
ADJ. FAC.	1.1	1.1
ADJ. VOL.	167	105
SHD. VOL.	<u>124</u>	<u>259</u>
TOT. VOL.	291	364

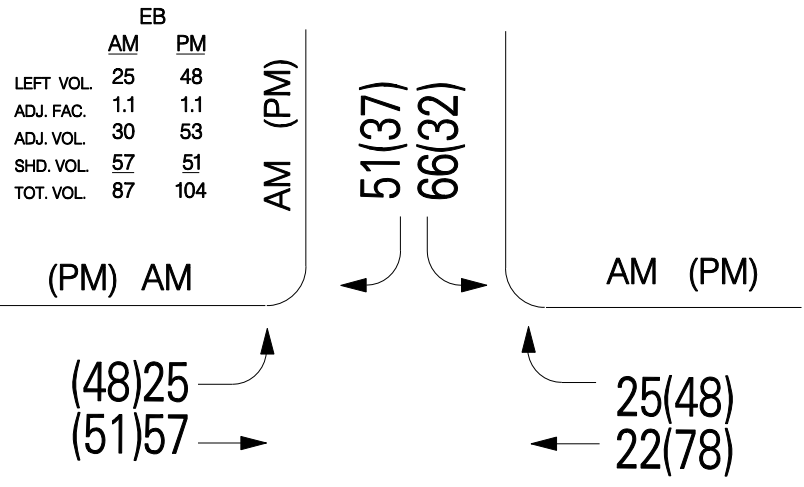
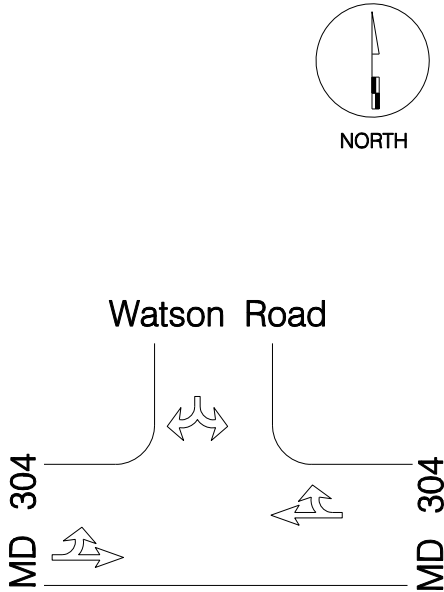
	TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =				CRITICAL LANE VOLUME	LEVEL OF SERVICE	
AM	NB	291	*	1	=	291	A 379
	SB	(175 + 52)	*	1	+ 152 * 1 =	379*	
	EB				—	—	
	WB				—	—	
PM	NB	364	*	1	=	364*	A 364
	SB	(28 + 177)	*	1	+ 95 * 1 =	300	
	EB				—	—	
	WB				—	—	

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	(51 + 66)	*	1	=	117*	A	
	EB	87	*	1	=	87*		
	WB	(22 + 25)	*	1	+ 25 * 1 =	72	204	
PM	NB	—					—	
	SB	(37 + 32)	*	1	=	69*	A	
	EB	104	*	1	=	104		
	WB	(78 + 48)	*	1	+ 48 * 1 =	174*	243	

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING

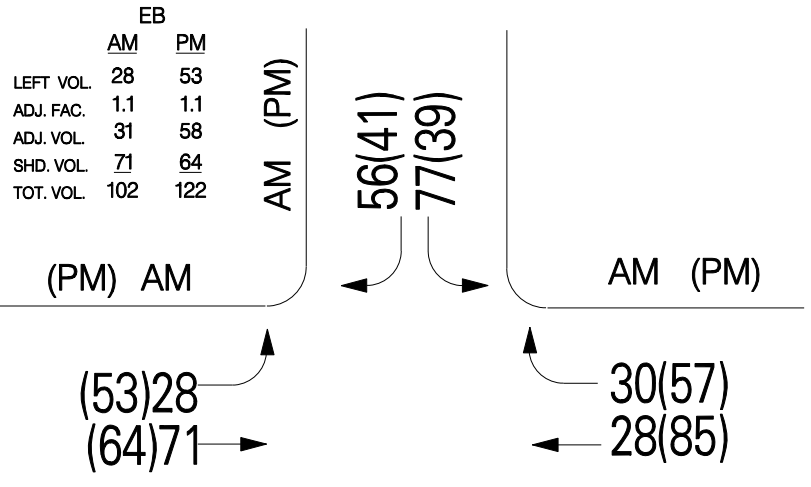
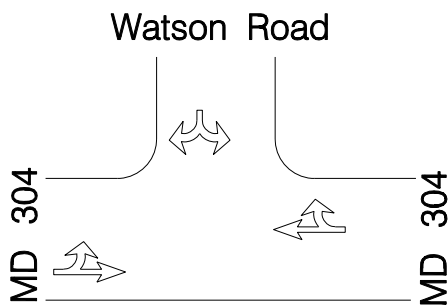


NORTH

LANE CONFIGURATION



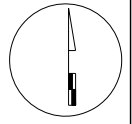
NORTH



		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =				CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	—				—	
	SB	(56 + 77)	*	1	=	133*	
	EB	102	*	1	=	102*	A
	WB	(28 + 30)	*	1	+ 28 * 1 =	86	235
PM	NB	—				—	
	SB	(41 + 39)	*	1	=	80*	
	EB	122	*	1	=	122	A
	WB	(85 + 57)	*	1	+ 53 * 1 =	195*	275

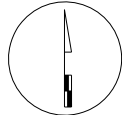
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND

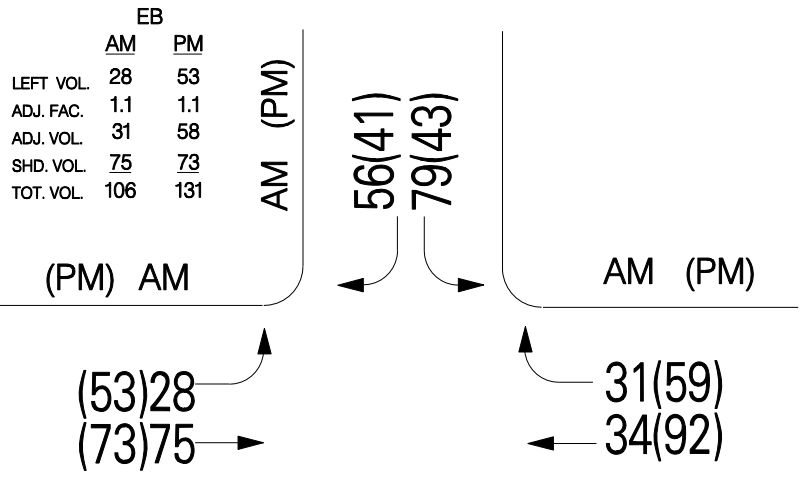
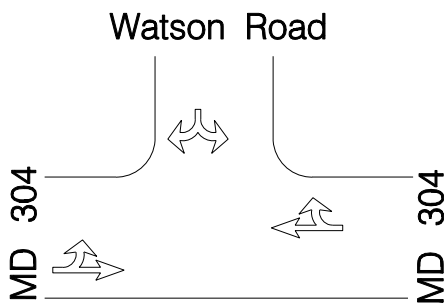


NORTH

LANE CONFIGURATION



NORTH



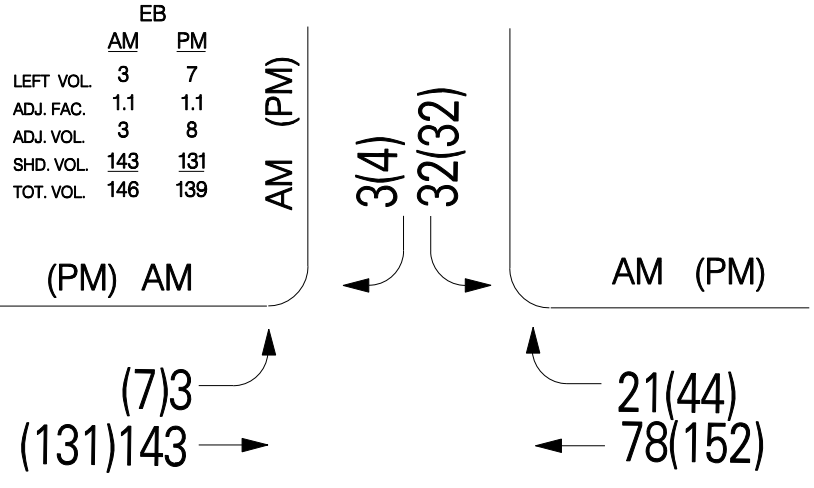
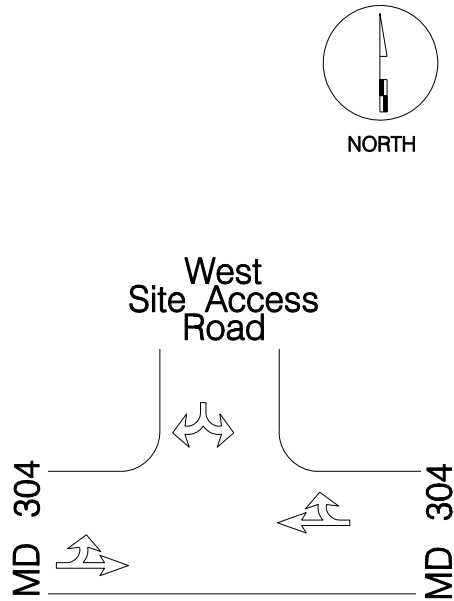
		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =				CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	—				—	A 241
	SB	(56 + 79)	*	1	=	135*	
	EB	106	*	1	=	106*	
	WB	(34 + 31)	*	1	+ 28 * 1 =	93	
PM	NB	—				—	A 288
	SB	(41 + 43)	*	1	=	84*	
	EB	131	*	1	=	131	
	WB	(92 + 59)	*	1	+ 53 * 1 =	204*	

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE



LANE CONFIGURATION



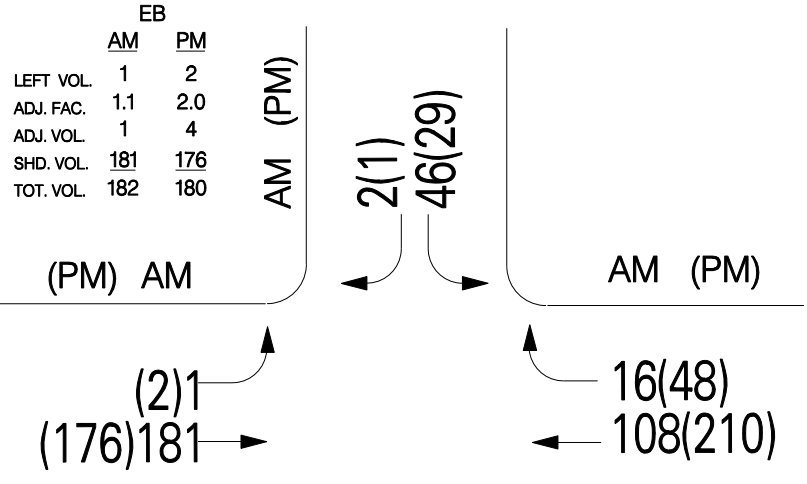
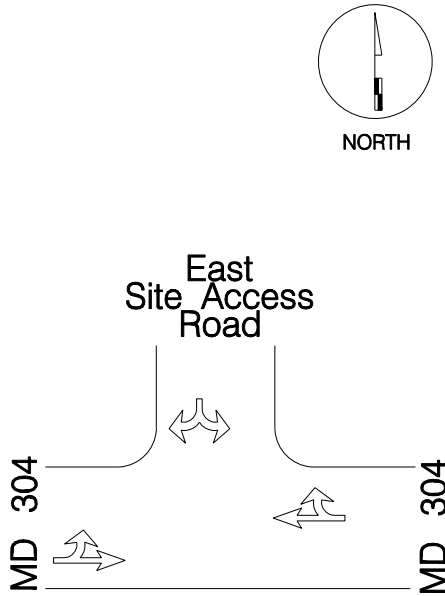
		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =					CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	—					—	
	SB	(32 + 3)	*	1	=	35*		
	EB	146	*	1	=	146*	A	
	WB	(78 + 21)	*	1	+ 3 * 1 =	102	181	
PM	NB	—					—	
	SB	(4 + 32)	*	1	=	36*		
	EB	139	*	1	=	139	A	
	WB	(152 + 44)	*	1	+ 7 * 1 =	203*	239	

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE



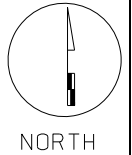
LANE CONFIGURATION



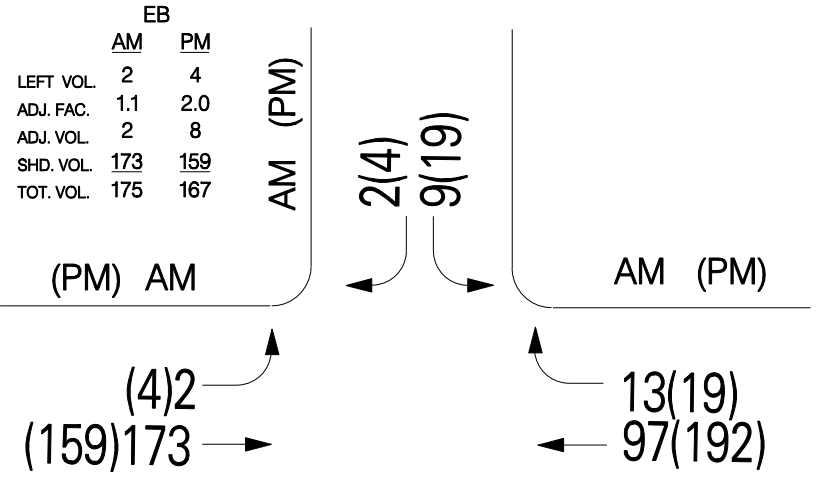
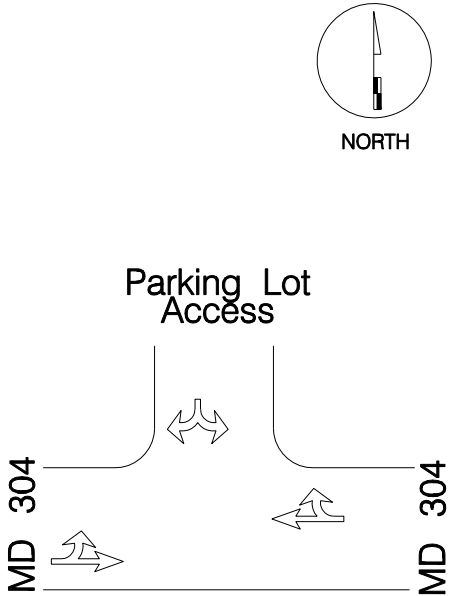
		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =					CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	—					—	
	SB	(46 + 2)	*	1	=		48*	
	EB	182	*	1	=		182*	A
	WB	(108 + 16)	*	1	+	1 * 1 =	125	230
PM	NB	—					—	
	SB	(1 + 29)	*	1	=		30*	
	EB	180	*	1	=		180	A
	WB	(210 + 48)	*	1	+	2 * 1 =	260*	290

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE



LANE CONFIGURATION



	EB	
	AM	PM
LEFT VOL.	2	4
ADJ. FAC.	1.1	2.0
ADJ. VOL.	2	8
SHD. VOL.	173	159
TOT. VOL.	175	167

		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =				CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	—				—	A 186
	SB	(9 + 2)	*	1	=	11*	
	EB	175	*	1	=	175*	
	WB	(97 + 13)	*	1	+ 2 * 1 =	112	
PM	NB	—				—	A 238
	SB	(4 + 19)	*	1	=	23*	
	EB	167	*	1	=	167	
	WB	(192 + 19)	*	1	+ 4 * 1 =	215*	

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE



APPENDIX II
TRAFFIC COUNT INFORMATION

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: MD 213 @ SPANIARD NECK RD

COUNTY: QUEEN ANNE'S

COUNT BY: CAMERA

DATE: JUNE 1, 2022

WEATHER: OVERCAST

DAY: WEDNESDAY

TIME	MD 213 NORTHBOUND			MD 213 SOUTHBOUND			SPANIARD NECK RD EASTBOUND			WEXFORD DR WESTBOUND			TOTAL
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
AM													
7:00-7:15	2	40	7	3	98	1	2	2	10	46	6	3	220
7:15-7:30	2	48	8	1	106	1	0	2	13	55	1	3	240
7:30-7:45	4	62	18	0	102	6	2	1	8	39	4	2	248
7:45-8:00	3	41	12	8	104	7	1	0	12	31	5	2	226
8:00-8:15	2	52	14	1	69	7	5	4	13	21	3	1	192
8:15-8:30	2	35	15	1	89	3	2	1	5	39	10	2	204
8:30-8:45	3	58	13	4	86	5	3	5	9	33	11	3	233
8:45-9:00	5	48	23	3	82	2	3	2	7	21	6	2	204
AM PEAK HR 7:00-8:00 TOTALS	11	191	45	12	410	15	5	5	43	171	16	10	PHF 0.94
PM													
4:00-4:15	8	94	37	1	77	5	3	8	7	20	2	4	266
4:15-4:30	15	83	38	6	70	2	5	2	5	24	2	5	257
4:30-4:45	11	103	33	3	57	8	5	6	10	25	1	5	267
4:45-5:00	17	92	42	6	72	5	5	1	10	21	1	3	275
5:00-5:15	15	109	46	5	56	2	1	3	3	25	2	6	273
5:15-5:30	12	115	25	6	83	8	4	0	7	31	5	7	303
5:30-5:45	13	107	45	2	76	3	2	2	5	34	1	2	292
5:45-6:00	14	93	40	1	52	5	4	2	6	20	1	1	239
PM PEAK HR 4:45-5:45 TOTALS	57	423	158	19	287	18	12	6	25	111	9	18	PHF 0.94

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 HANOVER, MARYLAND 21076
 410 760 2911 (FAX) 410 760 2915
 E-MAIL TRAFFIC@TRAFFIC-CONCEPTS.COM

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: N. LIBERTY ST @ BROADWAY

COUNTY: QUEEN ANNE'S

COUNT BY: CAMERA

DATE: JUNE 1, 2022

WEATHER: OVERCAST

DAY: WEDNESDAY

CAM

TIME	NORTHBOUND			N. LIBERTY ST SOUTHBOUND			BROADWAY EASTBOUND			BROADWAY WESTBOUND			TOTAL
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
AM													
7:00-7:15				1	153	9		1	2	1	15		182
7:15-7:30				0	177	12		3	5	2	33		232
7:30-7:45				0	174	13		3	3	1	31		225
7:45-8:00				3	154	4		8	2	1	29		201
8:00-8:15				5	142	10		6	0	3	28		194
8:15-8:30				0	124	19		3	1	5	33		185
8:30-8:45				3	125	21		5	8	1	52		215
8:45-9:00				2	133	19		11	5	9	55		234
AM PEAK HR 7:15-8:15 TOTALS				8	647	39		20	10	7	121		PHF 0.92
PM													
4:00-4:15				4	110	7		11	8	9	35		184
4:15-4:30				3	129	11		7	9	11	25		195
4:30-4:45				2	122	6		9	13	9	40		201
4:45-5:00				2	120	6		3	6	3	38		178
5:00-5:15				8	99	8		5	4	11	54		189
5:15-5:30				2	113	7		4	5	3	59		193
5:30-5:45				8	143	9		4	6	3	44		217
5:45-6:00				3	100	11		2	3	7	45		171
PM PEAK HR 4:45-5:45 TOTALS				20	475	30		16	21	20	195		PHF 0.90

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 HANOVER, MARYLAND 21076
 410 760 2911 (FAX) 410 760 2915
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PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: N. LIBERTY ST @ WATER ST

COUNTY: QUEEN ANNE'S

COUNT BY: CAMERA

DATE: JUNE 1, 2022

WEATHER: OVERCAST

DAY: WEDNESDAY

TIME	NORTHBOUND			N. LIBERTY ST SOUTHBOUND			WATER ST EASTBOUND			WATER ST WESTBOUND			TOTAL
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
AM													
7:00-7:15				43	119			16	8				186
7:15-7:30				51	142			21	14				228
7:30-7:45				34	157			12	15				218
7:45-8:00				35	130			15	14				194
8:00-8:15				36	120			9	10				175
8:15-8:30				35	110			14	6				165
8:30-8:45				43	113			36	30				222
8:45-9:00				43	126			31	42				242
AM PEAK HR 7:00-8:00 TOTALS				163	548			64	51				PHF 0.91
PM													
4:00-4:15				28	104			8	17				157
4:15-4:30				23	89			10	14				136
4:30-4:45				22	95			10	7				134
4:45-5:00				22	96			13	12				143
5:00-5:15				32	118			13	17				180
5:15-5:30				26	112			20	10				168
5:30-5:45				27	116			47	32				222
5:45-6:00				18	104			13	13				148
PM PEAK HR 5:00-6:00 TOTALS				103	450			93	72				PHF 0.81

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PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: COMMERCE ST @ WATER ST

COUNTY: QUEEN ANNE'S

COUNT BY: CAMERA

DATE: JUNE 1, 2022

WEATHER: OVERCAST

DAY: WEDNESDAY

CAM

TIME	COMMERCE ST NORTHBOUND			SOUTHBOUND			WATER ST EASTBOUND			WATER ST WESTBOUND			TOTAL
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
AM													
7:00-7:15		56	13				0	57				16	142
7:15-7:30		78	12				0	75				44	209
7:30-7:45		89	15				0	44				55	203
7:45-8:00		86	15				1	46				31	179
8:00-8:15		83	12				4	36				27	162
8:15-8:30		89	8				5	42				29	173
8:30-8:45		103	8				3	65				62	241
8:45-9:00		98	15				5	68				58	244
PEAK HR 8:00-9:00 TOTALS		373	43				17	211				176	PHF 0.84
PM													
4:00-4:15		107	23				3	33				36	202
4:15-4:30		118	17				3	30				35	203
4:30-4:45		102	20				6	20				40	188
4:45-5:00		124	22				5	35				45	231
5:00-5:15		133	14				7	36				42	232
5:15-5:30		110	24				6	39				55	234
5:30-5:45		116	10				5	75				54	260
5:45-6:00		147	16				2	28				63	256
PEAK HR 5:00-6:00 TOTALS		506	64				20	178				214	PHF 0.94

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 HANOVER, MARYLAND 21076
 410-760-2911 FAX 410-760-2915
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PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: MD 213 (N. LIBERTY ST) @ BROADWAY

COUNTY: QUEEN ANNE'S

COUNT BY: CAMERA

DATE: JUNE 1, 2022

WEATHER: OVERCAST

DAY: WEDNESDAY

CAM

TIME	COMMERCE ST NORTHBOUND			SOUTHBOUND			BROADWAY EASTBOUND			WESTBOUND			TOTAL
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
AM													
7:00-7:15	22	56					2						80
7:15-7:30	41	80					2						123
7:30-7:45	37	101					7						145
7:45-8:00	34	87					12						133
8:00-8:15	37	87					9						133
8:15-8:30	32	81					3						116
8:30-8:45	35	123					10						168
8:45-9:00	40	121					12						173
PEAK HR 8:00-9:00 TOTALS	144	412					34						PHF 0.85
PM													
4:00-4:15	42	100					18						160
4:15-4:30	41	110					18						169
4:30-4:45	39	111					16						166
4:45-5:00	47	134					8						189
5:00-5:15	54	103					12						169
5:15-5:30	66	126					17						209
5:30-5:45	74	124					12						210
5:45-6:00	70	141					10						221
PEAK HR 5:00-6:00 TOTALS	241	487					49						PHF 0.92

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: MD 304 @ BROADWAY

COUNTY: QUEEN ANNE'S

COUNT BY: CAMERA

DATE: JUNE 1, 2022

WEATHER: OVERCAST

DAY: WEDNESDAY

TIME	MD 304 NORTHBOUND			MD 304 SOUTHBOUND			EASTBOUND			BROADWAY WESTBOUND			TOTAL
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
AM													
7:00-7:15		0	0	4	23					0		23	50
7:15-7:30		0	1	4	32					5		38	80
7:30-7:45		2	0	7	17					2		29	57
7:45-8:00		0	0	8	27					2		18	55
8:00-8:15		0	1	5	16					1		30	53
8:15-8:30		1	0	6	18					0		45	70
8:30-8:45		0	0	9	68					0		63	140
8:45-9:00		1	1	12	70					1		71	156
AM PEAK HR 8:00-9:00 TOTALS		2	2	32	172					2		209	PHF 0.67
PM													
4:00-4:15		0	0	10	44					2		31	87
4:15-4:30		0	0	5	26					6		33	70
4:30-4:45		0	0	6	35					1		45	87
4:45-5:00		0	0	7	20					5		36	68
5:00-5:15		1	1	5	25					4		54	90
5:15-5:30		0	0	6	22					4		57	89
5:30-5:45		0	1	4	24					3		49	81
5:45-6:00		0	0	2	18					4		47	71
PM PEAK HR 4:30-5:30 TOTALS		1	1	24	102					14		192	PHF 0.93

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 HANOVER, MARYLAND 21076
 410 760 2911 (FAX) 410 760 2915
 E-MAIL TRAFFIC@TRAFFIC-CONCEPTS.COM

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: MD 304 @ DRAPER LANE

COUNTY: QUEEN ANNE'S

COUNT BY: CAMERA

DATE: JUNE 1, 2022

WEATHER: OVERCAST

DAY: WEDNESDAY

CAM

TIME	MD 304 NORTHBOUND			MD 304 SOUTHBOUND			DRAPER LN EASTBOUND			WESTBOUND			TOTAL
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
AM													
7:00-7:15	4	6			23	2							35
7:15-7:30	8	10			28	3							49
7:30-7:45	8	12			14	2							36
7:45-8:00	3	12			25	3							43
8:00-8:15	12	9			20	6							47
8:15-8:30	26	9			21	10							66
8:30-8:45	53	18			18	19							108
8:45-9:00	48	31			10	12							101
AM PEAK HR 8:00-9:00 TOTALS	139	67			69	47							PHF 0.75
PM													
4:00-4:15	5	22			14	1							42
4:15-4:30	2	26			23	0							51
4:30-4:45	4	22			18	1							45
4:45-5:00	10	20			26	6							62
5:00-5:15	17	21			18	3							59
5:15-5:30	26	18			20	12							76
5:30-5:45	27	37			18	9							91
5:45-6:00	16	46			21	1							84
PM PEAK HR 5:00-6:00 TOTALS	86	122			77	25							PHF 0.85

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 E-MAIL TRAFFIC@TRAFFIC-CONCEPTS.COM

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: MD 304 @ WATSON RD

COUNTY: QUEEN ANNE'S

COUNT BY: CAMERA

DATE: JUNE 1, 2022

WEATHER: OVERCAST

DAY: WEDNESDAY

TIME	NORTHBOUND			WATSON RD SOUTHBOUND			MD 304 EASTBOUND			MD 304 WESTBOUND			TOTAL
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
AM													
7:00-7:15				12		7	7	13			5	3	47
7:15-7:30				9		6	7	21			7	2	52
7:30-7:45				8		10	5	8			6	5	42
7:45-8:00				11		25	7	17			6	6	72
8:00-8:15				13		13	7	14			5	5	57
8:15-8:30				15		7	6	15			5	4	52
8:30-8:45				27		6	5	11			6	10	65
8:45-9:00				11		3	5	14			19	13	65
AM PEAK HR 7:45-8:45 TOTALS				66		51	25	57			22	25	PHF 0.85
PM													
4:00-4:15				10		7	12	15			14	15	73
4:15-4:30				10		9	9	8			21	9	66
4:30-4:45				6		12	17	12			16	12	75
4:45-5:00				8		8	13	14			13	14	70
5:00-5:15				8		8	9	17			28	13	83
5:15-5:30				10		13	9	11			13	8	64
5:30-5:45				8		10	6	18			6	6	54
5:45-6:00				13		17	13	6			16	13	78
PM PEAK HR 4:15-5:15 TOTALS				32		37	48	51			78	48	PHF 0.89

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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:\ 3027



**APPENDIX III
SCOPE OF SERVICES
WITH SITE PLAN**

TRAFFIC CONCEPTS, INC.

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

May 17, 2022

Mr. Charles “Chip” Koogle
Town Manager
Town of Centreville
101 Lawyer’s Road
Centreville, MD 21617

RE: Town of Centreville
MD 304 - Carter Farm
T/C 3027

Dear Mr. Koogle:

The Carter Farm TND project developer is proposing a plan that will create 80 single-family units, 46 townhouse/multifamily units, and various commercial uses. The commercial component of the project would include a small office building, restaurants, and a retail building. This is a revision to a plan that was introduced several years ago, which proposed 227 residential units including the existing Carter farmhouse.

As you are aware, Traffic Concepts, Inc. conducted a Traffic Impact Study dated April 2014 for an earlier version of the Carter Farm plan. The study examined the following intersections. For this new proposed project, we are proposing to study the same intersections. **Therefore, we are requesting your concurrence to study the intersections listed below that define the study area.**

- MD 213 (Church Hill Road) @ Spaniard Neck Road/Wexford Drive
- N. Liberty Street @ Broadway
- N. Liberty Street @ Water Street
- Commerce Street @ Water Street
- Commerce Street @ Broadway
- MD 304 (Chesterfield Avenue) @ Broadway
- MD 304 (Chesterfield Avenue) @ Draper Lane
- MD 304 (Chesterfield Avenue) @ Watson Road
- MD 304 (Chesterfield Avenue) @ Proposed Site Accesses

Mr. Charles Koogle

May 17, 2022

Page 3 of 3

The following information describes the proposed uses as stated on the attached site plan. The site trip information includes the weekday morning and afternoon peak hour trips that would be generate by the project. This peak hour trip information was determined with the *Institute of Transportation Engineers, Trip Generation Manual, 11th Edition*.

Land Use: Single-Family Detached Housing (LUC 210)
Independent Variable: 80 Dwelling Units

Time Period: Weekday AM

Fitted Curve Equation: $\ln(T) = 0.91 \ln(X) + 0.12$

Directional Distribution: 26% entering, 74% exiting

Calculated Trip Ends: Fitted Curve: **61 (Total)**, 16 (Entry), 45 (Exit)

Time Period: Weekday PM

Fitted Curve Equation: $\ln(T) = 0.94 \ln(X) + 0.27$

Directional Distribution: 63% entering, 37% exiting

Calculated Trip Ends: Fitted Curve: **81 (Total)**, 51 (Entry), 30 (Exit)

Land Use: Multifamily Housing (Low-Rise) (LUC 220)
Independent Variable: 46 Dwelling Units

Time Period: Weekday AM

Fitted Curve Equation: $T = 0.31(X) + 22.85$

Directional Distribution: 24% entering, 76% exiting

Calculated Trip Ends: Fitted Curve: **37 (Total)**, 9 (Entry), 28 (Exit)

Time Period: Weekday PM

Fitted Curve Equation: $T = 0.43(X) + 20.55$

Directional Distribution: 63% entering, 37% exiting

Calculated Trip Ends: Fitted Curve: **40 (Total)**, 25 (Entry), 15 (Exit)

Total Residential Trips	AM	PM
SFU's	61	81
THU's /Multifamily	<u>37</u>	<u>40</u>
Total	98	121

Mr. Charles Koogle

May 17, 2022

Page 3 of 3

Land Use: Small Office Building (LUC 712)

Independent Variable: 2,120 GFA

Time Period: Weekday AM

Average Rate: 1.67

Fitted Curve Equation: Not Given

Directional Distribution: 82% entering, 18% exiting

Calculated Trip Ends: Average Rate: **4 (Total)**, 3 (Entry), 1 (Exit)

Time Period: Weekday PM

Average Rate: 2.16

Fitted Curve Equation: Not Given

Directional Distribution: 34% entering, 66% exiting

Calculated Trip Ends: Average Rate: **5 (Total)**, 2 (Entry), 3 (Exit)

Land Use: Strip Retail Plaza (<40k) (LUC 822)

Independent Variable: 8,700 GLA

Time Period: Weekday AM

Fitted Curve Equation: $\ln(T) = 0.66 \ln(X) + 1.84$

Directional Distribution: 60% entering, 40% exiting

Calculated Trip Ends: Fitted Curve: **26 (Total)**, 15 (Entry), 11 (Exit)

Time Period: Weekday PM

Fitted Curve Equation: $\ln(T) = 0.71 \ln(X) + 2.72$

Directional Distribution: 50% entering, 50% exiting

Calculated Trip Ends: Fitted Curve: **71 (Total)**, 35 (Entry), 36 (Exit)

Land Use: High-Turnover (Sit-Down) Restaurant (LUC 932)

Independent Variable: 2,800 GFA

Time Period: Weekday AM

Average Rate: 9.57

Fitted Curve Equation: Not Given

Directional Distribution: 55% entering, 45% exiting

Calculated Trip Ends: Average Rate: **27 (Total)**, 15 (Entry), 12 (Exit)

Time Period: Weekday PM

Average Rate: 9.05

Fitted Curve Equation: Not Given

Directional Distribution: 61% entering, 39% exiting

Calculated Trip Ends: Average Rate: **25 (Total)**, 15 (Entry), 10 (Exit)

Mr. Charles Koogle

May 17, 2022

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Proposed New Site Trips

Residential Peak Hour Trips	<u>AM</u>	<u>PM</u>
SFU's	61	81
THU's /Multifamily	<u>37</u>	<u>40</u>
Sub-Total	98	121
Commercial Peak Hour Trips	<u>AM</u>	<u>PM</u>
Office	4	5
Retail	26	71
Restaurant	<u>27</u>	<u>25</u>
Sub-Total	57	101
Total New Peak Hour Trips	155	222

Previously Approved Site Trips

The Carter Farm development that was previously approved included 108 single family units, 106 townhouse/condo units (84 of the condo units are planned as age restricted units or 55+ units), and 13 apartment units. In order to create a conservative analysis, the trip generation provided in the previously approved traffic study was conducted with standard non-age restricted units trip generation rates. The trips as stated in the 2014 traffic study are provided below.

	<u>AM</u>	<u>PM</u>
ITE Land Use Code 230 119 condo/thu	59	69
ITE Land Use Code 210 108 sfu	85	113
Total New Peak Hour Trips	144	182

Source: Institute of Transportation Engineers', Trip Generation Manual, 9th Edition

Mr. Charles Koogle

May 17, 2022

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Please review the following information and if you have any questions or require additional information, please feel free to contact our office at your earliest convenience.

Sincerely,

TRAFFIC CONCEPTS, INC.

Handwritten signature of J. Mark Keeley in cursive script.

Mark Keeley, PTP

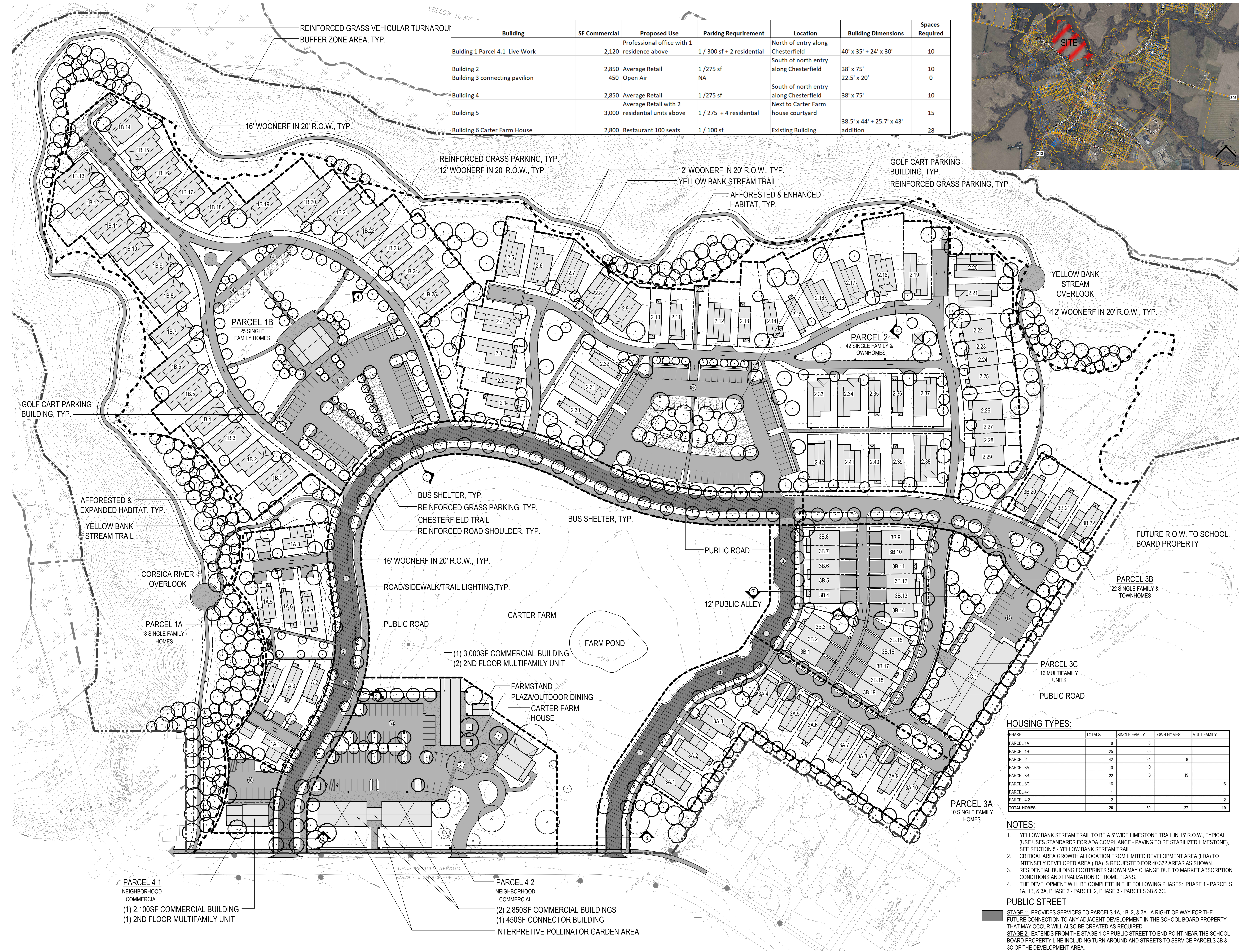
Project Manager

MKeeley@traffic-concepts.com

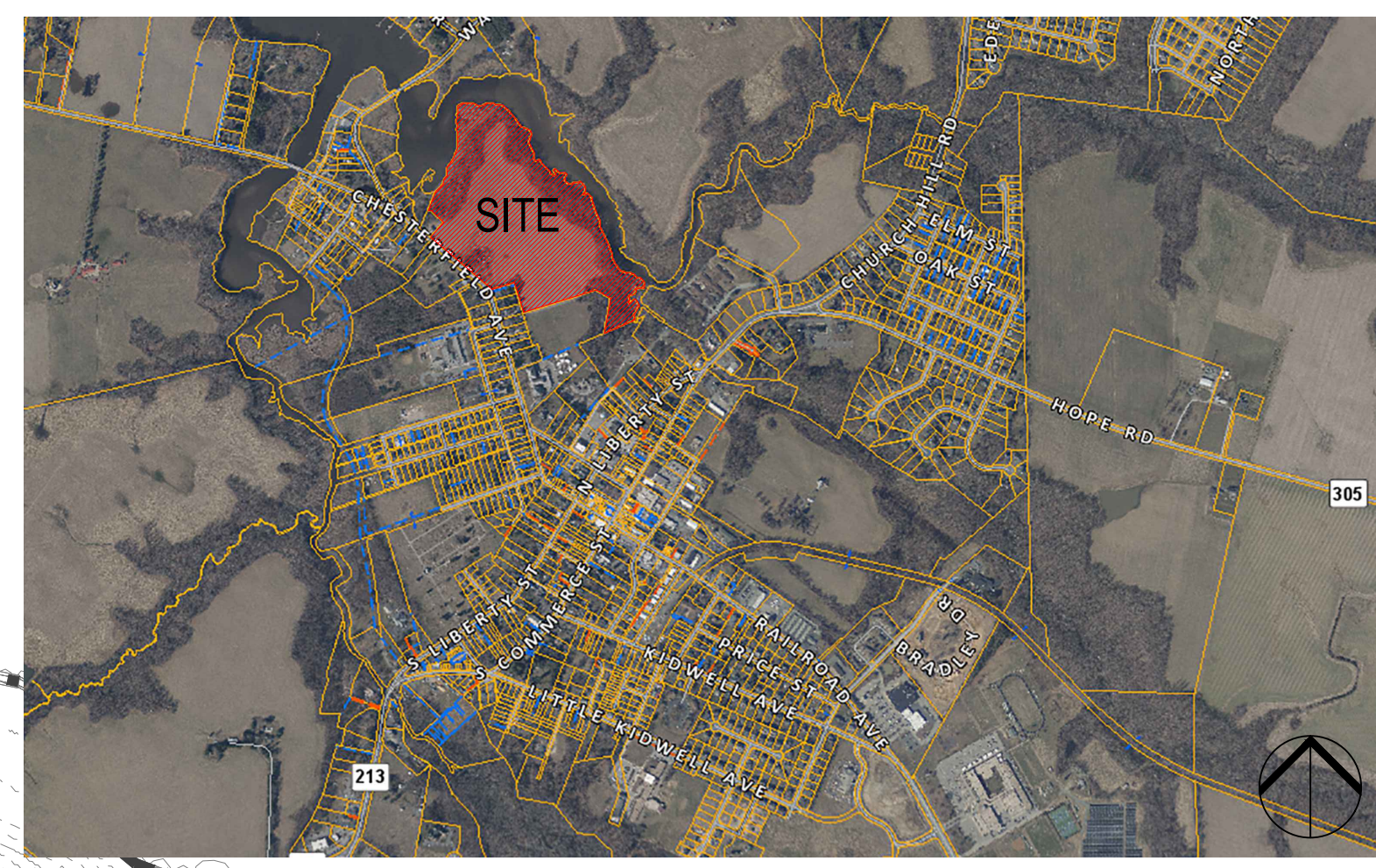
cc: Ernie Sota, LEED AP, President, Sota Construction Services Inc.
Green Development Inc.

Steve Cohoon, Public Facilities Planner, QAC Department of Public Works

Attachments: Site Plan



Building	SF Commercial	Proposed Use	Parking Requirement	Location	Building Dimensions	Spaces Required
Building 1 Parcel 4.1 Live Work	2,120	Professional office with 1 residence above	1 / 300 sf + 2 residential	North of entry along Chesterfield	40' x 35' + 24' x 30'	10
Building 2	2,850	Average Retail	1 / 275 sf	South of north entry along Chesterfield	38' x 75'	10
Building 3 connecting pavilion	450	Open Air	NA		22.5' x 20'	0
Building 4	2,850	Average Retail	1 / 275 sf	South of north entry along Chesterfield	38' x 75'	10
Building 5	3,000	Average Retail with 2 residential units above	1 / 275 + 4 residential	Next to Carter Farm house courtyard	38.5' x 44' + 25.7' x 43'	15
Building 6 Carter Farm House	2,800	Restaurant 100 seats	1 / 100 sf	Existing Building		28



LaQuatra Bonci ASSOCIATES
LANDSCAPE ARCHITECTURE

95 South Tenth Street
Pittsburgh, Pennsylvania 15203
tel 412. 488. 8822
fax 412. 488. 8825

Nature leads, art follows.

In Collaboration with:



Carter Farm at Chesterfield Avenue
Town of Centerville
Queens Anne's County, MD

Project Number: 20011:1
Drawn by: DM
Checked by: FB | DM
Date: March 28, 2022

Revisions:

PHASE	TOTALS	SINGLE FAMILY	TOWN HOMES	MULTIFAMILY
PARCEL 1A	8	8		
PARCEL 1B	25	25		
PARCEL 2	42	34	8	
PARCEL 3A	10	10		
PARCEL 3B	22	3	19	
PARCEL 3C	16			16
PARCEL 4-1	1			1
PARCEL 4-2	2			2
TOTAL HOMES	128	80	27	19

HOUSING TYPES:

PHASE	TOTALS	SINGLE FAMILY	TOWN HOMES	MULTIFAMILY
PARCEL 1A	8	8		
PARCEL 1B	25	25		
PARCEL 2	42	34	8	
PARCEL 3A	10	10		
PARCEL 3B	22	3	19	
PARCEL 3C	16			16
PARCEL 4-1	1			1
PARCEL 4-2	2			2
TOTAL HOMES	128	80	27	19

- NOTES:**
- YELLOW BANK STREAM TRAIL TO BE A 5' WIDE LIMESTONE TRAIL IN 15' R.O.W., TYPICAL (USE USFS STANDARDS FOR ADA COMPLIANCE - PAVING TO BE STABILIZED LIMESTONE), SEE SECTION 5 - YELLOW BANK STREAM TRAIL.
 - CRITICAL AREA GROWTH ALLOCATION FROM LIMITED DEVELOPMENT AREA (LDA) TO INTENSELY DEVELOPED AREA (IDA) IS REQUESTED FOR 40.372 AREAS AS SHOWN. RESIDENTIAL BUILDING FOOTPRINTS SHOWN MAY CHANGE DUE TO MARKET ABSORPTION CONDITIONS AND FINALIZATION OF HOME PLANS.
 - THE DEVELOPMENT WILL BE COMPLETE IN THE FOLLOWING PHASES: PHASE 1 - PARCELS 1A, 1B, & 3A, PHASE 2 - PARCEL 2, PHASE 3 - PARCELS 3B & 3C.

PUBLIC STREET
STAGE 1: PROVIDES SERVICES TO PARCELS 1A, 1B, 2, & 3A. A RIGHT-OF-WAY FOR THE FUTURE CONNECTION TO ANY ADJACENT DEVELOPMENT IN THE SCHOOL BOARD PROPERTY THAT MAY OCCUR WILL ALSO BE CREATED AS REQUIRED.
STAGE 2: EXTENDS FROM THE STAGE 1 OF PUBLIC STREET TO END POINT NEAR THE SCHOOL BOARD PROPERTY LINE INCLUDING TURN AROUND AND STREETS TO SERVICE PARCELS 3B & 3C OF THE DEVELOPMENT AREA.

Scale: 1" = 100'

Sheet Name: Preliminary Site Plan

Submission: PUD Application

Sheet Number: L200

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