GOLDEN BEACH PROPERTIES COMMERCIAL DEVELOPMENT
29890, 29900 & 29940 THREE NOTCH ROAD
LUGM #CSP-22-0234
TRAFFIC STUDY SUPPLEMENT
July 18, 2024

This memo will address the correlations between a proposed revision to the above referenced Site Plan to replace the proposed 2,675 gross square feet of retail space with a Starbucks and the previously approved Traffic Study.

Background:

A Traffic Impact Study titled "Traffic Impact Study, Charlotte Hall Center, Chick-fil-A, ALDI & Retail, 29920 & 29890 Three Notch Road" (the "Traffic Study" or the "Study") was prepared in July 2022 for the Charlotte Hall Center Project (the "Project"). The Study is attached to this Supplement as Attachment B. The Study addressed the impact of a proposed Chick-fil-A, a proposed ALDI store, and 14,000 gross square feet of general retail. The Study was reviewed and approved by the County and State Highway Administration. The 14,000 gross square feet of general retail was later revised to include 2,675 gross square feet of retail space plus a 2,437 gross square foot restaurant pad.

In order to mitigate the impact of the Project on the area road network, the Developer proffered major improvements at the intersection of MD 5/Traveled Lane (including widening and a new traffic signal), the intersection of MD 5/Golden Beach Road (including lane use changes), and the intersection of MD 5/MD 863A (including a new deceleration lane). The Planning Commission and the Developer both acknowledge these improvements over-mitigate the impact of the Project. For ease of reference, please find attached the Road Improvement Memo submitted as part of the Planning Commission approval process, which sets forth the extent of over-mitigation. (Attachment A)

The Planning Commission approved the Project including the Traffic Study and proposed offsite improvements on March 8, 2023. The infrastructure improvements are now approved and bonded through a State Highway Administration Access Permit.

Starbucks was originally approved at 30315 Three Notch Road. A Traffic Impact Study was prepared and approved for the Starbucks at the 30315 Three Notch Road location. As part of the Starbucks approval, infrastructure improvements were approved and bonded.

Starbucks wishes to relocate from the 30315 Three Notch Road location to the general retail pad site at Charlotte Hall Center.

Analysis

A comparison of the Vehicle Trip Generation Rates for Starbucks versus 14,000 sf of general retail indicates that the PM peak hour and average daily trips will be fewer for the Starbucks (78 fewer and 625 fewer, respectively).

The failures noted and over-mitigated for the overall Project were done to address the PM peak period failures. Starbucks will have less impact on the PM peak hour, with fewer trips than the previously planned retail.

A comparison of the Vehicle Trip Generation Rates for Starbucks versus 14,000 sf of general retail indicates that the Starbucks will increase the AM peak hour trips by 147. However and as indicated in the approved Traffic Study for the Project, the AM peak hour levels of service at all studied intersections are acceptable "B" and "C".

An updated Traffic Study will serve no purpose as Starbucks will reduce impacts to PM peak hour and AM peak hour operates at acceptable levels. Further and as outlined in the attachment A, the proffered mitigation which has been approved and bonded, significantly over mitigates the Developer's impact.

Prepared By:

TRAFFIC CONCEPTS, INC.

By: Jackie L. Chandler

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ATTACHMENT A

GOLDEN BEACH PROPERTIES COMMERCIAL DEVELOPMENT
29890, 29900 & 29940 THREE NOTCH ROAD
LUGM #CSP-22-0234
ROAD IMPROVEMENT MEMO

This memo will address the Adequate Public Facilities (APF) improvements as well as additional offered improvements for the subject property.

Adequate Public Facilities Improvements

In order to address the County's Adequate Public Facilities requirements, the developer is required to mitigate the impact of the development on any inadequate intersections noted in the traffic impact study. It is important to note that the developer is not required to improve any deficiency to an acceptable level of service, but is required to mitigate the impact of the development only. With respect to mitigation, there must be a "rational nexus" between the impacts caused by the development and the nature of mitigation required. There must also be "rough proportionality" between the extent of the impact and the extent of the mitigation. As in this case and as demonstrated below, the Developer, has proposed to "over mitigate" the impacts of the proposed development.

The chart below shows the inadequate intersections, the impact of the subject site on those intersections, as well as the improvements offered and the percentage of over-mitigation.

INTERSECTION	LOS/DELAY PRIOR TO DEV	LOS/DELAY AFTER DEV	IMPACT OF DEV	IMPROVEMENT PROPOSED	POST LOS/DELAY	PERCENTAGE OF OVER-MITIGATION
MD 5 @ Golden Beach Road **PM Peak Hour**	D/40.0	D/41.7	1.7 seconds per vehicle	Restripe eastbound Golden Beach Rd to provide dedicated right turn lane	D/36.4	**312%** (does not include the additional mitigation provided by the elimination of U-turns at this intersection with the signal proposed at MD 5/Traveled Lane)
MD 5 @ Traveled Lane **PM Peak Hour**	NB Left E/44.2	NB Left F/62.9	18.7 seconds per vehicle	Provide 3 outbound lanes/2 inbound lanes on Traveled Lane; construct cul-de-sac for loop road; install traffic signal	B/18.6 (overall signalized int. delay)	**F to B = 400%** Signalization allows all movements to occur at the intersection and still maintain an overall B level of service
MD 5 SB @ MD 6 **PM Peak Hour**	C level of service in TIS (SHA made changes to degrade to D)	C level of service in TIS (SHA made changes to degrade to D)	No change in level of service	Developer is working with SHA to provide an acceptable improvement	Impact of dev will be mitigated at a minimum	To be determined

LOS – Level of Service

Delay is reported in seconds per vehicle

Additional Improvements

In addition to the improvements noted above, the developer is offering improvements to enhance the operating conditions of the area road network. These improvements include the following:

1. Provide a deceleration lane along MD 5 northbound at the existing MD 863A (loop road) intersection. This lane will be constructed at the developer's expense provided right-of-way is available and an Access Permit can be obtained from the Maryland State Highway Administration.

2. Construct a private roundabout internal to the site at the intersection of Traveled Lane and Henry Lane. This roundabout will be constructed at the developer's expense and on private property. The roundabout will be maintained by the developer.

ATTACHMENT B

TRAFFIC IMPACT STUDY

CHARLOTTE HALL CENTER

(CHICK-FIL-A, ALDI & RETAIL)
29920 & 29890 THREE NOTCH ROAD
ST. MARY'S COUNTY, MARYLAND
JULY, 2022

PREPARED FOR:
ARLS PROPERTIES, LLC.

PREPARED BY:
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TC #3741

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Purpose

The purpose of this study is to determine the vehicular impact of the proposed Charlotte Hall Center (Chick-fil-A, ALDI and two retail buildings) will have on the surrounding roadway network under future traffic conditions, which are defined in this report. Specifically, the report will examine key intersections contained in the study area for capacity constraints that are identified as the peak hour weekday morning and evening intersection level of service.

Methodology

This report examines in detail the level of service at each key intersection under existing, background and future traffic conditions. Existing turning movement counts determine the base traffic conditions. Background traffic volumes are established with the consideration of impacts generated by approved but not yet constructed development projects as well as regional growth rates. Future traffic volumes determine the vehicle impact the Charlotte Hall Center project will have on the key intersections. The report is conducted in accordance with the St. Mary's County Adequate Public Facilities Law and with the Maryland State Highway Administration guidelines. The study intersections that are not signalized are analyzed using the Critical Lane Analysis methodology. In addition, these unsignalized intersections are analyzed using the Highway Capacity Manual methodology in order to determine the need for auxiliary lanes or the possibility for future signalization. The study intersections that are signalized are part of a coordinated signal system, and therefore, have been analyzed using the Synchro (traffic simulation program) methodology. In addition, a queuing analysis is conducted at all dedicated turn bays to determine if adequate length exists for future projected traffic volumes.

Summary of Conclusions

Based on St. Mary's County Comprehensive Zoning Ordinance all intersections located within a Town Center must be shown to operate at level of service "C" or better. The results of the study indicate the following issues must be addressed:

- MD 5 @ Golden Beach Road is projected to operate at a "D" level of service (41.7 seconds per vehicle of delay) during the evening peak period.

Recommended Mitigation Improvements

In order to satisfy St. Mary's County Comprehensive Zoning Ordinance requirements, the developer proposes the following improvements:

- MD 5 @ Golden Beach Road – remark the eastbound approach to provide one shared through/left turn lane and one dedicated right turn lane.
- MD 5 @ Traveled Lane – provide three outbound lanes (L/L/R) and two inbound lanes on Traveled Lane; construct an additional southbound left turn lane on MD 5; construct a cul-de-sac to end the "loop road" (MD 863A) prior to its connection with Traveled Lane; construct a new traffic signal at the intersection.

INTRODUCTION

INTRODUCTION

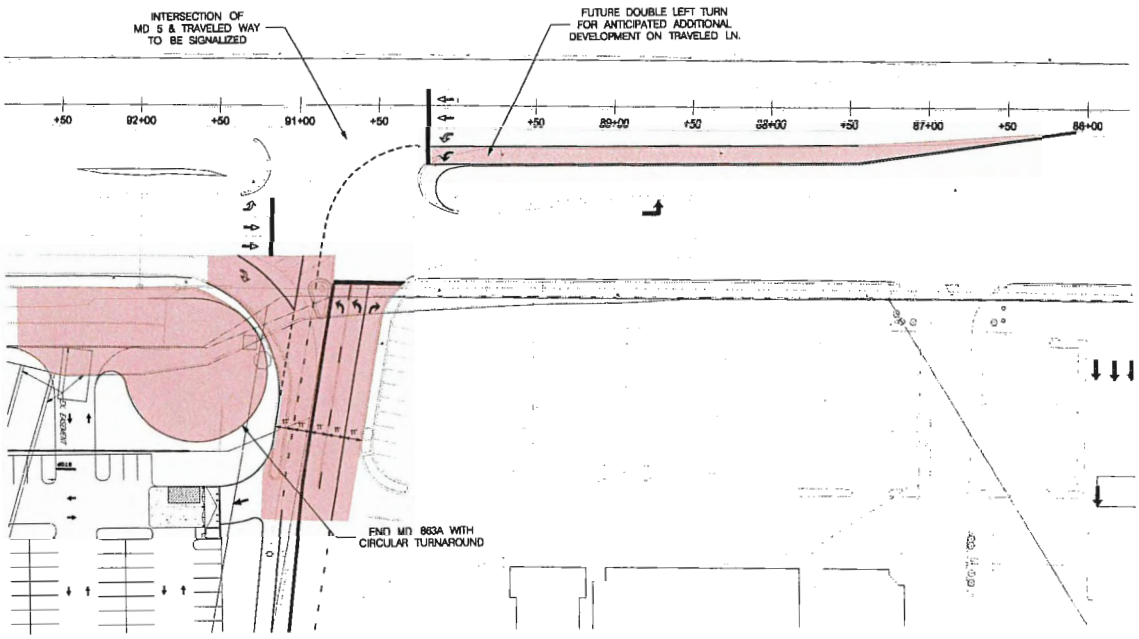
This traffic impact study was conducted for the proposed Charlotte Hall Center (Chick-fil-A, ALDI and two retail buildings).

Project Description

The proposed development will create a 4,997 gross square foot Chick-fil-A, a 19,432 gross square foot ALDI grocery store and two (2) retail buildings totaling 14,000 gross square feet. The project is located along the southeast quadrant of the intersection of MD 5 and Traveled Lane. The site will utilize the existing intersection of MD 5 @ Traveled Lane; however, this intersection will be modified to accommodate the future traffic volumes associated with the project.

The proposed intersection modifications include the following, and are shown graphically below:

- Allow all movements, and provide traffic signalization
- Construct an additional southbound MD 5 left turn lane (same length as the existing left turn lane) to provide double-left turn bays of approximately 255' in length
- Reconstruct Traveled Lane to provide three outbound lanes and two inbound lanes
- The Traveled Lane outbound lanes will be marked as two left turns and one exclusive right turn lane
- The right turns from Traveled Lane will be controlled by the traffic signal
- The existing "loop road" (MD 863A) will be modified to terminate in a cul-de-sac, with connection to Traveled Lane eliminated.



Scope of Services

The study was developed in accordance with the St. Mary's County Adequate Public Facilities Law. It has been determined that the following intersections will need to be analyzed during the weekday AM and PM peak periods (a copy of the scoping agreement emails with the Department of Public Works & Transportation are included in Appendix IV). Also, a traffic signal warrant analysis will be performed at the intersection of MD 5 (Three Notch Road) @ Traveled Lane as requested.

Key Intersections

MD 5 (Three Notch Road) @ Golden Beach Road (Signalized)
MD 5 (Three Notch Road) @ Traveled Lane (Unsignalized)
MD 5 NB (Three Notch Road) @ MD 6 (New Market Turner Road) (Signalized)
MD 5 SB (Three Notch Road) @ MD 6 (New Market Road) (Signalized)

The key intersections and the location of the site are shown on Exhibit 1 and the lane use configurations are provided on Exhibit 2.

Study Methodology

The Synchro methodology was used to determine existing levels of service at the signalized intersections. Critical Lane Analyses and Highway Capacity Manual analyses are included for the unsignalized intersections. The new and pass-by site generated peak hour trips were determined with data provided by the State Highway Administration, St. Mary's County and the *Institute of Transportation Engineers, Trip Generation Manual, 11th Edition.*

Since the MD 5 corridor operates under a coordinated signal system, the Synchro program will be used to analyze the key signalized intersection included in the system. The Synchro analysis uses the Transportation Research Board's Highway Capacity Manual analysis methodology for capacity calculations, and is utilized by the State Highway Administration to establish signal timing, splits and offsets along corridors with coordinated signal systems (such as MD 5). Factors include a wide range of parameters such as signal cycle lengths and phasing split timing, signal coordination offsets, lane use, etc. Results include the level of service designation for the overall intersection and individual movements based on average delay estimates.

Base traffic signal and intersection design parameters were supplied by the Maryland State Highway Administration. The existing signal timing, phasing and offsets as provided by the State Highway Administration have been utilized under existing, background and future traffic conditions in this report. Traffic signal timing and phasing is assumed for the proposed traffic signal at MD 5 @ Traveled Lane under future traffic conditions.

Study Format

The study is structured to include analyses of the key intersections under existing, background and future traffic conditions.

The existing traffic condition is determined using existing peak hour intersection turning movement counts and creates the baseline intersection levels of service.

The background traffic condition analysis of the key intersections includes peak hour trips generated by a regional growth rate that is calculated through the project's design year (2024) and trips generated by the nearby background developments. The total background trips are added to the existing traffic volumes to create the total background traffic volumes.

The future traffic condition determines the site generated peak hour trips. The total background traffic volumes are added to the new and pass-by site trips to create the total future traffic volumes. The total future traffic condition is described with the following formula:

Total Future Traffic = (Existing Traffic + Growth in Existing Traffic + Approved Development Traffic + Site Generated Traffic)

In addition, a queuing analysis will be conducted for all dedicated turn lanes at the key intersections using total background and future traffic volumes.

Finally, a traffic signal warrant analysis will be performed at the intersection of MD 5 at Traveled Lane.

Key Intersections:

1. MD 5 @ Golden Beach Road
2. MD 5 @ Traveled Lane
3. MD 5 NB @ MD 6
4. MD 5 SB @ MD 6

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EXHIBIT 1

Site Location

EXISTING CONDITION

EXISTING CONDITION

The existing condition analysis establishes the baseline intersection levels of service.

Although the State Highway Administration has indicated that 2021 traffic volumes are back (99%) to pre-COVID-19 restrictions, we have increased the traffic volumes at the study intersections in order to provide a conservative analysis. In order to adjust the traffic count to pre-COVID volumes, we have reviewed State Highway Administration data located along MD 5 (Three Notch Road) between MD 6 to the Charles County Line for prior years. This counter station indicates that traffic volumes throughout the 2021 year were 1.6% lower compared to 2019 (pre-COVID). Therefore, the traffic volumes at the study intersections have been increased by 1.6% during the AM and PM peak periods in order to provide a conservative analysis. Details of the traffic counts and information utilized to determine the COVID-19 factors can be found in Appendix III of this study. The existing base-line peak hour volumes are displayed on Exhibit 3.

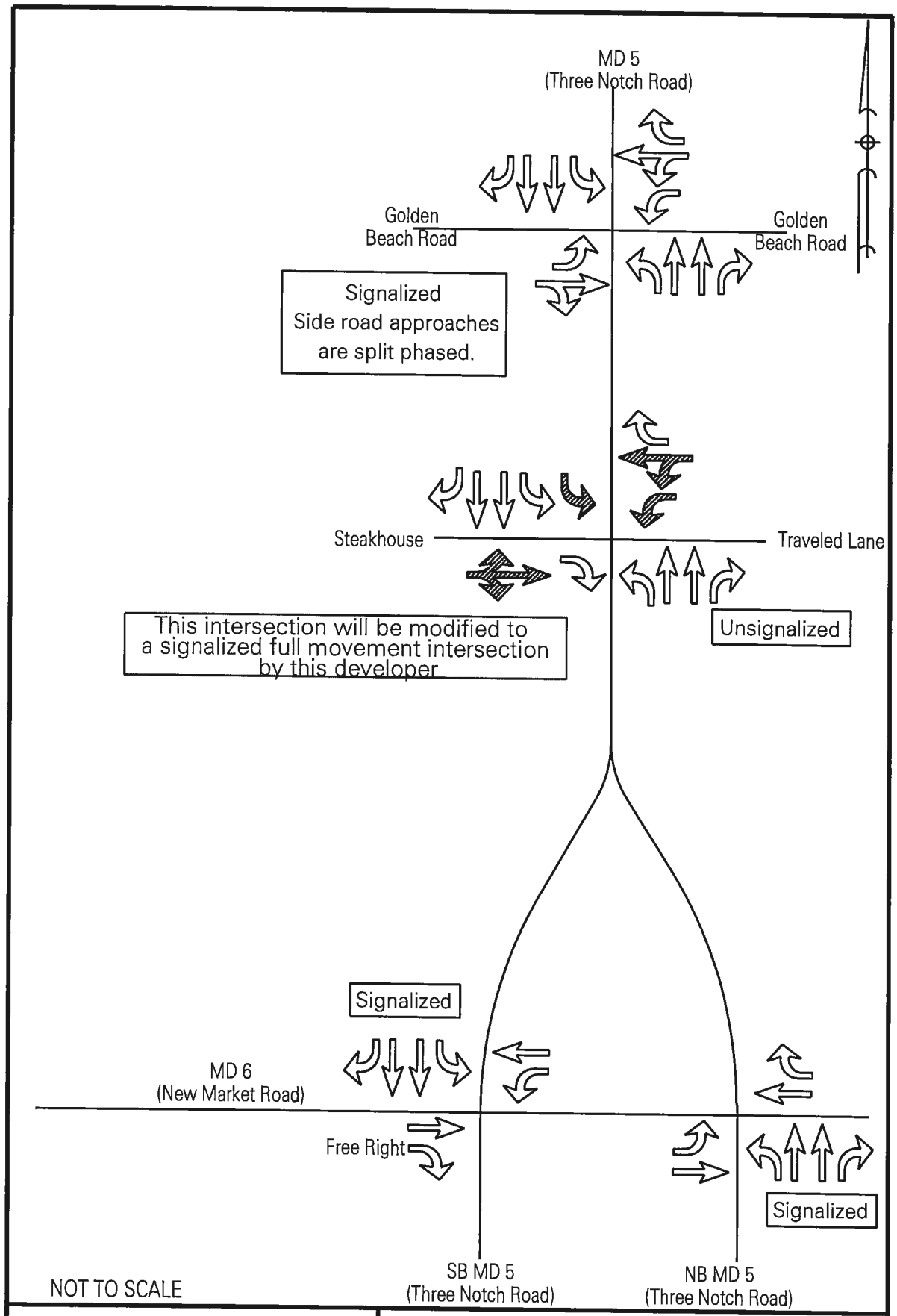

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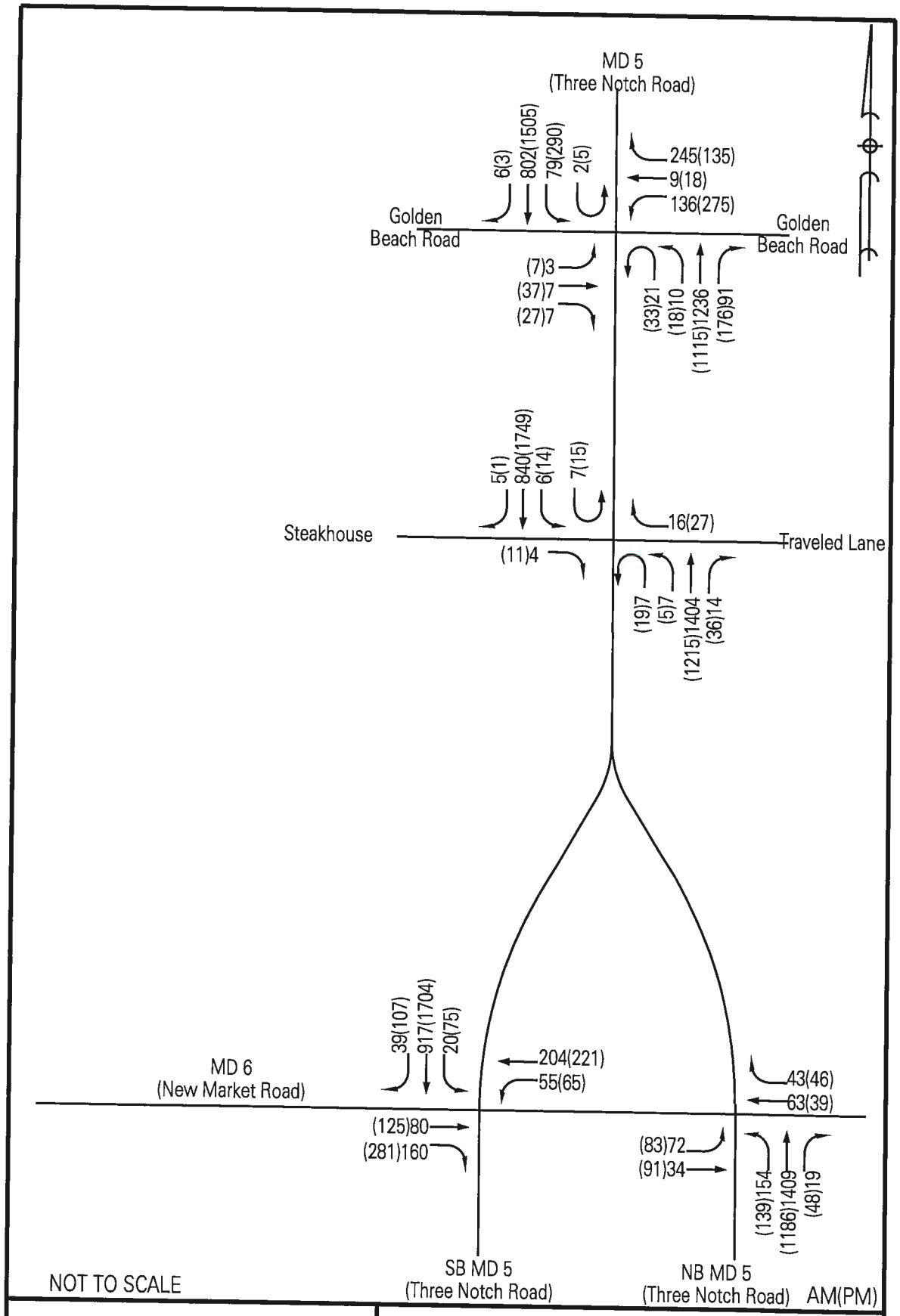
EXHIBIT 2

Lane Configurations



TRAFFIC CONCEPTS, INC. 7525 Connelley Drive Suite B Hanover, Maryland 21076 410-760-2911	EXHIBIT 3 Existing Traffic Volumes

BACKGROUND CONDITION

BACKGROUND CONDITION

The background condition analysis evaluates the key intersections with vehicle trips generated by a regional growth rate and the nearby background developments.

We have reviewed data provided by the Maryland State Highway Administration, Data Services Division to determine growth rates for the study area. This data can be found in Appendix III of this report, and indicates a growth of approximately 0.37% per year from 2015 to 2018 (years that actual counts were conducted). Therefore, in order to create a worse-case scenario, we will utilize a 0.5% growth rate for all high-volume movements. Since the buildout of this site is estimated to take two (2) years, the growth rate was projected for that length of time. These figures are shown on Exhibit 4.

We have also contacted the St. Mary's County Department of Land Use and Growth Management to determine if there are any developments in the study area that are approved but not yet built. They provided a list of seven (7) such developments (see email included in the appendices section of this report). The locations of these developments are shown on Exhibit 5. Using rates included in the St. Mary's County Comprehensive Zoning Ordinance and the Institute of Transportation Engineers' (ITE), Trip Generation Manual, trip generation was determined for each development. These are listed on the following pages.

Exhibit 6 shows the combined impact of the developments. Details of each individual development can be found in the appendices section of this report. The total background trips shown on Exhibit 7 include the existing traffic volumes, projected growth rates and the background development impacts.

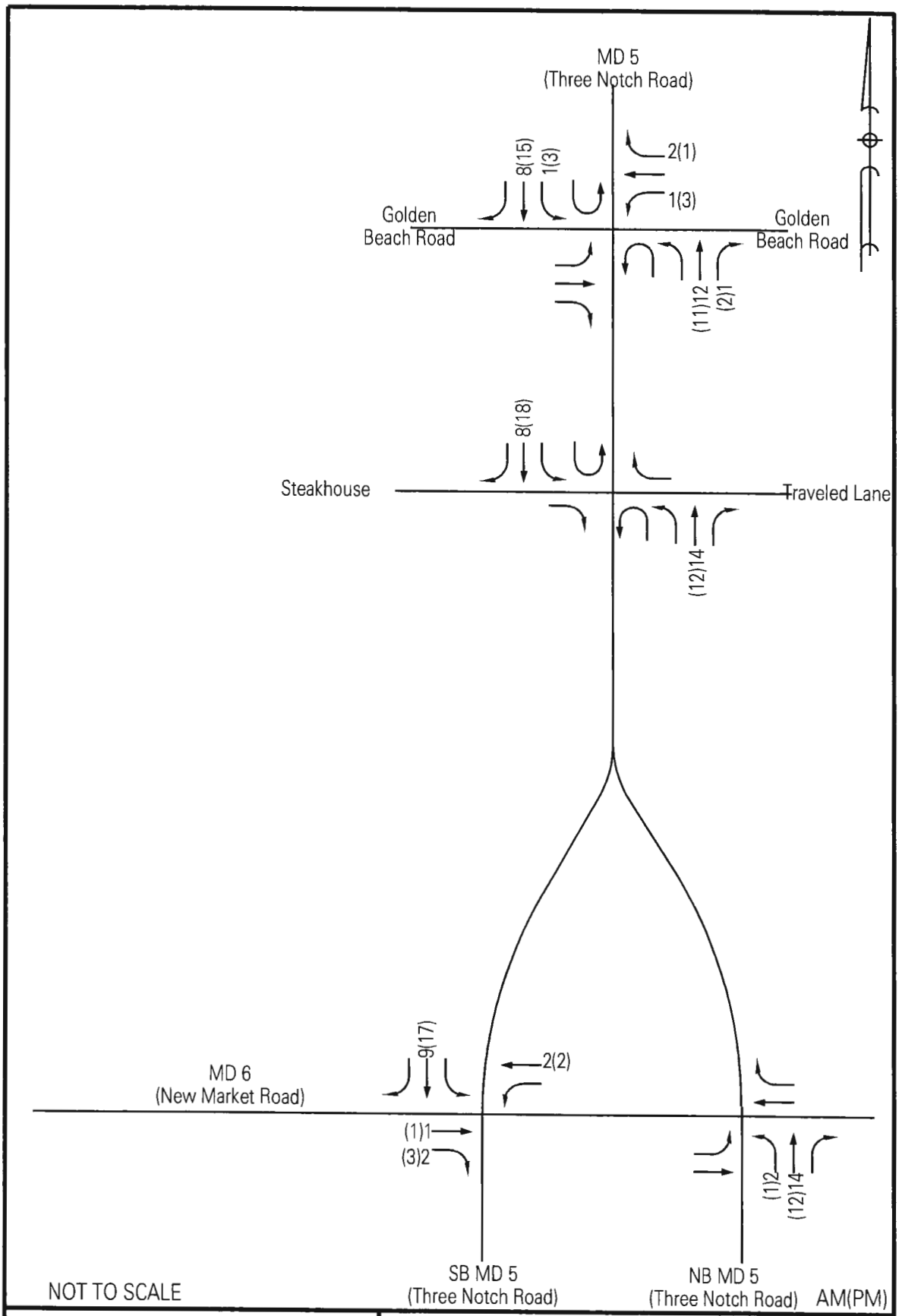


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EXHIBIT 4

Projected Growth Rates
(0.5% for Two Years)

BACKGROUND DEVELOPMENTS

	AM		PM	
	IN	OUT	IN	OUT
1. Charlotte Hall Station				
ITE Land Use Code 820				
Per ksf	0.91	0.58	2.87	3.11
114,008 gsf	103	66	328	355
less passby	- 0	- 0	- 123	- 133
Net New Trips	103	66	205	222
ITE Land Use Code 944				
Per pump	6.04	6.04	6.93	6.93
12 pumps	72	72	83	83
less passby	- 42	- 42	- 35	- 35
Net New Trips	30	30	48	48
TOTAL NEW TRIPS	**133**	**96**	**253**	**270**
TOTAL PASSBY TRIPS	**42**	**42**	**158**	**168**

2. VA Clinic
   ITE Land Use Code 720
   24,000 gsf — **BUILT OUT**

3. Charlotte Hall Commercial Center
   Subdivision stage only — uses have not been determined

4. Charlotte Hall Tractor Supply
   ITE Land Use Code 810
   Tractor Supply Store
   21,120 gsf — **BUILT OUT**

BACKGROUND DEVELOPMENTS

	AM IN	AM OUT	PM IN	PM OUT
5. 30315 Three Notch Road				
ITE Land Use Code 960				
Super Convenience Market/Gas Station				
5,380 gsf	224	223	186	187
Less passby (76% per ITE)	- 170	- 169	- 141	- 142
New Trips	54	54	45	45
No User Identified – Assumed:				
Coffee Shop with Drive-Thru				
ITE Land Use Code 937				
2,250 gsf	102	98	49	49
Less Passby Trips*	- 50	- 48	- 24	- 24
New Trips	52	50	25	25
NEW TRIPS	106	104	70	70
Less existing traffic **	- 7	- 2	- 10	- 27
TOTAL NEW TRIPS	**99**	**102**	**60**	**43**
TOTAL PASSBY TRIPS	**220**	**217**	**165**	**166**
6. Charlotte Hall Commons				
Lot 3				
Construction Business	minimal traffic (no impact)			
Lot 4				
ITE Land Use Code 140				
32,583 gsf	**17**	**5**	**7**	**17**

*The ITE Trip Generation Manual does not contain data for passby trips associated with a Coffee Shop with Drive-Thru. The Manual does contain data for Coffee Shop with Drive-Thru & No Indoor Seating that indicates a passby rate of 89%. In order to be conservative, we have not utilized the 89% rate, but have utilized the ITE passby rates for a fast-food restaurant with drive-thru service (49%AM/ 50%PM).

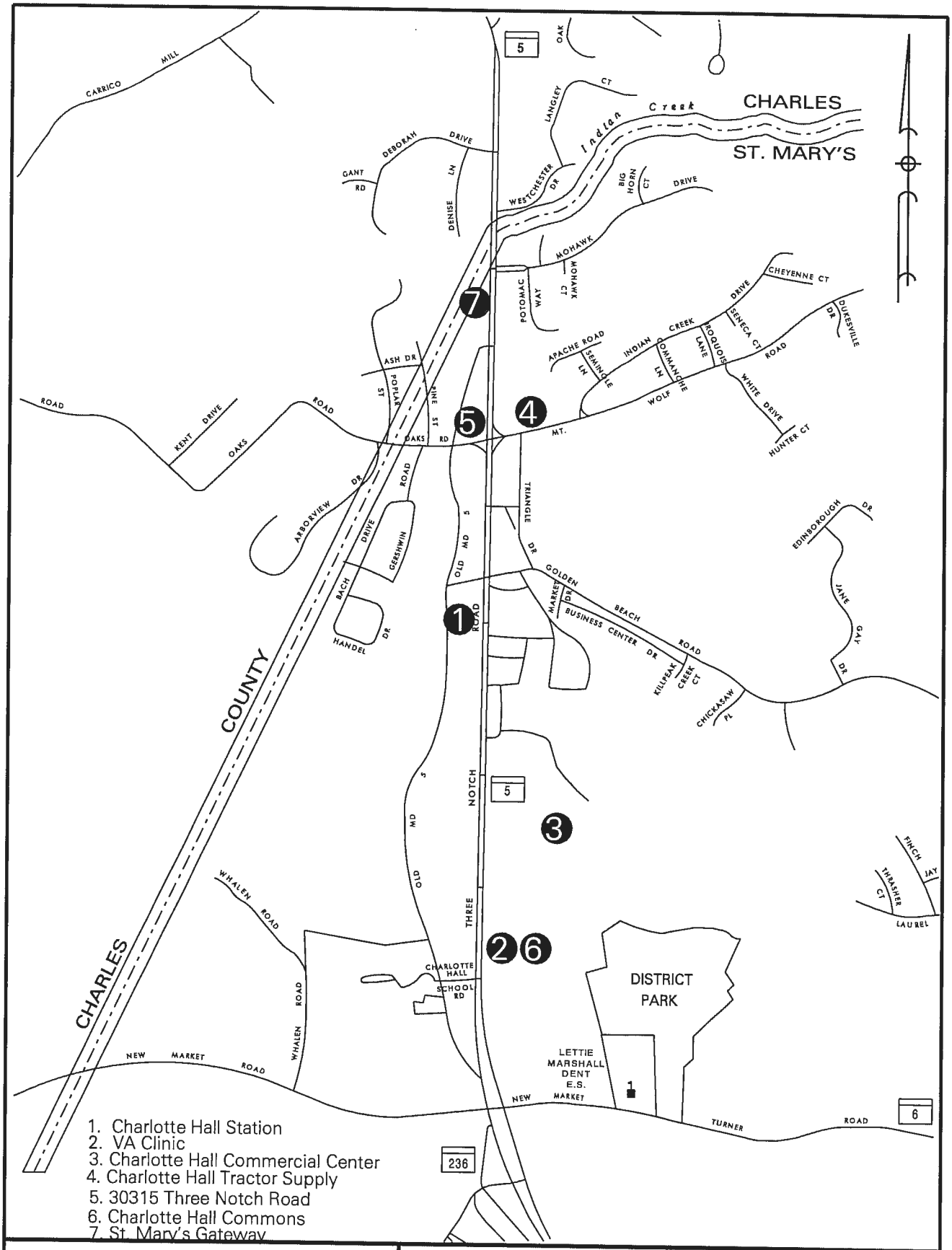
** Traffic counts were conducted at the existing nursery on December 3, 2020 to determine existing in and out volumes. These volumes are generated from the existing use that will be eliminated with the new proposed development. A copy of the existing traffic count can be found in the appendix section of this report.

BACKGROUND DEVELOPMENTS

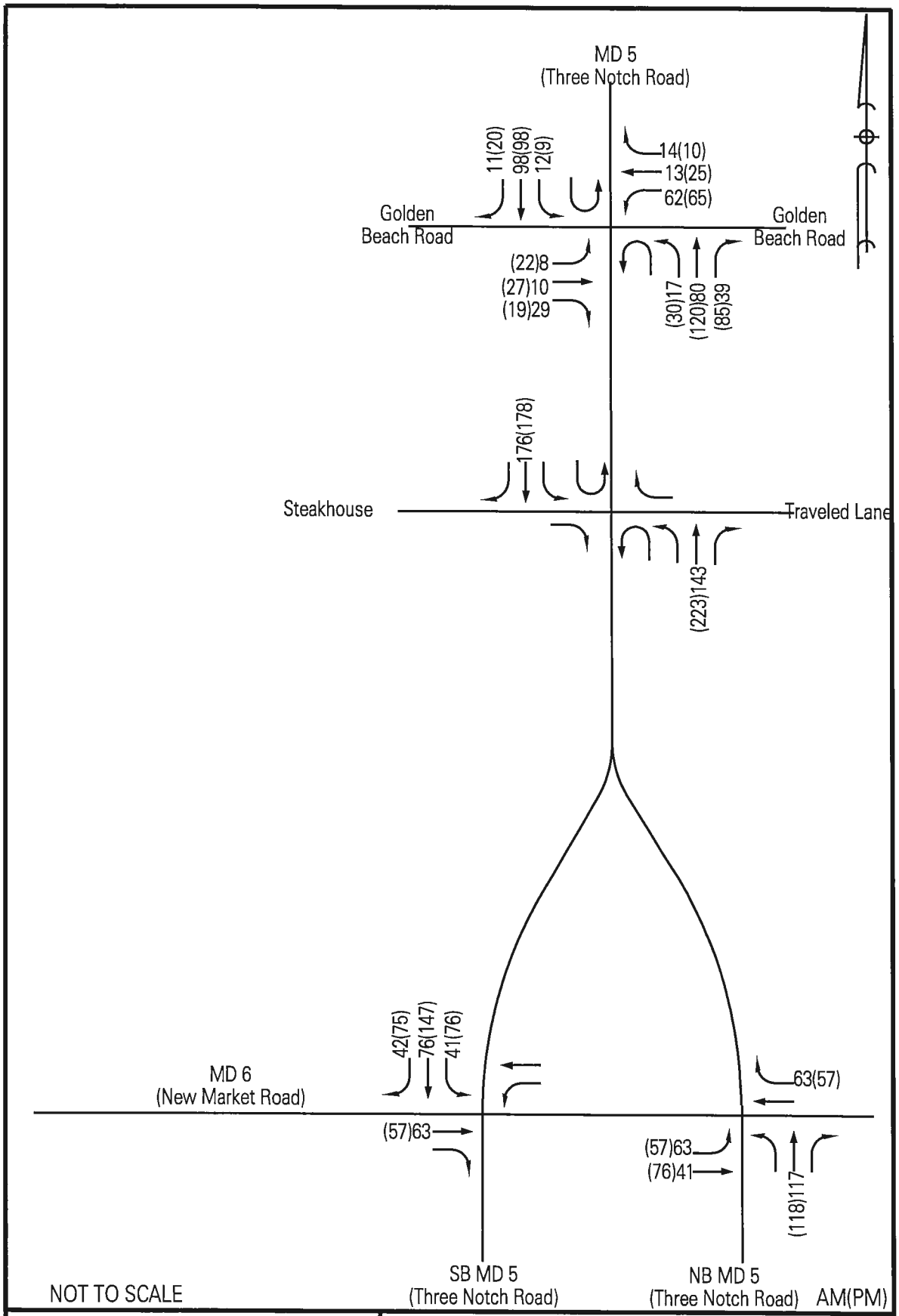
	AM		PM		
	IN	OUT	IN	OUT	ADT
6. Charlotte Hall Commons					
Lot 6					
ITE Land Use Code 945					
Convenience Store/Gas Station					
6,077 gsf	277	277	239	240	7790
Less passby					
(76% AM, 75% PM)	- 211	- 211	- 179	- 180	- 5842
New Trips	**66**	**66**	**60**	**60**	**1948**
ITE Land Use Code 720					
Medical Office					
Lot 2 - 10,000 gsf					
Lot 5 - 25,000 gsf					
Lot 10 - 30,000 gsf					
TOTAL 65,000 GSF					
MEDICAL TRIPS	129	35	78	183	
Lot 7					
ITE Land Use Code 932					
High-Turnover Sit-Down Restaurant					
5,000 gsf	26	22	27	18	
Less passby					
(0% AM, 43% PM)	- 0	- 0	- 12	- 8	
New Trips	**26**	**22**	**15**	**10**	
Lot 8					
ITE Land Use Code 937					
Coffee/Donut Shop w Drive-Thru					
2,000 gsf	88	84	39	39	
Less passby					
(90% AM, 98% PM)	- 79	- 76	- 38	- 38	
New Trips	9	8	1	1	

BACKGROUND DEVELOPMENTS

	AM		PM		
	IN	OUT	IN	OUT	
6. Charlotte Hall Commons					
Lot 9					
ITE Land Use Code 934					
Fast-Food Restaurant w/ Drive-Thru					
3,000 gsf	68	66	51	48	
Less passby					
(50% AM, 55% PM)	- 34	- 33	- 28	- 26	
New Trips	34	33	23	22	
TOTAL NEW TRIPS	**198**	**98**	**117**	**216**	
TOTAL PASSBY TRIPS	**113**	**109**	**78**	**72**	
TOTAL LOTS 2,5,8 & 9 NEW TRIPS	**172**	**76**	**102**	**206**	
TOTAL LOTS 2,5,8 & 9 PASSBY TRIPS	**113**	**109**	**66**	**64**	
7. St. Mary's Gateway					
ITE Land Use Code 812					
41,200 gsf	**41**	**25**	**43**	**50**	**702**



TRAFFIC CONCEPTS, INC. 7525 Connelley Drive Suite B Hanover, Maryland 21076 410-760-2911	EXHIBIT 5 Background Development Locations



TRAFFIC CONCEPTS, INC. 7525 Connelley Drive Suite B Hanover, Maryland 21076 410-760-2911	EXHIBIT 6 Background Traffic Volumes

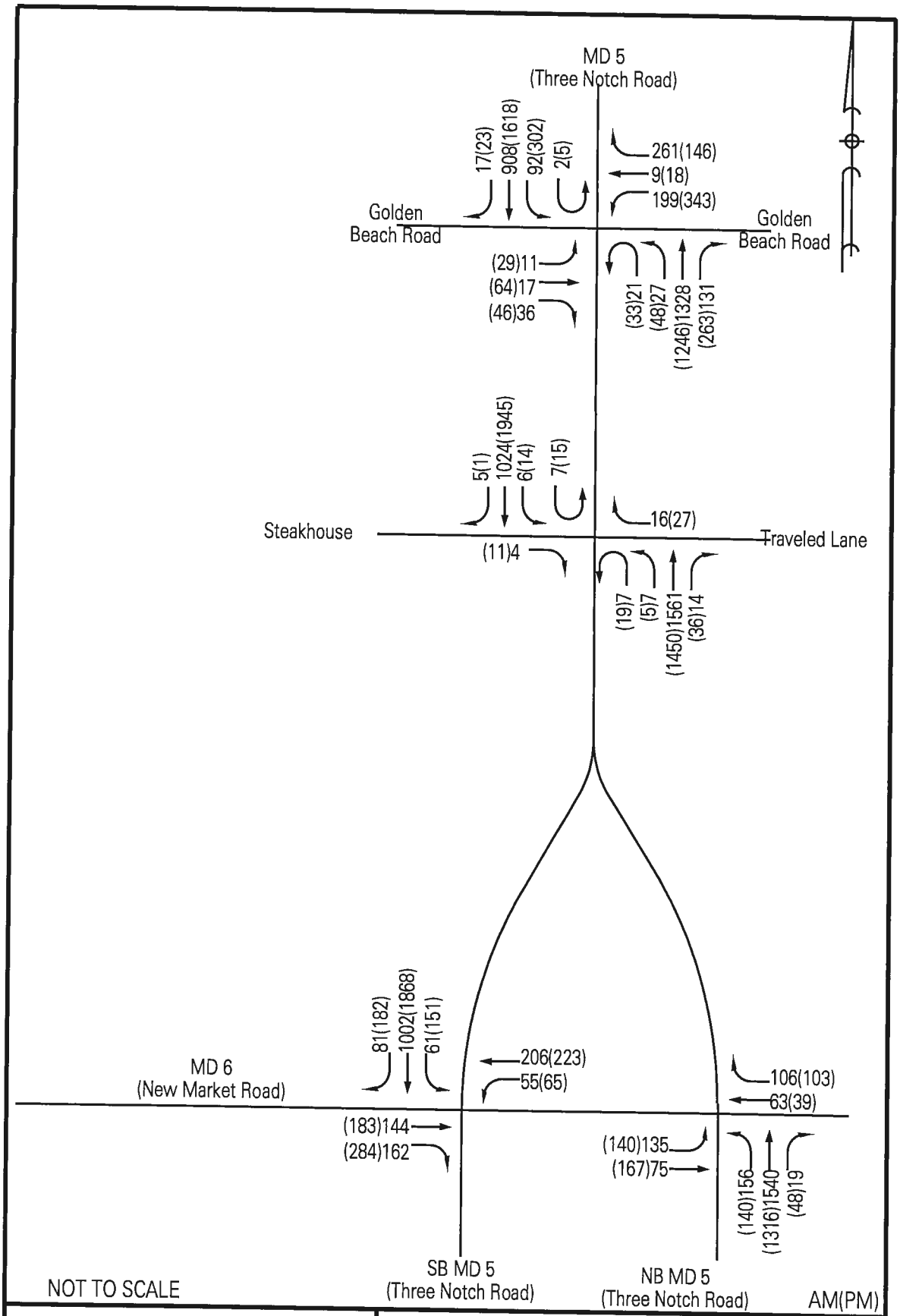


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EXHIBIT 7
Total Background Traffic Volumes

FUTURE CONDITION

FUTURE CONDITION

As discussed previously, the proposed development will utilize the existing intersection of MD 5 @ Traveled Lane, however, this intersection will be modified to accommodate the future traffic volumes associated with the project.

The proposed intersection modifications include the following:

- Allow all movements, and provide traffic signalization
- Construct an additional southbound MD 5 left turn lane (same length as the existing left turn lane) to provide double-left turn bays of approximately 255' in length
- Reconstruct Traveled Lane to provide three outbound lanes and two inbound lanes
- The Traveled Lane outbound lanes will be marked as two left turns and one exclusive right turn lane
- The right turns from Traveled Lane will be controlled by the traffic signal
- The existing "loop road" (MD 863A) will be modified to terminate in a cul-de-sac, with connection to Traveled Lane eliminated.

By modifying the intersection to provide all movements, a diversion of existing traffic will occur. The diverted traffic is shown on Exhibit 8.

The future traffic condition determines the peak hour trips generated by the proposed project. Using rates provided by the State Highway Administration (special rates for Chick-fil-A), St. Mary's County and the Institute of Transportation Engineers' (ITE), Trip Generation Manual, 11th Edition generated trips were determined for this development. The results are as follows:

Trip Generation

The new and pass-by site generated peak hour trips are shown below. The new trips are shown on Exhibit 9 and pass-by trips are shown on Exhibit 10.

ITE Trip Generation

	AM		PM		
	IN	OUT	IN	OUT	ADT
Chick-fil-A fast-food restaurant					
Rates provided by MDOT-SHA					
4,997 gsf	99	95	150	185	3350
Less pass-by (50% AM, 55% PM)	- 49	- 47	- 82	- 102	N/A
New Trips	50	48	83	83	3350
Aldi					
Supermarket					
ITE Land Use Code 850					
19,432 gsf	33	23	102	103	2160
Less pass-by (0% AM, 24% PM)	- 0	- 0	- 24	- 25	N/A
New Trips	33	23	78	78	2160
General Retail (St. Mary's					
County rates)					
Per ksf	2.00	1.18	5.89	5.90	129.62
14,000 gsf	28	17	82	83	1815
TOTAL NEW TRIPS	**111**	**88**	**243**	**244**	**7325**
TOTAL PASS-BY TRIPS	**49**	**47**	**106**	**127**	**N/A**

Pass-by percentages are taken from the ITE, Trip Generation Manual.

The trip distribution and assignment patterns and the ITE data for the new and pass-by site generated trips can be found on the following pages.

The total future traffic volumes shown on Exhibit 11 include the total background traffic volumes and the new and pass-by site trips.

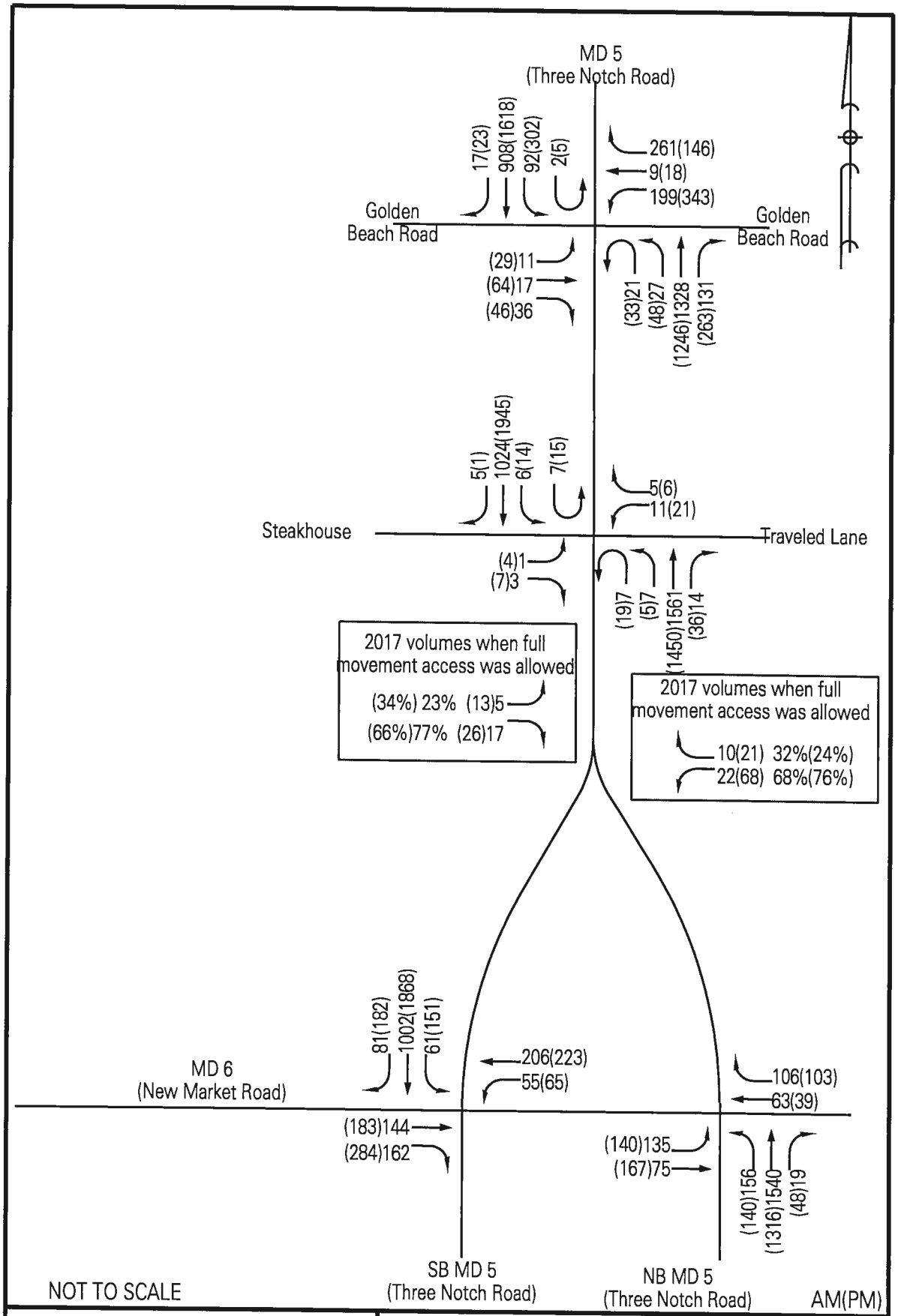

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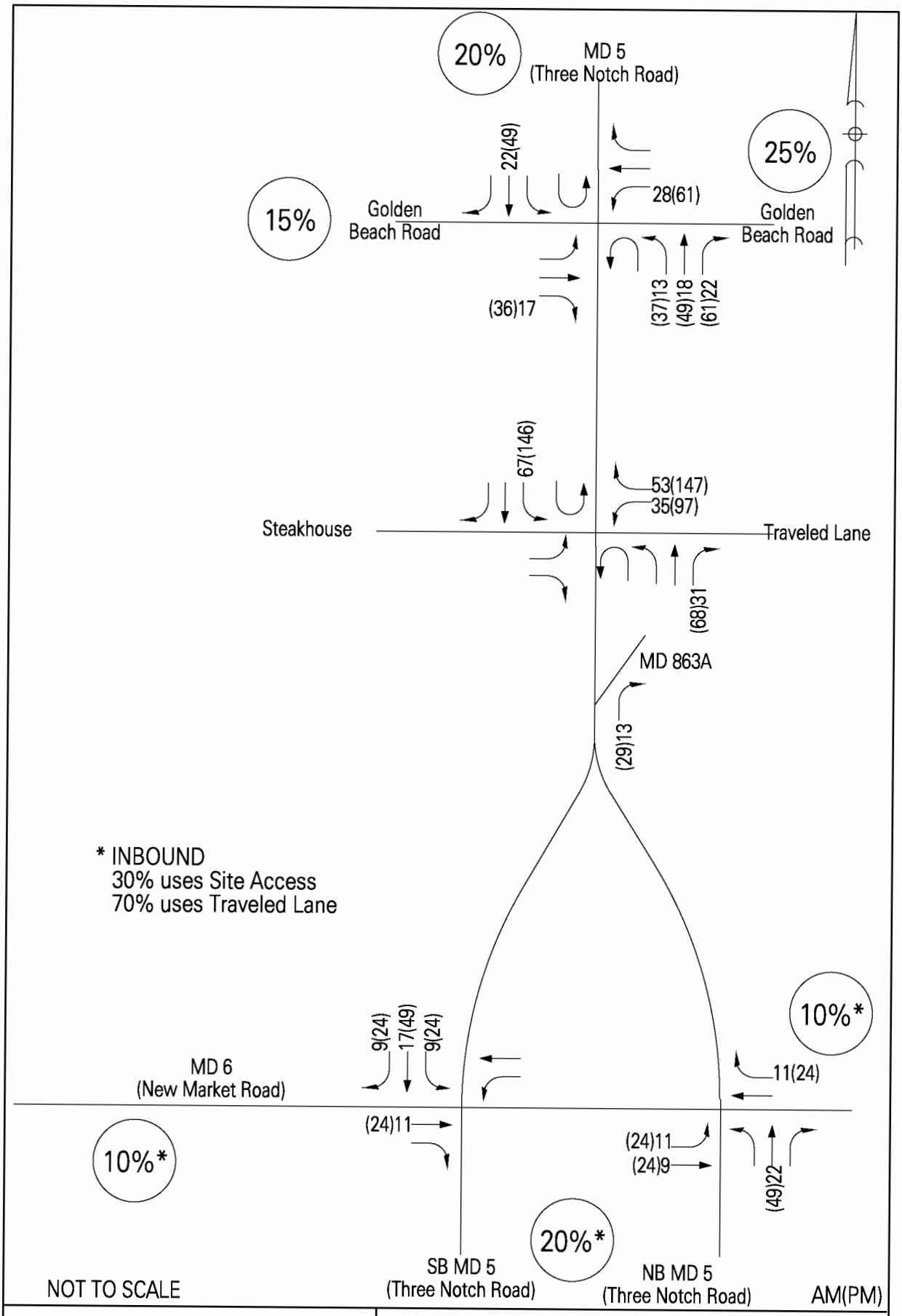
EXHIBIT 8
Diverted Traffic due to full movement
to MD 5 @ Traveled Lane



TRAFFIC CONCEPTS, INC. 7525 Connelley Drive Suite B Hanover, Maryland 21076 410-760-2911	EXHIBIT 9 Site Generated Traffic - New Trips

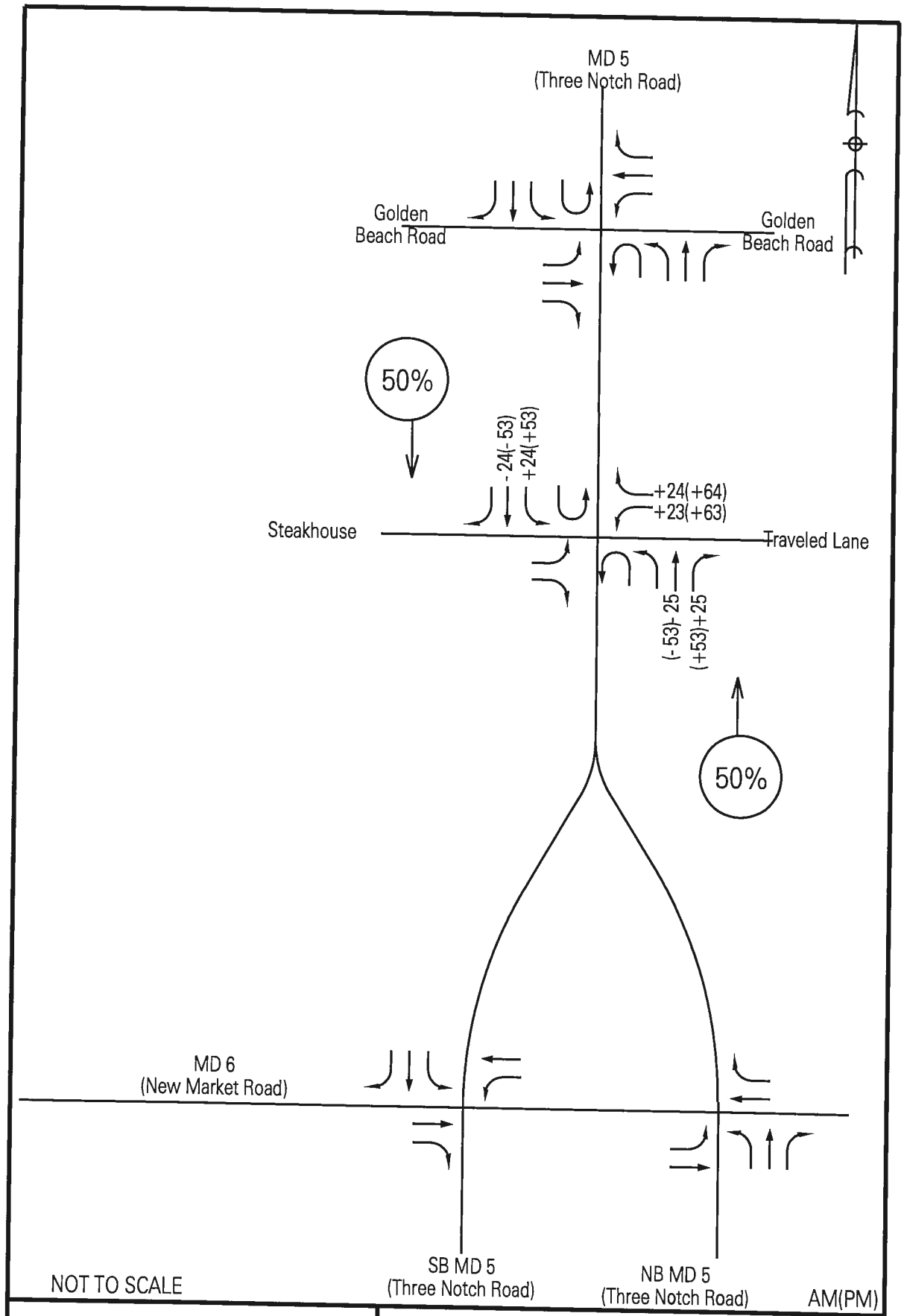


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EXHIBIT 10

Site Generated Traffic - Passby Trips

Chick-fil-A Trip Generation Calculation	
Sq Ft	4,997
AM In	99
AM Out	95
PM In	150
PM Out	185

<----- Enter development size here

					Historic Referenc
Project #	**Year**	**Office**	**Location**	**Road**	**Size (sq ft)**
20-03-022	2019	D4	Reisterstown	Reisterstown Road	5165
20-03-022	2019	D4	Eldersburg	Sykesville Road	4921
20-03-022	2019	D7	Frederick	Monocacy Boulevard	5166
16-02-004	2016	D4	?	Owings Mills Blvd	5084
16-02-004	2016	D4	?	Joppa Road	5084
			Average		

Vehicle Pass-By Rates by Land Use

Source: ITE *Trip Generation Manual*, 11th Edition

Land Use Code	934
Land Use	Fast-Food Restaurant with Drive-Through Window
Setting	General Urban/Suburban
Time Period	Weekday AM Peak Period
# Data Sites	5
Average Pass-By Rate	50%

Pass-By Characteristics for Individual Sites

GFA (000)	State or Province	Survey Year	# Interviews	Pass-By Trip (%)	Non-Pass-By Trips			Adj Street Peak Hour Volume	Source
					Primary (%)	Diverted (%)	Total (%)		
1.4	Kentucky	1993	—	62	22	16	38	1407	2
3	Kentucky	1993	—	43	14	43	57	2903	2
3.3	--	1996	—	68	—	—	32	—	21
3.6	Kentucky	1993	—	32	47	21	68	437	2
4.2	Indiana	1993	—	46	23	31	54	1049	2

Vehicle Pass-By Rates by Land Use

Source: ITE *Trip Generation Manual*, 11th Edition

Land Use Code	934
Land Use	Fast-Food Restaurant with Drive-Through Window
Setting	General Urban/Suburban
Time Period	Weekday PM Peak Period
# Data Sites	11
Average Pass-By Rate	55%

Pass-By Characteristics for Individual Sites

GFA (000)	State or Province	Survey Year	# Interviews	Pass-By Trip (%)	Non-Pass-By Trips			Adj Street Peak Hour Volume	Source
					Primary (%)	Diverted (%)	Total (%)		
1.3	Kentucky	1993	—	68	22	10	32	2055	2
1.9	Kentucky	1993	33	67	24	9	33	2447	2
2.8	Florida	1995	47	66	—	—	34	—	30
2.9	Florida	1996	271	41	41	18	59	—	30
3	Kentucky	1993	—	31	31	38	69	4250	2
3.1	Florida	1995	28	71	—	—	29	—	30
3.1	Florida	1996	29	38	—	—	62	—	30
3.2	Florida	1996	202	40	39	21	60	—	30
3.3	—	1996	—	62	—	—	38	—	21
4.2	Indiana	1993	—	56	25	19	44	1632	2
4.3	Florida	1994	304	62	—	—	38	—	30

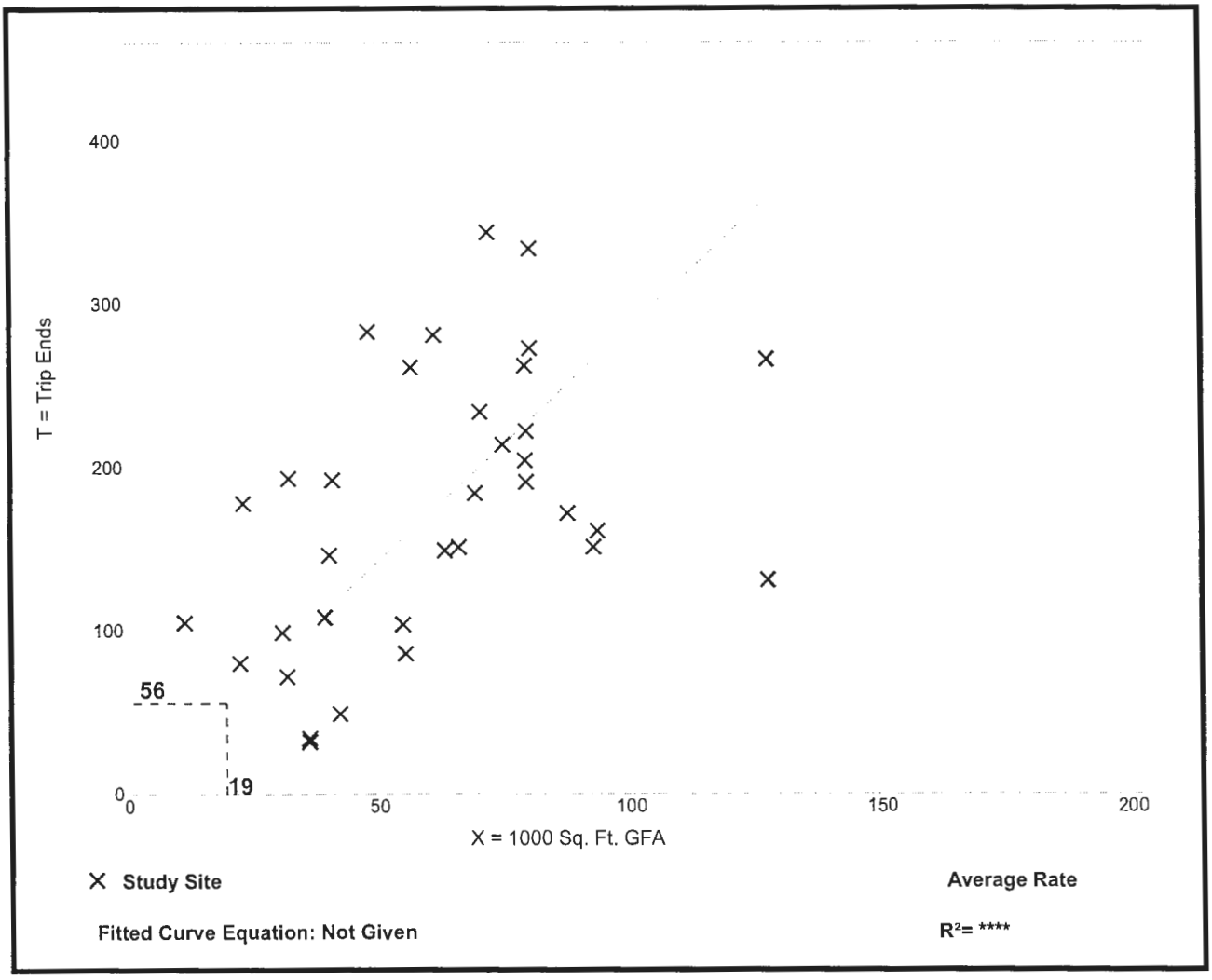
Supermarket
(850)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
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: 34
Avg. 1000 Sq. Ft. GFA: 61
Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.86	0.89 - 9.35	1.45

Data Plot and Equation



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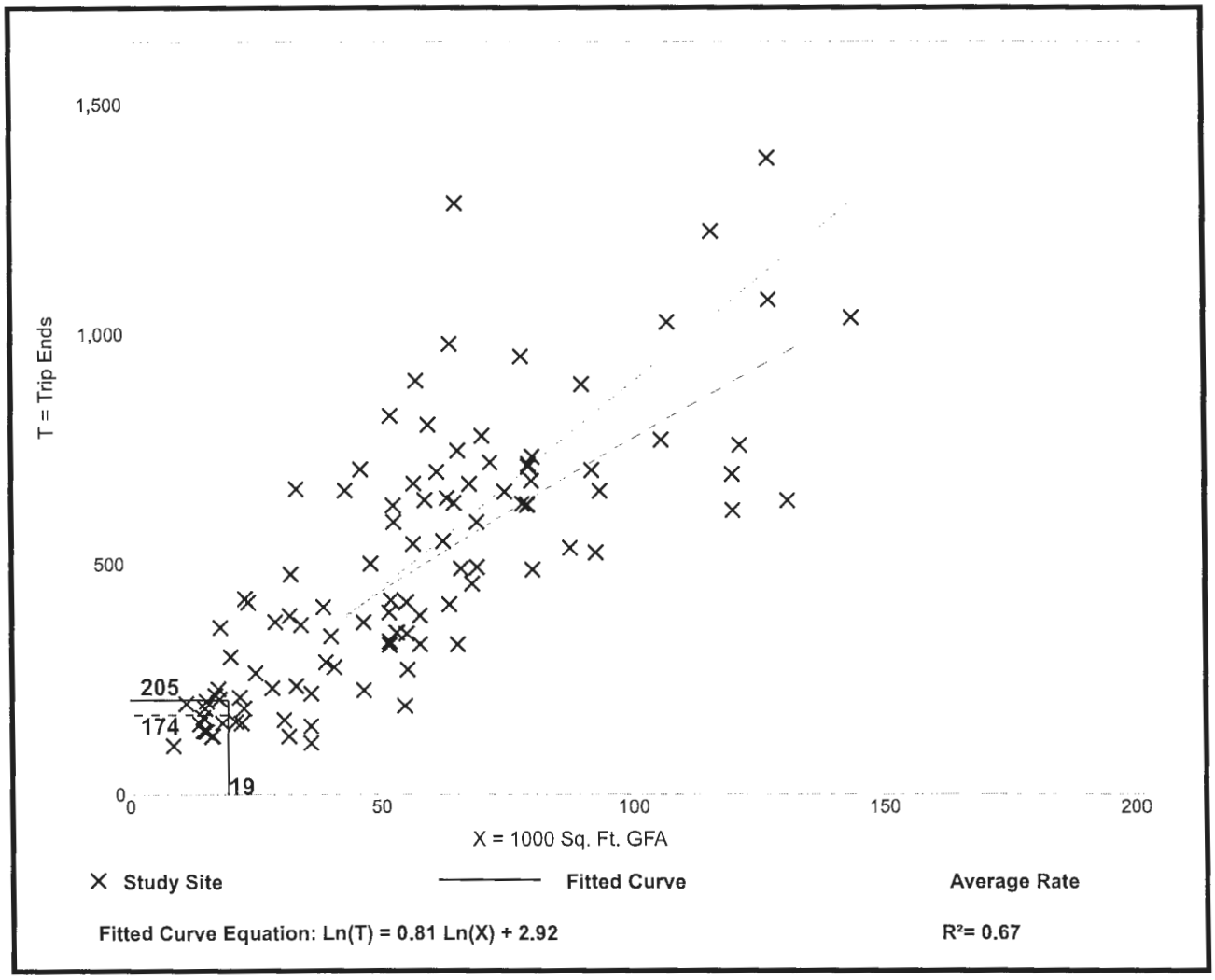
Supermarket
(850)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
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:	104
Avg. 1000 Sq. Ft. GFA:	55
Directional Distribution:	50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
8.95	3.11 - 20.30	3.32

Data Plot and Equation



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Supermarket
(850)

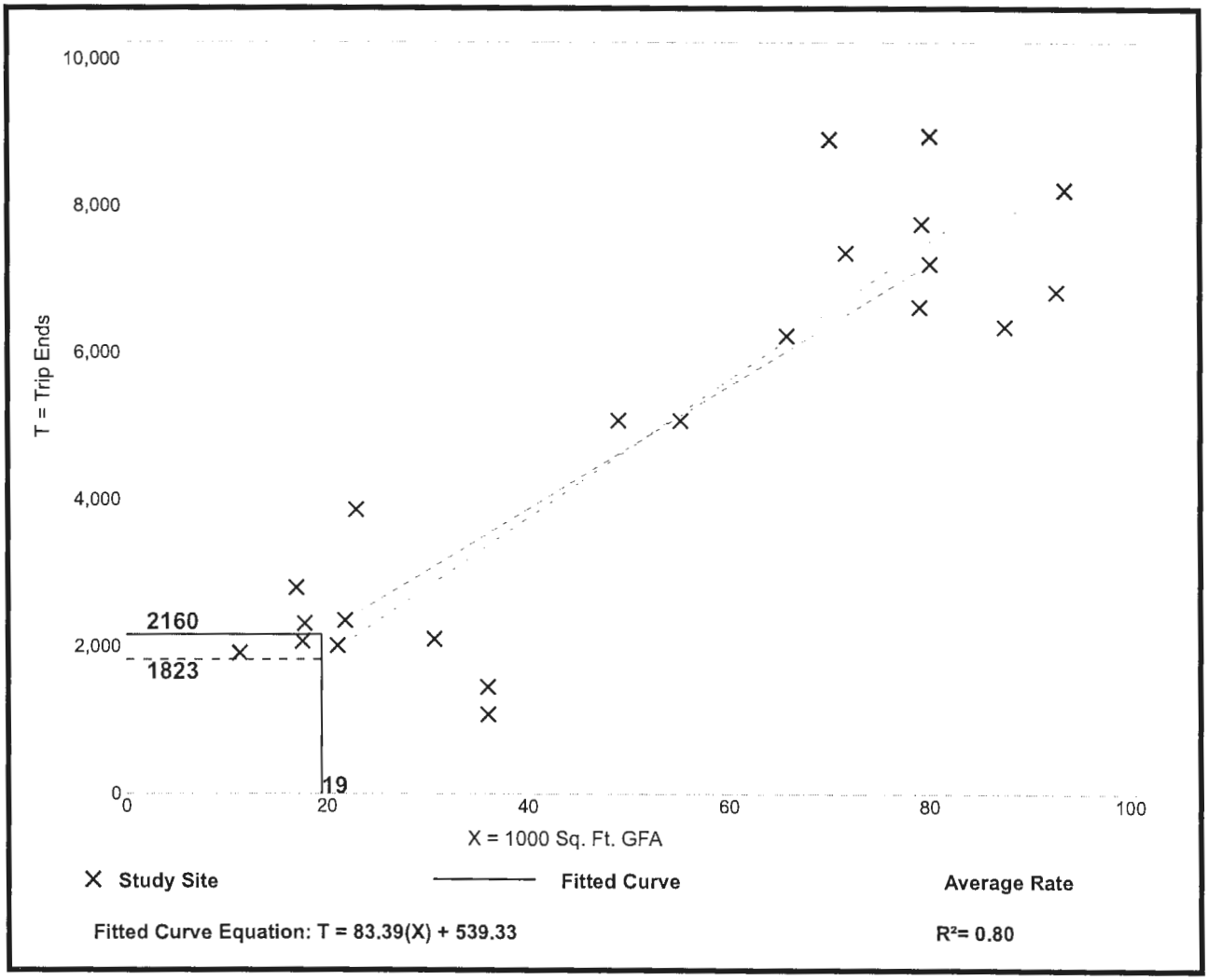
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 22
Avg. 1000 Sq. Ft. GFA: 52
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
93.84	30.09 - 170.24	27.05

Data Plot and Equation



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Vehicle Pass-By Rates by Land Use

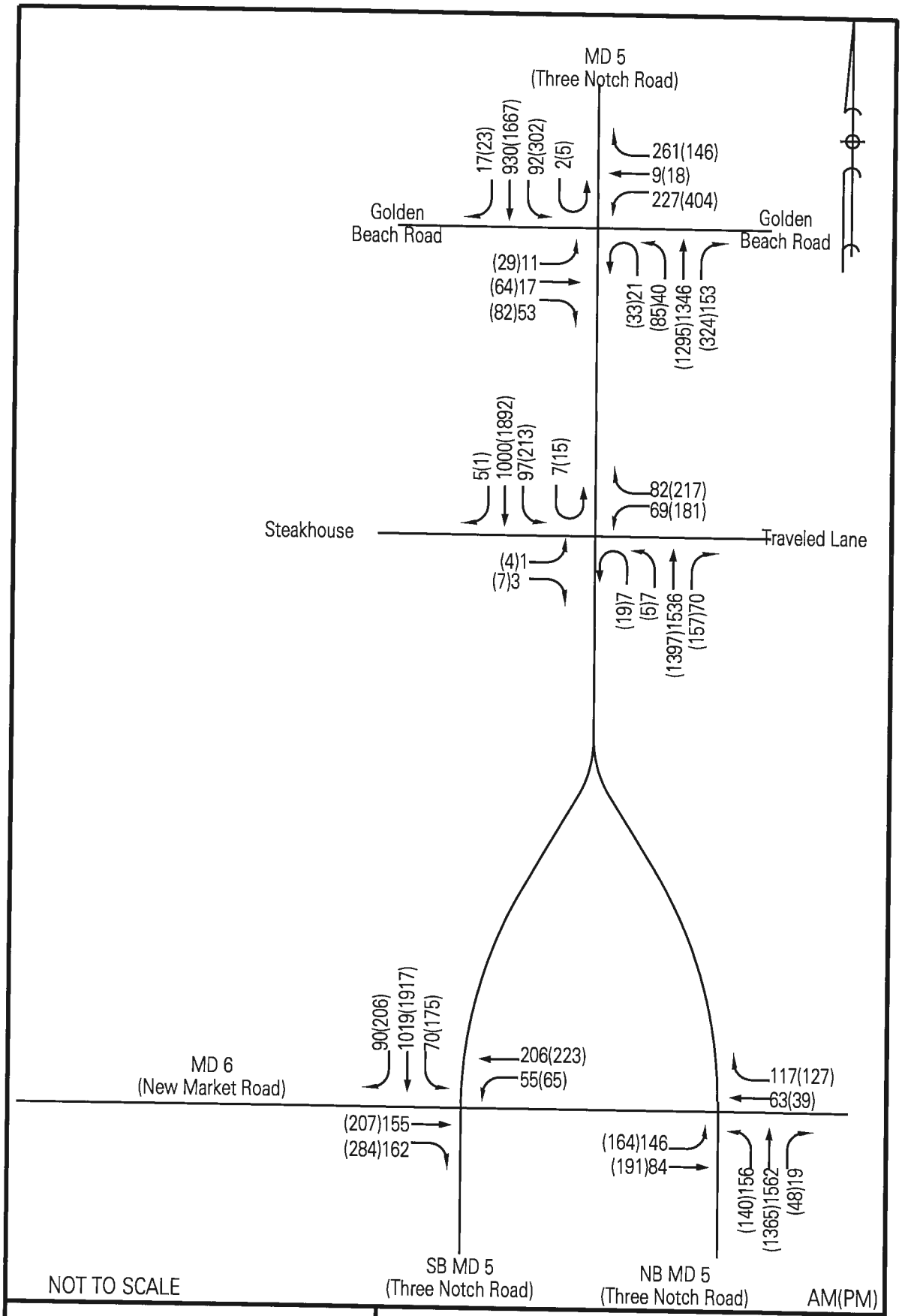
Source: ITE *Trip Generation Manual* , 11th Edition

Land Use Code	850
Land Use	Supermarket
Setting	General Urban/Suburban
Time Period	Weekday PM Peak Period
# Data Sites	43
Average Pass-By Rate	24%

Pass-By Characteristics for Individual Sites

GFA (000)	State or Province	Survey Year	# Interviews	Pass-By Trip (%)	Non-Pass-By Trips			Adj Street Daily Volume	Source
					Primary (%)	Diverted (%)	Total (%)		
15.16	Florida	1993	161	23	51	26	77	—	33
31	Nebraska	1990	—	19	36	45	81	48700	31
31	Nebraska	1990	—	28	40	32	72	23500	31
31	Florida	1993	440	35	—	—	65	—	30
34	Nebraska	1990	—	44	29	27	56	15200	31
50	Kansas	1998	33	9	70	21	91	—	31
55	Nebraska	1990	—	27	35	38	73	27200	31
65	Nebraska	1990	—	25	25	50	75	44700	31
66	Nebraska	1990	—	23	30	47	77	63000	31
66	Oregon	2010	382	18	47	35	82	—	27
67	Washington	2010	—	25	40	35	75	—	27
70	Nebraska	1990	—	26	30	44	74	34300	31
71.717	Oregon	2001	—	31	51	18	69	—	18
72	Oregon	2001	827	31	51	18	69	—	18
74.63	Oregon	2001	—	33	40	27	67	—	18
75	Oregon	2001	786	33	40	27	67	—	18
79	Washington	2001	884	34	39	27	66	—	18
79	Oregon	2001	637	13	52	35	87	—	18
79	California	2002	547	15	64	21	85	—	18
79	California	2002	798	20	58	22	80	—	18

79.097	California	2002	—	15	64	21	85	—	18
79.097	Oregon	2001	—	13	52	35	87	—	18
79.324	California	2002	—	20	58	22	80	—	18
79.336	Washington	2001	—	34	39	27	66	—	18
79.771	Nevada	2002	—	38	44	18	62	—	18
80	Nevada	2002	478	38	44	18	62	—	18
80	California	2002	617	12	68	20	88	—	18
80	California	2002	538	25	52	23	75	—	18
80.147	California	2002	—	12	68	20	88	—	18
80.147	California	2002	—	25	52	23	75	—	18
81	New York	1997	—	31	46	23	69	—	26
87.4	New York	1997	—	32	55	13	68	—	26
88	California	2010	497	15	49	36	85	—	27
89.8	New York	1997	—	38	47	15	62	—	26
93	Washington	2010	440	21	41	38	79	—	27
94	Oregon	2002	536	7	45	48	93	—	27
95	California	2010	—	16	56	28	84	—	27
96	California	2010	—	19	48	33	81	—	27
96	California	2010	—	15	64	21	85	—	27
99	California	2010	—	17	54	29	83	—	27
104	California	2010	—	18	55	27	82	—	27
105.3	New York	1997	—	33	48	19	67	—	26
123.5	New York	1997	—	26	44	30	74	—	26



TRAFFIC CONCEPTS, INC. 7525 Connelley Drive Suite B Hanover, Maryland 21076 410-760-2911	EXHIBIT 11 Total Future Traffic Volumes

QUEUING ANALYSIS

QUEUING ANALYSIS

A queuing analysis was conducted at all exclusive turn lanes using the SIMTRAFFIC Queuing and Blocking reports. Detailed calculations can be found in Appendix VI of this report. The results are shown below and on the following pages.

SIMTRAFFIC QUEUING AND BLOCKING REPORT

SIGNALIZED INTERSECTIONS

	BACKGROUND CONDITION	**FUTURE CONDITION**	
MD 5 @ Golden Beach Road			
	95th Percentile Queue Length (ft.) AM(PM)	95th Percentile Queue Length (ft.) AM(PM)	Storage Length (feet)
Eastbound Left	41(70)	38(204)	continuous
Eastbound Thru/Right	78(167)	86(298)	370
Westbound Right	222(269)	221(304)	165
Northbound Left	79(273)	87(157)	275
Northbound Right	210(418)	21(231)	275
Southbound Left	104(784)	115(785)	590
Southbound Right	41(105)	2(159)	160

	BACKGROUND CONDITION	**FUTURE CONDITION**	
MD 5 SB @ MD 6			
	95th Percentile Queue Length (ft.) AM(PM)	95th Percentile Queue Length (ft.) AM(PM)	Storage Length (feet)
Westbound Left	72(90)	65(81)	163
Southbound Left	81(433)	73(407)	510

SIMTRAFFIC QUEUING AND BLOCKING REPORT

SIGNALIZED INTERSECTIONS

MD 5 NB @ MD 6	BACKGROUND CONDITION	FUTURE CONDITION	
	95th Percentile Queue Length (ft.) AM(PM)	95th Percentile Queue Length (ft.) AM(PM)	Storage Length (feet)
Eastbound Left	124(125)	110(125)	163
Westbound Right	91(70)	107(95)	140
Northbound Left	97(81)	107(91)	325
Northbound Right	23(32)	19(40)	335

MD 5 @ Traveled Lane	BACKGROUND CONDITION	FUTURE CONDITION	
	95th Percentile Queue Length (ft.) AM(PM)	95th Percentile Queue Length (ft.) AM(PM)	Storage Length (feet)
Northbound Left	--	48(56)	315
Southbound Left	--	88(153)	255
Southbound Right	--	2(1)	100

UNSIGNALIZED INTERSECTION

MD 5 @ Traveled Lane	BACKGROUND CONDITION	FUTURE CONDITION	
	95th Percentile Queue Length (ft.) AM(PM)	95th Percentile Queue Length (ft.) AM(PM)	Storage Length (feet)
Eastbound Right	10(24)	--	60
Westbound Right	35(47)	--	420
Northbound Left	9(27)	--	315
Southbound Left	26(42)	--	255

INTERSECTION CAPACITY ANALYSIS

INTERSECTION CAPACITY ANALYSIS

The key intersections were analyzed during the existing, background, and future traffic conditions using the following methodologies.

All unsignalized intersections were analyzed using the Critical Lane Volume (CLV) and the Highway Capacity Manual Unsignalized methodology.

All signalized intersections were analyzed using the Synchro methodology. The overall intersection delay and level of service were calculated for each intersection since the intersections are part of a coordinated signal system.

Details of all calculations can be found in the appendices section of this report. The results are listed in the following charts:

CRITICAL LANE VOLUME ANALYSIS (UNSIGNALIZED INTERSECTION) – AM PEAK HOUR			
KEY INTERSECTIONS	EXISTING CLV / LOS	BACKGROUND CLV / LOS	FUTURE CLV / LOS
MD 5 @ Traveled Lane	788 / A	875 / A	*

CRITICAL LANE VOLUME ANALYSIS (UNSIGNALIZED INTERSECTIONS) – PM PEAK HOUR			
KEY INTERSECTIONS	EXISTING CLV / LOS	BACKGROUND CLV / LOS	FUTURE CLV / LOS
MD 5 @ Traveled Lane	986 / A	1094 / B	*

CLV – Critical Lane Volume
LOS – Level of Service

* This intersection will be signalized under future conditions

HIGHWAY CAPACITY MANUAL: STOP CONTROL - AM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS (APPROACH DELAY/LOS)	BACKGROUND Delay / LOS (APPROACH DELAY/LOS)	FUTURE Delay / LOS (APPROACH DELAY/LOS)
MD 5 @ Traveled Lane			
EB Right	11.5 / B (11.5 / B)	12.5 / B (12.5 / B)	*
WB Right	15.6 / C (15.6 / C)	17.2 / C	*
NB Left	12.3 / B	14.4 / B	*
SB Left	22.7 / C	27.8 / D	*

HIGHWAY CAPACITY MANUAL: STOP CONTROL - PM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS (APPROACH DELAY/LOS)	BACKGROUND Delay / LOS (APPROACH DELAY/LOS)	FUTURE Delay / LOS (APPROACH DELAY/LOS)
MD 5 @ Traveled Lane			
EB Right	18.2 / C (18.2 / C)	20.4 / C (20.4 / C)	*
WB Right	13.9 / B (13.9 / B)	15.8 / C 15.8 / C	*
NB Left	44.2 / E	62.9/ F	*
SB Left	18.0 / C	23.9 / D	*

* This intersection will be signalized under future condition

SYNCHRO (SIGNALIZED INTERSECTION) - AM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE Delay / LOS
MD 5 @ Golden Beach Road	21.1 / C	28.1 / C	24.1 / C
SB MD 5 @ MD 6	20.6 / C	24.4 / C	25.4 / C
NB MD 5 @ MD 6	8.5 / A	13.6 / B	15.0 / B
MD 5 @ Traveled Lane	--	--	13.3 / B

SYNCHRO (SIGNALIZED INTERSECTION) - PM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE Delay / LOS
MD 5 @ Golden Beach Road	31.5 / C	40.0 / D	41.7 / D
SB MD 5 @ MD 6	19.8 / B	27.6 / C	32.8 / C
NB MD 5 @ MD 6	9.6 / A	15.6 / B	17.9 / B
MD 5 @ Traveled Lane	--	--	18.6 / B

TRAFFIC SIGNAL
WARRANT ANALYSIS

TRAFFIC SIGNAL WARRANT ANALYSIS – MD 5 @ Traveled Lane

Traffic Signal Warrants as outlined in the Millennium edition of the Manual on Uniform Traffic Control Devices were analyzed based on future traffic volumes.

This analysis assumes that the intersection of MD 5 @ Traveled Lane will be re-constructed as a full movement access. The mainline of MD 5 includes two through lanes, and the side road approach of Traveled Lane includes three outbound lanes, two left turn lanes and one right turn lane. With this, we conclude that the right turns will operate independently of traffic signal control. Therefore, the impact of these right turns has been eliminated from the minor road total hourly volumes for the purpose of the traffic signal warrant analysis.

Reduced warrants were tested, since the 85th percentile speed along MD 5 is greater than 40 miles per hour.

Table 1 summarizes the results of the Traffic Signal Warrants with the detailed analyses on the following pages:

TABLE 1

TRAFFIC SIGNAL WARRANT SUMMARY
MINOR ROAD VOLUMES

WARRANTS	FUTURE CONDITIONS
1-Eight-Hour Vehicular Volume **A**-Minimum Vehicle Volume (met for 8 of the required 8 hours)	Satisfied
1-Eight-Hour Vehicular Volume **B**-Interruption of Continuous Traffic (met for 11 of the required 8 hours)	Satisfied
1-Eight-Hour Vehicular Volume -Combination of Warrants 1A & 1B (met 1A for 8 of the required 8 hours) (met 1B for 11 of the required 8 hours)	Satisfied
2-Four-Hour Vehicular Volume (met for at least 4 of the required 4 hours)	Satisfied
3-Peak Hour (met for at least 1 of the required 1 hour)	Satisfied
4-Pedestrian Volume	Not Satisfied
5-School Crossing	Not Applicable
6-Coordinated Signal System	Not Applicable
7-Crash Experience	Unknown
8-Roadway Network	Not Applicable
9-Intersection Near A Grade Crossing	Not Applicable

Warrant 1, Eight-Hour Vehicular Volume, Condition A, Minimum Vehicular Volume- This warrant is intended for application where a large volume of intersection traffic is the principal reason to consider a traffic control signal. This warrant is satisfied when the minimum volumes as shown on Table 2 are met for at least 8 hours.

TABLE 2

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME – 70%

CONDITION A - MINIMUM VEHICULAR VOLUME

TIME PERIOD	VEH/HR MAIN ST. BOTH DIR	VEH/HR WARRANT AMOUNT	VEH/HR WARRANT MET	VEH/HR SIDE ROAD	VEH/HR WARRANT AMOUNT	VEH/HR WARRANT MET	VEH/HR WARRANT MET
7-8 AM	2474	420	X	52	140		
8-9	2347	420	X	70	140		
9-10	2187	420	X	81	140		
10-11	2074	420	X	101	140		
11-12PM	2246	420	X	146	140	X	1
12-1	2517	420	X	199	140	X	2
1-2	2486	420	X	165	140	X	3
2-3	2540	420	X	163	140	X	4
3-4	3137	420	X	157	140	X	5
4-5	3361	420	X	156	140	X	6
5-6	3109	420	X	162	140	X	7
6-7	2172	420	X	163	140	X	8

Note: Warrant amount 70% of MUTCD requirements due to the major street traffic 85th percentile exceeding 40 mph. As shown on Table 2, the minimum volumes are met for eight of the required twelve (12) hours, therefore, **Warrant 1 - Condition A is satisfied**.

Condition B-Interruption of Continuous Traffic – This warrant is intended for application where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street. This warrant is satisfied when the minimum volumes as shown on Table 3, are met for at least eight (8) hours.

TABLE 3

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME – 70%

CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC

TIME PERIOD	VEH/HR MAIN ST. BOTH DIR	VEH/HR WARRANT AMOUNT	VEH/HR WARRANT MET	VEH/HR SIDE ROAD	VEH/HR WARRANT AMOUNT	VEH/HR WARRANT MET	VEH/HR WARRANT MET
7-8 AM	2474	630	X	52	70		
8-9	2347	630	X	70	70	X	1
9-10	2187	630	X	81	70	X	2
10-11	2074	630	X	101	70	X	3
11-12PM	2246	630	X	146	70	X	4
12-1	2517	630	X	199	70	X	5
1-2	2486	630	X	165	70	X	6
2-3	2540	630	X	163	70	X	7
3-4	3137	630	X	157	70	X	8
4-5	3361	630	X	156	70	X	9
5-6	3109	630	X	162	70	X	10
6-7	2172	630	X	163	70	X	11

Note: Warrant amount 70% of MUTCD requirements due to the major street traffic 85th percentile exceeding 40 mph. As shown on Table 2, the minimum volumes are met for eleven (11) of the required eight (8) hours, therefore, **Warrant 1 - Condition B is satisfied**.

Combination of Warrant 1, Condition A and Condition B – This warrant is intended for application at intersections where no warrants are satisfied, but the minimum required volumes are nearly met for warrant 1, Condition A and Condition B.

TABLE 4

WARRANT 1 - COMBINATION OF WARRANTS

56% OF WARRANT 1 - CONDITION A

TIME PERIOD	VEH/HR MAIN ST. BOTH DIR	VEH/HR WARRANT AMOUNT	VEH/HR WARRANT MET	VEH/HR SIDE ROAD	VEH/HR WARRANT AMOUNT	VEH/HR WARRANT MET	VEH/HR WARRANT MET
7-8 AM	2474	336	X	52	112		
8-9	2347	336	X	70	112		
9-10	2187	336	X	81	112		
10-11	2074	336	X	101	112		
11-12PM	2246	336	X	146	112	X	1
12-1	2517	336	X	199	112	X	2
1-2	2486	336	X	165	112	X	3
2-3	2540	336	X	163	112	X	4
3-4	3137	336	X	157	112	X	5
4-5	3361	336	X	156	112	X	6
5-6	3109	336	X	162	112	X	7
6-7	2172	336	X	163	112	X	8

TABLE 5

WARRANT 1 – COMBINATION OF WARRANTS

56% OF WARRANT 1 – CONDITION B

TIME PERIOD	VEH/HR MAIN ST. BOTH DIR	VEH/HR WARRANT AMOUNT	VEH/HR WARRANT MET	VEH/HR SIDE ROAD	VEH/HR WARRANT AMOUNT	VEH/HR WARRANT MET	VEH/HR WARRANT MET
7-8 AM	2474	504	X	52	56		
8-9	2347	504	X	70	56	X	1
9-10	2187	504	X	81	56	X	2
10-11	2074	504	X	101	56	X	3
11-12PM	2246	504	X	146	56	X	4
12-1	2517	504	X	199	56	X	5
1-2	2486	504	X	165	56	X	6
2-3	2540	504	X	163	56	X	7
3-4	3137	504	X	157	56	X	8
4-5	3361	504	X	156	56	X	9
5-6	3109	504	X	162	56	X	10
6-7	2172	504	X	163	56	X	11

As indicated in these tables, 56% of the values in warrant 1- condition A are met for eight (8) of the required 8 hours, and 56% of the values in warrant 1- condition B are met for eleven (11) of the required 8 hours, therefore, **Warrant 1 (Combination of Warrants) is satisfied**.

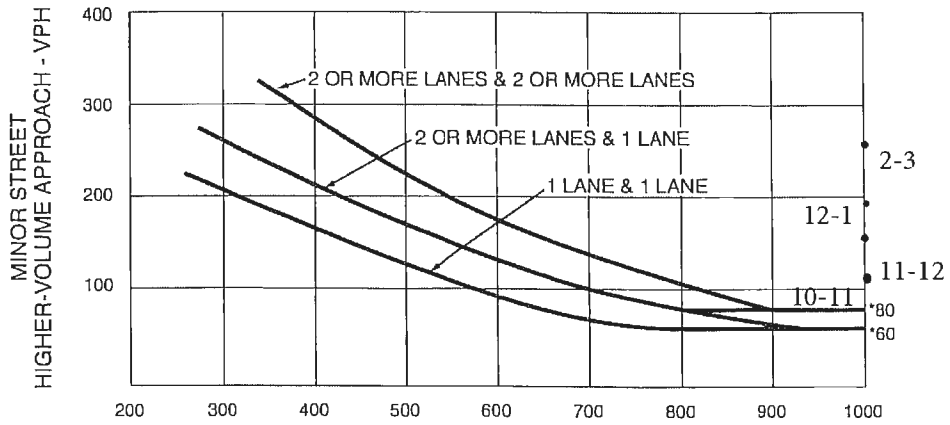
Warrant 2, Four-Hour Vehicular Volume – This warrant is intended for application where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. This warrant is satisfied when at least four plotted points, representing vehicles per hour fall above the curve as shown on Table 6.

TABLE 6

FOUR HOUR VEHICULAR VOLUME

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h OR ABOVE 40 mph ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

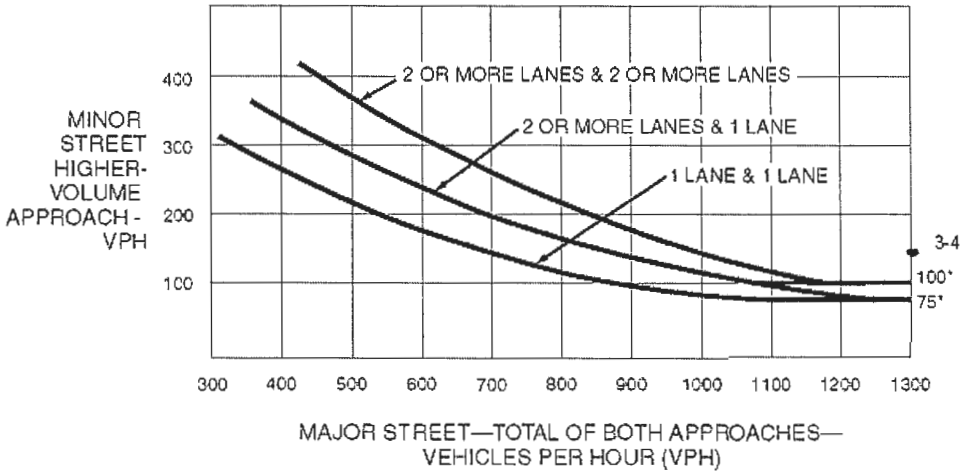
The plotted points fell above the curve for at least four hours; therefore, **Warrant 2 is satisfied.**

Warrant 3, Peak Hour – The peak hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of one hour of an average day, the minor street traffic suffers undue delay when entering or crossing the major street. This warrant is satisfied when for one hour of the day, at least one plotted point, representing vehicles per hour, fall above the curve shown on Table 7.

TABLE 7
PEAK HOUR VOLUME WARRANT

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

The plotted points fell above the curve for at least one hour; therefore, **Warrant 3 is satisfied**.

Warrant 4, Pedestrian Volume – This warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street. This warrant is satisfied when there is a pedestrian volume crossing the major street of at least 100 for each of any four hours, or at least 190 during any one hour.

The warrant also requires that there be less than 60 gaps per hour in main street traffic adequate enough to allow pedestrians to cross.

While conducting the turning movement count no pedestrians were observed crossing the Main Street, therefore **Warrant 4 is not satisfied**.

Warrant 5, School Crossing – This warrant is intended for application at established school crossings where the frequency and adequacy of gaps in the vehicular traffic stream do not allow school children to safely cross and there are a minimum of 20 students during the highest crossing hour.

An established school crossing is not located at this intersection; therefore **Warrant 5 is not applicable**.

Warrant 6, Coordinated Signal Systems – This warrant is intended for application in coordinated signal systems in order to maintain proper platooning of vehicles.

The intersection is not located within a coordinated signal system; therefore **Warrant 6 is not applicable**.

Warrant 7, Crash Experience – This warrant is intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic signal. The warrant requires five (5) or more reported crashes in the last 12 months susceptible to correction by a traffic signal and 80% of Warrant 1, Condition A or Warrant 1, Condition B or Warrant 4 is met.

The Maryland State Highway Administration no longer releases reported crash data to consultants. Therefore, **Warrant 7 is unknown.**

Warrant 8, Roadway Network – This warrant is intended for application at intersections to encourage concentration and organization of traffic flow on a roadway network.

The warrant requires the intersection to be of two major routes and have 1000 vehicles entering the intersection during the peak hour and 5-year projected traffic volumes that satisfy warrants 1, 2 and 3; or the intersection has an entering volume at least 1000 vehicles per hour for each of any five hours of a non-normal business day.

The side street is not considered a major route; therefore, **Warrant 8 is not applicable**.

Warrant 9, Intersection Near A Grade Crossing – This warrant is intended for use at a location where none of the conditions described in the other eight warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic signal.

This signal warrant should be applied only after adequate consideration has been given to other alternatives or after a trial of an alternative has failed to alleviate the safety concerns associated with the grade crossing.

This intersection is not near an at grade crossing, therefore, **Warrant 9 is not applicable**.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

According to the St. Mary's County Comprehensive Zoning Ordinance, since the proposed development is located within a Town Center, all intersections must be shown to operate at levels of service "C" or better. If any intersection is shown to operate below this standard, the developer is required to mitigate the project's impact. The results of the study indicate that the key intersections will operate at acceptable "C" or better levels of service under future traffic conditions, with the following exception:

- The intersection of MD 5 at Golden Beach Road is projected to operate at a "D" level of service (41.7 seconds per vehicle of delay) during the evening peak period.

In addition to the level of service requirements noted above, a queuing analysis is required at all turn bays to determine that adequate length exists to accommodate future traffic volumes. This queuing analysis has been conducted utilizing the SIMTRAFFIC (part of the Synchro traffic simulation software) methodology. The analyses indicate that all turn lanes are adequate in length to accommodate future traffic volumes, with the following exceptions:

<u>MD 5 @ Golden Beach Road</u>

- The westbound right turn bay from Golden Beach Road to MD 5 is approximately 165' long.
    - Projected queue lengths will reach 221' during the AM peak period and 304' during the PM peak period.
    - The proposed development will not add vehicles to this turn bay.

- The southbound left turn bay from MD 5 to Golden Beach Road is approximately 590' long.
    - Projected queue lengths will reach 785' during the PM peak period.
    - The proposed development will not add vehicles to this turn bay.

RECOMMENDATIONS:

In order to mitigate the impact of the proposed development on the deficiencies noted above, the developer of the Charlotte Hall Center project proposes the following:

MD 5 @ Golden Beach Road:

The developer of the Charlotte Hall Center project proposes to modify the lane use along the eastbound approach of Golden Beach Road. Currently, the lane use includes one dedicated left turn lane, and one shared through/right turn lane. By modifying this lane use to provide one shared through/left turn lane and one dedicated right turn lane, the overall intersection delay is improved from 41.7 seconds per vehicle to 36.4 seconds per vehicle. While the intersection will remain an overall "D" level of service, the delay will be improved beyond the background conditions (40.0 seconds per vehicle). While the development is projected to increase the delay at this intersection by 1.7 seconds per vehicle, the proposed improvement will decrease the delay by 5.3 seconds per vehicle.

As noted previously, the deficient turn bays at this intersection are not affected by the subject development. However, we would like to note that the proposed improvements will reduce the projected queue length for the westbound right turn lane from 304' to 280' during the PM peak period due to the additional signal time that can be allotted to this approach.

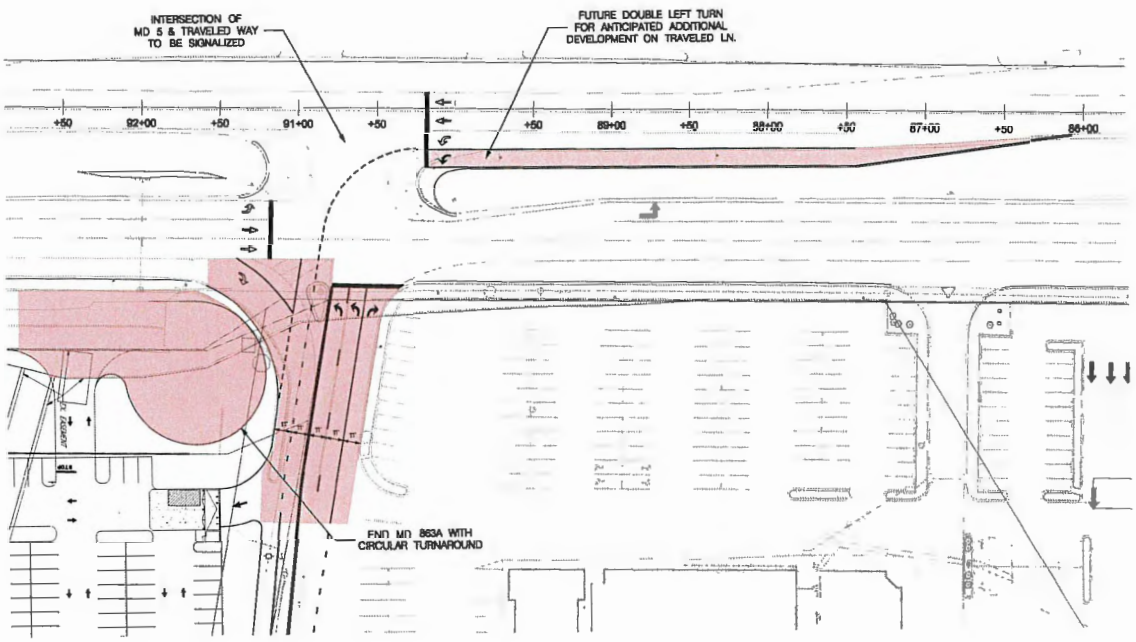
The proposed lane use change at this intersection will over-mitigate the impact of the development.

MD 5 @ Traveled Lane:

The developer of the Charlotte Hall Center project plans to modify this intersection in order to accommodate future traffic volumes associated with the site.

The proposed intersection modifications include the following, and are shown graphically on the following page:

- Allow all movements, and provide traffic signalization
- Construct an additional southbound MD 5 left turn lane (same length as the existing left turn lane) to provide double-left turn bays of approximately 255' in length
- Reconstruct Traveled Lane to provide three outbound lanes and two inbound lanes
- The Traveled Lane outbound lanes will be marked as two left turns and one exclusive right turn lane
- The right turns from Traveled Lane will be controlled by the traffic signal
- The existing "loop road" (MD 863A) will be modified to terminate in a cul-de-sac, with connection to Traveled Lane eliminated.



The results of the traffic signal warrant analysis indicate that this intersection will require signalization with the build out of the subject site. With the current planned uses on the property (additional uses could be planned for the property in the future), Warrant 1A (Minimum Vehicle Volume), Warrant 1B (Interruption of Continuous Traffic), Warrant 1C (Combinations of Warrants 1A & 1B), Warrant 2 (Four-Hour Vehicular Volume) and Warrant 3 (Peak Hour Volume) are satisfied.

If this intersection were to remain as it exists today, with left turns out of Traveled Way restricted, vehicles would be forced to make U-turns at the Golden Beach Road intersection, or travel through the back portion of the property to Golden Beach Road then making a left at the Golden Beach Road intersection onto MD 5 south. With the volume of left turns predicted (69 during the AM peak period, and 181 during the PM peak period), the existing configuration of MD 5 @ Traveled Way would force all of these vehicles to the Golden Beach Road intersection, pushing that intersection into the "E" or worse level of service range. For these reasons, the MD 5 @ Traveled Way intersection should be modified to allow all movements.

The MD 5 @ Traveled Way intersection should be modified to a full-movement intersection and signalized in order to accommodate the traffic volumes associated with the proposed development (Chick-fil-A, ALDI and two retail buildings). It should be noted that the overall Charlotte Hall Center development (beyond the four pad sites included in this traffic study) will likely improve in the future with additional uses, thereby creating even more traffic volumes that can only be accommodated with this signalized intersection.

We respectfully request that your office review and approve this project from a traffic impact standpoint, with the condition that the developer of the Charlotte Hall Commerce Center provide the following improvements:

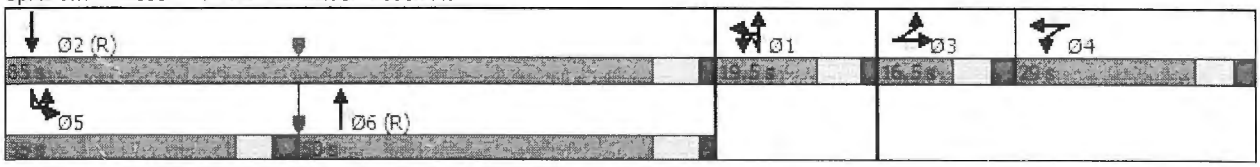
1. MD 5 @ Golden Beach Road – remark the eastbound approach to provide one shared through/left turn lane and one dedicated right turn lane.
2. MD 5 @ Traveled Lane – provide three outbound lanes (L/L/R) and two inbound lanes on Traveled Lane; construct an additional southbound left turn lane on MD 5; construct a cul-de-sac to end the "loop road" (MD 863A) prior to its connection with Traveled Lane; construct a new traffic signal at the intersection.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	29	64	82	404	18	146	33	85	1295	324	5	302
Future Volume (vph)	29	64	82	404	18	146	33	85	1295	324	5	302
Satd. Flow (prot)	0	1835	1583	1625	1635	1531	0	1761	3522	1575	0	1770
Flt Permitted		0.985		0.950	0.956			0.950				0.950
Satd. Flow (perm)	0	1835	1583	1625	1635	1531	0	1761	3522	1575	0	1770
Satd. Flow (RTOR)			196			196				241		
Lane Group Flow (vph)	0	96	85	216	219	151	0	122	1335	334	0	316
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	3	3		4	4		1	1	6 1		5	5
Permitted Phases			3			4				6 1		
Total Split (s)	16.5	16.5	16.5	29.0	29.0	29.0	19.5	19.5			35.0	35.0
Total Lost Time (s)		5.5	4.5	5.5	5.5	5.5		6.5				4.5
Act Effct Green (s)		10.9	11.9	22.9	22.9	22.9		12.8	65.9	65.9		30.2
Actuated g/C Ratio		0.07	0.08	0.15	0.15	0.15		0.09	0.44	0.44		0.20
v/c Ratio		0.72	0.28	0.87	0.88	0.38		0.82	0.86	0.40		0.89
Control Delay		96.4	2.3	93.8	94.5	5.0		84.3	29.7	3.0		64.6
Queue Delay		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
Total Delay		96.4	2.3	93.8	94.5	5.0		84.3	29.7	3.0		64.6
LOS		F	A	F	F	A		F	C	A		E
Approach Delay		52.2			71.2				28.4			
Approach LOS		D			E				C			

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 78 (52%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 36.4 Intersection LOS: D
Intersection Capacity Utilization 88.4% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 7: MD 5 & Golden Beach Rd



Lane Group	SBT	SBR	Ø6
Lane Configurations	↑↑	↱	
Traffic Volume (vph)	1667	23	
Future Volume (vph)	1667	23	
Satd. Flow (prot)	3539	1531	
Flt Permitted			
Satd. Flow (perm)	3539	1531	
Satd. Flow (RTOR)		142	
Lane Group Flow (vph)	1719	24	
Turn Type	NA	Perm	
Protected Phases	2		6
Permitted Phases		2	
Total Split (s)	85.0	85.0	50.0
Total Lost Time (s)	4.5	4.5	
Act Effct Green (s)	81.4	81.4	
Actuated g/C Ratio	0.54	0.54	
v/c Ratio	0.90	0.03	
Control Delay	26.5	0.0	
Queue Delay	0.0	0.0	
Total Delay	26.5	0.0	
LOS	C	A	
Approach Delay	32.0		
Approach LOS	C		

Intersection Summary

Intersection: 7: MD 5 & Golden Beach Rd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	B8	B8	SB
Directions Served	LT	R	L	LT	R	UL	T	T	R	T	T	UL
Maximum Queue (ft)	219	131	225	512	225	364	577	603	435	49	55	597
Average Queue (ft)	106	58	194	314	141	111	314	333	136	3	5	478
95th Queue (ft)	218	110	252	508	280	257	528	550	419	37	56	786
Link Distance (ft)	639			497			656	656		796	796	
Upstream Blk Time (%)				3			1	1				
Queuing Penalty (veh)				0			6	8				
Storage Bay Dist (ft)		370	100		165	275			275			590
Storage Blk Time (%)	0		38	71	0	1	20	24	0			27
Queuing Penalty (veh)	0		138	247	0	4	24	76	0			224

Intersection: 7: MD 5 & Golden Beach Rd

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	1172	1180	232
Average Queue (ft)	663	631	19
95th Queue (ft)	1334	1315	138
Link Distance (ft)	1844	1844	
Upstream Blk Time (%)	0	0	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)			160
Storage Blk Time (%)	3	34	
Queuing Penalty (veh)	10	8	

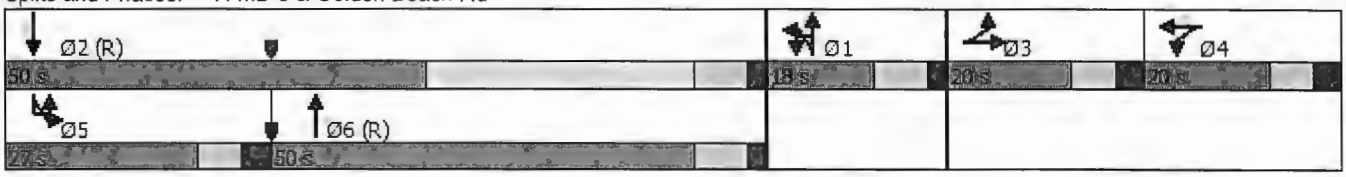
APPENDIX I
INTERSECTION CAPACITY CALCULATIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	3	7	7	136	9	245	21	10	1236	91	2	79
Future Volume (vph)	3	7	7	136	9	245	21	10	1236	91	2	79
Satd. Flow (prot)	1770	1723	0	1625	1639	1531	0	1761	3522	1575	0	1770
Flt Permitted	0.950			0.950	0.958			0.950				0.950
Satd. Flow (perm)	1770	1723	0	1625	1639	1531	0	1761	3522	1575	0	1770
Satd. Flow (RTOR)		8				263				158		
Lane Group Flow (vph)	3	16	0	77	79	263	0	34	1329	98	0	87
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA	Perm	custom	Prot
Protected Phases	3	3		4	4		1	1	6 1		5	5
Permitted Phases						4				6 1	5	
Total Split (s)	20.0	20.0		20.0	20.0	20.0	18.0	18.0			27.0	27.0
Total Lost Time (s)	5.5	5.5		5.5	5.5	5.5		6.5				4.5
Act Effct Green (s)	10.0	10.0		14.1	14.1	14.1		9.0	83.4	83.4		16.9
Actuated g/C Ratio	0.07	0.07		0.10	0.10	0.10		0.07	0.62	0.62		0.13
v/c Ratio	0.02	0.12		0.46	0.46	0.67		0.29	0.61	0.09		0.39
Control Delay	58.3	41.6		64.8	65.0	14.9		65.6	20.1	0.4		57.5
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Total Delay	58.3	41.6		64.8	65.0	14.9		65.6	20.1	0.4		57.5
LOS	E	D		E	E	B		E	C	A		E
Approach Delay		44.2			33.5				19.8			
Approach LOS		D			C				B			

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 135
Offset: 82 (61%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 21.1 Intersection LOS: C
Intersection Capacity Utilization 77.2% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 7: MD 5 & Golden Beach Rd



Lane Group	SBT	SBR	Ø6
Lane Configurations	↑↑	↱	
Traffic Volume (vph)	802	6	
Future Volume (vph)	802	6	
Satd. Flow (prot)	3539	1531	
Flt Permitted			
Satd. Flow (perm)	3539	1531	
Satd. Flow (RTOR)		158	
Lane Group Flow (vph)	862	6	
Turn Type	NA	Perm	
Protected Phases	2		6
Permitted Phases		2	
Total Split (s)	50.0	50.0	50.0
Total Lost Time (s)	4.5	4.5	
Act Effct Green (s)	94.7	94.7	
Actuated g/C Ratio	0.70	0.70	
v/c Ratio	0.35	0.01	
Control Delay	13.2	0.0	
Queue Delay	0.0	0.0	
Total Delay	13.2	0.0	
LOS	B	A	
Approach Delay	17.2		
Approach LOS	B		

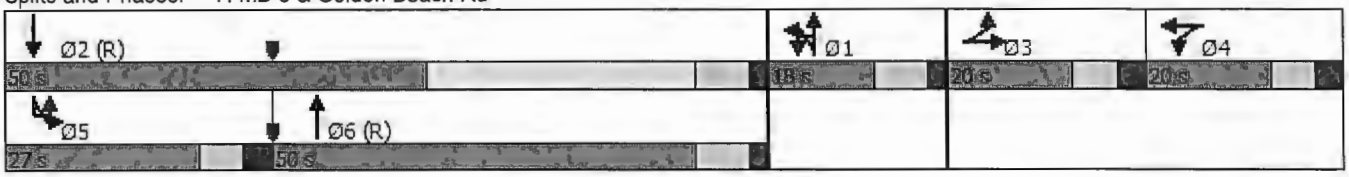
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	11	17	36	199	9	261	21	27	1328	131	2	92
Future Volume (vph)	11	17	36	199	9	261	21	27	1328	131	2	92
Satd. Flow (prot)	1770	1671	0	1625	1635	1531	0	1761	3522	1575	0	1770
Flt Permitted	0.950			0.950	0.956			0.950				0.950
Satd. Flow (perm)	1770	1671	0	1625	1635	1531	0	1761	3522	1575	0	1770
Satd. Flow (RTOR)		39				281				158		
Lane Group Flow (vph)	12	57	0	111	113	281	0	52	1428	141	0	101
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	3	3		4	4		1	1	6 1		5	5
Permitted Phases						4				6 1		
Total Split (s)	20.0	20.0		20.0	20.0	20.0	18.0	18.0			27.0	27.0
Total Lost Time (s)	5.5	5.5		5.5	5.5	5.5		6.5				4.5
Act Effct Green (s)	10.7	10.7		15.3	15.3	15.3		9.8	74.2	74.2		17.8
Actuated g/C Ratio	0.08	0.08		0.11	0.11	0.11		0.07	0.55	0.55		0.13
v/c Ratio	0.09	0.34		0.60	0.61	0.66		0.41	0.74	0.15		0.43
Control Delay	58.4	30.7		70.7	71.0	14.2		68.8	28.3	2.5		59.6
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Total Delay	58.4	30.7		70.7	71.0	14.2		68.8	28.3	2.5		59.6
LOS	E	C		E	E	B		E	C	A		E
Approach Delay		35.5			39.3				27.3			
Approach LOS		D			D				C			

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 135
Offset: 82 (61%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 28.1 Intersection LOS: C
Intersection Capacity Utilization 81.4% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 7: MD 5 & Golden Beach Rd



Lane Group	SBT	SBR	Ø6
Lane Configurations	↑↑	↱	
Traffic Volume (vph)	908	17	
Future Volume (vph)	908	17	
Satd. Flow (prot)	3539	1531	
Flt Permitted			
Satd. Flow (perm)	3539	1531	
Satd. Flow (RTOR)		158	
Lane Group Flow (vph)	976	18	
Turn Type	NA	Perm	
Protected Phases	2		6
Permitted Phases		2	
Total Split (s)	50.0	50.0	50.0
Total Lost Time (s)	4.5	4.5	
Act Effct Green (s)	82.9	82.9	
Actuated g/C Ratio	0.61	0.61	
v/c Ratio	0.45	0.02	
Control Delay	20.4	0.1	
Queue Delay	0.0	0.0	
Total Delay	20.4	0.1	
LOS	C	A	
Approach Delay	23.6		
Approach LOS	C		

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	11	17	53	227	9	261	21	40	1346	153	2	92
Future Volume (vph)	11	17	53	227	9	261	21	40	1346	153	2	92
Satd. Flow (prot)	1770	1650	0	1625	1635	1531	0	1761	3522	1575	0	1770
Flt Permitted	0.950			0.950	0.956			0.950				0.950
Satd. Flow (perm)	1770	1650	0	1625	1635	1531	0	1761	3522	1575	0	1770
Satd. Flow (RTOR)		57				281				158		
Lane Group Flow (vph)	12	75	0	127	127	281	0	66	1447	165	0	101
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	3	3		4	4		1	1	6 1		5	5
Permitted Phases						4				6 1		
Total Split (s)	20.0	20.0		20.0	20.0	20.0	18.0	18.0			27.0	27.0
Total Lost Time (s)	5.5	5.5		5.5	5.5	5.5		6.5				4.5
Act Effct Green (s)	10.9	10.9		16.0	16.0	16.0		10.3	73.4	73.4		17.8
Actuated g/C Ratio	0.08	0.08		0.12	0.12	0.12		0.08	0.54	0.54		0.13
v/c Ratio	0.08	0.41		0.66	0.66	0.66		0.49	0.76	0.18		0.43
Control Delay	57.9	27.1		73.5	73.3	13.9		56.0	18.0	0.8		60.1
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Total Delay	57.9	27.1		73.5	73.3	13.9		56.0	18.0	0.8		60.1
LOS	E	C		E	E	B		E	B	A		E
Approach Delay		31.3			42.2				17.8			
Approach LOS		C			D				B			

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 135
Offset: 82 (61%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 24.1 Intersection LOS: C
Intersection Capacity Utilization 81.9% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 7: MD 5 & Golden Beach Rd

Lane Group	SBT	SBR	Ø6
Lane Configurations	↑↑	↱	
Traffic Volume (vph)	930	17	
Future Volume (vph)	930	17	
Satd. Flow (prot)	3539	1531	
Flt Permitted			
Satd. Flow (perm)	3539	1531	
Satd. Flow (RTOR)		158	
Lane Group Flow (vph)	1000	18	
Turn Type	NA	Perm	
Protected Phases	2		6
Permitted Phases		2	
Total Split (s)	50.0	50.0	50.0
Total Lost Time (s)	4.5	4.5	
Act Effct Green (s)	81.7	81.7	
Actuated g/C Ratio	0.61	0.61	
v/c Ratio	0.47	0.02	
Control Delay	21.3	0.1	
Queue Delay	0.0	0.0	
Total Delay	21.3	0.1	
LOS	C	A	
Approach Delay	24.4		
Approach LOS	C		

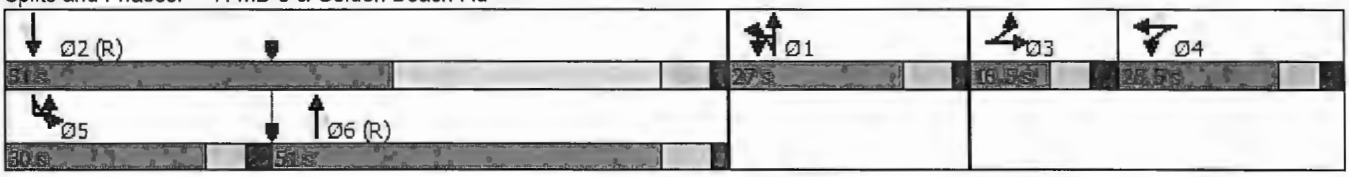
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	7	37	27	275	18	135	33	18	1115	176	5	290
Future Volume (vph)	7	37	27	275	18	135	33	18	1115	176	5	290
Satd. Flow (prot)	1770	1744	0	1625	1639	1531	0	1761	3522	1575	0	1770
Flt Permitted	0.950			0.950	0.958			0.950				0.950
Satd. Flow (perm)	1770	1744	0	1625	1639	1531	0	1761	3522	1575	0	1770
Satd. Flow (RTOR)		19				196				169		
Lane Group Flow (vph)	7	66	0	151	152	139	0	53	1149	181	0	304
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	3	3		4	4		1	1	6 1		5	5
Permitted Phases						4				6 1		
Total Split (s)	16.5	16.5		25.5	25.5	25.5	27.0	27.0			30.0	30.0
Total Lost Time (s)	5.5	5.5		5.5	5.5	5.5		6.5				4.5
Act Effct Green (s)	12.1	12.1		19.9	19.9	19.9		10.9	68.8	68.8		32.3
Actuated g/C Ratio	0.08	0.08		0.13	0.13	0.13		0.07	0.46	0.46		0.22
v/c Ratio	0.05	0.42		0.70	0.70	0.37		0.42	0.71	0.22		0.80
Control Delay	62.6	54.8		79.5	79.3	4.2		75.5	36.5	4.8		64.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Total Delay	62.6	54.8		79.5	79.3	4.2		75.5	36.5	4.8		64.2
LOS	E	D		E	E	A		E	D	A		E
Approach Delay		55.6			55.8				33.9			
Approach LOS		E			E				C			

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 61.5 (41%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 31.5 Intersection LOS: C
Intersection Capacity Utilization 78.9% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 7: MD 5 & Golden Beach Rd



Lane Group	SBT	SBR	Ø6
Lane Configurations	↑↑	↱	
Traffic Volume (vph)	1505	3	
Future Volume (vph)	1505	3	
Satd. Flow (prot)	3539	1531	
Flt Permitted			
Satd. Flow (perm)	3539	1531	
Satd. Flow (RTOR)		142	
Lane Group Flow (vph)	1552	3	
Turn Type	NA	Perm	
Protected Phases	2		6
Permitted Phases		2	
Total Split (s)	51.0	51.0	51.0
Total Lost Time (s)	4.5	4.5	
Act Effct Green (s)	90.9	90.9	
Actuated g/C Ratio	0.61	0.61	
v/c Ratio	0.72	0.00	
Control Delay	15.0	0.0	
Queue Delay	0.0	0.0	
Total Delay	15.0	0.0	
LOS	B	A	
Approach Delay	23.0		
Approach LOS	C		

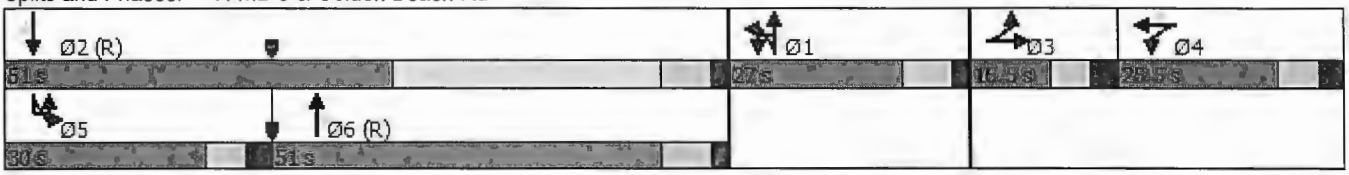
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	29	64	46	343	18	146	33	48	1246	263	5	302
Future Volume (vph)	29	64	46	343	18	146	33	48	1246	263	5	302
Satd. Flow (prot)	1770	1747	0	1625	1637	1531	0	1761	3522	1575	0	1770
Flt Permitted	0.950			0.950	0.957			0.950				0.950
Satd. Flow (perm)	1770	1747	0	1625	1637	1531	0	1761	3522	1575	0	1770
Satd. Flow (RTOR)		18				196				226		
Lane Group Flow (vph)	30	113	0	188	185	151	0	83	1285	271	0	316
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	3	3		4	4		1	1	6 1		5	5
Permitted Phases						4				6 1		
Total Split (s)	16.5	16.5		25.5	25.5	25.5	27.0	27.0			30.0	30.0
Total Lost Time (s)	5.5	5.5		5.5	5.5	5.5		6.5				4.5
Act Effct Green (s)	14.2	14.2		20.7	20.7	20.7		13.4	66.4	66.4		28.7
Actuated g/C Ratio	0.09	0.09		0.14	0.14	0.14		0.09	0.44	0.44		0.19
v/c Ratio	0.18	0.62		0.84	0.82	0.40		0.53	0.82	0.33		0.93
Control Delay	64.9	70.0		92.3	89.7	5.5		76.7	41.8	6.0		80.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Total Delay	64.9	70.0		92.3	89.7	5.5		76.7	41.8	6.0		80.7
LOS	E	E		F	F	A		E	D	A		F
Approach Delay		68.9			66.4				37.6			
Approach LOS		E			E				D			

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 61.5 (41%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 40.0 Intersection LOS: D
Intersection Capacity Utilization 83.8% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 7: MD 5 & Golden Beach Rd



Lane Group	SBT	SBR	Ø6
Lane Configurations	↑↑	↱	
Traffic Volume (vph)	1618	23	
Future Volume (vph)	1618	23	
Satd. Flow (prot)	3539	1531	
Flt Permitted			
Satd. Flow (perm)	3539	1531	
Satd. Flow (RTOR)		142	
Lane Group Flow (vph)	1668	24	
Turn Type	NA	Perm	
Protected Phases	2		6
Permitted Phases		2	
Total Split (s)	51.0	51.0	51.0
Total Lost Time (s)	4.5	4.5	
Act Effct Green (s)	79.7	79.7	
Actuated g/C Ratio	0.53	0.53	
v/c Ratio	0.89	0.03	
Control Delay	24.3	0.0	
Queue Delay	0.0	0.0	
Total Delay	24.3	0.0	
LOS	C	A	
Approach Delay	32.9		
Approach LOS	C		

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	29	64	82	404	18	146	33	85	1295	324	5	302
Future Volume (vph)	29	64	82	404	18	146	33	85	1295	324	5	302
Satd. Flow (prot)	1770	1706	0	1625	1635	1531	0	1761	3522	1575	0	1770
Flt Permitted	0.950			0.950	0.956			0.950				0.950
Satd. Flow (perm)	1770	1706	0	1625	1635	1531	0	1761	3522	1575	0	1770
Satd. Flow (RTOR)		33				196				268		
Lane Group Flow (vph)	30	151	0	216	219	151	0	122	1335	334	0	316
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	3	3		4	4		1	1	6 1		5	5
Permitted Phases						4				6 1		
Total Split (s)	16.5	16.5		25.5	25.5	25.5	27.0	27.0			30.0	30.0
Total Lost Time (s)	5.5	5.5		5.5	5.5	5.5		6.5				4.5
Act Effct Green (s)	14.4	14.4		20.8	20.8	20.8		16.3	69.3	69.3		25.5
Actuated g/C Ratio	0.10	0.10		0.14	0.14	0.14		0.11	0.46	0.46		0.17
v/c Ratio	0.18	0.78		0.96	0.96	0.40		0.64	0.82	0.38		1.05
Control Delay	66.8	77.4		113.7	114.7	5.5		60.4	24.5	2.2		108.9
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Total Delay	66.8	77.4		113.7	114.7	5.5		60.4	24.5	2.2		108.9
LOS	E	E		F	F	A		E	C	A		F
Approach Delay		75.7			86.2				22.8			
Approach LOS		E			F				C			

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Offset: 61.5 (41%), Referenced to phase 2:SBT and 6:NBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 41.7	Intersection LOS: D
Intersection Capacity Utilization 91.0%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 7: MD 5 & Golden Beach Rd

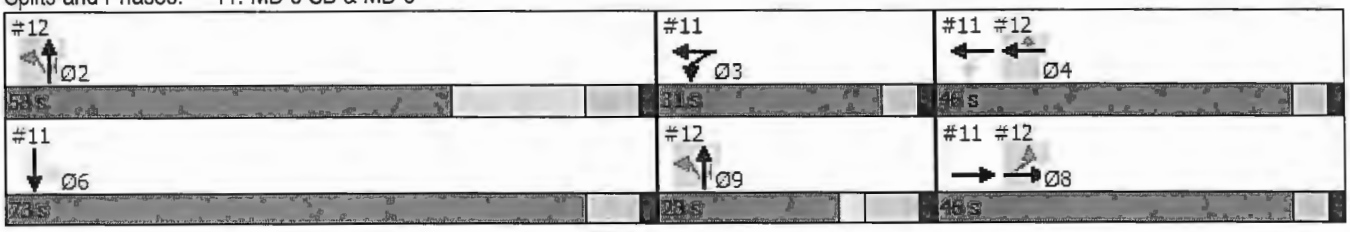
Lane Group	SBT	SBR	Ø6
Lane Configurations	↑↑	↱	
Traffic Volume (vph)	1667	23	
Future Volume (vph)	1667	23	
Satd. Flow (prot)	3539	1531	
Flt Permitted			
Satd. Flow (perm)	3539	1531	
Satd. Flow (RTOR)		142	
Lane Group Flow (vph)	1719	24	
Turn Type	NA	Perm	
Protected Phases	2		6
Permitted Phases		2	
Total Split (s)	51.0	51.0	51.0
Total Lost Time (s)	4.5	4.5	
Act Effct Green (s)	76.5	76.5	
Actuated g/C Ratio	0.51	0.51	
v/c Ratio	0.95	0.03	
Control Delay	30.9	0.0	
Queue Delay	0.0	0.0	
Total Delay	30.9	0.0	
LOS	C	A	
Approach Delay	42.5		
Approach LOS	D		

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑					↰	↑↑	↱
Traffic Volume (vph)	0	80	160	55	204	0	0	0	0	20	917	39
Future Volume (vph)	0	80	160	55	204	0	0	0	0	20	917	39
Satd. Flow (prot)	0	1853	1575	1761	1853	0	0	0	0	1702	3522	1733
Flt Permitted				0.688						0.950		
Satd. Flow (perm)	0	1853	1575	1275	1853	0	0	0	0	1702	3522	1733
Satd. Flow (RTOR)			176									80
Lane Group Flow (vph)	0	88	176	60	224	0	0	0	0	22	1008	43
Turn Type		NA	Free	pm+pt	NA					Perm	NA	Perm
Protected Phases		8		3	4 3						6	
Permitted Phases			Free	4 3						6		6
Total Split (s)		46.0		31.0						73.0	73.0	73.0
Total Lost Time (s)		4.0		6.0						7.0	5.0	5.0
Act Effct Green (s)		16.6	99.3	33.6	38.4					43.3	45.3	45.3
Actuated g/C Ratio		0.17	1.00	0.34	0.39					0.44	0.46	0.46
v/c Ratio		0.28	0.11	0.11	0.31					0.03	0.63	0.05
Control Delay		40.9	0.1	21.1	24.0					16.0	22.4	0.8
Queue Delay		0.0	0.0	0.2	0.3					0.0	0.0	0.0
Total Delay		40.9	0.1	21.3	24.3					16.0	22.4	0.8
LOS		D	A	C	C					B	C	A
Approach Delay		13.7			23.7						21.4	
Approach LOS		B			C						C	

Intersection Summary		
Cycle Length: 150		
Actuated Cycle Length: 99.3		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.63		
Intersection Signal Delay: 20.6		Intersection LOS: C
Intersection Capacity Utilization 90.1%		ICU Level of Service E
Analysis Period (min) 15		

Splits and Phases: 11: MD 5 SB & MD 6



Lane Group	Ø2	Ø4	Ø9
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	2	4	9
Permitted Phases			
Total Split (s)	58.0	46.0	28.0
Total Lost Time (s)			
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			

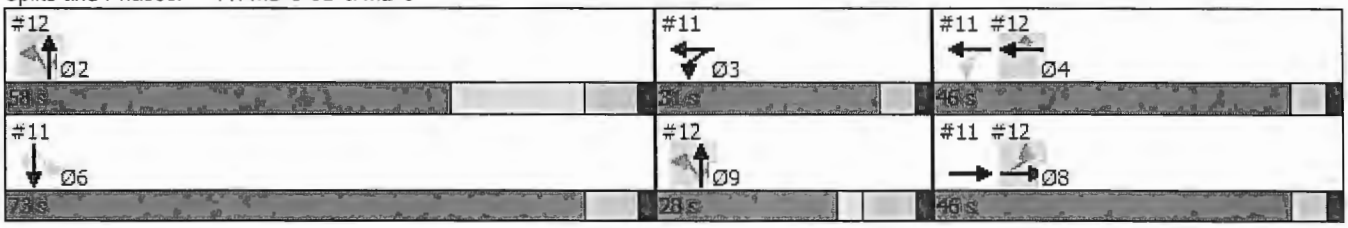
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑					↰	↑↑	↱
Traffic Volume (vph)	0	144	162	55	206	0	0	0	0	61	1002	81
Future Volume (vph)	0	144	162	55	206	0	0	0	0	61	1002	81
Satd. Flow (prot)	0	1853	1575	1761	1853	0	0	0	0	1702	3522	1733
Flt Permitted				0.511						0.950		
Satd. Flow (perm)	0	1853	1575	947	1853	0	0	0	0	1702	3522	1733
Satd. Flow (RTOR)			178									89
Lane Group Flow (vph)	0	158	178	60	226	0	0	0	0	67	1101	89
Turn Type		NA	Free	pm+pt	NA					Perm	NA	Perm
Protected Phases		8		3	4 3						6	
Permitted Phases			Free	4 3						6		6
Total Split (s)		46.0		31.0						73.0	73.0	73.0
Total Lost Time (s)		4.0		6.0						7.0	5.0	5.0
Act Effct Green (s)		23.5	115.0	40.5	45.2					51.8	53.8	53.8
Actuated g/C Ratio		0.20	1.00	0.35	0.39					0.45	0.47	0.47
v/c Ratio		0.42	0.11	0.13	0.31					0.09	0.67	0.10
Control Delay		44.2	0.1	25.5	27.9					19.5	26.4	4.1
Queue Delay		0.0	0.0	0.3	0.9					0.0	0.0	0.0
Total Delay		44.2	0.1	25.8	28.8					19.5	26.4	4.1
LOS		D	A	C	C					B	C	A
Approach Delay		20.8			28.1						24.5	
Approach LOS		C			C						C	

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 115
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 24.4 Intersection LOS: C
Intersection Capacity Utilization 96.1% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 11: MD 5 SB & MD 6



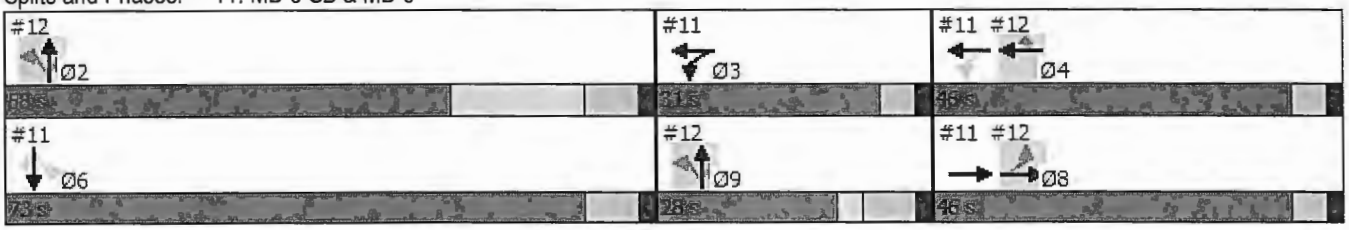
Lane Group	Ø2	Ø4	Ø9
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	2	4	9
Permitted Phases			
Total Split (s)	58.0	46.0	28.0
Total Lost Time (s)			
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑					↰	↑↑	↱
Traffic Volume (vph)	0	155	162	55	206	0	0	0	0	70	1019	90
Future Volume (vph)	0	155	162	55	206	0	0	0	0	70	1019	90
Satd. Flow (prot)	0	1853	1575	1761	1853	0	0	0	0	1702	3522	1733
Flt Permitted				0.493						0.950		
Satd. Flow (perm)	0	1853	1575	914	1853	0	0	0	0	1702	3522	1733
Satd. Flow (RTOR)			178									99
Lane Group Flow (vph)	0	170	178	60	226	0	0	0	0	77	1120	99
Turn Type		NA	Free	pm+pt	NA					Perm	NA	Perm
Protected Phases		8		3	4 3						6	
Permitted Phases			Free	4 3						6		6
Total Split (s)		46.0		31.0						73.0	73.0	73.0
Total Lost Time (s)		4.0		6.0						7.0	5.0	5.0
Act Effct Green (s)		25.5	118.1	42.4	47.1					52.9	55.0	55.0
Actuated g/C Ratio		0.22	1.00	0.36	0.40					0.45	0.47	0.47
v/c Ratio		0.43	0.11	0.13	0.31					0.10	0.68	0.12
Control Delay		44.1	0.1	26.0	28.6					20.5	27.8	4.1
Queue Delay		0.0	0.0	0.3	1.2					0.0	0.0	0.0
Total Delay		44.1	0.1	26.3	29.8					20.5	27.8	4.1
LOS		D	A	C	C					C	C	A
Approach Delay		21.6			29.0						25.6	
Approach LOS		C			C						C	

Intersection Summary		
Cycle Length: 150		
Actuated Cycle Length: 118.1		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.68		
Intersection Signal Delay: 25.4	Intersection LOS: C	
Intersection Capacity Utilization 97.2%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 11: MD 5 SB & MD 6



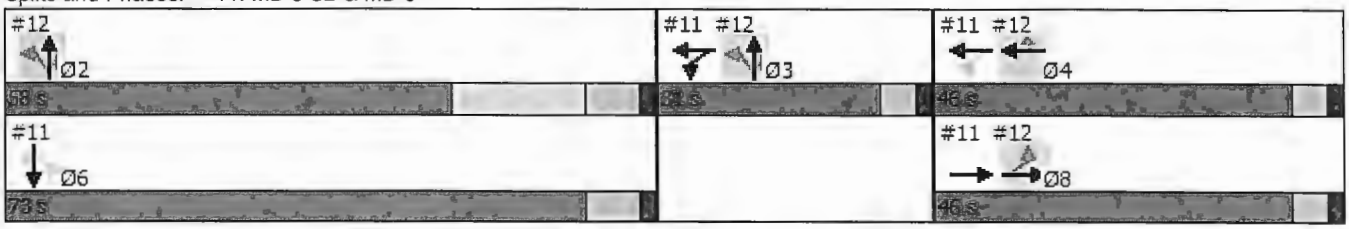
Lane Group	Ø2	Ø4	Ø9
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	2	4	9
Permitted Phases			
Total Split (s)	58.0	46.0	28.0
Total Lost Time (s)			
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Intersection Summary			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑					↰	↑↑	↱
Traffic Volume (vph)	0	125	281	65	221	0	0	0	0	75	1704	107
Future Volume (vph)	0	125	281	65	221	0	0	0	0	75	1704	107
Satd. Flow (prot)	0	1853	1575	1761	1853	0	0	0	0	1702	3522	1733
Flt Permitted				0.547						0.950		
Satd. Flow (perm)	0	1853	1575	1014	1853	0	0	0	0	1702	3522	1733
Satd. Flow (RTOR)			293									111
Lane Group Flow (vph)	0	130	293	68	230	0	0	0	0	78	1775	111
Turn Type		NA	Free	pm+pt	NA					Perm	NA	Perm
Protected Phases		8		3	4 3						6	
Permitted Phases			Free	4 3						6		6
Total Split (s)		46.0		31.0						73.0	73.0	73.0
Total Lost Time (s)		4.0		6.0						7.0	5.0	5.0
Act Effct Green (s)		18.3	107.8	23.5	30.2					66.5	68.5	68.5
Actuated g/C Ratio		0.17	1.00	0.22	0.28					0.62	0.64	0.64
v/c Ratio		0.41	0.19	0.24	0.44					0.07	0.79	0.10
Control Delay		45.1	0.3	34.3	37.9					10.6	19.7	2.3
Queue Delay		0.0	0.0	0.0	0.5					0.0	0.0	0.0
Total Delay		45.1	0.3	34.4	38.3					10.6	19.7	2.3
LOS		D	A	C	D					B	B	A
Approach Delay		14.0			37.4						18.4	
Approach LOS		B			D						B	

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 107.8
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 19.8 Intersection LOS: B
Intersection Capacity Utilization 105.7% ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 11: MD 5 SB & MD 6



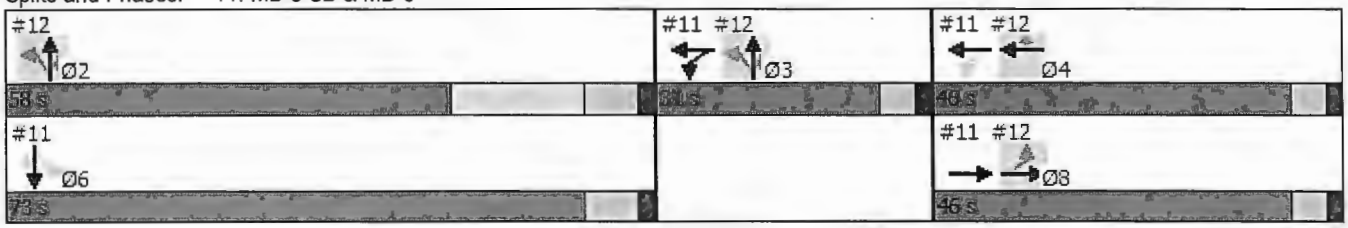
Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	4
Permitted Phases		
Total Split (s)	58.0	46.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑					↰	↑↑	↱
Traffic Volume (vph)	0	183	284	65	223	0	0	0	0	151	1868	182
Future Volume (vph)	0	183	284	65	223	0	0	0	0	151	1868	182
Satd. Flow (prot)	0	1853	1575	1761	1853	0	0	0	0	1702	3522	1733
Flt Permitted				0.451						0.950		
Satd. Flow (perm)	0	1853	1575	836	1853	0	0	0	0	1702	3522	1733
Satd. Flow (RTOR)			296									190
Lane Group Flow (vph)	0	191	296	68	232	0	0	0	0	157	1946	190
Turn Type		NA	Free	pm+pt	NA					Perm	NA	Perm
Protected Phases		8		3	4 3						6	
Permitted Phases			Free	4 3						6		6
Total Split (s)		46.0		31.0						73.0	73.0	73.0
Total Lost Time (s)		4.0		6.0						7.0	5.0	5.0
Act Effct Green (s)		25.3	115.2	30.4	37.1					67.0	69.0	69.0
Actuated g/C Ratio		0.22	1.00	0.26	0.32					0.58	0.60	0.60
v/c Ratio		0.47	0.19	0.23	0.39					0.16	0.92	0.17
Control Delay		43.2	0.3	34.7	37.6					14.5	32.0	2.5
Queue Delay		0.0	0.0	0.1	1.5					0.0	0.0	0.0
Total Delay		43.2	0.3	34.8	39.1					14.5	32.0	2.5
LOS		D	A	C	D					B	C	A
Approach Delay		17.1			38.1						28.4	
Approach LOS		B			D						C	

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 115.2
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 27.6 — Intersection LOS: C
Intersection Capacity Utilization 115.1% — ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 11: MD 5 SB & MD 6



Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	4
Permitted Phases		
Total Split (s)	58.0	46.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		

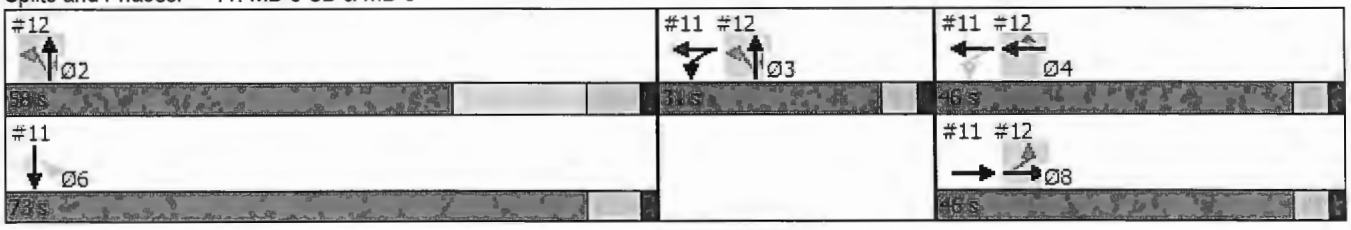
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱	↰	↑					↰	↑↑	↱
Traffic Volume (vph)	0	207	284	65	223	0	0	0	0	175	1917	206
Future Volume (vph)	0	207	284	65	223	0	0	0	0	175	1917	206
Satd. Flow (prot)	0	1853	1575	1761	1853	0	0	0	0	1702	3522	1733
Flt Permitted				0.423						0.950		
Satd. Flow (perm)	0	1853	1575	784	1853	0	0	0	0	1702	3522	1733
Satd. Flow (RTOR)			296									215
Lane Group Flow (vph)	0	216	296	68	232	0	0	0	0	182	1997	215
Turn Type		NA	Free	pm+pt	NA					Perm	NA	Perm
Protected Phases		8		3	4 3						6	
Permitted Phases			Free	4 3						6		6
Total Split (s)		46.0		31.0						73.0	73.0	73.0
Total Lost Time (s)		4.0		6.0						7.0	5.0	5.0
Act Effct Green (s)		28.3	118.2	33.4	40.0					67.1	69.1	69.1
Actuated g/C Ratio		0.24	1.00	0.28	0.34					0.57	0.58	0.58
v/c Ratio		0.49	0.19	0.23	0.37					0.19	0.97	0.20
Control Delay		42.7	0.3	34.7	37.6					16.1	40.4	2.6
Queue Delay		0.1	0.0	0.1	2.7					0.0	0.0	0.0
Total Delay		42.7	0.3	34.8	40.2					16.1	40.4	2.6
LOS		D	A	C	D					B	D	A
Approach Delay		18.2			39.0						35.1	
Approach LOS		B			D						D	

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 118.2
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 32.8 Intersection LOS: C
Intersection Capacity Utilization 119.1% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 11: MD 5 SB & MD 6



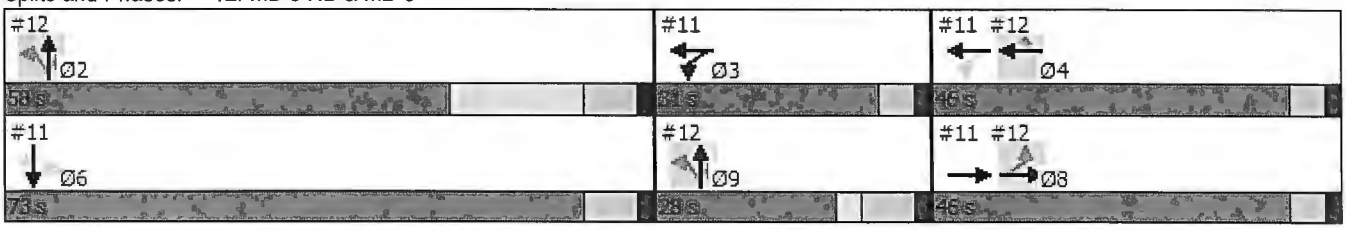
Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	4
Permitted Phases		
Total Split (s)	58.0	46.0
Total Lost Time (s)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	34	0	0	63	43	154	1409	19	0	0	0
Future Volume (vph)	72	34	0	0	63	43	154	1409	19	0	0	0
Satd. Flow (prot)	1719	1872	0	0	1863	1531	1770	3539	1583	0	0	0
Flt Permitted	0.713						0.950					
Satd. Flow (perm)	1290	1872	0	0	1863	1531	1770	3539	1583	0	0	0
Satd. Flow (RTOR)						95			22			
Lane Group Flow (vph)	77	37	0	0	68	46	166	1515	20	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		8			4			2 9				
Permitted Phases	8					4	2 9		2 9			
Total Split (s)	46.0	46.0			46.0	46.0						
Total Lost Time (s)	4.0	4.0			4.0	4.0						
Act Effct Green (s)	16.6	16.6			16.6	16.6	71.6	73.6	73.6			
Actuated g/C Ratio	0.17	0.17			0.17	0.17	0.72	0.74	0.74			
v/c Ratio	0.36	0.12			0.22	0.14	0.13	0.58	0.02			
Control Delay	21.7	17.7			40.0	0.9	4.7	7.0	1.6			
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Delay	21.7	17.7			40.0	0.9	4.7	7.0	1.6			
LOS	C	B			D	A	A	A	A			
Approach Delay		20.4			24.2			6.7				
Approach LOS		C			C			A				

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 99.3
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 8.5 Intersection LOS: A
Intersection Capacity Utilization 91.3% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 12: MD 5 NB & MD 6



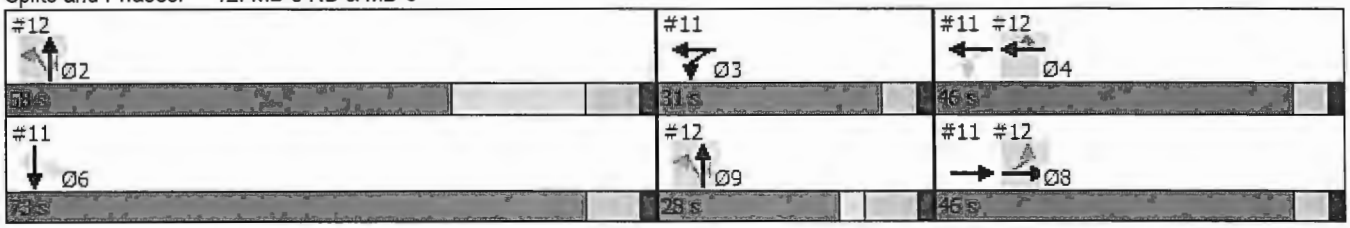
Lane Group	Ø2	Ø3	Ø6	Ø9
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Satd. Flow (RTOR)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	2	3	6	9
Permitted Phases				
Total Split (s)	58.0	31.0	73.0	28.0
Total Lost Time (s)				
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	75	0	0	63	106	156	1540	19	0	0	0
Future Volume (vph)	135	75	0	0	63	106	156	1540	19	0	0	0
Satd. Flow (prot)	1719	1872	0	0	1863	1531	1770	3539	1583	0	0	0
Flt Permitted	0.713						0.950					
Satd. Flow (perm)	1290	1872	0	0	1863	1531	1770	3539	1583	0	0	0
Satd. Flow (RTOR)						95			22			
Lane Group Flow (vph)	145	81	0	0	68	114	168	1656	20	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		8			4			2 9				
Permitted Phases	8					4	2 9		2 9			
Total Split (s)	46.0	46.0			46.0	46.0						
Total Lost Time (s)	4.0	4.0			4.0	4.0						
Act Effct Green (s)	23.5	23.5			23.5	23.5	80.3	82.3	82.3			
Actuated g/C Ratio	0.20	0.20			0.20	0.20	0.70	0.72	0.72			
v/c Ratio	0.55	0.21			0.18	0.29	0.14	0.65	0.02			
Control Delay	33.1	25.4			40.1	13.1	6.9	11.0	2.4			
Queue Delay	0.1	0.1			0.0	0.0	0.0	0.0	0.0			
Total Delay	33.3	25.5			40.1	13.1	6.9	11.0	2.4			
LOS	C	C			D	B	A	B	A			
Approach Delay		30.5			23.2			10.6				
Approach LOS		C			C			B				

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 115
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 13.6 Intersection LOS: B
Intersection Capacity Utilization 97.3% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 12: MD 5 NB & MD 6

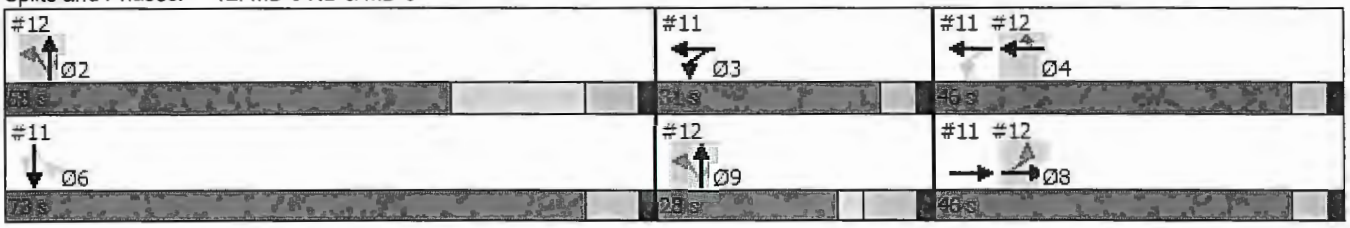


Lane Group	Ø2	Ø3	Ø6	Ø9
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Satd. Flow (RTOR)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	2	3	6	9
Permitted Phases				
Total Split (s)	58.0	31.0	73.0	28.0
Total Lost Time (s)				
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				
Intersection Summary				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	84	0	0	63	117	156	1562	19	0	0	0
Future Volume (vph)	146	84	0	0	63	117	156	1562	19	0	0	0
Satd. Flow (prot)	1719	1872	0	0	1863	1531	1770	3539	1583	0	0	0
Flt Permitted	0.713						0.950					
Satd. Flow (perm)	1290	1872	0	0	1863	1531	1770	3539	1583	0	0	0
Satd. Flow (RTOR)						95			22			
Lane Group Flow (vph)	157	90	0	0	68	126	168	1680	20	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		8			4			2 9				
Permitted Phases	8					4	2 9		2 9			
Total Split (s)	46.0	46.0			46.0	46.0						
Total Lost Time (s)	4.0	4.0			4.0	4.0						
Act Effct Green (s)	25.5	25.5			25.5	25.5	81.4	83.5	83.5			
Actuated g/C Ratio	0.22	0.22			0.22	0.22	0.69	0.71	0.71			
v/c Ratio	0.56	0.22			0.17	0.31	0.14	0.67	0.02			
Control Delay	35.5	26.8			39.6	14.7	7.6	12.3	2.6			
Queue Delay	0.2	0.2			0.0	0.0	0.0	0.0	0.0			
Total Delay	35.7	27.0			39.6	14.7	7.6	12.3	2.6			
LOS	D	C			D	B	A	B	A			
Approach Delay		32.5			23.4			11.8				
Approach LOS		C			C			B				

Intersection Summary		
Cycle Length: 150		
Actuated Cycle Length: 118.1		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.68		
Intersection Signal Delay: 15.0	Intersection LOS: B	
Intersection Capacity Utilization 98.3%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 12: MD 5 NB & MD 6



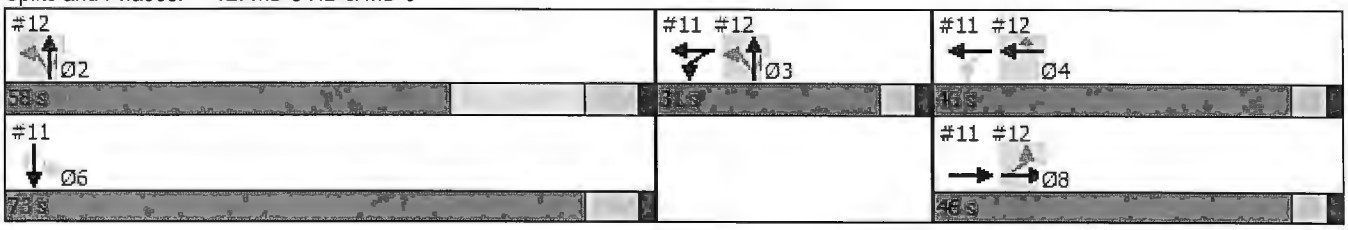
Lane Group	Ø2	Ø3	Ø6	Ø9
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Satd. Flow (RTOR)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	2	3	6	9
Permitted Phases				
Total Split (s)	58.0	31.0	73.0	28.0
Total Lost Time (s)				
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
LOS				
Approach Delay				
Approach LOS				

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	91	0	0	39	46	139	1186	48	0	0	0
Future Volume (vph)	83	91	0	0	39	46	139	1186	48	0	0	0
Satd. Flow (prot)	1719	1872	0	0	1863	1531	1770	3539	1583	0	0	0
Flt Permitted	0.729						0.950					
Satd. Flow (perm)	1319	1872	0	0	1863	1531	1770	3539	1583	0	0	0
Satd. Flow (RTOR)						80			53			
Lane Group Flow (vph)	92	101	0	0	43	51	154	1318	53	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		8			4			2 3				
Permitted Phases	8					4	2 3		2 3			
Total Split (s)	46.0	46.0			46.0	46.0						
Total Lost Time (s)	4.0	4.0			4.0	4.0						
Act Effct Green (s)	18.3	18.3			18.3	18.3	78.4	80.4	80.4			
Actuated g/C Ratio	0.17	0.17			0.17	0.17	0.73	0.75	0.75			
v/c Ratio	0.41	0.32			0.14	0.16	0.12	0.50	0.04			
Control Delay	32.4	29.2			40.2	4.2	5.0	6.6	1.4			
Queue Delay	0.1	0.1			0.0	0.0	0.0	0.0	0.0			
Total Delay	32.5	29.2			40.2	4.2	5.0	6.6	1.4			
LOS	C	C			D	A	A	A	A			
Approach Delay		30.8			20.6			6.3				
Approach LOS		C			C			A				

Intersection Summary		
Cycle Length: 150		
Actuated Cycle Length: 107.8		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.79		
Intersection Signal Delay: 9.6	Intersection LOS: A	
Intersection Capacity Utilization 106.9%	ICU Level of Service G	
Analysis Period (min) 15		

Splits and Phases: 12: MD 5 NB & MD 6



Lane Group	Ø2	Ø3	Ø6
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	2	3	6
Permitted Phases			
Total Split (s)	58.0	31.0	73.0
Total Lost Time (s)			
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	167	0	0	39	103	140	1316	48	0	0	0
Future Volume (vph)	140	167	0	0	39	103	140	1316	48	0	0	0
Satd. Flow (prot)	1719	1872	0	0	1863	1531	1770	3539	1583	0	0	0
Flt Permitted	0.729						0.950					
Satd. Flow (perm)	1319	1872	0	0	1863	1531	1770	3539	1583	0	0	0
Satd. Flow (RTOR)						80			53			
Lane Group Flow (vph)	156	186	0	0	43	114	156	1462	53	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		8			4			2 3				
Permitted Phases	8					4	2 3		2 3			
Total Split (s)	46.0	46.0			46.0	46.0						
Total Lost Time (s)	4.0	4.0			4.0	4.0						
Act Effct Green (s)	25.3	25.3			25.3	25.3	78.7	80.7	80.7			
Actuated g/C Ratio	0.22	0.22			0.22	0.22	0.68	0.70	0.70			
v/c Ratio	0.54	0.45			0.11	0.29	0.13	0.59	0.05			
Control Delay	40.6	35.9			36.5	15.3	7.8	11.0	2.2			
Queue Delay	0.3	0.3			0.0	0.0	0.1	0.0	0.0			
Total Delay	41.0	36.2			36.5	15.3	7.8	11.0	2.2			
LOS	D	D			D	B	A	B	A			
Approach Delay		38.4			21.1			10.4				
Approach LOS		D			C			B				

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 115.2
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 15.6 Intersection LOS: B
Intersection Capacity Utilization 116.3% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 12: MD 5 NB & MD 6

Lane Group	Ø2	Ø3	Ø6
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	2	3	6
Permitted Phases			
Total Split (s)	58.0	31.0	73.0
Total Lost Time (s)			
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			

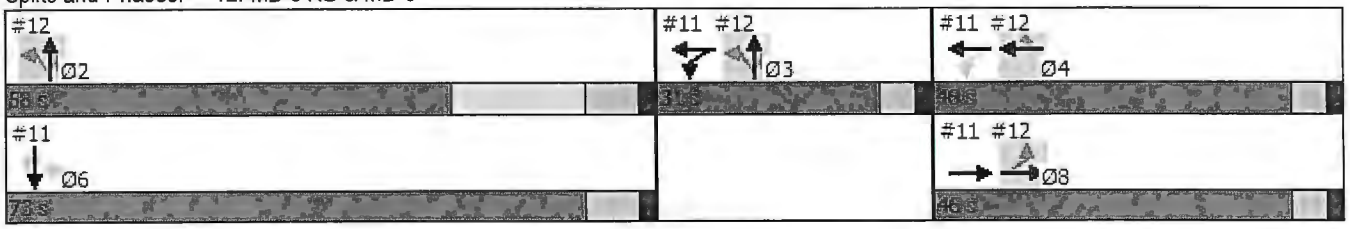
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	191	0	0	39	127	140	1365	48	0	0	0
Future Volume (vph)	164	191	0	0	39	127	140	1365	48	0	0	0
Satd. Flow (prot)	1719	1872	0	0	1863	1531	1770	3539	1583	0	0	0
Flt Permitted	0.729						0.950					
Satd. Flow (perm)	1319	1872	0	0	1863	1531	1770	3539	1583	0	0	0
Satd. Flow (RTOR)						80			53			
Lane Group Flow (vph)	182	212	0	0	43	141	156	1517	53	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		8			4			2 3				
Permitted Phases	8					4	2 3		2 3			
Total Split (s)	46.0	46.0			46.0	46.0						
Total Lost Time (s)	4.0	4.0			4.0	4.0						
Act Effct Green (s)	28.3	28.3			28.3	28.3	78.7	80.8	80.8			
Actuated g/C Ratio	0.24	0.24			0.24	0.24	0.67	0.68	0.68			
v/c Ratio	0.58	0.47			0.10	0.33	0.13	0.63	0.05			
Control Delay	42.1	36.7			35.4	19.0	8.9	13.0	2.5			
Queue Delay	0.6	0.5			0.0	0.0	0.1	0.0	0.0			
Total Delay	42.7	37.2			35.4	19.0	8.9	13.0	2.5			
LOS	D	D			D	B	A	B	A			
Approach Delay		39.7			22.8			12.3				
Approach LOS		D			C			B				

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 118.2
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 17.9 Intersection LOS: B
Intersection Capacity Utilization 120.3% ICU Level of Service H
Analysis Period (min) 15

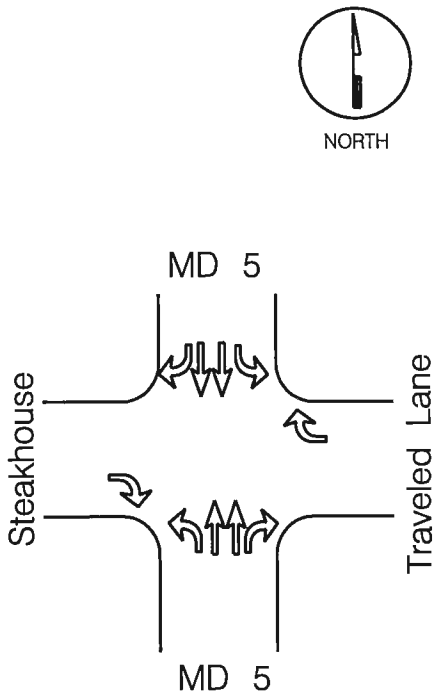
Splits and Phases: 12: MD 5 NB & MD 6



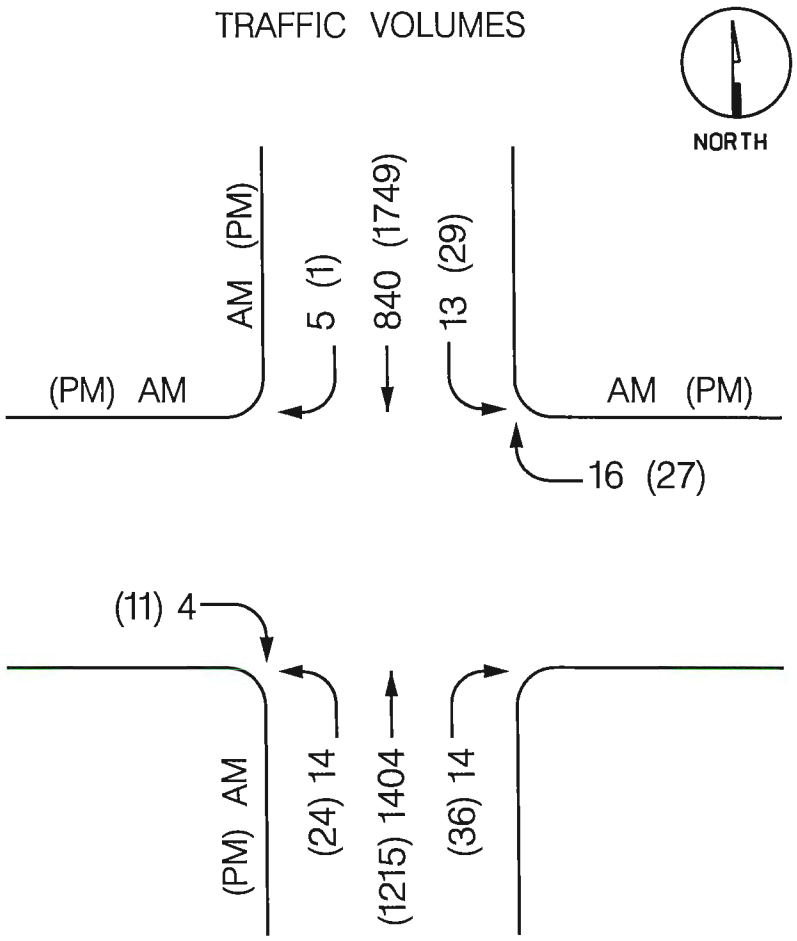
Lane Group	Ø2	Ø3	Ø6
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	2	3	6
Permitted Phases			
Total Split (s)	58.0	31.0	73.0
Total Lost Time (s)			
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Intersection Summary			

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



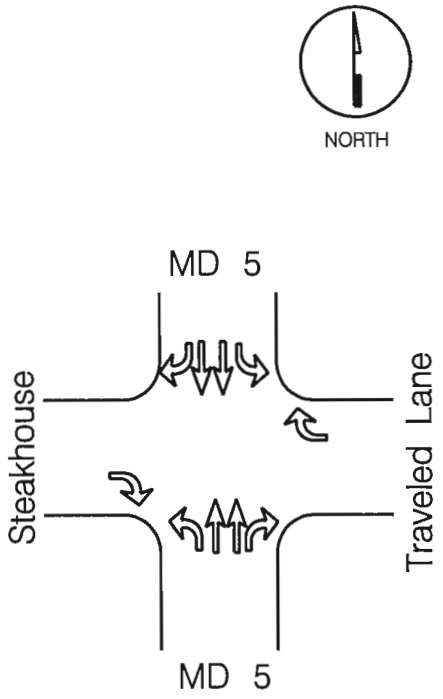
		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	1404	*	.55	+	13	*	1	=	785*	
	SB	840	*	.55	+	14	*	1	=	476	
	EB	(4 – 14)	*	1					=	0	A
	WB	(16 – 13)	*	1					=	3*	788
PM	NB	1215	*	.55	+	29	*	1	=	697	
	SB	1749	*	.55	+	24	*	1	=	986*	
	EB	(11 – 24)	*	1					=	0	A
	WB	(27 – 29)	*	1					=	0*	986

CRITICAL LANE ANALYSIS

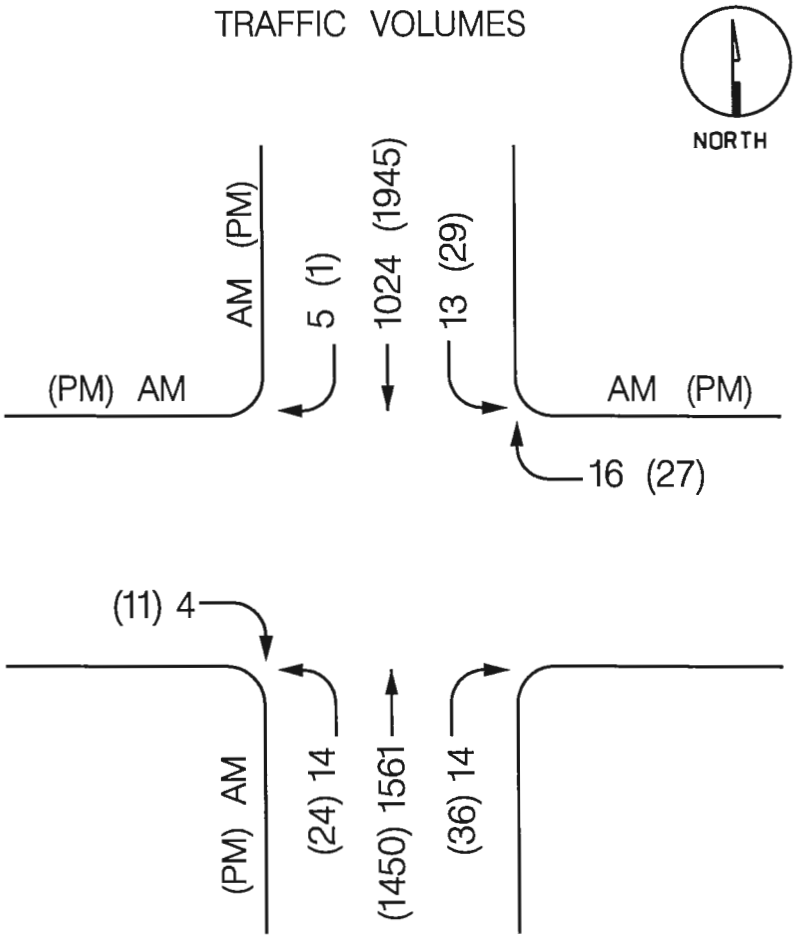
Prepared By: C. ATKINSON Condition: EXISTING

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	1561	*	.55	+	13	*	1	=	872*	
	SB	1024	*	.55	+	14	*	1	=	577	
	EB	(4 – 14)	*	1					=	0	A
	WB	(16 – 13)	*	1					=	3*	875
PM	NB	1450	*	.55	+	29	*	1	=	826	
	SB	1945	*	.55	+	24	*	1	=	1094*	
	EB	(11 – 24)	*	1					=	0	B
	WB	(27 – 29)	*	1					=	0*	1094

CRITICAL LANE ANALYSIS

Prepared By: C. ATKINSON Condition: BACKGROUND

HCS7 Two-Way Stop-Control Report

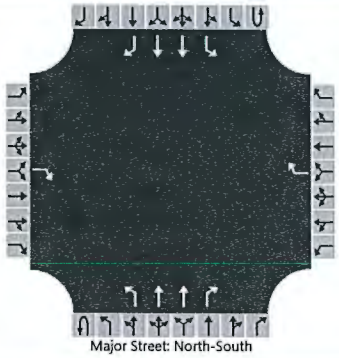
General Information

Analyst	C. Atkinson
Agency/Co.	Traffic Concepts, Inc.
Date Performed	7/11/2022
Analysis Year	2022
Time Analyzed	Existing - AM Peak
Intersection Orientation	North-South
Project Description	3741 - Charlotte Hall Center

Site Information

Intersection	MD 5 @ Traveled Lane
Jurisdiction	St. Mary's County, MD
East/West Street	Traveled Lane
North/South Street	MD 5
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1		0	0	1	0	1	2	1	0	1	2	1
Configuration				R				R		L	T	R		L	T	R
Volume (veh/h)				4				16	7	7	1404	14	7	6	840	5
Percent Heavy Vehicles (%)				2				2	2	2			2	2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9	6.4	4.1			6.4	4.1		
Critical Headway (sec)				6.94				6.94	6.44	4.14			6.44	4.14		
Base Follow-Up Headway (sec)				3.3				3.3	2.5	2.2			2.5	2.2		
Follow-Up Headway (sec)				3.32				3.32	2.52	2.22			2.52	2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				4				17		15				14		
Capacity, c (veh/h)				559				356		510				217		
v/c Ratio				0.01				0.05		0.03				0.06		
95% Queue Length, Q_{95} (veh)				0.0				0.2		0.1				0.2		
Control Delay (s/veh)				11.5				15.6		12.3				22.7		
Level of Service (LOS)				B				C		B				C		
Approach Delay (s/veh)	11.5				15.6				0.1				0.3			
Approach LOS	B				C											

HCS7 Two-Way Stop-Control Report

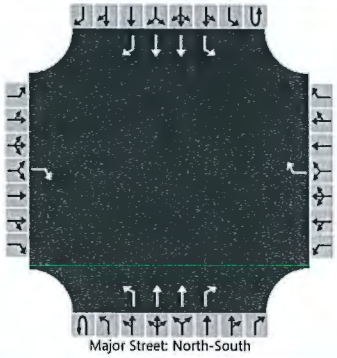
General Information

Analyst	C. Atkinson
Agency/Co.	Traffic Concepts, Inc.
Date Performed	7/11/2022
Analysis Year	2022
Time Analyzed	Background - AM Peak
Intersection Orientation	North-South
Project Description	3741 - Charlotte Hall Center

Site Information

Intersection	MD 5 @ Traveled Lane
Jurisdiction	St. Mary's County, MD
East/West Street	Traveled Lane
North/South Street	MD 5
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1		0	0	1	0	1	2	1	0	1	2	1
Configuration				R				R		L	T	R		L	T	R
Volume (veh/h)				4				16	7	7	1561	14	7	6	1024	5
Percent Heavy Vehicles (%)				2				2	2	2			2	2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9	6.4	4.1			6.4	4.1		
Critical Headway (sec)				6.94				6.94	6.44	4.14			6.44	4.14		
Base Follow-Up Headway (sec)				3.3				3.3	2.5	2.2			2.5	2.2		
Follow-Up Headway (sec)				3.32				3.32	2.52	2.22			2.52	2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				4				17		15				14		
Capacity, c (veh/h)				483				313		396				172		
v/c Ratio				0.01				0.05		0.04				0.08		
95% Queue Length, Q_{95} (veh)				0.0				0.2		0.1				0.3		
Control Delay (s/veh)				12.5				17.2		14.4				27.8		
Level of Service (LOS)				B				C		B				D		
Approach Delay (s/veh)	12.5				17.2				0.1				0.3			
Approach LOS	B				C											

HCS7 Two-Way Stop-Control Report

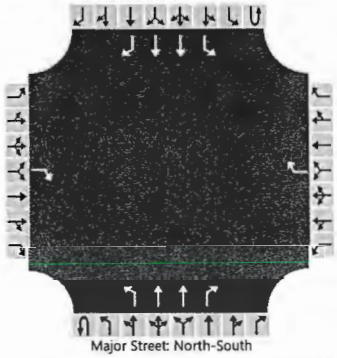
General Information

Analyst	C. Atkinson
Agency/Co.	Traffic Concepts, Inc.
Date Performed	7/11/2022
Analysis Year	2022
Time Analyzed	Existing - PM Peak
Intersection Orientation	North-South
Project Description	3741 - Charlotte Hall Center

Site Information

Intersection	MD 5 @ Traveled Lane
Jurisdiction	St. Mary's County, MD
East/West Street	Traveled Lane
North/South Street	MD 5
Peak Hour Factor	0.98
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1		0	0	1	0	1	2	1	0	1	2	1
Configuration				R				R		L	T	R		L	T	R
Volume (veh/h)				11				27	19	5	1215	36	15	14	1749	1
Percent Heavy Vehicles (%)				2				2	2	2			2	2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9	6.4	4.1			6.4	4.1		
Critical Headway (sec)				6.94				6.94	6.44	4.14			6.44	4.14		
Base Follow-Up Headway (sec)				3.3				3.3	2.5	2.2			2.5	2.2		
Follow-Up Headway (sec)				3.32				3.32	2.52	2.22			2.52	2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				11				28		24				30		
Capacity, c (veh/h)				285				431		116				306		
v/c Ratio				0.04				0.06		0.21				0.10		
95% Queue Length, Q_{95} (veh)				0.1				0.2		0.8				0.3		
Control Delay (s/veh)				18.2				13.9		44.2				18.0		
Level of Service (LOS)				C				B		E				C		
Approach Delay (s/veh)	18.2				13.9				0.8				0.3			
Approach LOS	C				B											

HCS7 Two-Way Stop-Control Report

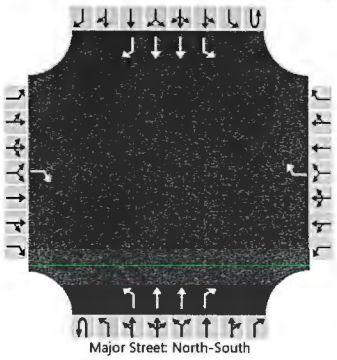
General Information

Analyst	C. Atkinson
Agency/Co.	Traffic Concepts, Inc.
Date Performed	7/11/2022
Analysis Year	2022
Time Analyzed	Background - PM Peak
Intersection Orientation	North-South
Project Description	3741 - Charlotte Hall Center

Site Information

Intersection	MD 5 @ Traveled Lane
Jurisdiction	St. Mary's County, MD
East/West Street	Traveled Lane
North/South Street	MD 5
Peak Hour Factor	0.98
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	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	1		0	0	1	0	1	2	1	0	1	2	1
Configuration				R				R		L	T	R		L	T	R
Volume (veh/h)				11				27	19	5	1450	36	15	14	1945	1
Percent Heavy Vehicles (%)				2				2	2	2			2	2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				No				No				No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9				6.9	6.4	4.1			6.4	4.1		
Critical Headway (sec)				6.94				6.94	6.44	4.14			6.44	4.14		
Base Follow-Up Headway (sec)				3.3				3.3	2.5	2.2			2.5	2.2		
Follow-Up Headway (sec)				3.32				3.32	2.52	2.22			2.52	2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				11				28		24				30		
Capacity, c (veh/h)				244				359		86				220		
v/c Ratio				0.05				0.08		0.29				0.13		
95% Queue Length, Q_{95} (veh)				0.1				0.2		1.1				0.5		
Control Delay (s/veh)				20.4				15.8		62.9				23.9		
Level of Service (LOS)				C				C		F				C		
Approach Delay (s/veh)	20.4				15.8				1.0				0.4			
Approach LOS	C				C											

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	1	0	3	69	0	82	7	7	1536	70	7	97
Future Volume (vph)	1	0	3	69	0	82	7	7	1536	70	7	97
Satd. Flow (prot)	0	1671	0	1617	1617	1523	0	1770	3539	1531	0	3319
Flt Permitted		0.988		0.950	0.950			0.950				0.950
Satd. Flow (perm)	0	1671	0	1617	1617	1523	0	1770	3539	1531	0	3319
Satd. Flow (RTOR)		145				145				145		
Lane Group Flow (vph)	0	4	0	36	37	87	0	14	1634	74	0	110
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	3	3		4	4		1	1	6		5	5
Permitted Phases						4				6		
Total Split (s)	12.0	12.0		15.0	15.0	15.0	16.0	16.0	92.0	92.0	16.0	16.0
Total Lost Time (s)		7.0		7.0	7.0	7.0		7.0	7.0	7.0		7.0
Act Effct Green (s)		5.0		8.5	8.5	8.5		6.7	94.0	94.0		9.1
Actuated g/C Ratio		0.04		0.06	0.06	0.06		0.05	0.70	0.70		0.07
v/c Ratio		0.02		0.36	0.37	0.38		0.16	0.66	0.07		0.49
Control Delay		0.2		70.9	71.3	5.2		65.0	14.0	0.1		83.0
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Total Delay		0.2		70.9	71.3	5.2		65.0	14.0	0.1		83.0
LOS		A		E	E	A		E	B	A		F
Approach Delay		0.3			35.3				13.8			
Approach LOS		A			D				B			

Intersection Summary

Cycle Length: 135
Actuated Cycle Length: 135
Offset: 63 (47%) Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 13.3 Intersection LOS: B
Intersection Capacity Utilization 72.8% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 9: MD 5 & Traveled Ln

Lane Group	SBT	SBR
Lane Configurations	↑↑	↱
Traffic Volume (vph)	1000	5
Future Volume (vph)	1000	5
Satd. Flow (prot)	3539	1794
Flt Permitted		
Satd. Flow (perm)	3539	1794
Satd. Flow (RTOR)		145
Lane Group Flow (vph)	1064	5
Turn Type	NA	Perm
Protected Phases	2	
Permitted Phases		2
Total Split (s)	92.0	92.0
Total Lost Time (s)	7.0	7.0
Act Effct Green (s)	104.2	104.2
Actuated g/C Ratio	0.77	0.77
v/c Ratio	0.39	0.00
Control Delay	2.2	0.0
Queue Delay	0.0	0.0
Total Delay	2.2	0.0
LOS	A	A
Approach Delay	9.8	
Approach LOS	A	

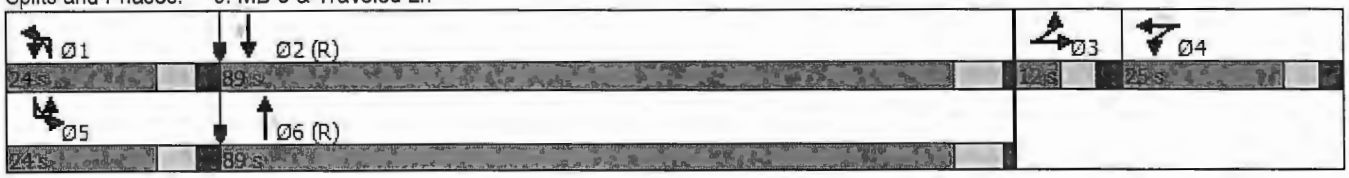
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (vph)	4	0	7	181	0	217	19	5	1397	157	15	213
Future Volume (vph)	4	0	7	181	0	217	19	5	1397	157	15	213
Satd. Flow (prot)	0	1689	0	1617	1617	1523	0	1770	3539	1531	0	3319
Flt Permitted		0.982		0.950	0.950			0.950				0.950
Satd. Flow (perm)	0	1689	0	1617	1617	1523	0	1770	3539	1531	0	3319
Satd. Flow (RTOR)		131				221				160		
Lane Group Flow (vph)	0	11	0	92	93	221	0	24	1426	160	0	232
Turn Type	Split	NA		Split	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	3	3		4	4		1	1	6		5	5
Permitted Phases						4				6		
Total Split (s)	12.0	12.0		25.0	25.0	25.0	24.0	24.0	89.0	89.0	24.0	24.0
Total Lost Time (s)		7.0		7.0	7.0	7.0		7.0	7.0	7.0		7.0
Act Effct Green (s)		5.0		13.6	13.6	13.6		7.6	95.4	95.4		15.1
Actuated g/C Ratio		0.03		0.09	0.09	0.09		0.05	0.64	0.64		0.10
v/c Ratio		0.06		0.63	0.64	0.65		0.27	0.63	0.16		0.69
Control Delay		0.6		83.8	84.3	16.8		75.3	20.1	2.6		82.7
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0
Total Delay		0.6		83.8	84.3	16.8		75.3	20.1	2.6		82.7
LOS		A		F	F	B		E	C	A		F
Approach Delay		0.6			47.4				19.2			
Approach LOS		A			D				B			

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 46 (31%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 18.6 Intersection LOS: B
Intersection Capacity Utilization 86.1% ICU Level of Service E
Analysis Period (min) 15

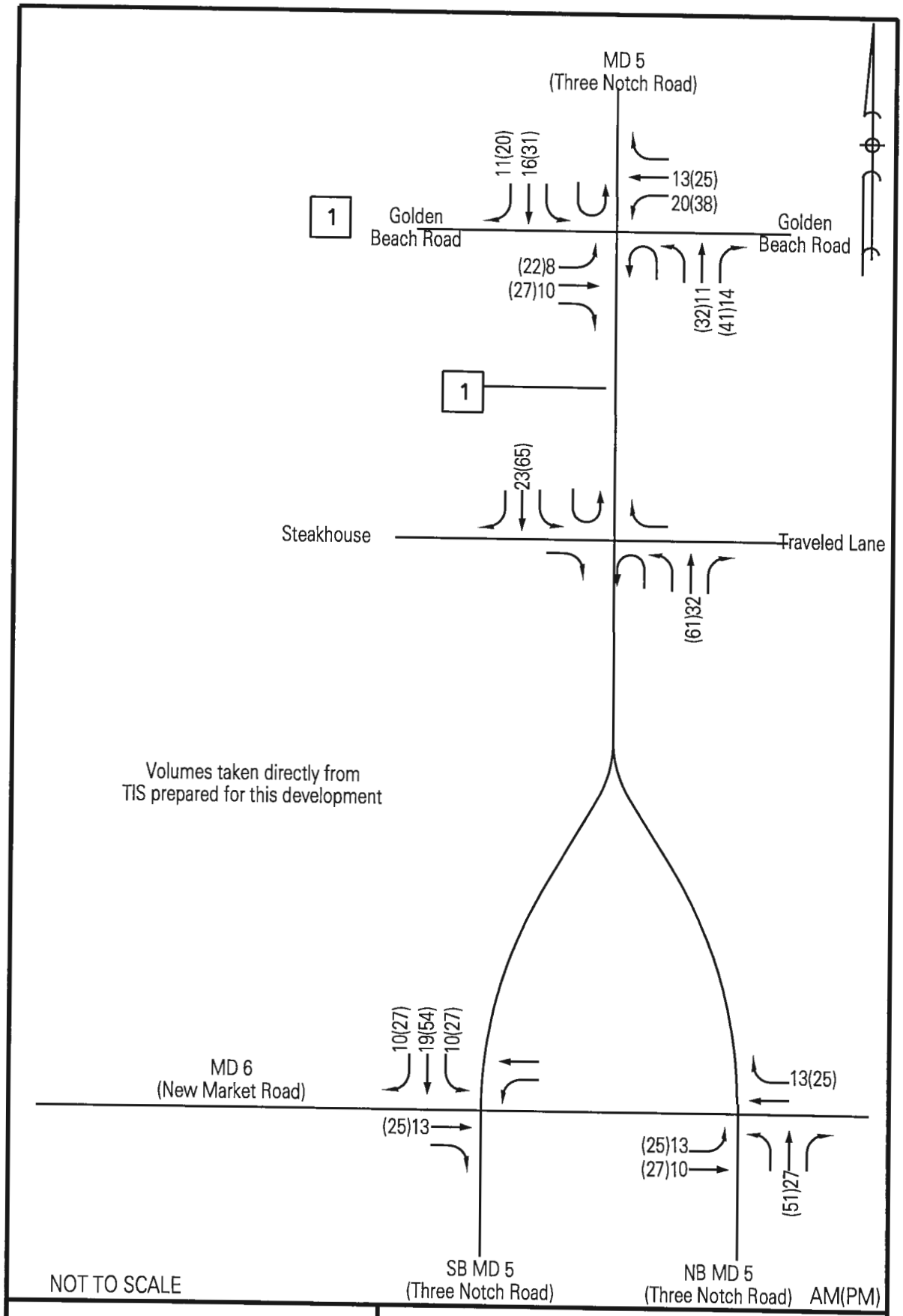
Splits and Phases: 9: MD 5 & Traveled Ln



Lane Group	SBT	SBR
Lane Configurations	↑↑	↱
Traffic Volume (vph)	1892	1
Future Volume (vph)	1892	1
Satd. Flow (prot)	3539	1794
Flt Permitted		
Satd. Flow (perm)	3539	1794
Satd. Flow (RTOR)		131
Lane Group Flow (vph)	1931	1
Turn Type	NA	Perm
Protected Phases	2	
Permitted Phases		2
Total Split (s)	89.0	89.0
Total Lost Time (s)	7.0	7.0
Act Effct Green (s)	108.2	108.2
Actuated g/C Ratio	0.72	0.72
v/c Ratio	0.76	0.00
Control Delay	4.4	0.0
Queue Delay	0.0	0.0
Total Delay	4.4	0.0
LOS	A	A
Approach Delay	12.8	
Approach LOS	B	

Intersection Summary

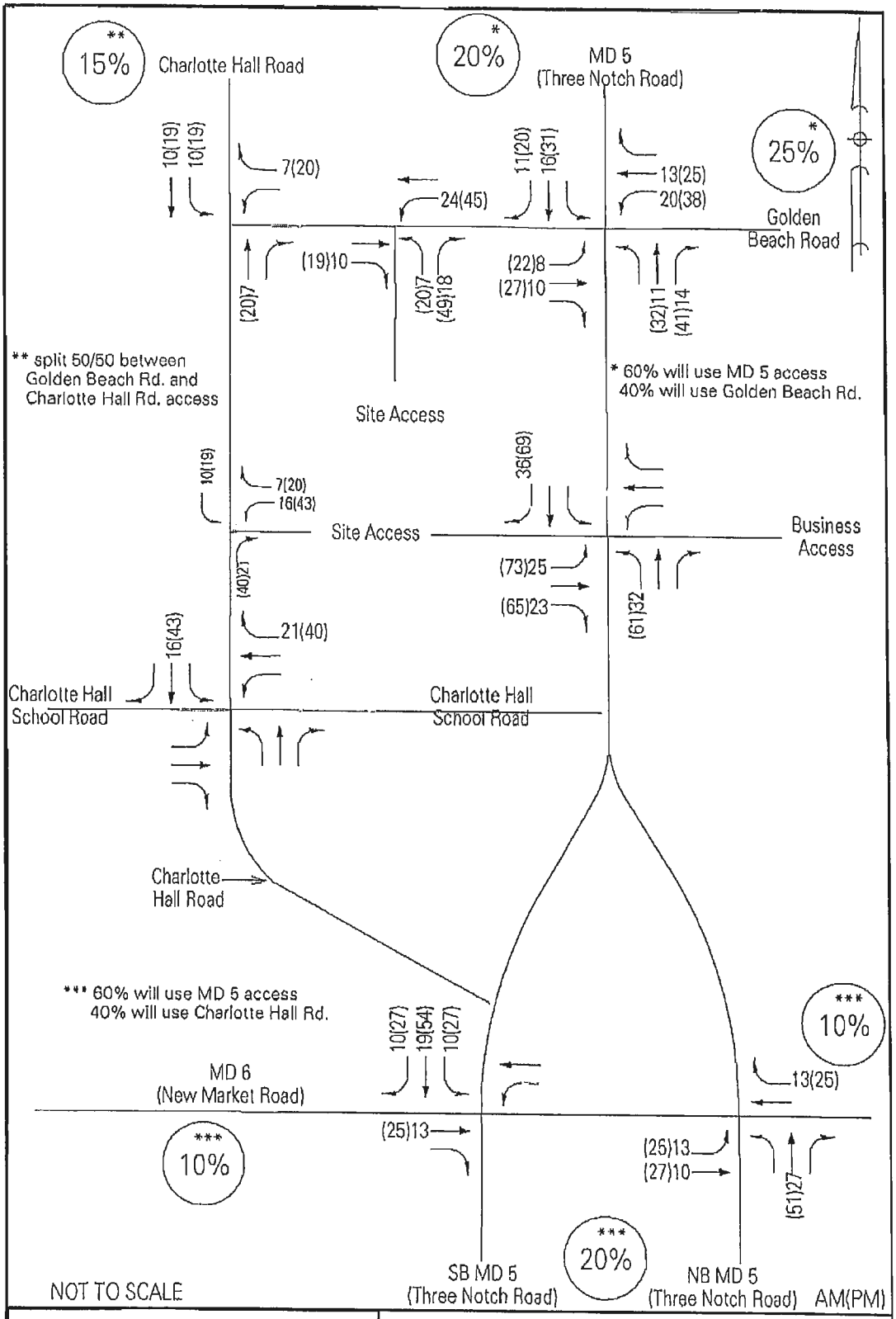
APPENDIX II
BACKGROUND INFORMATION



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

BACKGROUND 1

Charlotte Hall Station

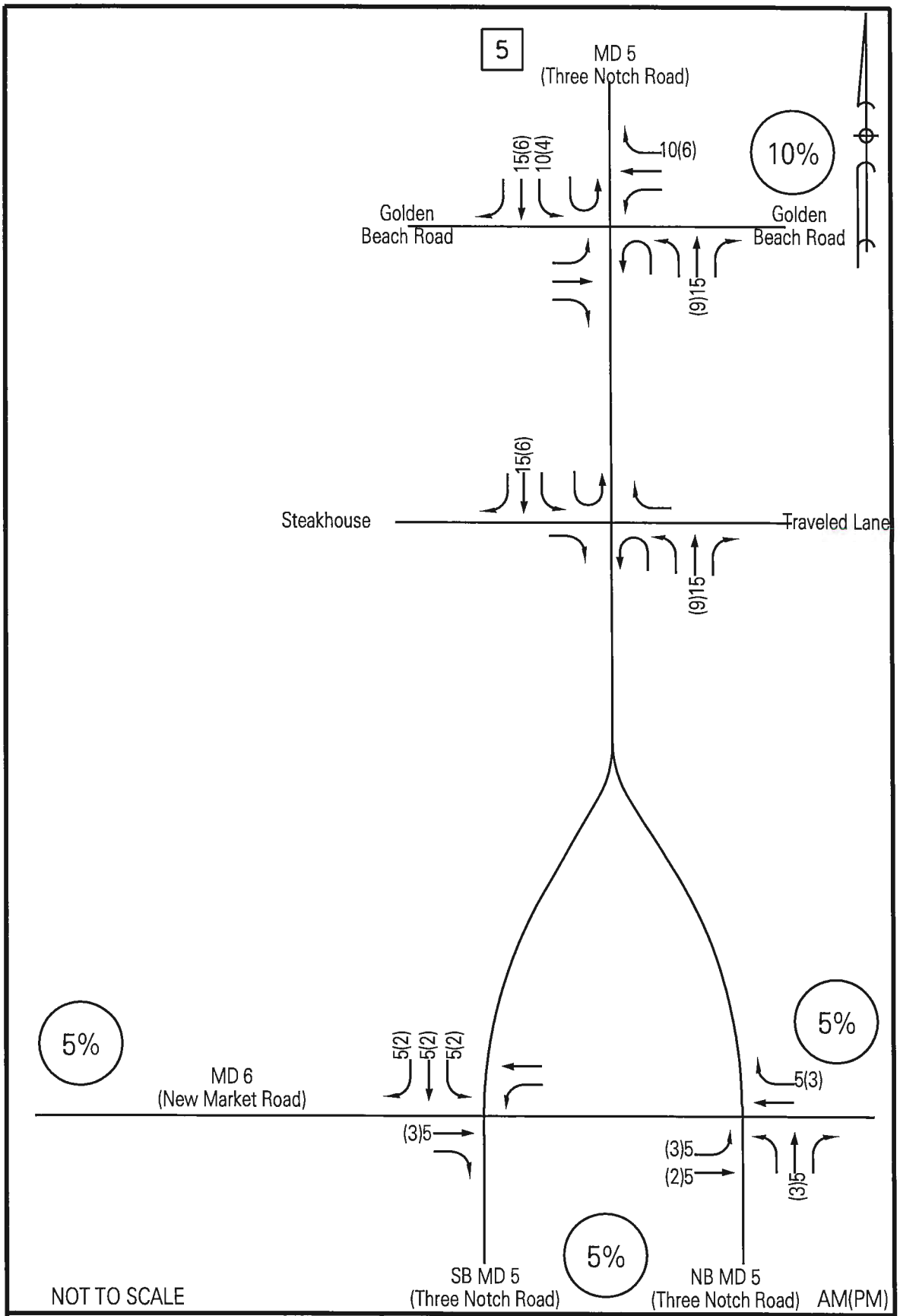


TRAFFIC CONCEPTS, INC.
325 Gambrills Road
Suite E
Gambrills, Maryland 21054
410-923-7101

EXHIBIT 8

Site Generated Traffic - New Trips

Charlotte Hall Station



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

BACKGROUND 5

30315 Three Notch Road

30315 Three Notch Road

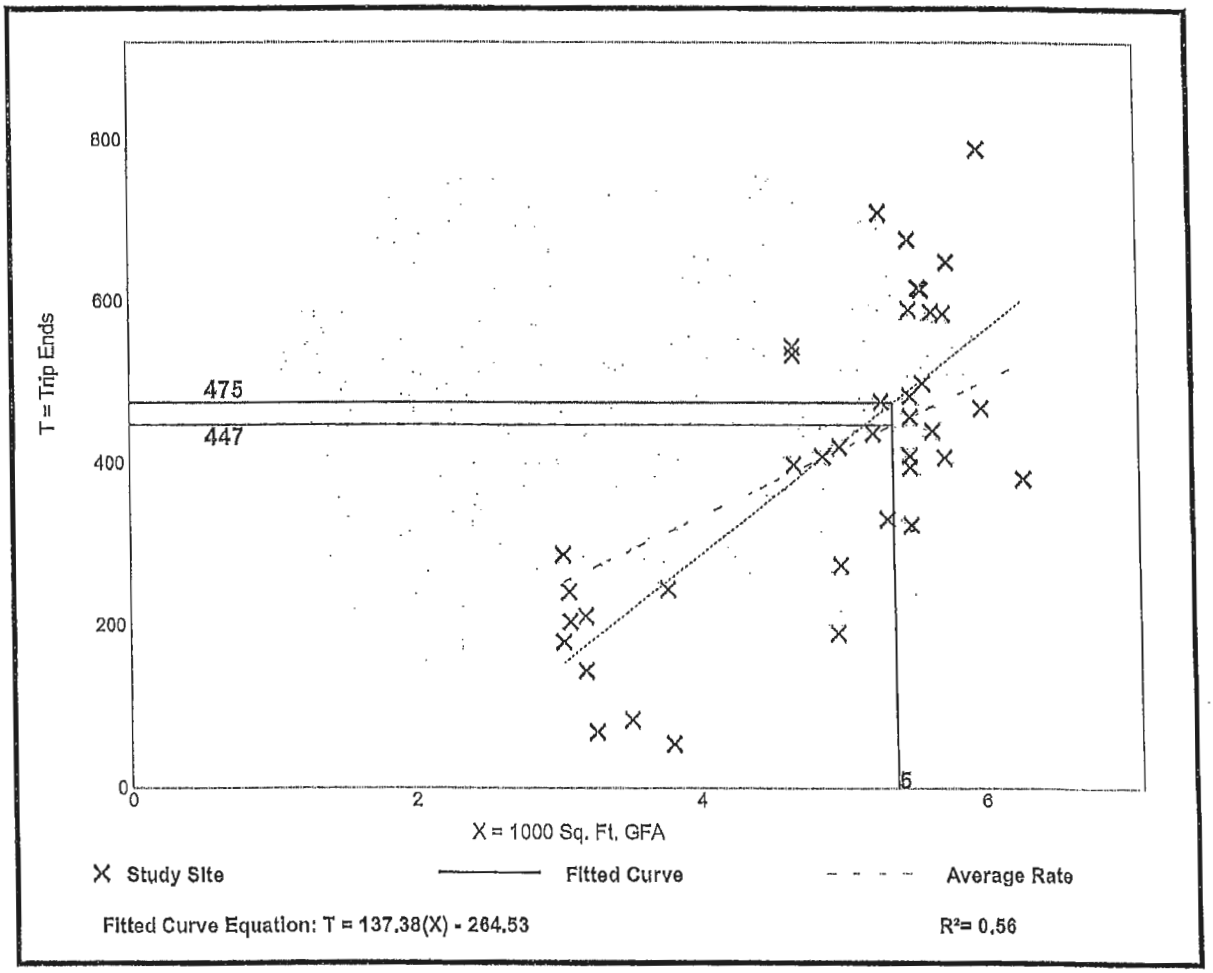
Super Convenience Market/Gas Station
(960)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA- 5,380 gsf**
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:	39
Avg. 1000 Sq. Ft. GFA:	5
Directional Distribution:	50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
83.14	14.17 - 133.96	28.07

Data Plot and Equation



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IN-224 OUT-223

30315 Three Notch Road

Super Convenience Market/Gas Station

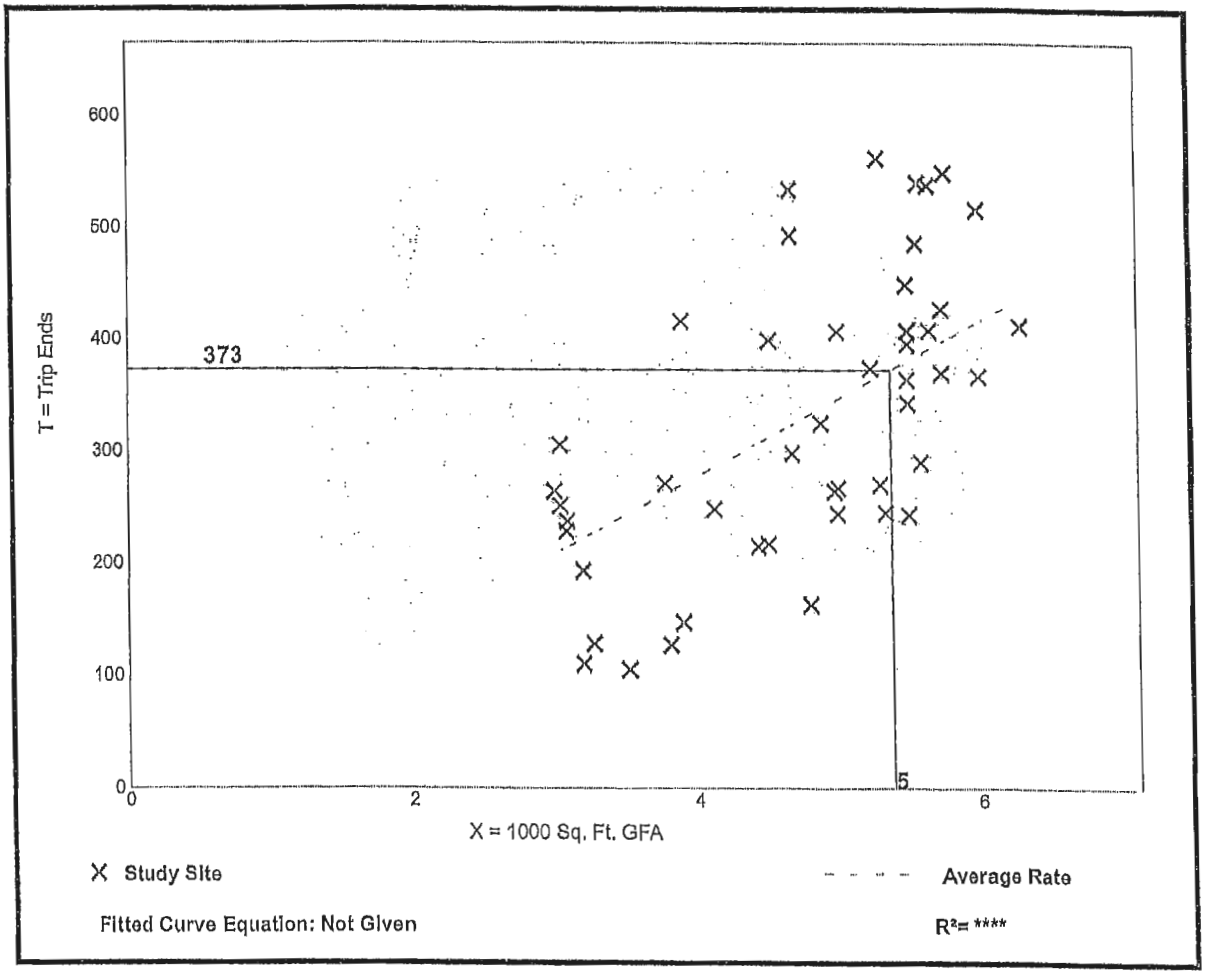
(960)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA - 5,380 sf**
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:	48
Avg. 1000 Sq. Ft. GFA:	5
Directional Distribution:	50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
69.28	29.83 - 114.20	21.07

Data Plot and Equation



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IN-186 007-187

30315 Three Notch Road

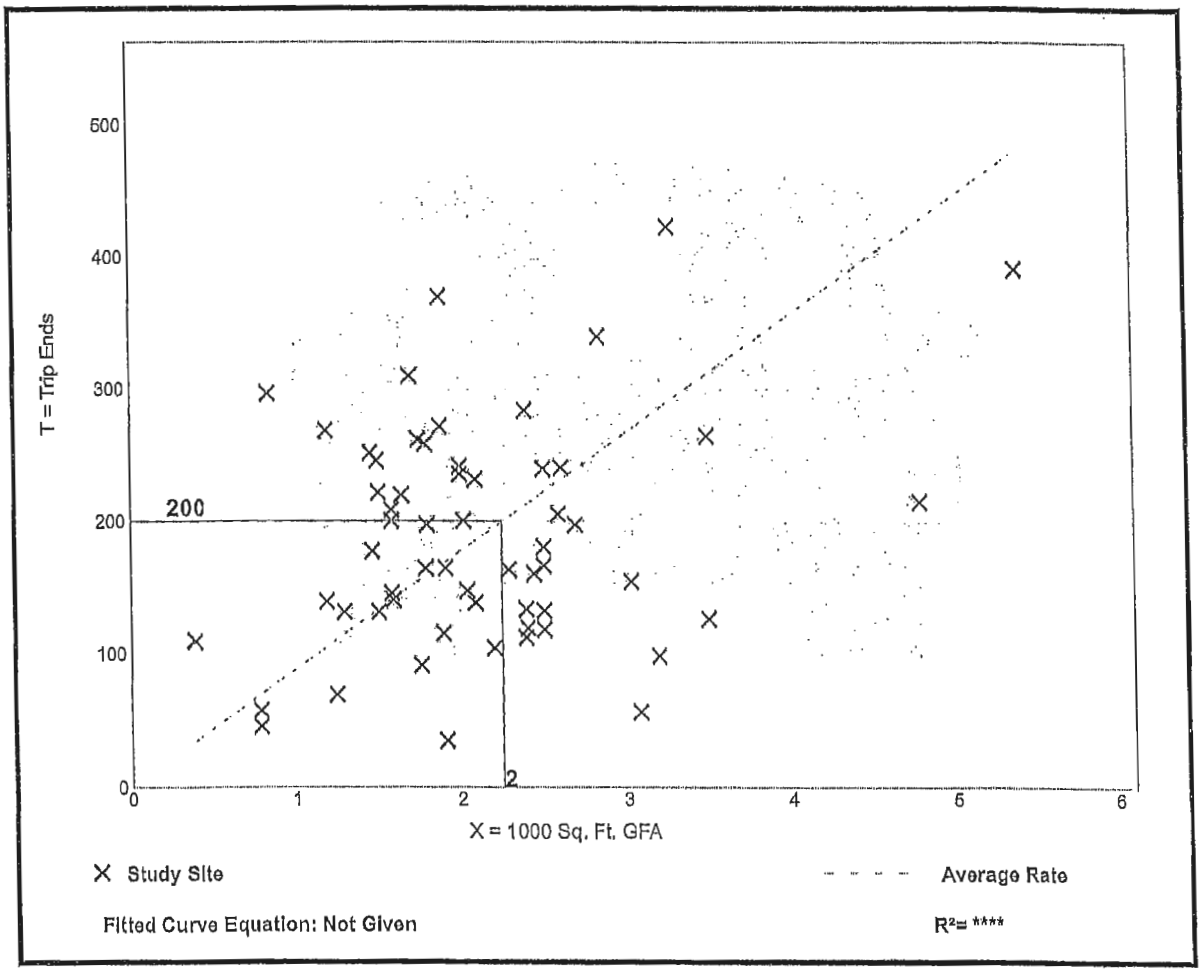
Coffee/Donut Shop with Drive-Through Window
(937)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA-2,250 SF**
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:	61
Avg. 1000 Sq. Ft. GFA:	2
Directional Distribution:	51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
88.99	18.32 - 353.57	48.19

Data Plot and Equation



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IN-102 OUT-98

30315 Three Notch Road

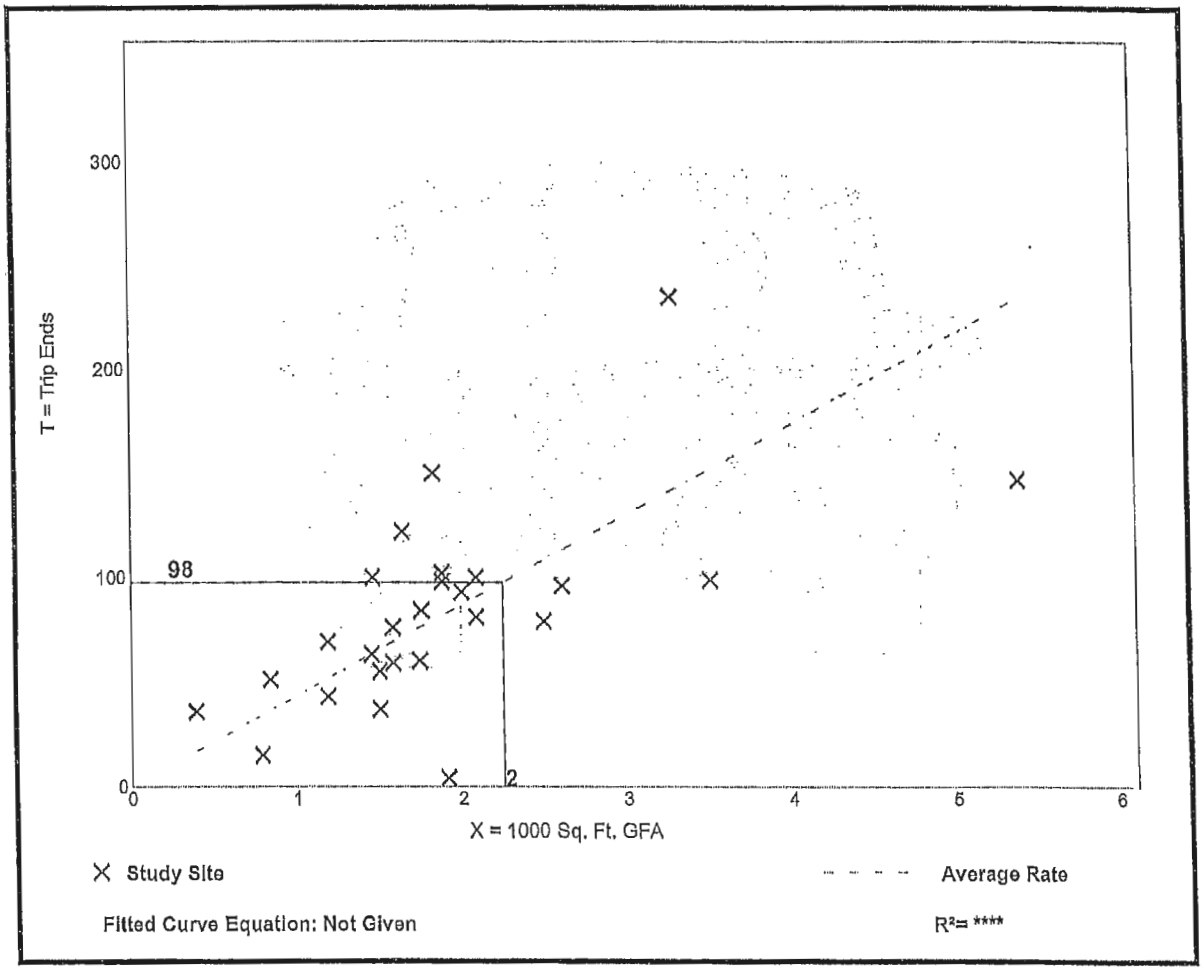
Coffee/Donut Shop with Drive-Through Window
(937)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA - 2,250 SF**
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:	26
Avg. 1000 Sq. Ft. GFA:	2
Directional Distribution:	50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
43.38	2.09 - 92.31	18.88

Data Plot and Equation



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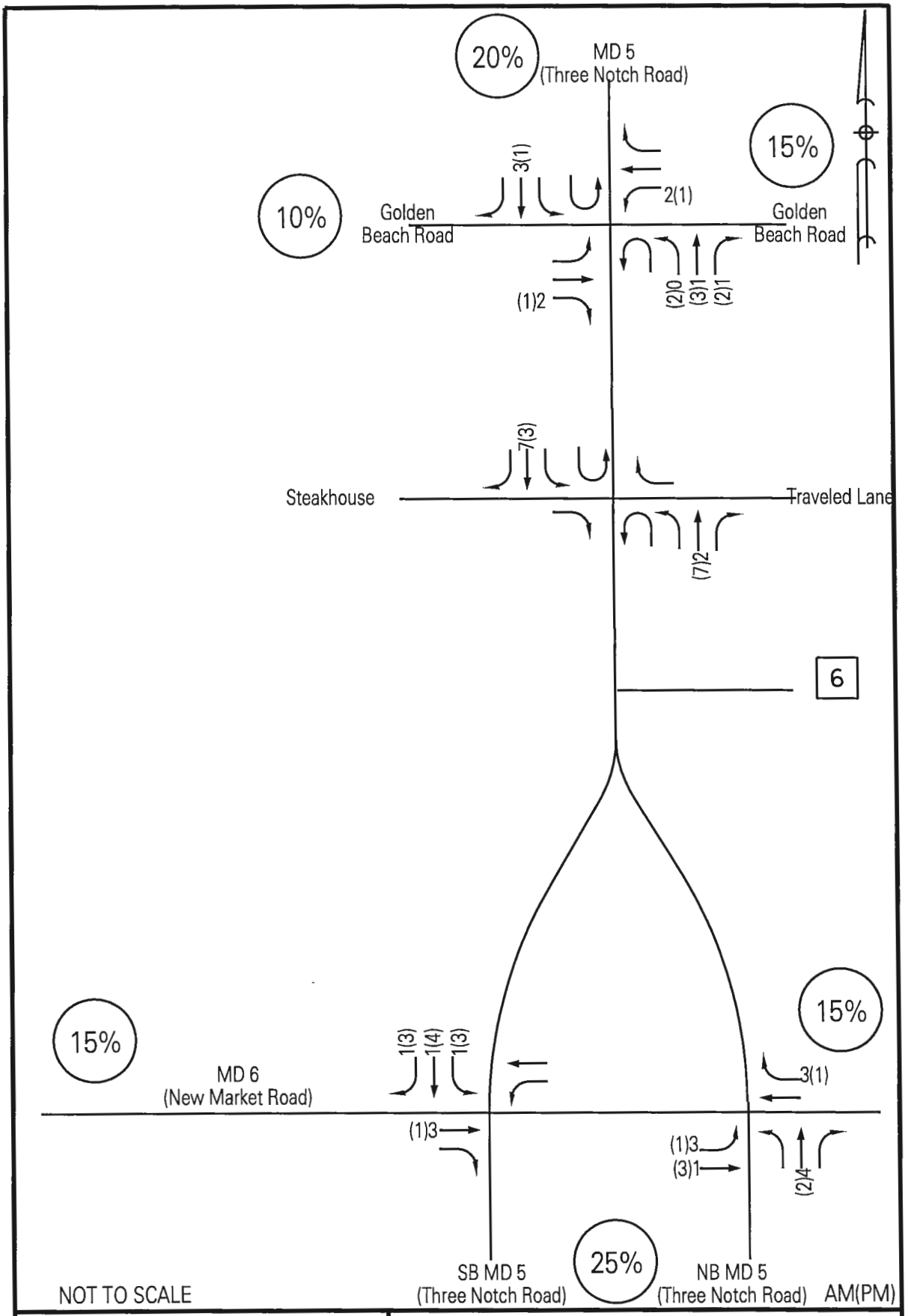
IN-49 OUT-49



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Suite B
Hanover, Maryland 21076
410-760-2911

BACKGROUND 6

Charlotte Hall Commerce Center, Lot 4

Charlotte Hall Commerce Center, Lot 4

Manufacturing

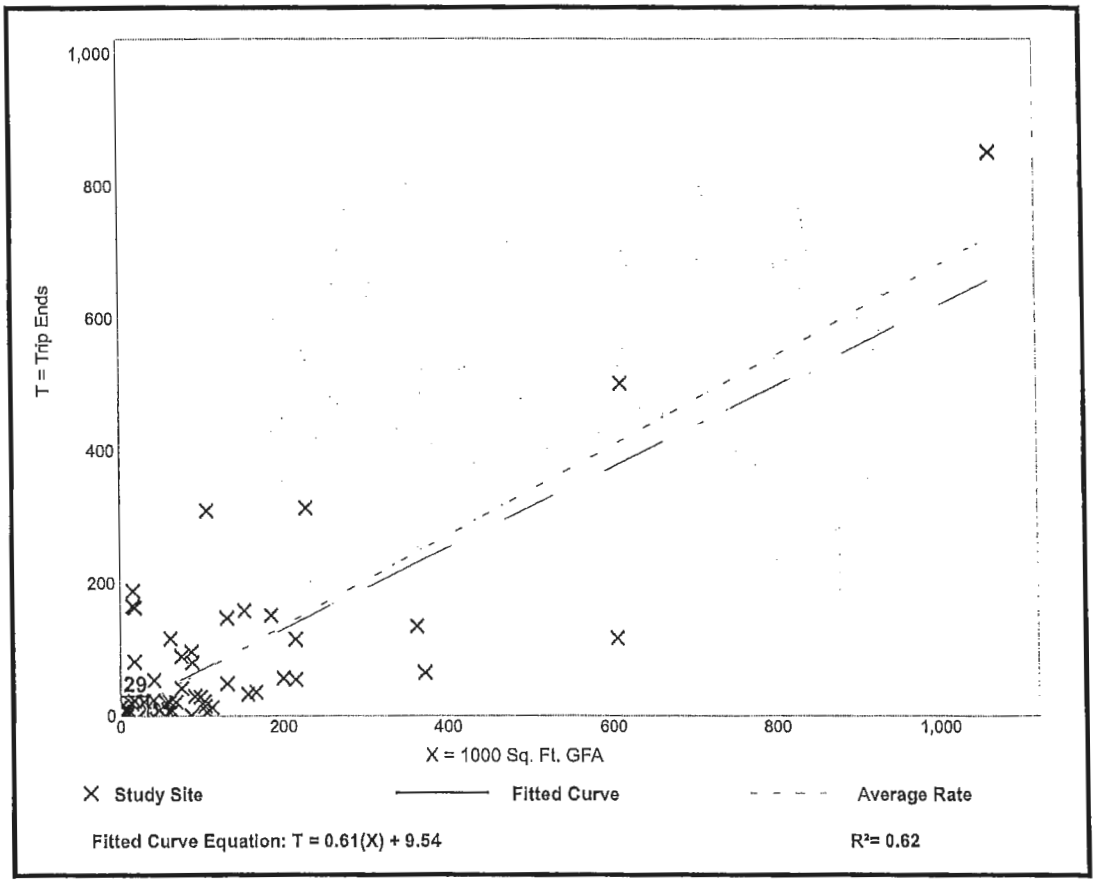
(140)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
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:	48
Avg. 1000 Sq. Ft. GFA:	138
Directional Distribution:	76% entering, 24% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.68	0.01 - 11.93	1.03

Data Plot and Equation



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IN-17 007-5

Charlotte Hall Commerce Center, Lot 4

Manufacturing

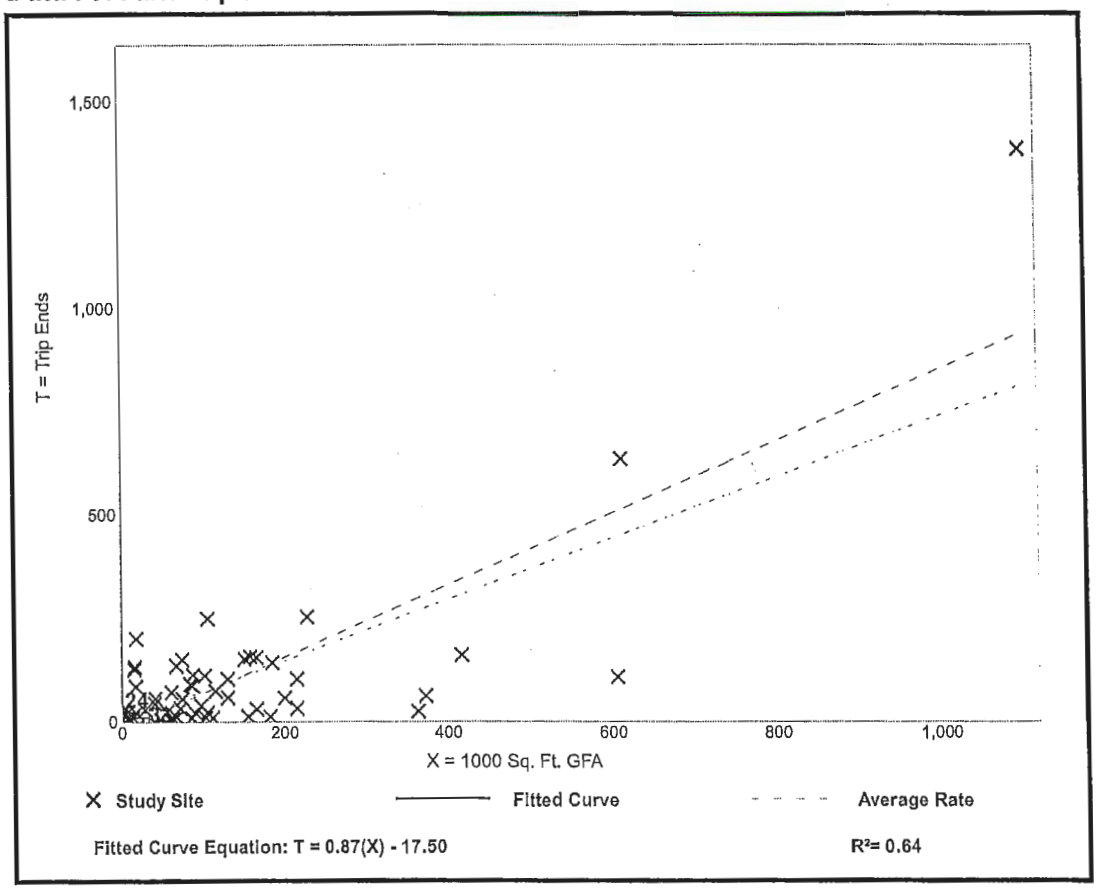
(140)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
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: 55
Avg. 1000 Sq. Ft. GFA: 142
Directional Distribution: 31% entering, 69% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.74	0.07 - 11.37	0.93

Data Plot and Equation



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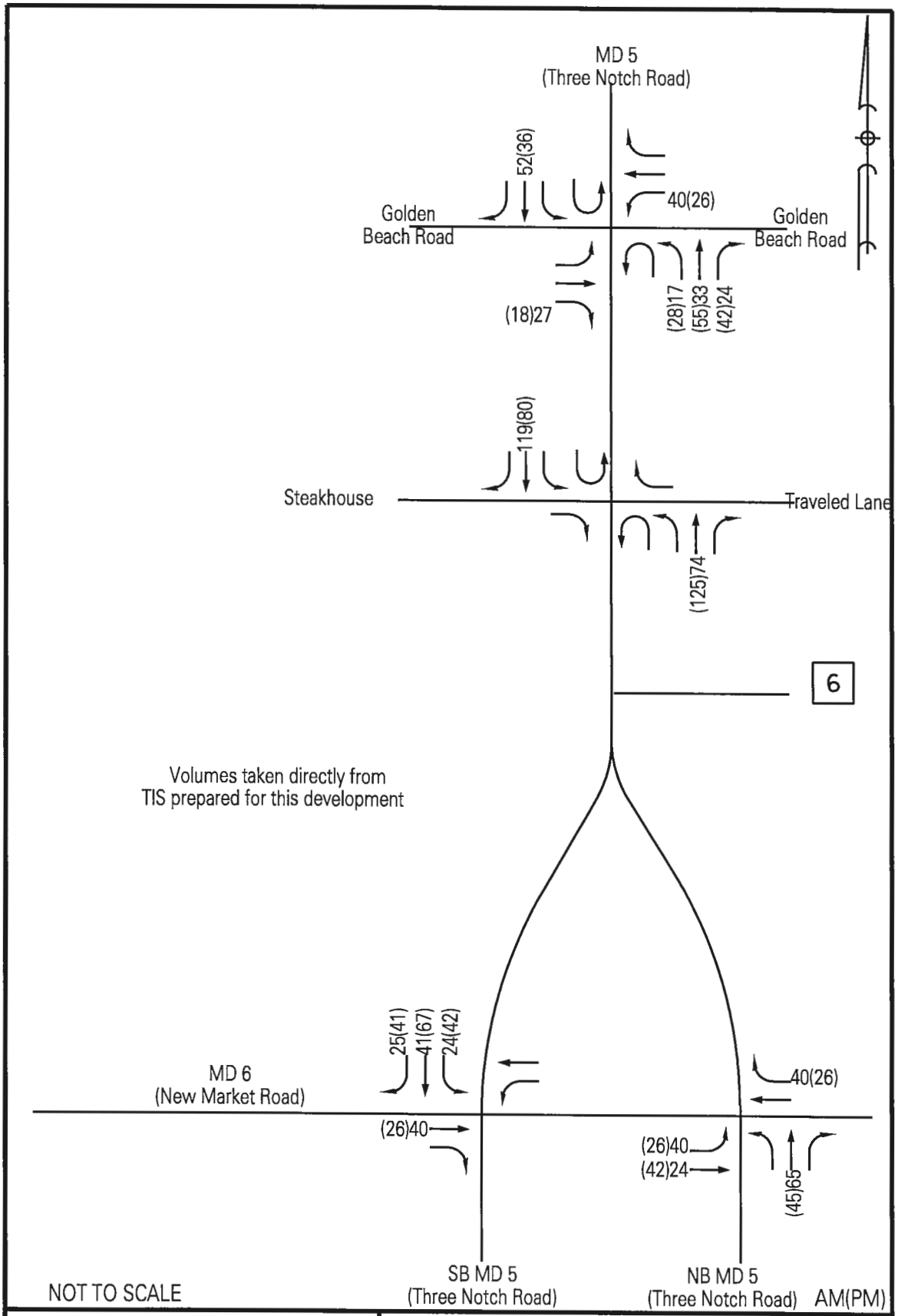
IN-7 007-17



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BACKGROUND 6
Charlotte Hall Commerce Center
Lots 2, 5 - 10

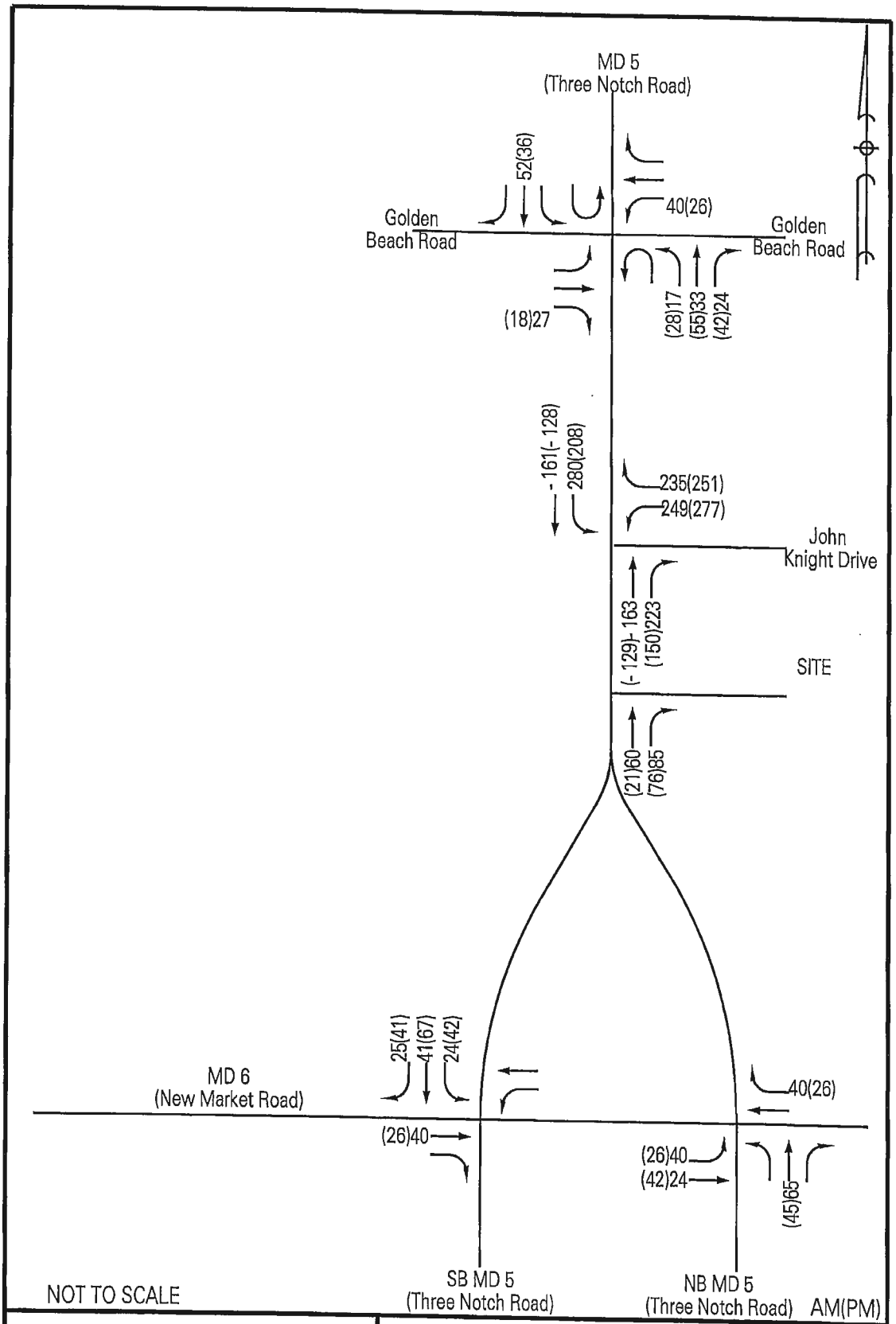

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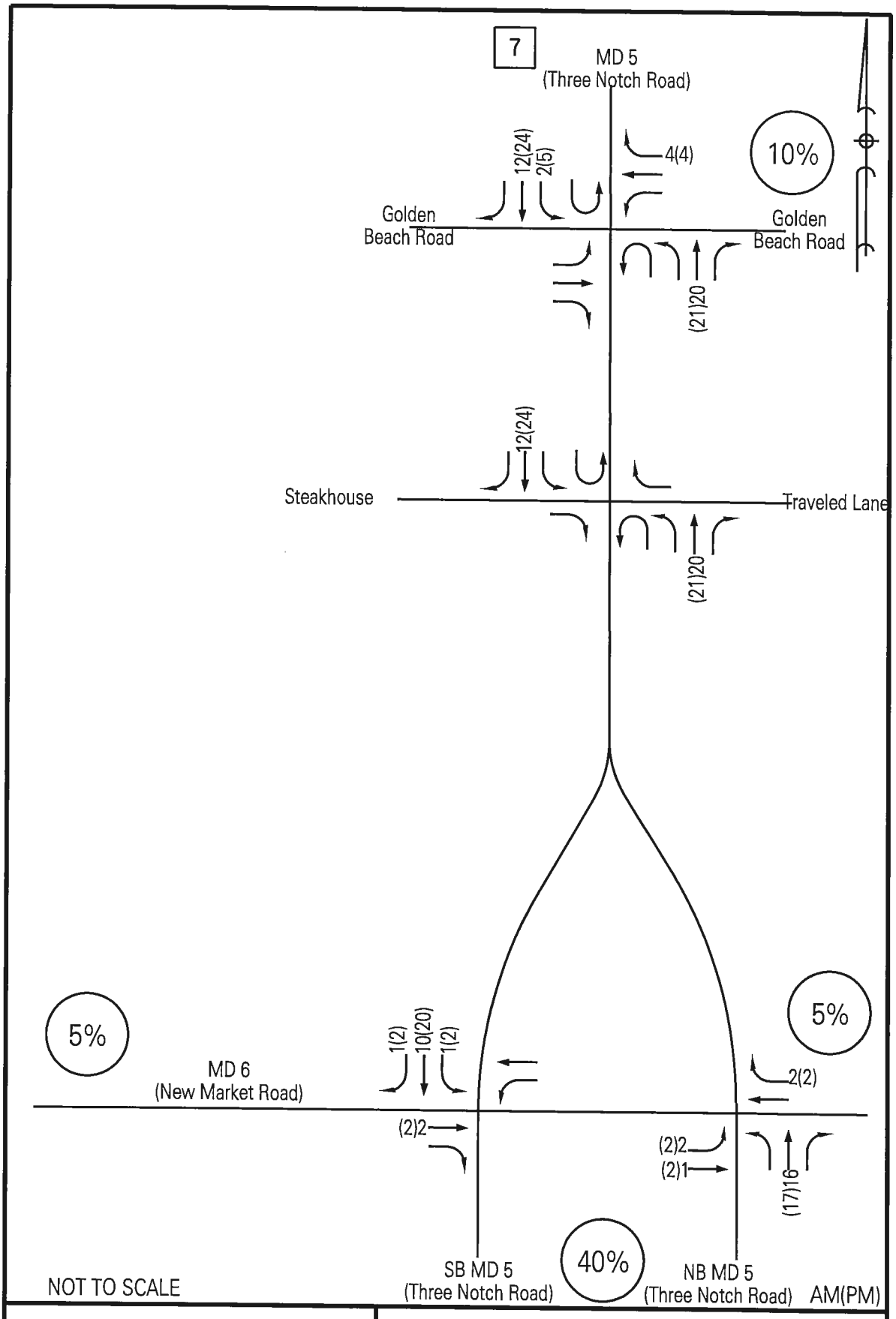
EXHIBIT 17
Site Generated Traffic Combined
Phases I & II



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BACKGROUND 7

St. Mary's Gateway

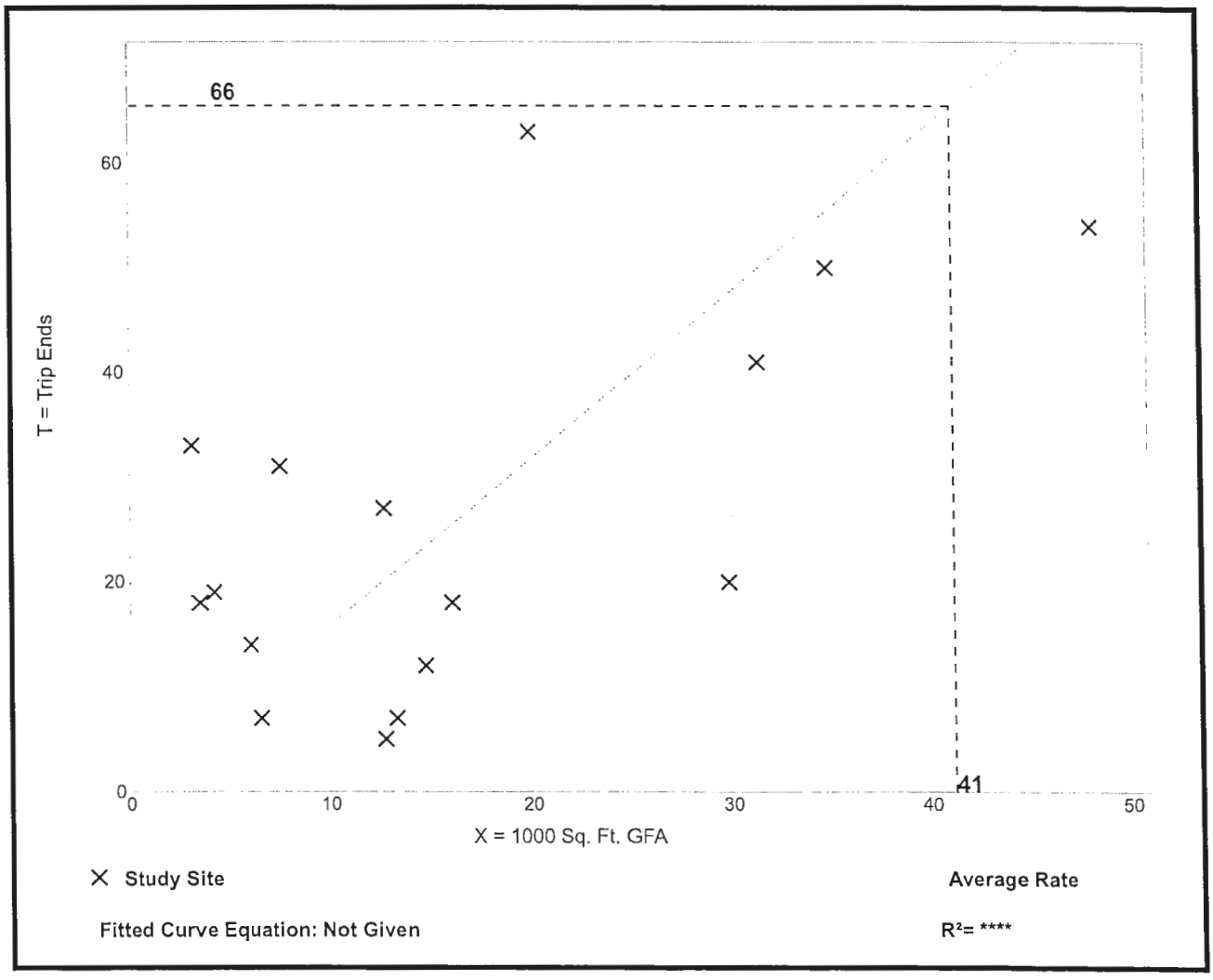
Building Materials and Lumber Store
(812)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
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: 16
Avg. 1000 Sq. Ft. GFA: 17
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.59	0.39 - 10.58	1.46

Data Plot and Equation



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IN-41 007-25

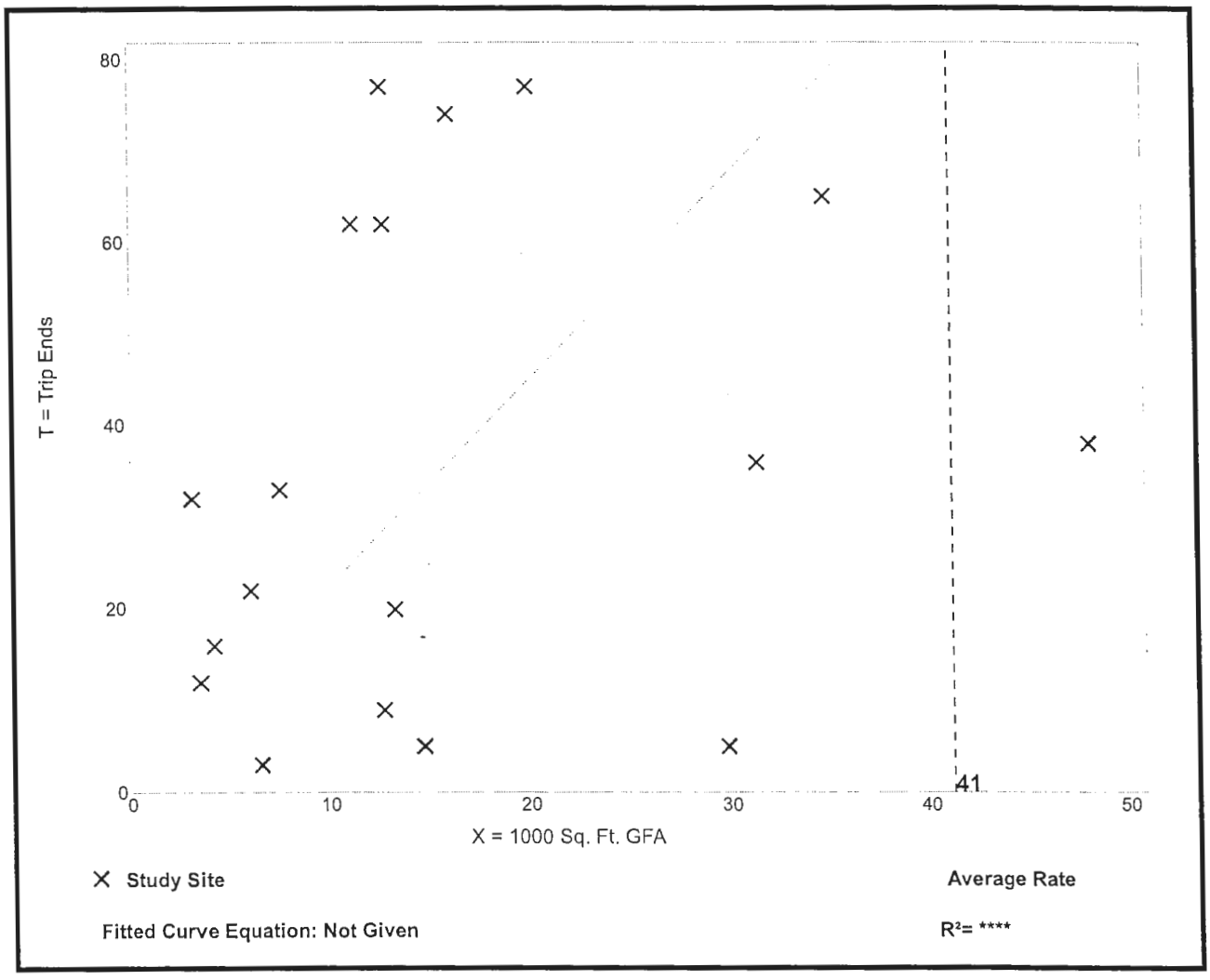
Building Materials and Lumber Store
(812)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
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: 18
Avg. 1000 Sq. Ft. GFA: 16
Directional Distribution: 46% entering, 54% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.25	0.17 - 10.26	2.09

Data Plot and Equation



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IN-43 007-50

Building Materials and Lumber Store
(812)

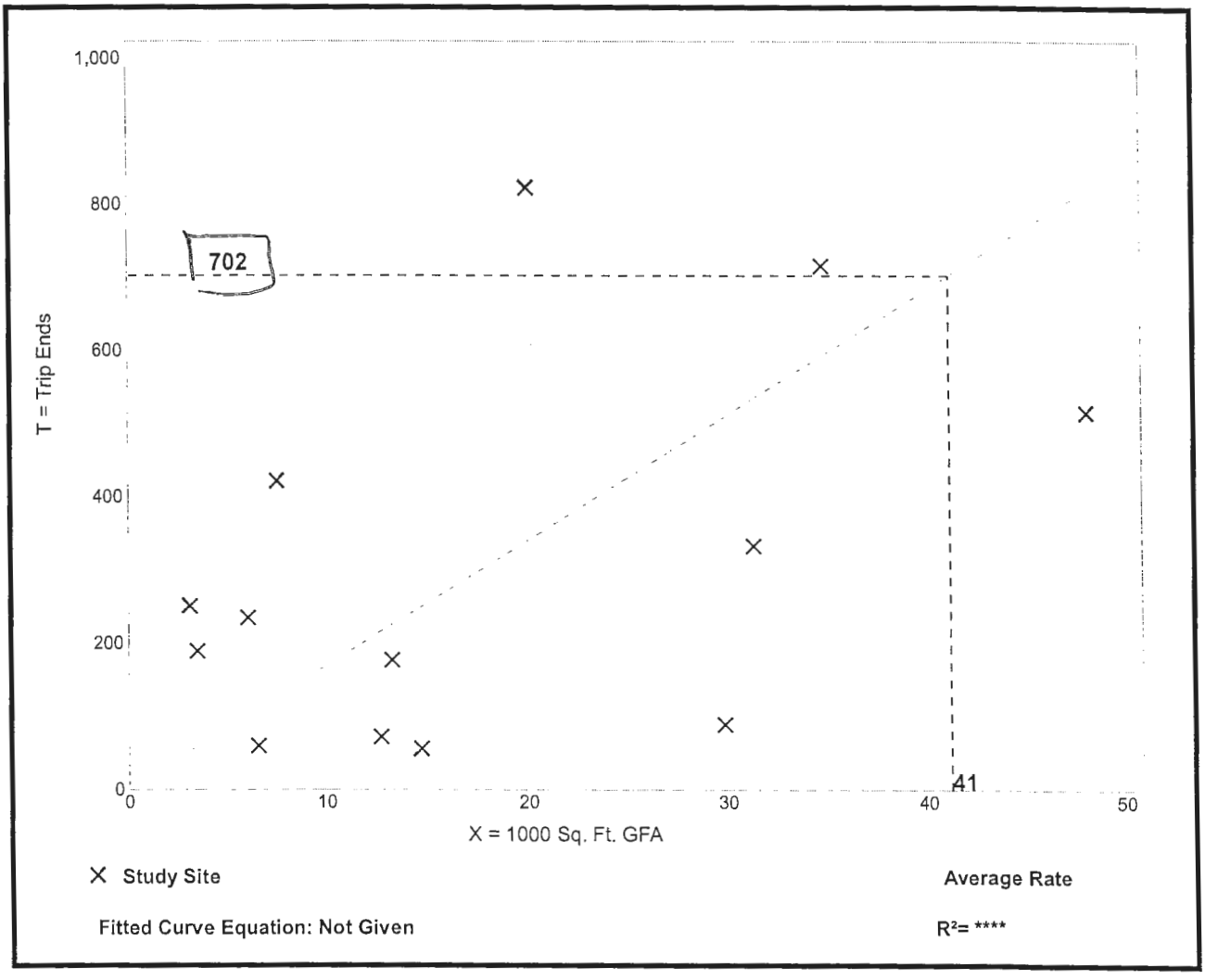
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 13
Avg. 1000 Sq. Ft. GFA: 18
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
17.05	3.02 - 80.45	16.46

Data Plot and Equation



APPENDIX III
TRAFFIC COUNT INFORMATION

Increased by 1.6% (COVID Factor)

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: MD 5 @ GOLDEN BEACH RD

COUNTY: ST. MARY'S

COUNT BY: CAMERA

DATE: FEBRUARY 10, 2022

WEATHER: CLEAR

DAY: THURSDAY

	MD 5 NORTHBOUND				MD 5 SOUTHBOUND				GOLDEN BEACH RD EASTBOUND			GOLDEN BEACH RD WESTBOUND			
TIME	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
AM															
6:30-6:45	1	286	20	2	11	152	0	0	0	0	2	13	2	47	536
6:45-7:00	0	289	31	3	15	151	0	0	0	1	2	16	0	42	550
7:00-7:15	3	299	18	3	26	185	4	0	1	2	0	29	1	67	638
7:15-7:30	3	311	21	2	20	211	1	1	1	2	3	47	2	67	692
7:30-7:45	2	374	25	4	12	209	0	1	0	2	3	30	1	63	726
7:45-8:00	2	233	26	12	20	184	1	0	1	1	1	28	5	44	558
8:00-8:15	2	308	16	6	24	172	1	0	1	4	3	29	2	38	606
8:15-8:30	2	287	25	6	16	201	1	3	0	3	3	25	2	39	613
8:30-8:45	2	272	30	7	20	158	0	1	1	0	3	31	4	31	560
8:45-9:00	1	283	30	6	22	180	0	0	1	2	2	28	1	29	585
PEAK HR	**10**	**1236**	**91**	**21**	**79**	**802**	**6**	**2**	**3**	**7**	**7**	**136**	**9**	**245**	**PHF**
7:00-8:00	**10**	**1217**	**90**	**21**	**78**	**789**	**6**	**2**	**3**	**7**	**7**	**134**	**9**	**241**	**0.90**
TOTALS															
PM															
4:00-4:15	3	285	50	9	71	335	0	1	2	8	9	77	4	23	877
4:15-4:30	7	272	46	3	65	329	2	2	2	13	6	52	5	38	842
4:30-4:45	3	254	45	10	63	352	2	0	3	12	4	63	5	40	856
4:45-5:00	9	295	40	9	71	377	1	3	1	11	5	70	6	34	932
5:00-5:15	3	288	54	5	79	388	0	1	0	4	11	72	3	29	937
5:15-5:30	3	260	34	8	72	364	0	1	3	9	7	66	4	30	861
5:30-5:45	4	234	39	6	67	358	0	4	3	11	6	72	3	25	832
5:45-6:00	6	251	23	5	65	341	1	1	2	6	2	54	2	28	787
6:00-6:15	0	201	29	9	53	269	1	0	3	9	2	47	4	27	654
6:15-6:30	4	170	22	10	55	233	0	2	4	2	2	37	2	24	567
PEAK HR	**18**	**1115**	**176**	**33**	**290**	**1505**	**3**	**5**	**7**	**37**	**27**	**275**	**18**	**135**	**PHF**
4:30-5:30	**18**	**1097**	**173**	**32**	**285**	**1481**	**3**	**5**	**7**	**36**	**27**	**271**	**18**	**133**	**0.96**
TOTALS															

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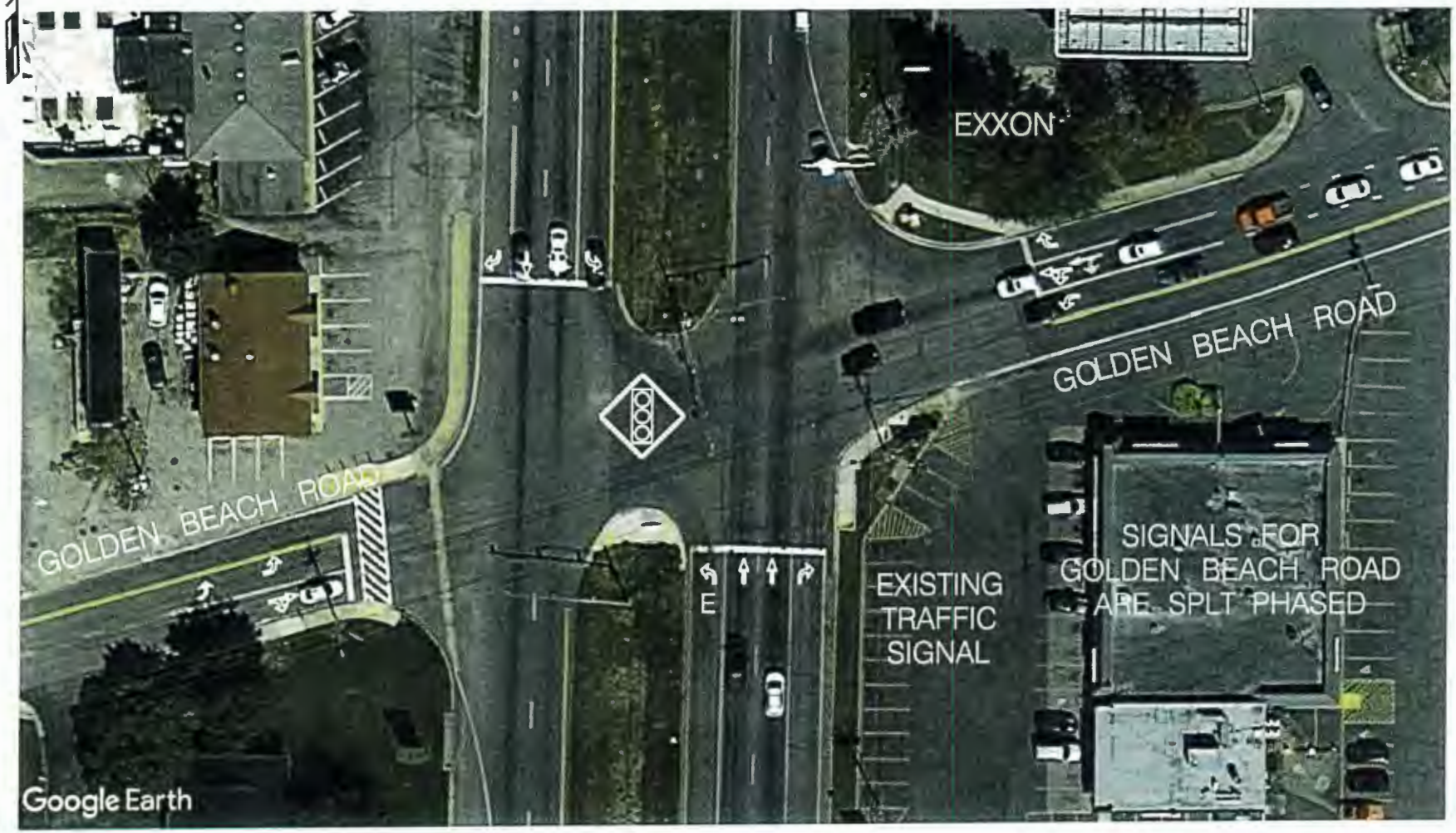
M:\3741



NOT TO SCALE

DATE: NOVEMBER, 2021 FILE# 3654

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EXISTING INTERSECTION CONFIGURATION
MD 5 AT GOLDEN BEACH ROAD
ST. MARY'S COUNTY, MARYLAND

Increased by 1.6% (COVID Factor)

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: MD 5 SB @ MD 6 **COUNTY:** ST. MARY'S

COUNT BY: CAMERA (B.SMITH) **DATE:** DECEMBER 14, 2021

WEATHER: CLEAR **DAY:** TUESDAY

	NORTHBOUND			MD 5 SOUTHBOUND			MD 6 EASTBOUND			MD 6 WESTBOUND			
TIME	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
AM													
6:30-6:45				4	130	7		14	18	17	63		253
6:45-7:00				2	152	7		14	21	20	59		275
7:00-7:15				4	198	11		22	46	17	39		337
7:15-7:30				6	256	9		19	35	13	63		401
7:30-7:45				5	226	10		17	32	14	57		361
7:45-8:00				5	223	8		21	44	10	42		353
8:00-8:15				10	178	10		19	21	6	40		284
8:15-8:30				8	207	12		12	33	7	39		318
8:30-8:45				7	184	10		19	25	7	14		266
8:45-9:00				13	224	11		10	41	3	17		319
9:00-9:15				12	187	14		21	23	3	11		271
9:15-9:30				9	200	16		11	26	5	6		273
PEAK HR 7:00-8:00 TOTALS				**20** ~~20~~	**917** ~~903~~	**39** ~~38~~		**80** ~~79~~	**160** ~~157~~	**55** ~~54~~	**204** ~~201~~		**PHF 0.91**
PM													
4:00-4:15				20	416	18		34	43	17	63		611
4:15-4:30				24	400	35		32	64	20	59		634
4:30-4:45				24	430	25		28	70	17	39		633
4:45-5:00				13	442	20		39	69	13	63		659
5:00-5:15				13	405	25		24	74	14	57		612
5:15-5:30				18	428	27		23	57	10	42		605
5:30-5:45				9	417	19		19	36	6	40		546
5:45-6:00				22	347	24		20	50	7	39		509
6:00-6:15				10	299	17		17	48	7	14		412
6:15-6:30				16	277	19		13	35	3	17		380
6:30-6:45				15	228	7		11	21	3	11		296
6:45-:700				11	208	11		9	23	5	16		283
PEAK HR 4:15-5:15 TOTALS				**75** ~~74~~	**1704** ~~1677~~	**107** ~~105~~		**125** ~~123~~	**281** ~~277~~	**65** ~~64~~	**221** ~~218~~		**PHF 0.96**

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Increased by 1.6% (COVID Factor)

PEAK HOUR TURNING MOVEMENT COUNT

INTERSECTION: MD 5 NB @ MD 6 **COUNTY:** ST. MARY'S

COUNT BY: CAMERA (B.SMITH) **DATE:** DECEMBER 14, 2021

WEATHER: CLEAR **DAY:** TUESDAY

	MD 5 NORTHBOUND			SOUTHBOUND			MD 6 EASTBOUND			MD 6 WESTBOUND			
TIME	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
AM													
6:30-6:45	30	310	5				16	6			11	13	391
6:45-7:00	44	317	4				12	3			9	11	400
7:00-7:15	29	365	1				19	9			20	9	452
7:15-7:30	32	327	2				22	5			15	11	414
7:30-7:45	49	363	9				12	13			18	10	474
7:45-8:00	42	332	7				18	6			9	12	426
8:00-8:15	39	338	15				14	16			17	8	447
8:15-8:30	42	325	6				12	10			10	9	414
8:30-8:45	33	267	13				18	11			14	8	364
8:45-9:00	32	312	20				10	13			16	12	415
9:00-9:15	35	261	20				19	12			39	19	405
9:15-9:30	26	269	10				14	13			5	17	354
PEAK HR	**154**	**1409**	**19**				**72**	**34**			**63**	**43**	**PHF**
7:00-8:00	**152**	**1387**	**19**				**71**	**33**			**62**	**42**	**0.93**
TOTALS													
PM													
4:00-4:15	29	264	23				20	28			18	18	400
4:15-4:30	49	264	10				20	23			10	11	387
4:30-4:45	27	252	14				27	17			12	12	361
4:45-5:00	38	338	13				13	21			9	14	446
5:00-5:15	38	289	11				19	28			10	10	405
5:15-5:30	34	288	9				23	24			7	9	394
5:30-5:45	35	252	2				21	29			12	8	359
5:45-6:00	29	235	6				19	24			13	12	338
6:00-6:15	26	199	5				14	18			12	4	278
6:15-6:30	11	231	3				5	15			6	15	286
6:30-6:45	14	148	6				13	14			12	1	208
6:45-:700	9	123	11				8	6			3	6	166
PEAK HR	**139**	**1186**	**48**				**83**	**91**			**39**	**46**	**PHF**
4:30-5:30	**137**	**1167**	**47**				**82**	**90**			**38**	**45**	**0.90**
TOTALS													

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Suite B
Hanover, Maryland 21076
410-760-2911

DATE: JULY, 2022 FILE# 3741

EXISTING INTERSECTION CONFIGURATION
MD 5 AT MD 6
ST. MARY'S COUNTY, MARYLAND

Increased 1.6% (COVID Factor)

TURNING MOVEMENT COUNT SUMMARY

INTERSECTION: MD 5 @ TRAVELED LANE
COUNT BY: CAMERA
WEATHER: CLEAR

12HR

COUNTY: ST. MARY'S
DATE: FEBRUARY 15, 2022
DAY: TUESDAY

	MD 5 NORTHBOUND				MD 5 SOUTHBOUND				STEAK HOUSE EASTBOUND			TRAVELED LANE WESTBOUND			
TIME	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	TOTAL
HOURLY															
6:00-8:00 AM	2	910 ~~896~~	8	1	9	453 ~~446~~	2	5			6			8	1383
7:00-8:00	10	1400 ~~1378~~	15	7	5	907 ~~893~~	5	5			5			16	2339
8:00-9:00	9	1221 ~~1202~~	23	7	14	889 ~~875~~	1	8			12			13	2164
9:00-10:00	4	1138 ~~1120~~	27	11	9	784 ~~772~~	3	16			8			12	1982
10:00-11:00	5	866 ~~852~~	45 ~~44~~	15	12	893 ~~879~~	5	11			10			22	1855
11:00-12:00	7	942 ~~927~~	31	10	12	919 ~~905~~	1	12			15			25	1945
12:00-1:00PM	7	1071 ~~1054~~	29	13	20	983 ~~968~~	2	14			12			23	2142
1:00-2:00	8	972 ~~957~~	38 ~~37~~	13	16	1120 ~~1102~~	6	4			12			26	2181
2:00-3:00	8	975 ~~960~~	19	14	11	1230 ~~1211~~	2	12			10			40 ~~39~~	2286
3:00-4:00	2	1125 ~~1107~~	29	9	13	1656 ~~1630~~	2	16			16			37 ~~36~~	2860
4:00-5:00	5	1215 ~~1196~~	36 ~~35~~	19	14	1748 ~~1721~~	1	15			11			27	3044
5:00-6:00	4	1119 ~~1101~~	16	7	10	1623 ~~1597~~	3	8			5			24	2775
6:00-7:00	4	729 ~~718~~	12	3	14	1095 ~~1078~~	4	12			7			20	1872
12-HOUR TOTALS	**75**	**13683 13468**	**328 325**	**129**	**159**	**14300 14077**	**37**	**138**			**129**			**293 291**	**27445**
AM PEAK															
6:30-6:45	1	341	3	0	4	130	2	2			3			2	488
6:45-7:00	1	315	4	0	3	161	0	2			0			3	489
7:00-7:15	3	310	1	3	1	192	1	2			1			2	516
7:15-7:30	1	352	6	3	2	259	3	1			1			6	634
7:30-7:45	2	405	3	1	0	215	1	2			2			5	636
7:45-8:00	4	311	5	0	2	227	0	0			1			3	553
8:00-8:15	2	334	10	3	1	215	1	1			2			2	571
8:15-8:30	3	305	7	2	5	200	0	3			1			3	529
8:30-8:45	3	285	3	1	3	226	0	1			3			2	527
8:45-9:00	1	278	3	1	5	234	0	3			6			6	537
PEAK HR 7:15-8:15 TOTALS	**7**	**1404 1382**	**14**	**7**	**6**	**840 827**	**5**	**7**			**4**			**16**	**PHF 0.94**
PM PEAK															
4:00-4:15	2	283	8	5	1	437	0	6			3			8	753
4:15-4:30	1	269	6	7	6	466	1	2			2			9	769
4:30-4:45	1	355	10	3	4	394	0	4			3			5	779
4:45-5:00	1	289	11	4	3	424	0	3			3			5	743
5:00-5:15	1	280	3	3	2	433	1	1			1			9	734
5:15-5:30	2	308	3	1	2	366	1	5			2			1	691
5:30-5:45	1	255	7	1	3	403	0	1			1			9	681
5:45-6:00	0	258	3	2	3	395	1	1			1			5	669
6:00-6:15	1	195	0	1	3	339	1	5			3			0	548
6:15-6:30	0	217	2	0	5	280	0	3			7			2	516
PEAK HR 4:00-5:00 TOTALS	**5**	**1215 1196**	**36 35**	**19**	**14**	**1749 1721**	**1**	**15**			**11**			**27**	**PHF 0.98**

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

M:\3741

NOT TO SCALE

DATE: APRIL, 2022 FILE# 3741

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

EXISTING INTERSECTION CONFIGURATION
MD 5 AT TRAVELED LANE
ST. MARY'S COUNTY, MARYLAND

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

County:	CHARLES	Municipality:	NONE		
Prefix:	MD	Route NO: 5	Suffix:	Mile Point:	-1
Location:	MD5-.20 MI S OF CHARLES CO/L				
Begin Sect:	0	End Sect:	1.85		
Station Desc:	ST MARYS CO/L TO MD 231				
Func Class:	2-RURAL OTHER PRINCIPAL ARTERIAL	Location ID:	B3665		

2021	39,563	40,753	5	1	8.2	60.07	50.9	49.1	SOUTH
2020	33,302	34,632	5	1	8.2	60.07	50.9	49.1	SOUTH
2019	40,211	41,821	6	1	8.2	60.07	50.9	49.1	SOUTH
2018	39,730	41,720	6	1	8.2	60.07	50.9	49.1	SOUTH
2017	41,032	43,082	7	2	8	55.93	51.79	48.21	SOUTH
2016	40,151	42,961	7	2	8	55.93	51.79	48.21	SOUTH
2015	39,290	41,650	7	2	8	55.93	51.79	48.21	SOUTH
2014	37,312	39,552	10	1	8.22	60.07	50.26	49.74	SOUTH
2013	37,351	39,971	10	1	8.22	60.07	50.26	49.74	SOUTH
2012	37,540	39,790	10	1	8.22	60.07	50.26	49.74	SOUTH

Volumes decreased 1.6% from 2021-2019

Note

AADT: Annual Average Daily Traffic is the number of vehicles expected to pass a given location on an average day of the year.

AAWDT: Annual Average Weekday Traffic is the number of vehicles expected to pass a given location on an average Weekday (Monday – Friday).

Single Unit: Percentage of Trucks (FHWA Classes 4 -7).

Combination Unit: Percentage of Trucks (FHWA Classes 8-13).

K Factor: Proportion of Annual Average Daily Traffic occurring in the 30th highest hour volume for Continuous count station and Peak hour volume for Short duration count stations.

D Factor: Percentage of traffic moving in the peak direction during the 30th highest hour volume for Continuous count station and Peak hour volume for Short duration count stations.

North East Split: Percentage of traffic in the North or East Direction.

South West Split: Percentage of traffic in the South or West Direction.

Peak Hour Direction: The direction with largest volume in the peak hour.

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
DATA SERVICES DIVISION
ANNUAL AVERAGE DAILY TRAFFIC (AADT) 2014-2020

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

COUNTY ROUTE	ROADNAME	LOCATION	BEGIN_MP	END_MP	ROAD SECTION	AADT 2014	AADT 2015	AADT 2016	AADT 2017	AADT 2018	AADT 2019	AADT 2020
ST. MARY'S												
MD 234	BUDDS CREEK RD	B1735	0.000	0.880	CHARLES CO/L TO MD 236	***6,380***	6,531	6,682	***6,460***	6,421	6,502	5,102
MD 234	BUDDS CREEK RD	B3618	0.880	4.900	MD 236 TO MD 238	***8,490***	8,691	***9,620***	9,831	9,772	9,893	8,194
MD 234	BUDDS CREEK RD	B3620	4.900	9.160	MD 238 to MD 242	***6,470***	6,631	6,782	***6,780***	6,741	6,822	5,653
MD 234	BUDDS CREEK RD	B3621	9.160	12.665	MD 242 TO MD 5	***9,940***	10,181	10,412	10,643	10,584	10,715	8,875
MD 235	THREE NOTCH RD	B3623	0.000	7.643	MD 5 to MD 489	4,344	4,455	***4,350***	4,451	4,422	4,483	3,714
MD 235	THREE NOTCH RD	B3624	7.643	9.856	MD 489 TO MD 712	9,094	9,315	***9,900***	10,121	10,062	10,183	8,434
MD 235	THREE NOTCH RD	B3625	9.856	11.938	MD 712 TO MD 246	16,941	17,382	***16,830***	17,231	17,082	18,280	15,261
MD 235	THREE NOTCH RD	B3626	11.938	14.916	MD 246 TO MD 237	32,751	33,602	***33,040***	33,831	33,532	34,800	29,061
MD 235	THREE NOTCH RD	B3627	14.916	16.608	MD 237 TO MD 4	58,531	60,052	***59,970***	61,411	60,862	63,210	52,781
MD 235	THREE NOTCH RD	B3629	16.608	20.717	MD 4 to MD 245	29,321	30,032	***30,140***	30,801	30,622	29,970	24,821
MD 235	THREE NOTCH RD	B3630	20.717	26.607	MD 245 TO MD 247	25,751	26,372	***26,970***	27,561	27,402	26,600	22,031
MD 235	THREE NOTCH RD	B3632	26.607	30.636	MD 247 to MD 6	26,421	27,062	***24,230***	24,761	24,612	23,460	19,431
MD 236	THOMPSONS CORNER RD	B3634	0.000	6.190	MD 234 TO MD 5	3,583	3,674	3,765	***3,590***	3,571	3,612	2,993
MD 237	CHANCELLORS RUN RD	B3672	0.000	2.950	MD 246 TO MD 235	***19,110***	19,611	19,982	***20,210***	20,031	20,032	16,733
MD 238	CHAPTICO RD	B3637	7.165	10.830	MD 234 TO MD 5	***2,230***	2,281	2,332	2,383	2,374	2,405	1,995
MD 238	MADDOX RD	B3635	0.000	7.165	MD 242 to MD 234	***1,490***	1,531	1,572	1,613	1,604	1,625	1,355
MD 239	BUSHWOOD WHARF RD	B3638	0.000	1.640	ROAD END TO MD 242	202	***190***	***210***	***200***	***210***	211	182
MD 242	COLTON POINT RD	B3639	0.000	4.370	POINT BREEZE RD TO MD 239	***720***	741	762	783	784	795	665
MD 242	COLTON POINT RD	B3640	4.370	5.340	MD 239 TO MD 238	***3,190***	3,271	3,342	3,423	3,404	3,455	2,865
MD 242	COLTON POINT RD	B3641	5.340	8.830	MD 238 TO MD 234	5,533	5,674	5,805	***5,470***	5,441	5,512	4,563
MD 242	COLTON POINT RD	B3643	8.830	12.804	MD 234 TO MD 5	***2,380***	2,441	2,502	2,563	2,554	2,595	2,155
MD 243	NEWTOWNE NECK RD	B3644	0.000	1.500	ROAD END TO BAYSIDE RD	701	722	743	764	765	700	581
MD 243	NEWTOWNE NECK RD	B3645	1.500	4.656	BAYSIDE RD TO MD 5	7,101	7,272	7,433	7,604	7,565	7,150	5,921
MD 244	BLAKE CREEK RD	B3647	9.920	10.480	BLAKE CREEK RD TO MD 249	1,802	1,853	1,894	1,945	***1,830***	1,851	1,532
MD 244	MEDLEYS NECK RD	B3646	0.000	9.920	MD 5 TO BLAKE CREEK RD	2,252	2,313	2,364	2,425	***2,250***	2,281	1,892
MD 245	HOLLYWOOD RD	B3649	0.000	5.270	MD 5 TO MD 235	***11,290***	11,561	11,822	***13,910***	13,831	14,002	11,593
MD 245	SOTTERLEY RD	B3651	5.270	7.550	MD 235 TO STEER HORN NECK RD	***1,840***	1,881	1,922	1,963	1,954	1,985	1,645
MD 246	GREAT MILLS RD	B3669	0.000	3.350	MD 5 TO ROAD END	18,062	***18,400***	18,751	19,202	***18,350***	18,351	15,322
MD 247	LOVEVILLE RD	B3652	0.000	2.890	MD 5 TO OAKVILLE RD	4,204	4,315	***4,730***	4,831	4,802	4,863	4,034
MD 249	PINEY POINT RD	B3653	0.000	2.460	INDIGO POINT RD (BACK) TO LIGHTHOUSE RD	1,582	1,623	1,664	1,705	***1,570***	1,591	1,322
MD 249	PINEY POINT RD	B3654	6.650	9.840	MD 244 TO MD 5	5,382	5,513	5,634	5,765	***5,410***	5,481	4,542
MD 249	PINEY POINT RD	B3670	2.460	6.650	LIGHTHOUSE RD TO MD 244	4,332	4,443	4,544	4,645	***4,580***	4,641	3,842
MD 4	PATUXENT BEACH RD	B180014	6.100	9.360	MD 235 TO CALVERT CO/L	***28,060***	28,791	29,342	***28,470***	28,211	28,212	23,563
MD 4	ST ANDREWS CHURCH RD	B180008	0.000	3.550	MD 5 TO INDIAN BRIDGE RD	12,001	12,292	***11,860***	12,121	12,052	11,510	9,531
MD 4	ST ANDREWS CHURCH RD	B3671	3.550	6.100	INDIAN BRIDGE RD TO MD 235	***19,560***	20,071	20,452	***19,860***	19,681	19,682	16,433
MD 470	OAKLEY RD	B3657	0.000	3.750	MD 242 TO MD 242	1,101	1,132	1,163	1,194	1,195	1,160	961
MD 471	INDIAN BRIDGE RD	B3658	0.000	1.010	MD 5 TO INDIAN BRIDGE RD (AHEAD)	4,384	***4,920***	5,011	5,132	5,093	5,094	4,254
MD 472	NORTH SANDGATES RD	B3659	0.000	2.580	MD 235 TO SOUTH SANDGATES RD (AHEAD)	2,424	2,485	***2,260***	2,311	2,302	2,333	1,934
MD 489	PARK HALL RD	B3660	0.000	1.270	MD 5 TO MD 235	1,834	1,885	***1,940***	1,981	1,972	2,003	1,664
MD 5	POINT LOOKOUT RD	B180007	25.530	26.700	MD 4 TO MD 5BU/ MD 245	21,662	22,183	22,674	23,175	***24,580***	24,881	20,602
MD 5	POINT LOOKOUT RD	B3602	5.010	13.330	MD 235 to MD 489	5,745	***5,540***	5,661	5,792	5,763	5,834	4,835
MD 5	POINT LOOKOUT RD	B3604	13.330	17.200	MD 489 TO MD 246	7,905	***8,660***	8,851	9,052	9,003	9,114	7,555
MD 5	POINT LOOKOUT RD	B3605	17.200	17.460	MD 246 TO MD 471	18,452	***21,360***	***22,300***	22,841	22,642	23,593	19,703
MD 5	POINT LOOKOUT RD	B3607	17.460	25.530	MD 471 to MD 4	12,422	***13,810***	14,111	14,422	14,343	14,524	12,035
MD 5	POINT LOOKOUT RD	B3609	26.700	28.090	MD 5BU/MD 245 TO MD 243	***26,380***	27,011	27,612	28,223	28,054	28,395	23,515
MD 5	POINT LOOKOUT RD	B3610	28.090	28.830	MD 243 TO MD 234	18,892	19,353	19,784	20,225	***20,420***	20,671	17,122
MD 5	POINT LOOKOUT RD	B3611	28.830	38.320	MD 234 to MD 235	8,995	***10,380***	10,611	10,842	10,783	10,914	9,045
MD 5	POINT LOOKOUT RD	P0087	2.320	5.010	CAMP BROWN RD TO MD 235	***1,750***	1,785	1,793	1,819	1,721	1,763	1,764
MD 5	POINT LOOKOUT RD	S2000180006	0.000	2.320	POINT LOOKOUT RD (BACK) TO CAMP BROWN RD	781	***1,240***	1,271	1,302	1,293	1,314	1,095
MD 5	THREE NOTCH RD	B3614	38.320	42.760	MD 235 TO MD 6	29,572	***36,830***	37,641	38,472	***36,940***	37,381	30,952
MD 5	THREE NOTCH RD	B3665	42.760	45.230	MD 6 TO CHARLES CO/L	37,312	***39,290***	40,151	41,032	***39,730***	40,211	33,302
MD 5 B	NO NAME	S2012180528	0.000	0.100	MD 238 TO MD 5	1,442	1,483	1,524	1,565	***1,560***	1,581	1,312
MD 520	WHITES NECK RD	B3662	0.000	2.610	ROAD END TO MD 239	***640***	661	682	703	704	715	595
MD 6	NEW MARKET RD	B3615	0.000	1.230	CHARLES CO/L TO MD 5	6,272	***5,980***	6,111	6,252	***5,730***	5,801	4,802
MD 6	NEW MARKET TURNER RD	B3616	1.230	3.780	MD 5 TO ALL FAITH CHURCH RD	***3,290***	3,381	3,452	***3,410***	3,381	3,382	2,823
MD 6	NEW MARKET TURNER RD	B3617	3.780	9.550	ALL FAITH CHURCH RD TO MD 235	***2,040***	2,091	2,142	2,193	2,184	2,215	1,835

increased 0.4% from 2015-2018 (actual counts)

Note: AADTs that are bold and italicized are counted that year

APPENDIX IV
SCOPING
AGREEMENT

Gmail Colleen Atkinson <catkinson@traffic-concepts.com>

Charlotte Hall Commercial Center - Traffic Impact Study Limits

Jesse Harper <Jesse.Harper@stmarysmd.com> Fri, Apr 22, 2022 at 12:44 PM
To: Jackie Chandler <jchandler@traffic-concepts.com>, Donald Mills <Donald.Mills@stmarysmd.com>, Colleen Atkinson <CAtkinson@traffic-concepts.com>, Jon Mayer <jmayer@traffic-concepts.com>

Good afternoon Jackie,

DPW&T has reviewed the proposed scoping limits for the proposed Chick-fil-A and Aldi grocery store located in the Charlotte hall Commercial Center and confirms that the intersections of MD 5 @ Golden Beach Road, MD 5 @ MD 6, and MD 5 @ Traveled Lane (to include a signal warrant analysis for this intersection) to be acceptable for this analysis. We also note that you are reaching out to LUGM for any additional background limit requests for this study.

We do have a few questions and concerns that may come up in PC for this intersection.

1. How much of Traveled lane should be a part of the public system either State or County owned?
2. Should this be a channelized intersection? (MD 5 @ Traveled Lane)
3. What would the state require of this intersection?
4. Should the Loop Road be restricted from connection to Traveled Lane or MD 5?

If you have any questions or concerns please do not hesitate to contact us.

Thanks,

Jesse

(301)-475-4200 x3521

From: Jackie Chandler <jchandler@traffic-concepts.com>
Sent: Tuesday, April 19, 2022 11:16 AM
To: Donald Mills <Donald.Mills@stmarysmd.com>; Jesse Harper <Jesse.Harper@stmarysmd.com>; Colleen Atkinson <CAtkinson@traffic-concepts.com>; Jon Mayer <jmayer@traffic-concepts.com>
Subject: Charlotte Hall Commercial Center - Traffic Impact Study Limits

Good morning Donnie/Jesse,

We have been contracted to prepare a traffic impact study for a proposed Chick-fil-A and ALDI grocery store at the Charlotte Hall Commercial Center. See the attached concept plan which is still a work in

progress.

We propose to analyze the following intersections during the weekday morning and evening peak periods:

MD 5 @ Traveled Lane (will include a signal warrant analysis for this intersection as well)

MD 5 @ Golden Beach Road

MD 5 @ MD 6

Please confirm that these study limits will be acceptable for the proposed project.

We will also be reaching out to LUGM (will cc you both) to request a list of background developments that should be included in the study.

Thank you,

Jackie L. Chandler

Project Manager

Traffic Concepts, Inc.
7525 Connelley Drive, Suite B
Hanover, MD 21076

410-760-2911

Direct: 410-450-3189

Mobile: 410-245-4046

Gmail Colleen Atkinson <catkinson@traffic-concepts.com>

Charlotte Hall Commercial Center - Traffic Impact Study Limits

Nicholas Colvin <Nicholas.Colvin@stmarysmd.com> Thu, Apr 21, 2022 at 2:24 PM
To: Colleen Atkinson <CAtkinson@traffic-concepts.com>

Colleen,

I don't have any other projects to add to your list.

Thanks,

Nick

From: Colleen Atkinson <CAtkinson@traffic-concepts.com>
Sent: Wednesday, April 20, 2022 4:17 PM
To: Nicholas Colvin <Nicholas.Colvin@stmarysmd.com>; Donald Mills <Donald.Mills@stmarysmd.com>; Jesse Harper <Jesse.Harper@stmarysmd.com>
Subject: Fwd: Charlotte Hall Commercial Center - Traffic Impact Study Limits

Good Afternoon.

Please see the email below regarding a Traffic Impact Study for a proposed Chick-fil-A and ALDI at Charlotte Hall Commerce Center.

I've attached a list of the latest background developments that we plan to include in the study. Can you please review the list and let me know if there are any additional background developments that should be included?

Thank you,

Colleen Atkinson

Traffic Concepts, Inc.

---------- Forwarded message ---------
From: **Jackie Chandler** <jchandler@traffic-concepts.com>
Date: Tue, Apr 19, 2022 at 11:16 AM
Subject: Charlotte Hall Commercial Center - Traffic Impact Study Limits

To: Donnie Mills <donald.mills@stmarysmd.com>, Jesse Harper <Jesse.Harper@stmarysmd.com>, Colleen Atkinson <CAtkinson@traffic-concepts.com>, Jon Mayer <jmayer@traffic-concepts.com>

Good morning Donnie/Jesse,

We have been contracted to prepare a traffic impact study for a proposed Chick-fil-A and ALDI grocery store at the Charlotte Hall Commercial Center. See the attached concept plan which is still a work in progress.

We propose to analyze the following intersections during the weekday morning and evening peak periods:

MD 5 @ Traveled Lane (will include a signal warrant analysis for this intersection as well)

MD 5 @ Golden Beach Road

MD 5 @ MD 6

Please confirm that these study limits will be acceptable for the proposed project.

We will also be reaching out to LUGM (will cc you both) to request a list of background developments that should be included in the study.

Thank you,

Jackie L. Chandler

Project Manager

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Hanover, MD 21076

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Direct: 410-450-3189

Mobile: 410-245-4046

APPENDIX V
SIGNAL WARRANT ANALYSIS COMPUTATIONS

TRAFFIC VOLUMES

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	MD 5				MD 5				STEAKHOUSE				TRAVELED LANE			
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL
7-8 AM	17	1414	63	1494	59	916	5	980	1	0	4	5	52	0	46	98
8-9	16	1233	100	1349	99	898	1	998	3	0	9	12	70	0	67	137
9-10	15	1149	115	1279	113	792	3	908	2	0	6	8	81	0	76	157
10-11	20	875	147	1042	125	902	5	1032	2	0	8	10	101	0	92	193
11-12 PM	17	951	178	1146	171	928	1	1100	3	0	12	15	146	0	140	286
12-1	20	1082	207	1309	213	993	2	1208	4	0	8	12	199	0	186	385
1-2	21	982	182	1185	164	1131	6	1301	4	0	8	12	165	0	152	317
2-3	22	985	144	1151	145	1242	2	1389	3	0	7	10	163	0	143	306
3-4	11	1136	157	1304	158	1673	2	1833	5	0	11	16	157	0	136	293
4-5	24	1227	175	1426	168	1766	1	1935	4	0	7	11	156	0	143	299
5-6	11	1130	163	1304	163	1639	3	1805	2	0	3	5	162	0	147	309
6-7	7	736	152	895	167	1106	4	1277	2	0	5	7	163	0	154	317
TOTAL	201	12900	1783	14884	1745	13986	35	15766	35	0	88	123	1615	0	1482	3097

TRAFFIC CONCEPTS, INC.
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TOTAL FUTURE TRAFFIC VOLUMES

MD 5 @ TRAVELED LANE

TRAFFIC VOLUMES

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	MD 5				MD 5				STEAKHOUSE				TRAVELED LANE			
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL
7-8 AM	17	1400	15	1432	10	907	5	922			5	5			16	16
8-9	16	1221	23	1260	22	889	1	912			12	12			13	13
9-10	15	1138	27	1180	25	784	3	812			8	8			12	12
10-11	20	866	45	931	23	893	5	921			10	10			22	22
11-12 PM	17	942	31	990	24	919	1	944			15	15			25	25
12-1	20	1071	29	1120	34	983	2	1019			12	12			23	23
1-2	21	972	38	1031	20	1120	6	1146			12	12			26	26
2-3	22	975	19	1016	23	1230	2	1255			10	10			40	40
3-4	11	1125	29	1165	29	1656	2	1687			16	16			37	37
4-5	24	1215	36	1275	29	1748	1	1778			11	11			27	27
5-6	11	1119	16	1146	18	1623	3	1644			5	5			24	24
6-7	7	729	12	748	26	1095	4	1125			7	7			20	20
TOTAL	201	12773	320	13294	283	13847	35	14165			123	123			285	285

TRAFFIC CONCEPTS, INC.
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EXISTING TRAFFIC VOLUMES

MD 5 @ TRAVELED LANE

TRAFFIC VOLUMES

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	MD 5				MD 6				STEAKHOUSE				TRAVELED LANE			
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL
7-8 AM									1		-1		11		-11	0
8-9									3		-3		9		-9	0
9-10									2		-2		8		-8	0
10-11									2		-2		15		-15	0
11-12 PM									3		-3		17		-17	0
12-1									4		-4		17		-17	0
1-2									4		-4		20		-20	0
2-3									3		-3		30		-30	0
3-4									5		-5		28		-28	0
4-5									4		-4		21		-21	0
5-6									2		-2		18		-18	0
6-7									2		-2		15		-15	0
TOTAL									35		-35		209		-209	0

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DIVERTED TRIPS DUE TO FULL MOVEMENT ACCESS

TRAFFIC VOLUMES

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	MD 5				MD 5				STEAKHOUSE				TRAVELED LANE			
TIME	**L**	**S**	**R**	**TOTAL**	**L**	**S**	**R**	**TOTAL**	**L**	**S**	**R**	**TOTAL**	**L**	**S**	**R**	**TOTAL**
7-8 AM		14		14		9		9								
8-9		12		12		9		9								
9-10		11		11		8		8								
10-11		9		9		9		9								
11-12 PM		9		9		9		9								
12-1		11		11		10		10								
1-2		10		10		11		11								
2-3		10		10		12		12								
3-4		11		11		17		17								
4-5		12		12		18		18								
5-6		11		11		16		16								
6-7		7		7		11		11								
TOTAL		127		127		139		139								

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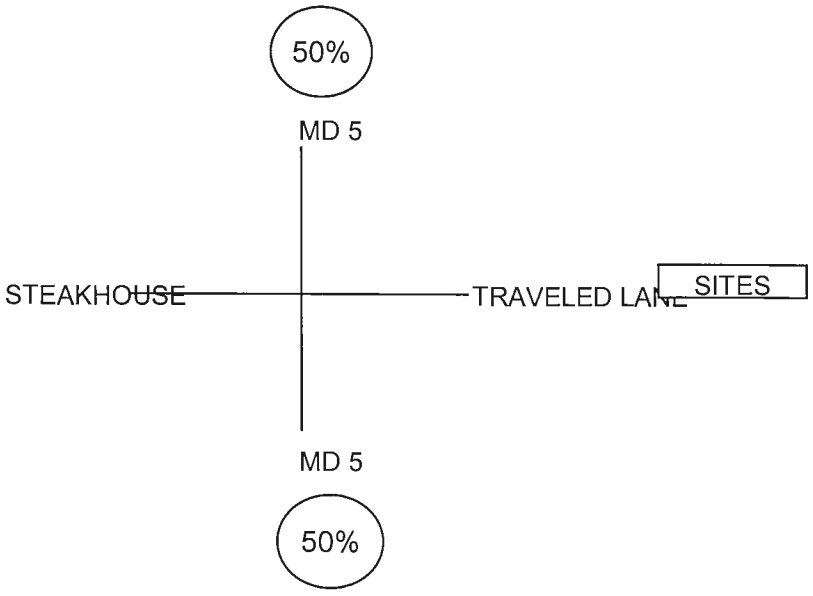
PROJECTED GROWTH RATES
(0.5% FOR TWO YEARS)

CHICK-FIL-A

FAST FOOD W/ DRIVE-THRU - 4,997 GSF ADT - 3350

TIME	IN	OUT	IN	OUT
7-8 AM	1.70%	1.55%	57	52
8-9	1.75%	1.70%	59	57
9-10	1.70%	1.65%	57	55
10-11	2.00%	1.85%	67	62
11-12 PM	4.55%	3.85%	152	129
12-1	5.95%	6.00%	199	201
1-2	3.95%	4.35%	132	146
2-3	2.95%	3.25%	99	109
3-4	2.85%	2.85%	95	95
4-5	2.95%	2.80%	99	94
5-6	3.45%	3.25%	116	109
6-7	3.70%	3.70%	124	124



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HOURLY IMPACT

CHICK-FIL-A

TRAFFIC VOLUMES

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	MD 5				MD 5				STEAKHOUSE				TRAVELED LANE			
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL
7-8 AM			28	28	29			29					26		26	52
8-9			30	30	29			29					28		29	57
9-10			28	28	29			29					28		27	55
10-11			34	34	33			33					31		31	62
11-12 PM			76	76	76			76					64		65	129
12-1			99	99	100			100					101		100	201
1-2			66	66	66			66					73		73	146
2-3			50	50	49			49					54		55	109
3-4			47	47	48			48					48		47	95
4-5			50	50	49			49					47		47	94
5-6			58	58	58			58					55		54	109
6-7			62	62	62			62					62		62	124
TOTAL			628	628	628			628					617		616	1233

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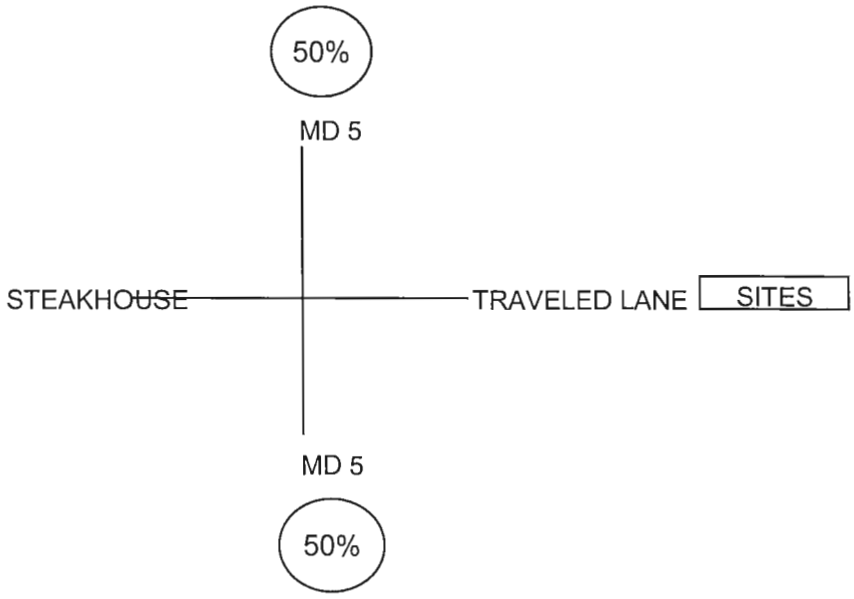
CHICK-FIL-A

ALDI

SUPERMARKET - 19.432 GSF ADT - 2160

TIME	IN	OUT	IN	OUT
7-8 AM	0.75%	0.70%	16	15
8-9	2.15%	1.65%	46	36
9-10	2.55%	2.20%	55	48
10-11	3.20%	2.70%	69	58
11-12 PM	3.70%	3.65%	80	79
12-1	4.65%	4.95%	100	107
1-2	4.35%	3.75%	94	81
2-3	4.40%	4.60%	95	99
3-4	4.45%	4.25%	96	92
4-5	4.90%	4.85%	106	105
5-6	4.75%	4.75%	103	103
6-7	3.90%	4.65%	84	100



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HOURLY IMPACT

ALDI

TRAFFIC VOLUMES

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	MD 5				MD 5				STEAKHOUSE				TRAVELED LANE			
TIME	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL	L	S	R	TOTAL
7-8 AM			8	8	8			8					7		8	15
8-9			23	23	23			23					18		18	36
9-10			28	28	27			27					24		24	48
10-11			34	34	35			35					29		29	58
11-12 PM			40	40	40			40					39		40	79
12-1			50	50	50			50					54		53	107
1-2			47	47	47			47					40		41	81
2-3			48	48	47			47					50		49	99
3-4			48	48	48			48					46		46	92
4-5			53	53	53			53					52		53	105
5-6			52	52	51			51					52		51	103
6-7			42	42	42			42					50		50	100
TOTAL			473	473	471			471					461		462	923

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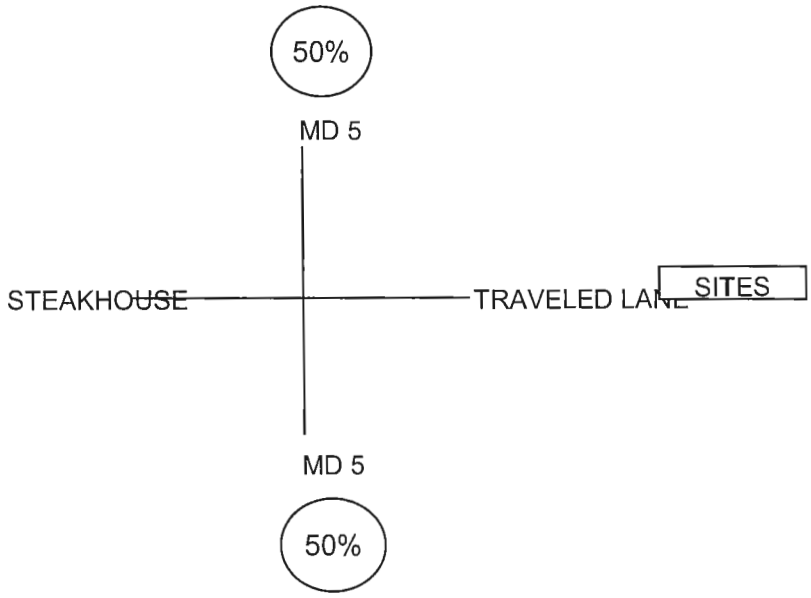
ALDI

CHARLOTTE HALL CENTER

STRIP RETAIL PLAZA - 14,000 GSF ADT - 1815

TIME	IN	OUT	IN	OUT
7-8 AM	1.31%	0.83%	24	15
8-9	2.72%	1.69%	49	31
9-10	3.55%	2.32%	64	42
10-11	3.73%	2.82%	68	51
11-12 PM	3.39%	2.91%	62	53
12-1	3.18%	2.95%	58	54
1-2	3.41%	3.53%	62	64
2-3	2.90%	3.20%	53	58
3-4	3.61%	3.79%	66	69
4-5	4.00%	4.00%	73	73
5-6	4.00%	4.00%	73	73
6-7	4.00%	4.00%	73	73



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HOURLY IMPACT

STRIP RETAIL PLAZA

TRAFFIC VOLUMES

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	MD 5				MD 5				STEAKHOUSE				TRAVELED LANE			
TIME	**L**	**S**	**R**	**TOTAL**	**L**	**S**	**R**	**TOTAL**	**L**	**S**	**R**	**TOTAL**	**L**	**S**	**R**	**TOTAL**
7-8 AM			12	12	12			12					8		7	15
8-9			24	24	25			25					15		16	31
9-10			32	32	32			32					21		21	42
10-11			34	34	34			34					26		25	51
11-12 PM			31	31	31			31					26		27	53
12-1			29	29	29			29					27		27	54
1-2			31	31	31			31					32		32	64
2-3			27	27	26			26					29		29	58
3-4			33	33	33			33					35		34	69
4-5			36	36	37			37					36		37	73
5-6			37	37	36			36					37		36	73
6-7			36	36	37			37					36		37	73
TOTAL			362	362	363			363					328		328	656

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RETAIL

APPENDIX VI
SIMTRAFFIC
ANALYSES

Intersection: 7: MD 5 & Golden Beach Rd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	LT	R	UL	T	T	R	UL	T	T
Maximum Queue (ft)	66	111	193	310	223	132	464	482	275	128	321	328
Average Queue (ft)	12	38	75	161	131	24	263	279	34	50	167	165
95th Queue (ft)	41	78	183	267	222	79	431	457	210	104	278	286
Link Distance (ft)	640			497			662	662			1844	1844
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		370	100		165	275			275	590		
Storage Blk Time (%)			1	29	6		9	10				10
Queuing Penalty (veh)			2	103	13		4	14				2

Intersection: 7: MD 5 & Golden Beach Rd

Movement	SB
Directions Served	R
Maximum Queue (ft)	58
Average Queue (ft)	2
95th Queue (ft)	41
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	160
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: MD 5 & Traveled Ln

Movement	EB	WB	NB	NB	SB
Directions Served	R	R	UL	T	UL
Maximum Queue (ft)	19	38	16	3	36
Average Queue (ft)	2	11	2	0	7
95th Queue (ft)	10	35	9	2	26
Link Distance (ft)	160	647		2945	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			315		255
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 11: MD 5 SB & MD 6

Movement	EB	WB	WB	SB	SB	SB
Directions Served	T	L	T	L	T	T
Maximum Queue (ft)	170	99	169	112	397	392
Average Queue (ft)	82	33	102	34	198	211
95th Queue (ft)	150	72	164	81	340	348
Link Distance (ft)	350	163	163		2001	2001
Upstream Blk Time (%)		0	2			
Queuing Penalty (veh)		0	2			
Storage Bay Dist (ft)				510		
Storage Blk Time (%)					0	
Queuing Penalty (veh)					0	

Intersection: 12: MD 5 NB & MD 6

Movement	EB	EB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R
Maximum Queue (ft)	162	83	119	116	108	377	367	37
Average Queue (ft)	60	31	42	45	45	183	170	5
95th Queue (ft)	124	69	97	91	97	299	291	23
Link Distance (ft)	163	163	699			1087	1087	
Upstream Blk Time (%)	0							
Queuing Penalty (veh)	0							
Storage Bay Dist (ft)				140	325			335
Storage Blk Time (%)			0	0		0	0	
Queuing Penalty (veh)			0	0		1	0	

Zone Summary

Zone wide Queuing Penalty: 141

Intersection: 7: MD 5 & Golden Beach Rd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	B8	B8	SB
Directions Served	L	TR	L	LT	R	UL	T	T	R	T	T	UL
Maximum Queue (ft)	81	206	225	478	225	454	643	661	435	87	101	660
Average Queue (ft)	29	90	180	261	130	81	367	383	137	14	18	622
95th Queue (ft)	70	167	251	411	269	273	615	639	418	114	131	784
Link Distance (ft)	640			497			662	662		808	808	
Upstream Blk Time (%)				1			3	4				
Queuing Penalty (veh)				0			21	29				
Storage Bay Dist (ft)		370	100		165	275			275			590
Storage Blk Time (%)			20	64	1		22	25				75
Queuing Penalty (veh)			68	204	2		18	65				608

Intersection: 7: MD 5 & Golden Beach Rd

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	1683	1685	231
Average Queue (ft)	1160	1134	12
95th Queue (ft)	2086	2113	105
Link Distance (ft)	1844	1844	
Upstream Blk Time (%)	1	1	
Queuing Penalty (veh)	5	5	
Storage Bay Dist (ft)			160
Storage Blk Time (%)	0	30	
Queuing Penalty (veh)	0	7	

Intersection: 9: MD 5 & Traveled Ln

Movement	EB	WB	NB	SB
Directions Served	R	R	UL	UL
Maximum Queue (ft)	37	55	43	57
Average Queue (ft)	6	18	7	15
95th Queue (ft)	24	47	27	42
Link Distance (ft)	160	647		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			315	255
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 11: MD 5 SB & MD 6

Movement	EB	WB	WB	SB	SB	SB	SB
Directions Served	T	L	T	L	T	T	R
Maximum Queue (ft)	200	98	168	319	810	804	168
Average Queue (ft)	104	45	112	122	519	529	112
95th Queue (ft)	179	90	164	433	1118	1142	583
Link Distance (ft)	350	163	163		2001	2001	
Upstream Blk Time (%)			2				
Queuing Penalty (veh)			2				
Storage Bay Dist (ft)				510			735
Storage Blk Time (%)					10	8	
Queuing Penalty (veh)					15	14	

Intersection: 12: MD 5 NB & MD 6

Movement	EB	EB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R
Maximum Queue (ft)	147	139	67	92	106	282	281	51
Average Queue (ft)	68	70	20	32	36	154	138	8
95th Queue (ft)	125	125	51	70	81	254	246	32
Link Distance (ft)	163	163	699			1087	1087	
Upstream Blk Time (%)	1	0						
Queuing Penalty (veh)	1	1						
Storage Bay Dist (ft)				140	325			335
Storage Blk Time (%)						0		
Queuing Penalty (veh)						0		

Zone Summary

Zone wide Queuing Penalty: 1064

Intersection: 7: MD 5 & Golden Beach Rd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	LT	R	UL	T	T	R	UL	T	T
Maximum Queue (ft)	53	98	204	293	223	110	307	325	45	131	312	311
Average Queue (ft)	12	41	92	154	136	36	163	170	5	55	167	168
95th Queue (ft)	38	86	199	244	221	87	280	291	21	116	271	281
Link Distance (ft)	640			497			662	662			1844	1844
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		370	100		165	275			275	590		
Storage Blk Time (%)			2	31	6		2	2				9
Queuing Penalty (veh)			9	117	14		1	3				2

Intersection: 7: MD 5 & Golden Beach Rd

Movement	SB
Directions Served	R
Maximum Queue (ft)	2
Average Queue (ft)	0
95th Queue (ft)	2
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	160
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: MD 5 & Traveled Ln

Movement	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	LTR	L	LT	R	UL	T	T	UL	L	T	T	R
Maximum Queue (ft)	19	80	132	121	62	307	304	92	103	46	39	4
Average Queue (ft)	2	9	55	49	15	143	158	31	49	7	8	0
95th Queue (ft)	11	44	111	97	48	275	287	73	88	28	30	2
Link Distance (ft)	159		649			2950	2950			796	796	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		125		110	315			255	255			100
Storage Blk Time (%)		0	1	1		0	0					
Queuing Penalty (veh)		0	1	1		0	0					

Intersection: 11: MD 5 SB & MD 6

Movement	EB	WB	WB	SB	SB	SB
Directions Served	T	L	T	L	T	T
Maximum Queue (ft)	218	81	174	83	362	372
Average Queue (ft)	92	31	116	31	206	218
95th Queue (ft)	172	65	174	73	330	337
Link Distance (ft)	350	163	163		2001	2001
Upstream Blk Time (%)			5			
Queuing Penalty (veh)			5			
Storage Bay Dist (ft)				510		
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: MD 5 NB & MD 6

Movement	EB	EB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R
Maximum Queue (ft)	135	88	114	141	131	336	338	28
Average Queue (ft)	58	29	37	52	49	205	194	4
95th Queue (ft)	110	68	86	107	107	318	314	19
Link Distance (ft)	163	163	699			1087	1087	
Upstream Blk Time (%)	0							
Queuing Penalty (veh)	0							
Storage Bay Dist (ft)				140	325			335
Storage Blk Time (%)			0	0		0	0	
Queuing Penalty (veh)			0	0		1	0	

Zone Summary

Zone wide Queuing Penalty: 154

Intersection: 7: MD 5 & Golden Beach Rd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	B8	B8	SB
Directions Served	L	TR	L	LT	R	UL	T	T	R	T	T	UL
Maximum Queue (ft)	178	289	225	542	225	224	465	476	287	31	33	660
Average Queue (ft)	41	151	212	459	164	70	232	243	65	1	1	616
95th Queue (ft)	204	298	246	630	304	157	421	437	231	22	23	785
Link Distance (ft)	640			497			662	662		796	796	
Upstream Blk Time (%)				43			0	0				
Queuing Penalty (veh)				0			1	2				
Storage Bay Dist (ft)		370	100		165	275			275			590
Storage Blk Time (%)	0	3	69	83	0		8	10				71
Queuing Penalty (veh)	1	1	253	289	1		9	32				595

Intersection: 7: MD 5 & Golden Beach Rd

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	1847	1865	234
Average Queue (ft)	1305	1287	25
95th Queue (ft)	2239	2278	159
Link Distance (ft)	1844	1844	
Upstream Blk Time (%)	2	2	
Queuing Penalty (veh)	20	24	
Storage Bay Dist (ft)			160
Storage Blk Time (%)	4	34	
Queuing Penalty (veh)	14	8	

Intersection: 9: MD 5 & Traveled Ln

Movement	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	LTR	L	LT	R	UL	T	T	UL	L	T	T	R
Maximum Queue (ft)	36	218	304	180	71	401	404	154	182	181	185	2
Average Queue (ft)	9	72	154	121	22	216	241	84	93	98	92	0
95th Queue (ft)	29	186	253	199	56	368	387	139	153	184	177	1
Link Distance (ft)	159		649			2950	2950			796	796	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		125		110	315			255	255			100
Storage Blk Time (%)		1	23	15		2	3				9	
Queuing Penalty (veh)		4	69	28		1	4				0	

Intersection: 11: MD 5 SB & MD 6

Movement	EB	WB	WB	SB	SB	SB	SB
Directions Served	T	L	T	L	T	T	R
Maximum Queue (ft)	225	98	179	609	816	808	168
Average Queue (ft)	113	39	113	126	489	498	39
95th Queue (ft)	200	81	172	407	807	808	331
Link Distance (ft)	350	163	163		2001	2001	
Upstream Blk Time (%)			4				
Queuing Penalty (veh)			3				
Storage Bay Dist (ft)				510			735
Storage Blk Time (%)					9	2	
Queuing Penalty (veh)					17	5	

Intersection: 12: MD 5 NB & MD 6

Movement	EB	EB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R
Maximum Queue (ft)	147	146	73	126	125	321	289	52
Average Queue (ft)	69	76	23	47	42	175	162	12
95th Queue (ft)	125	133	56	95	91	280	266	40
Link Distance (ft)	163	163	699			1087	1087	
Upstream Blk Time (%)	0	1						
Queuing Penalty (veh)	0	2						
Storage Bay Dist (ft)				140	325			335
Storage Blk Time (%)				0		0	0	
Queuing Penalty (veh)				0		0	0	

Zone Summary

Zone wide Queuing Penalty: 1382