TRAFFIC IMPACT STUDY

MITCHELL PROPERTY WAREHOUSE
(F.O. Mitchell & Brothers Property)

Industrial Development
Harford County, Maryland

Revised September 28, 2022

Revised June, 2022
November, 2021

Prepared For:

Chesapeake Real Estate Group

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INTRODUCTION

The June 2022 Mitchell Property Warehouse Traffic Impact Study was revised to address the August 11, 2022 Harford County comments and Maryland Department of Transportation State Highway Administration (MDOT SHA) comments dated July18, 2022 and August 16, 2022.

Site Description & Access

The developer proposes to construct a 5,200,000 gsf of warehouse on the F.O. Mitchell & Brothers property. The property address is 1714 Perryman Road. The property is situated on the west side of MD 159 (Perryman RD) and the property boundary begins south of Canning House Road and extends to Fords Lane.

The subject property has direct access to Canning House Road and to MD 159. As shown on the site plan, Canning House would be relocated to intersect MD 159 north of its current location and will be extended to Chelsea Road. All site trips were assigned to this new road connection.

Scope of Services

The study was developed in accordance with the Harford County Adequate Public Facilities Ordinance and the Harford County Traffic Impact Study Guidelines. A scope of services document was developed by the County, which is included in the Appendix IV. The key intersections are listed below. Exhibit 1 shows the location of the site, the proposed Canning House Road extension and new connection to Chelsea Road, and the key intersections.

US 40 EB Ramps @ MD 22 (Signalized)	US 40 @ MD 132 (Signalized)
US 40 @ MD 7/MD 159 (Signalized)	US 40 @ MD 543 (Signalized)
US 40 @ Spesutia Road (Signalized)	MD 543 @ I-95 NB Ramps (Signalized)
MD 543 @ I-95 SB Ramps (Signalized)	MD 543 @ MD 7 (Signalized)
MD 715 @ US 40 EB Ramps (Signalzied)	MD 715 @ Old Philadelphia RD (Signalized)
MD 7 @ Stepney Road (Unsignalized)	MD 159 (Old Phil. RD) @ MD 159 (Perryman RD) (Roundabout)
MD 159 @ Spesutia Road (Unsignalized)	MD 159 @ Chelsea Road (Unsignalized)
MD 159 @ Fords Lane (Unsignalized)	MD 159 @ Canning House Road (Unsignalized)
Chelsea Road @ Woodley RD (Unsignalized)	Chelsea Road @ Proposed Canning House Road Extended (Unsignalized)

Study Methodology

The key intersections were counted during the weekday morning (6:00 AM - 9:30 AM) and evening (3:00 PM – 6:30 PM) peak hours. The key intersections were analyzed during the peak hour time periods under an existing, background, and the future traffic conditions. The intersection analysis methodologies are stated below.

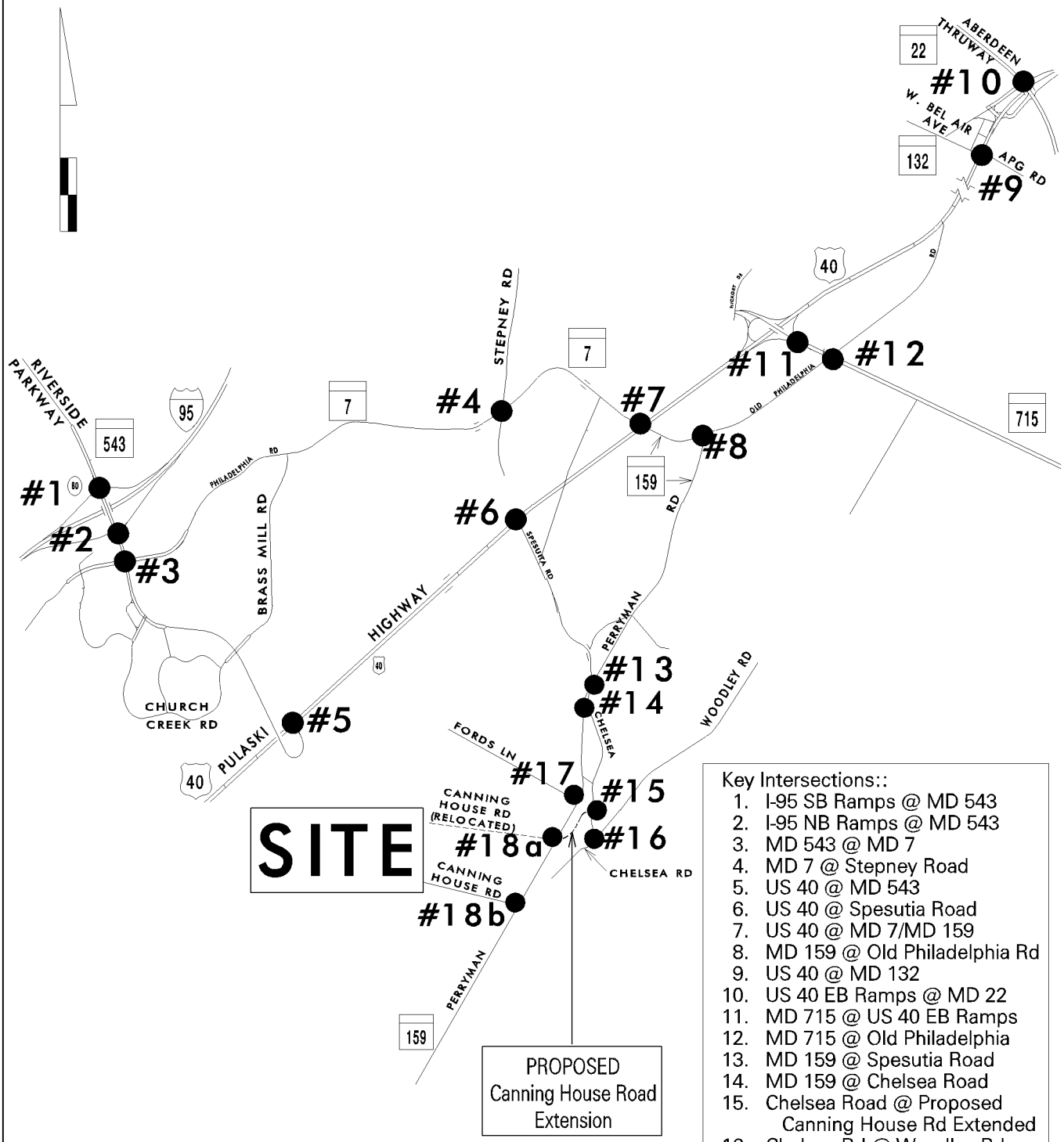
This study meets the County APFO standards by including analyses at all key intersections using the Critical Lane Volume (CLV) and Highway Capacity Manual software (HCS) methodologies. The HCS results are included at all key intersections, unless otherwise approved by Harford County.

Additionally, the signalized key intersections and the non-standard unsignalized intersections were analyzed with Synchro model. The Synchro model results were reported with HCM methodology, which is represented as Version HCM 2000. This methodology was requested by MDOT SHA and is accepted by Harford County. Finally, roundabout intersections were analyzed using the Sidra Intersection method. The results are listed in the following tables and the detailed calculations are included in Appendix I.

Vehicle queuing analyses were conducted at signalized intersections, as directed by the County. The SimTraffic queues from the Synchro model were also reported.

The Institute of Transportation Engineers', Trip Generation Manual, 11th Edition (ITE Manual) was used to determine the background and the future peak hour trips. The total future traffic volumes are described with the following formula:

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



Key Intersections::

1. I-95 SB Ramps @ MD 543
2. I-95 NB Ramps @ MD 543
3. MD 543 @ MD 7
4. MD 7 @ Stepney Road
5. US 40 @ MD 543
6. US 40 @ Spesutia Road
7. US 40 @ MD 7/MD 159
8. MD 159 @ Old Philadelphia Rd
9. US 40 @ MD 132
10. US 40 EB Ramps @ MD 22
11. MD 715 @ US 40 EB Ramps
12. MD 715 @ Old Philadelphia
13. MD 159 @ Spesutia Road
14. MD 159 @ Chelsea Road
15. Chelsea Road @ Proposed Canning House Rd Extended
16. Chelsea Rd @ Woodley Rd
17. MD 159 @ Fords Lane

18a. MD 159 @ Canning House Rd Relocated/Extended

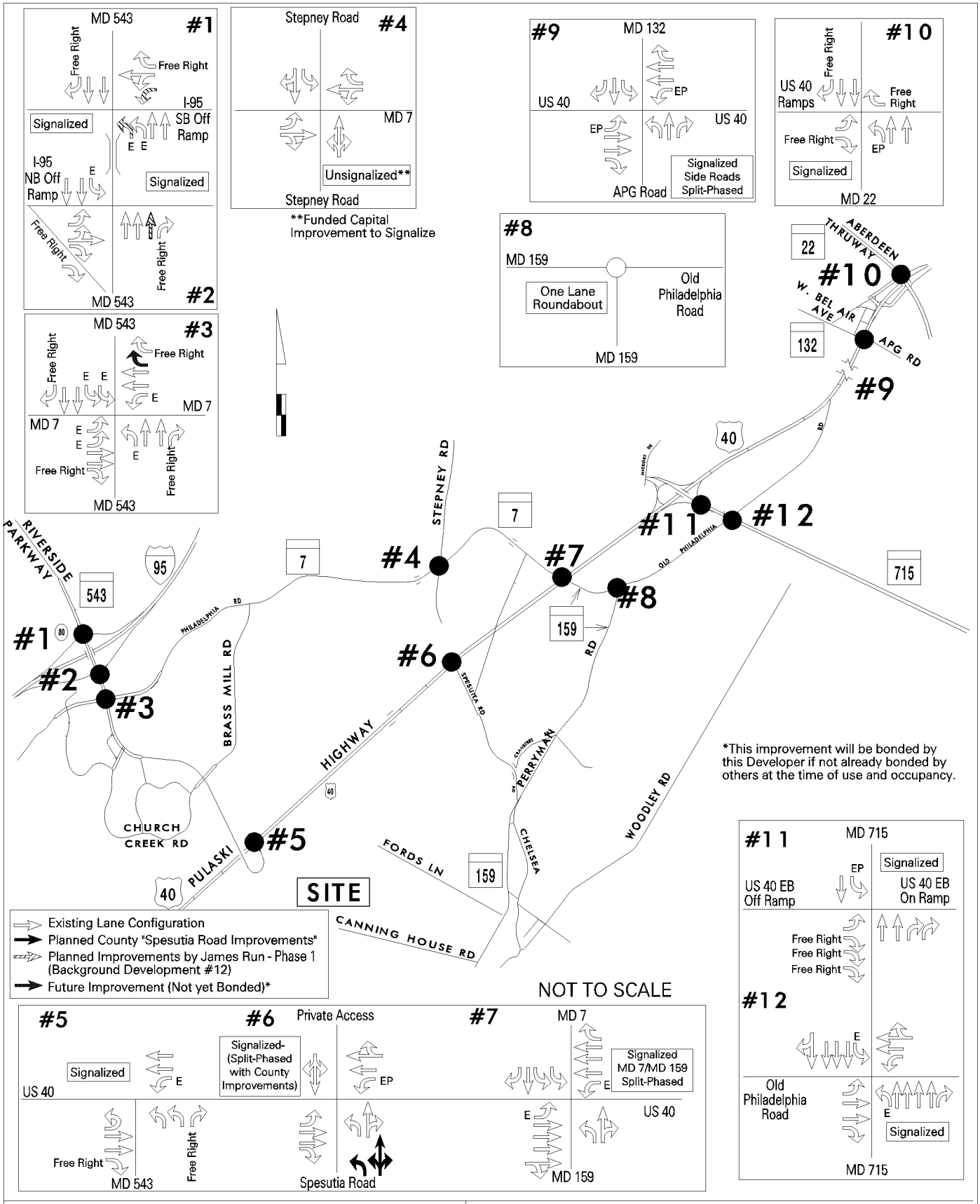
18b. MD 159 @ Canning House Rd

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EXHIBIT 1

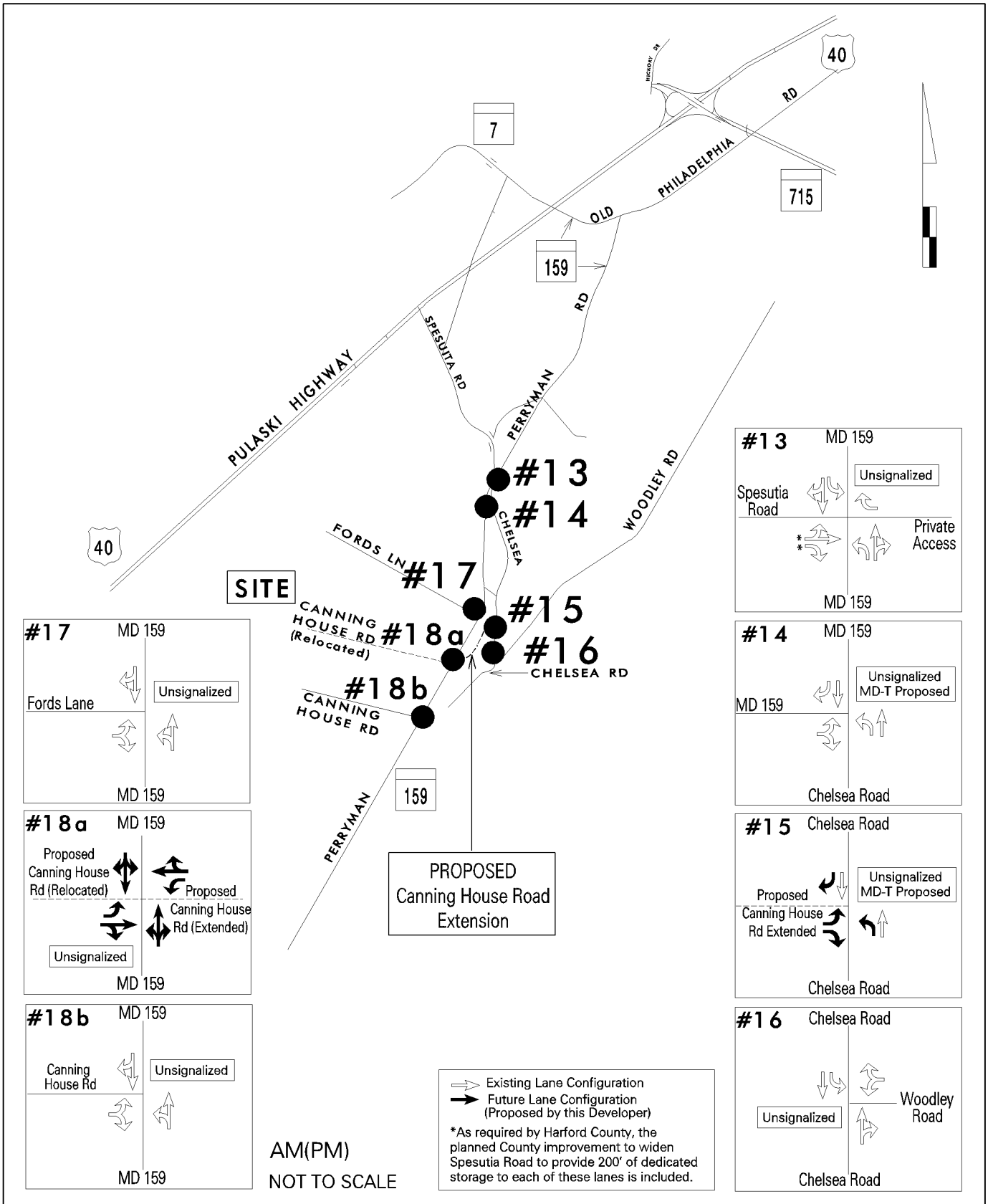
Site Location Map



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EXHIBIT 2A

Lane Configuration



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EXHIBIT 2B

Lane Configuration

EXISTING CONDITION

The existing traffic condition was established with intersection turning movement counts that were conducted at the key intersections in March, 2022. This existing traffic data determines the baseline intersection levels of service.

Study Exhibits 2A and 2B display the existing intersection lane use, improvements planned by others, and improvements proposed by the developer. The peak hour volumes are shown on Exhibits 3A and 3B. The existing intersection conditions diagrams and the existing intersection turning movement counts are included in Appendix III.

Traffic Data Revisions

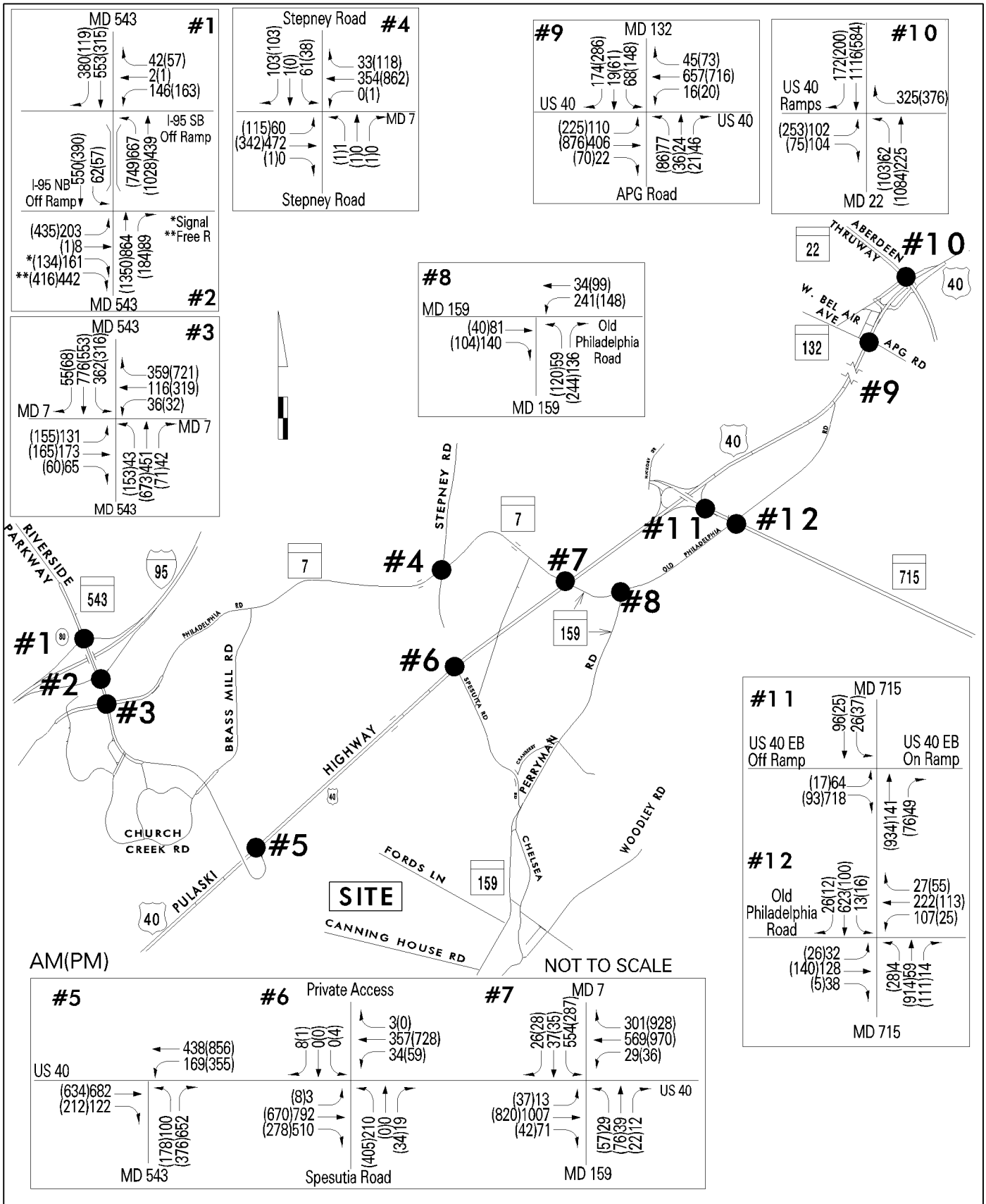
Study revisions to the existing traffic counts include a September 7, 2022 count conducted at the Woodley Road @ Chelsea Road intersection. Also, thirteen-hour counts were conducted at the MD 159 @ Chelsea Rd/MD 159 intersection and at the MD 159 @ Spesutia Road intersection for a Signal Warrant Analysis.

Truck Data

Truck percentages at the key intersections were determined with 24-hour traffic count data, conducted by Traffic Concepts, Inc. and with MDOT SHA data. The MDOT SHA data was used to determine the heavy truck percentages along roadways outside of the Perryman Peninsula. The September 2022 counts conducted by Traffic Concepts, Inc. determined the heavy truck percentages along MD 159 (Perryman Road), south of the roundabout and along Chelsea Road, north of Woodley Road. The TIS was revised with heavy truck percentages, as shown on the table below. The 24-hours counts and the MDOT SHA traffic data are provided in Appendix III.

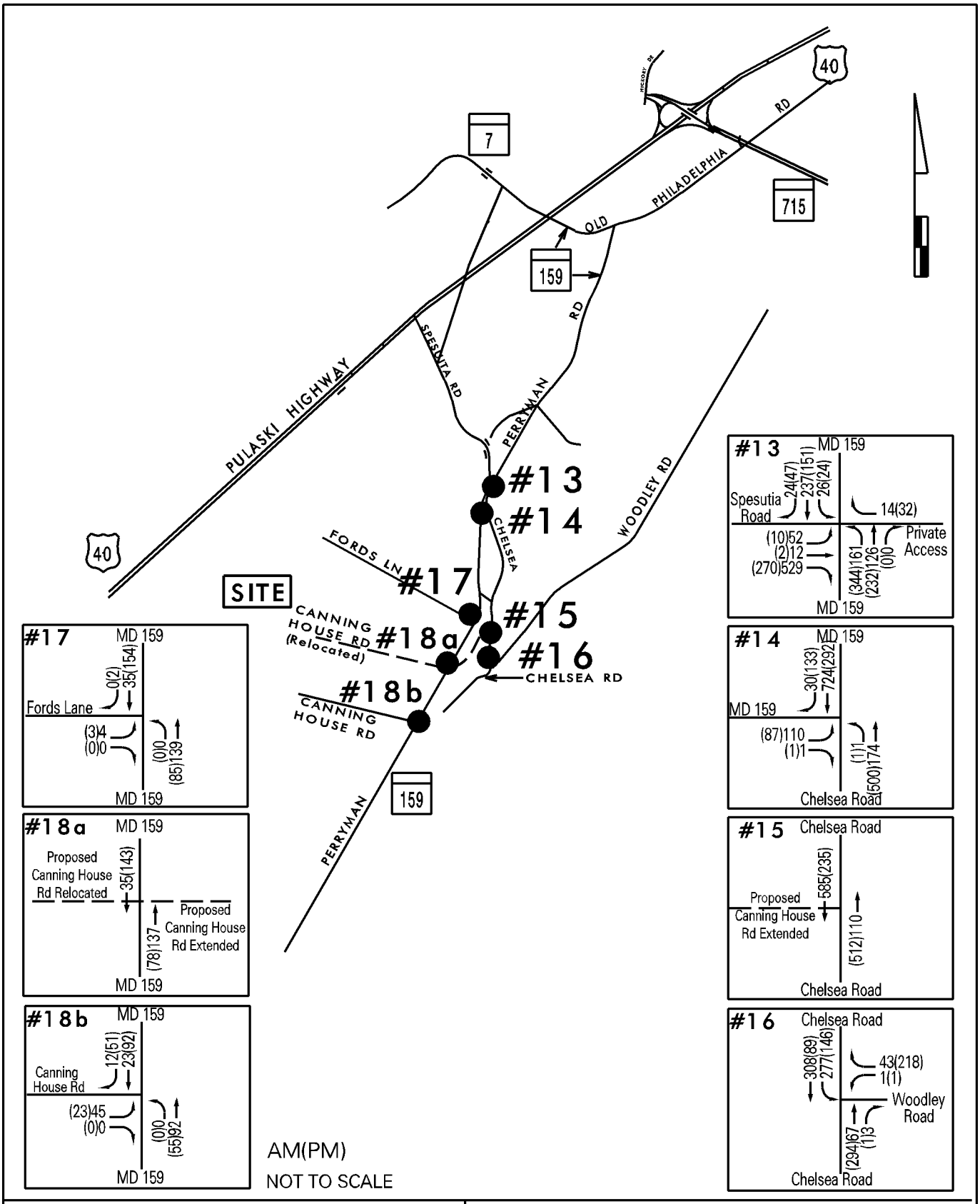
STATE ROADWAY	CLASSIFICATION	Peak Hour % of Heavy Trucks
MD 543	Minor Arterial	12%[1]
US 40	Principal Arterial	10%[1]
MD 159 (Old Phil. RD)	Minor Arterial	Use 10% (No Data Available)
MD 7	Minor Arterial	Use 10% (No Data Available)
MD 132	Minor Arterial	5%[1]
MD 22	Principal Arterial	5%[1]
MD 715	Minor Arterial	Use 10% (No Data Available)
MD 159 (Perryman RD)	Major Collector	15% [2]

Source: 1. MDOT SHA Data & 2. Traffic Concepts, INC Data



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EXHIBIT 3A
Existing Traffic Volumes



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EXHIBIT 3B
Existing Traffic Volumes

BACKGROUND CONDITION

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

Growth Rates

The required Harford County growth rate of 2.2 percent was applied to the key intersection volumes and was compounded over 5-years. Five years represents the project build-out period. The peak hour trips generated by the growth rates are shown on Exhibit 4.

Background Developments

Harford County DPZ identified fourteen (14) nearby developments that could impact the key intersections. The locations of these developments are shown on Exhibit 5. The background developments and the resulting background peak hour trips are shown below. All background trips were generated with the *ITE Manual 10th Edition*.

	AM		PM	
	IN	OUT	IN	OUT
1. Abingdon Addition (ITE LUC 210)				
20 sfu	**5**	**14**	**14**	**8**
2. Beech Creek Estates (ITE LUC 220)				
15 thu	**2**	**6**	**7**	**4**
3. Hollywoods (ITE LUC 220)				
250 condos	26	88	84	49
6. Woodlawn (ITE LUC 210)				
103 sfu	20	58	66	39
TOTAL BACKGROUNDS 3 & 6:	**46**	**146**	**150**	**88**
4. Monarch Glen				
1 sfu (ITE LUC 210)	0	1	1	0
15 thu (ITE LUC 220)	2	6	7	4
5. Redlief Run				
26 sfu (ITE LUC 210)	6	17	18	10
TOTAL BACKGROUNDS 4 & 5:	**8**	**24**	**26**	**14**

	AM		PM	
	IN	**OUT**	**IN**	**OUT**
7. 999-1041 Old Philadelphia Rd (Cranberry Run Ph II)				
Distribution Center – per ksf*	0.06	0.02	0.04	0.07
691.6 ksf	**41**	**14**	**28**	**48**
8. Abingdon Business Park (Lots 1-3)				
Distribution Center – per ksf*	0.06	0.02	0.04	0.07
2,064.8 ksf	**124**	**41**	**83**	**145**
9. Belcamp Commercial – Lots 1 & 2**				
Total New Trips	**85**	**78**	**78**	**66**
10. Capital Exports				
ITE Land Use Code 840				
8.0 ksf	**11**	**4**	**18**	**10**
11. Crossroads Community Church – 13.72 ksf house of worship***				
12. James Run****				
13. LEMS Contrating Company, Inc. – 8.8 ksf retail trade service***				
14. Riverside Business Park – Lot 36				
ITE Land Use Code 150				
242.94 ksf	**41**	**13**	**15**	**42**

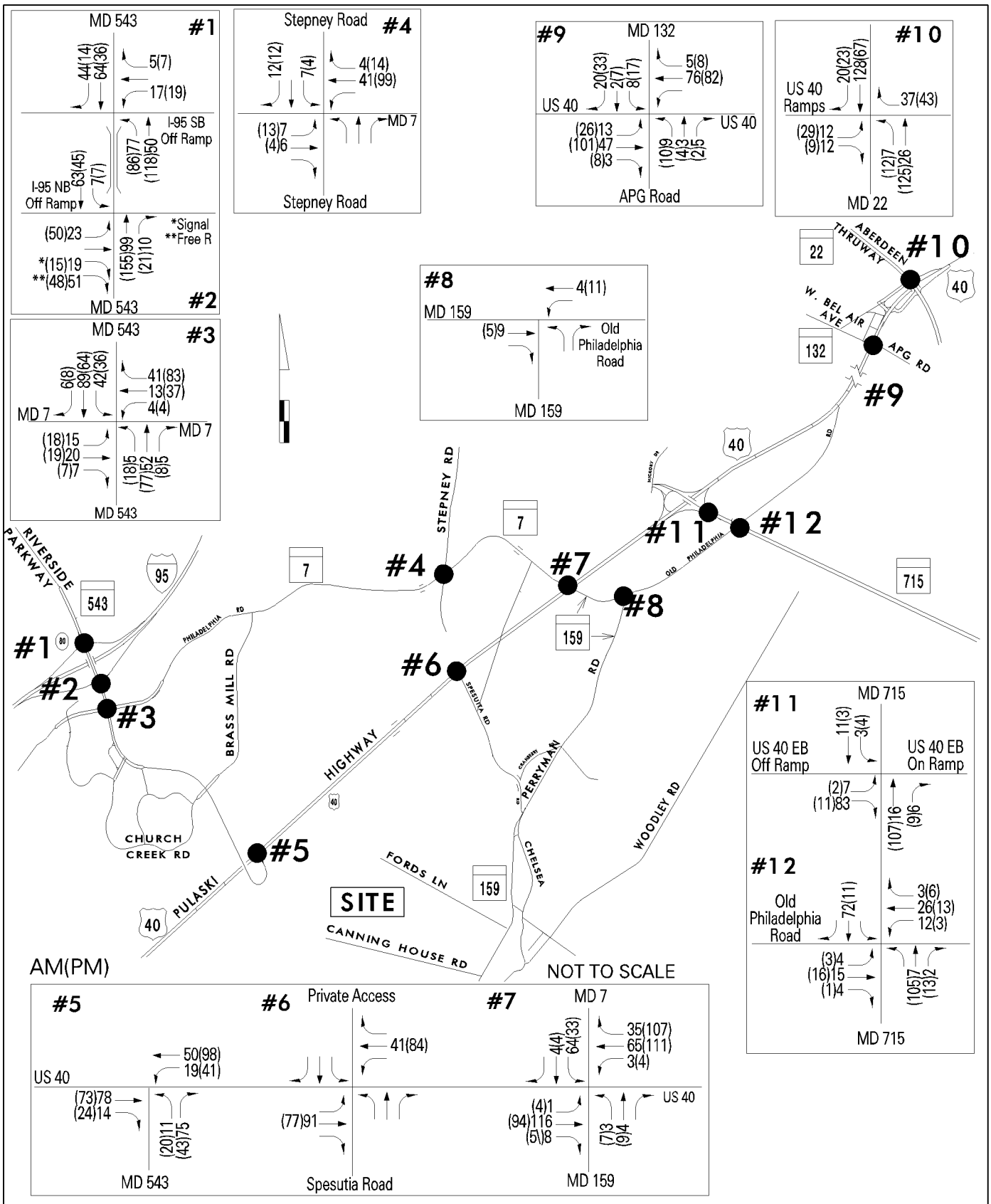
* Harford County peak hour distribution center rates were used.

** Belcamp Commercial trips were copied directly from the approved TIS. The current plan, approved by Harford County, represents a trip reduction of the total site trips analyzed in the TIS. Excerpts of the approved TIS are included in Appendix II.

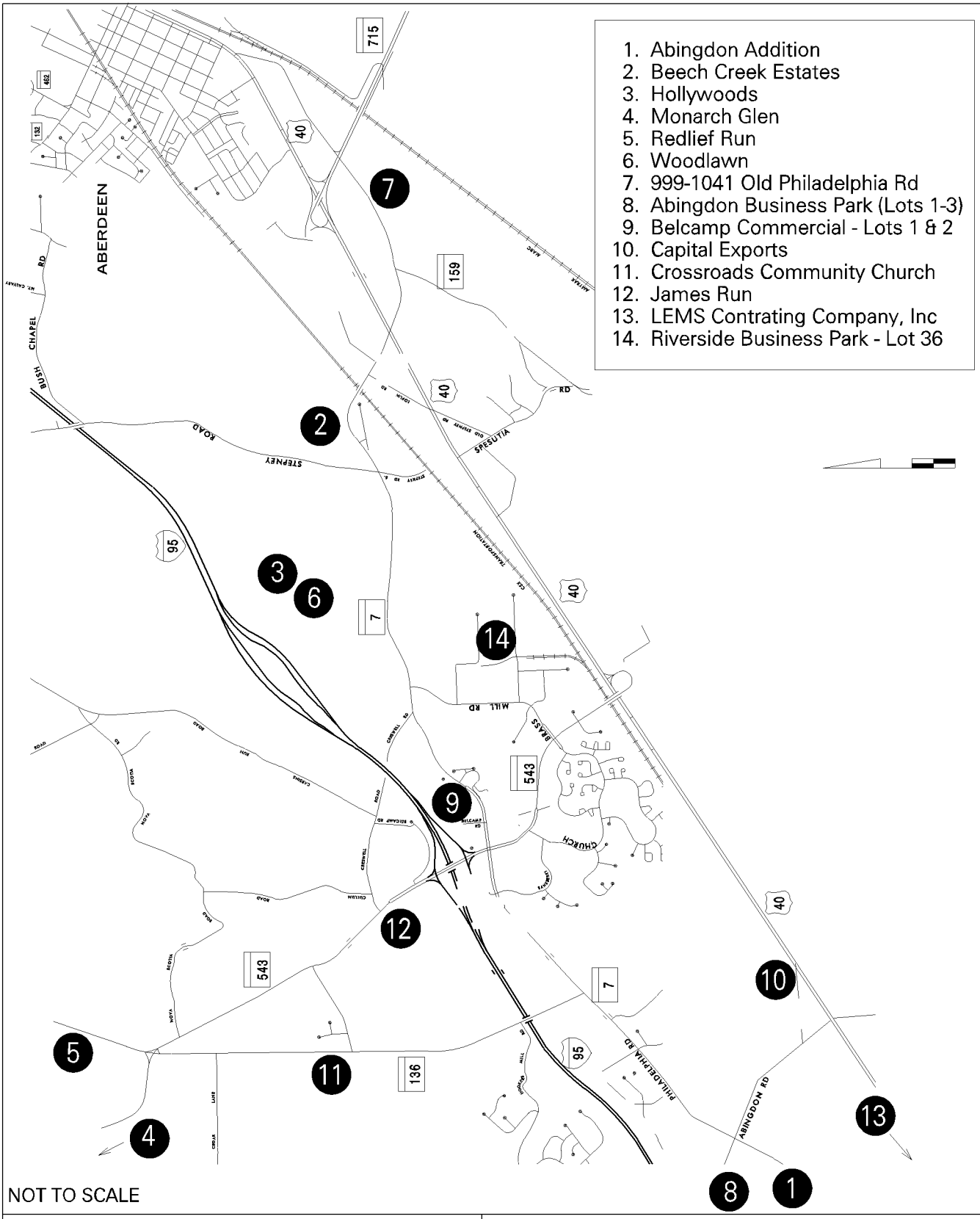
*** The peak hour trips, approved by the County, for these projects are accounted for with the projected growth rates.

**** The James Run site trips approved by the County are included are included in Appendix II.

The background development trips were distributed and assigned to the key intersections using the approved Harford County trip distribution patterns. The combined background peak hour trip assignment is provided on Exhibit 6. The distribution and assignment for each background development are provided in Appendix II.



TRAFFIC CONCEPTS, INC. 7525 Connelly Drive Suite B Hanover, Maryland 21076 410-760-2911	EXHIBIT 4 Projected Growth Rates (2.2% for Five Years)

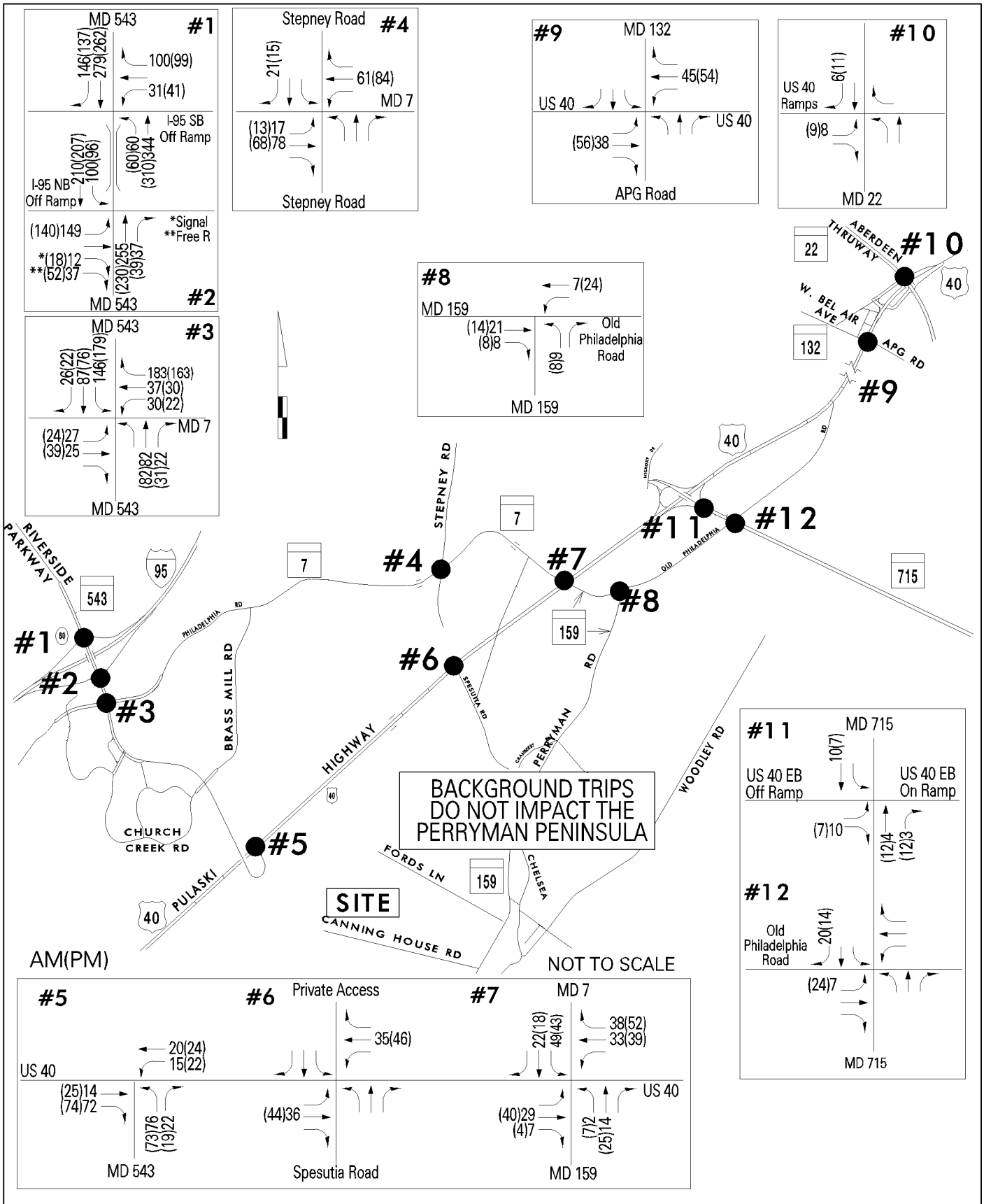


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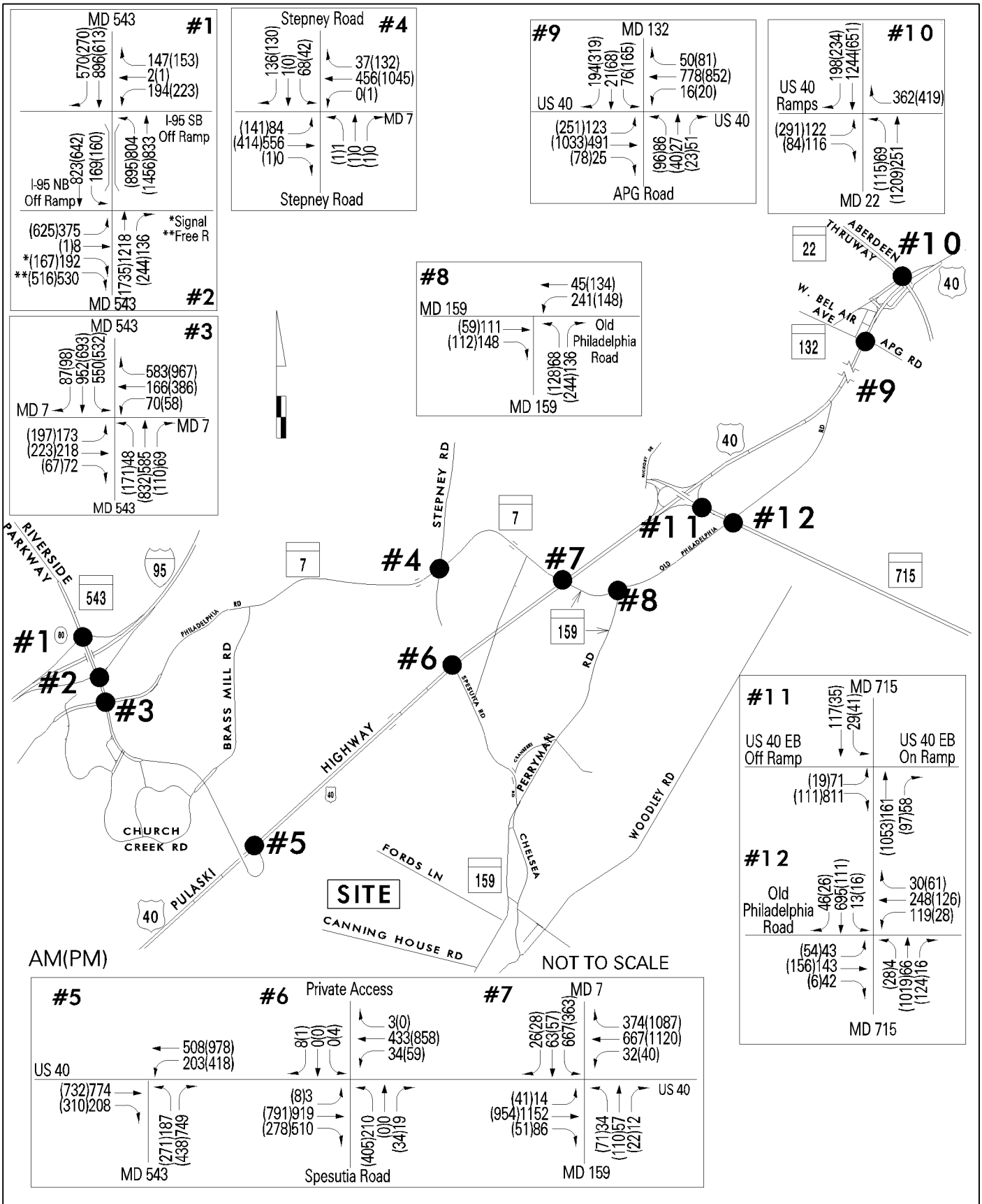
EXHIBIT 5

Background Development Locations



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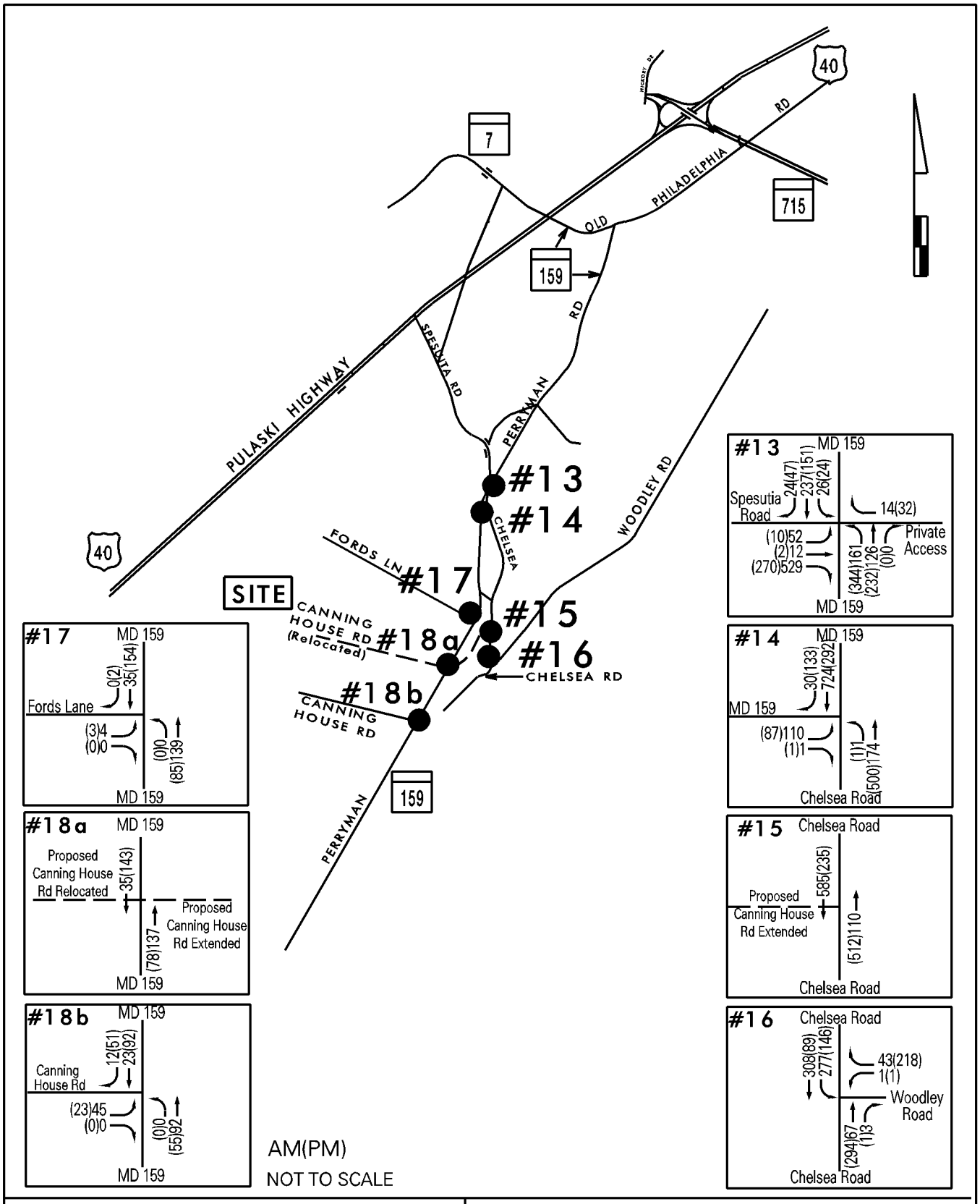
EXHIBIT 6
Background Traffic Volumes



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EXHIBIT 7A

Total Background Traffic Volumes



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EXHIBIT 7B

Total Background Traffic Volumes

FUTURE CONDITION

The future condition evaluates the impact that the new site generated peak hour trips have on the existing key intersections and the proposed new road connection labeled Canning House Road (Extended) between MD 159 and Chelsea Road.

Proposed Road Connection

As shown on the current site plan, the existing Canning House Road intersection at MD 159 will be eliminated. The developer will realign Canning House Road through the subject property to create a new intersection at MD 159, north of its current location. Canning House Road (extended) would be constructed by the developer and would span the distance from MD 159 to Chelsea Road. As stated, all new site generated trips were assigned to this new road connection.

This new roadway is designed as a main south to north thoroughfare connection in order to bypass the Perryman residential community along MD 159. This roadway is also designed with no residential and or commercial access points to encourage public use. Signage will be installed at the proposed site access and along MD 159 in order to direct passenger car and trucks to use the new public road. Due to the proposed signage directing traffic to use the new Canning House Road connection, the majority of diverted trips are outbound trips. The diverted trips include two-thirds of the existing (local) northbound through traffic diverted to Chelsea Road via Canning House Road extended, as shown on Exhibit 7C (Diverted Total Background Traffic for Canning House Road Extension).

A portion of the existing (local) southbound MD 159 traffic may use this new connection from Chelsea Road to MD 159. However, the study represents all existing (local) southbound MD 159 traffic using MD 159, which includes a right turn movement in order to continue south along MD 159. Therefore, no local southbound MD 159 trips were diverted to Chelsea Road to Canning House Road (extended).

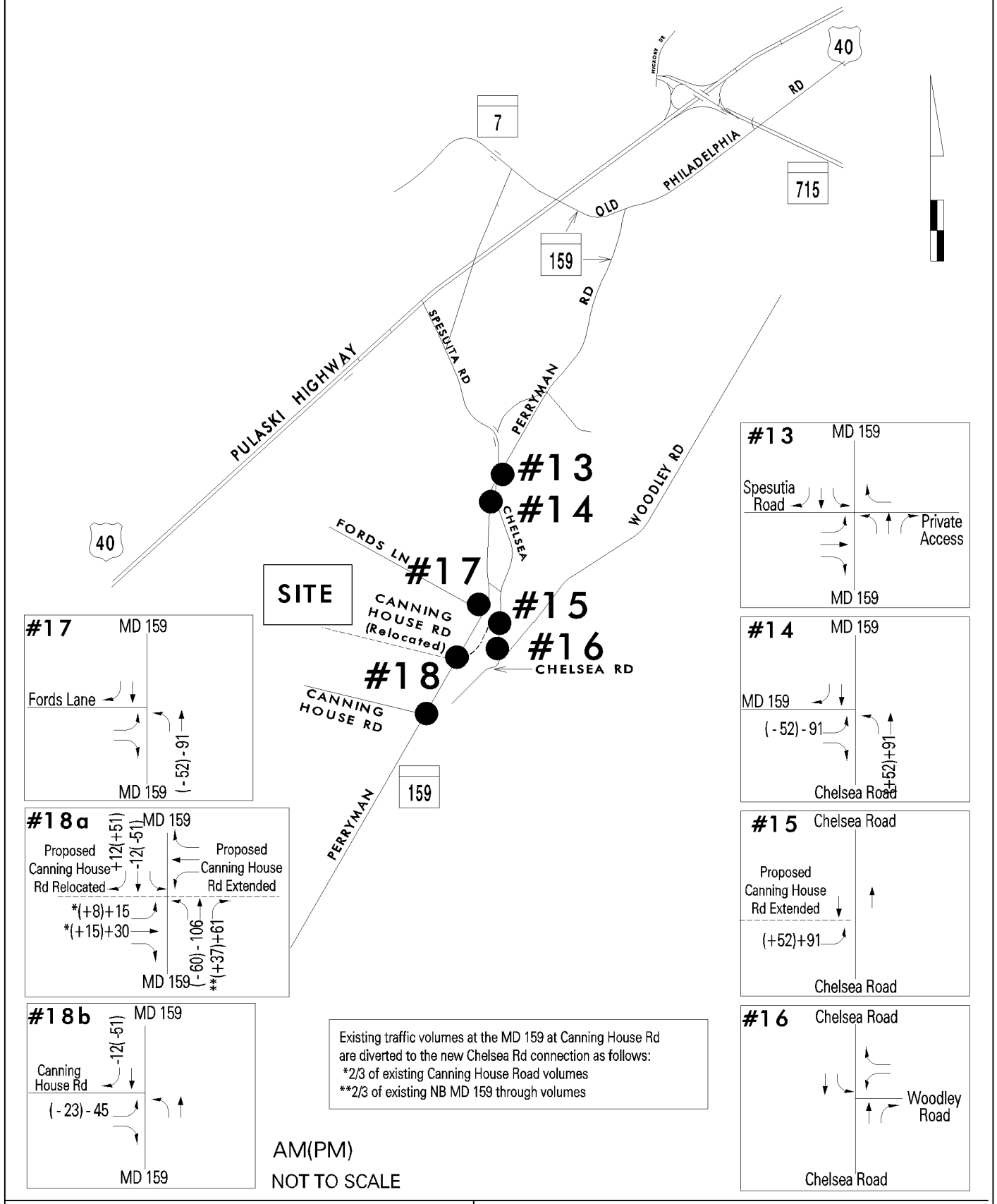
Site Generated Trips

The developer proposes to construct warehouse buildings with a gross floor area of 5,200,000 s.f. The weekday peak hour trips associated with this project are shown below and were generated with data contained in the *ITE* Trip Generation Manual *11th Edition*.

	AM		PM	
	IN	**OUT**	**IN**	**OUT**
High Cube Fulfillment Center Warehouse ITE LUC 155				
5,200,000 gsf	632	148	324	508
Trucks Trips (30%)	**190**	**44**	**97**	**152**
Passenger Vehicles (70%)	**442**	**104**	**227**	**356**

The site generated truck trips are shown on Exhibits 8A and 8B and Exhibits 9A and 9B show the site generated passenger car trips. The total combined site generated trips are shown on Exhibits 10A and 10B.

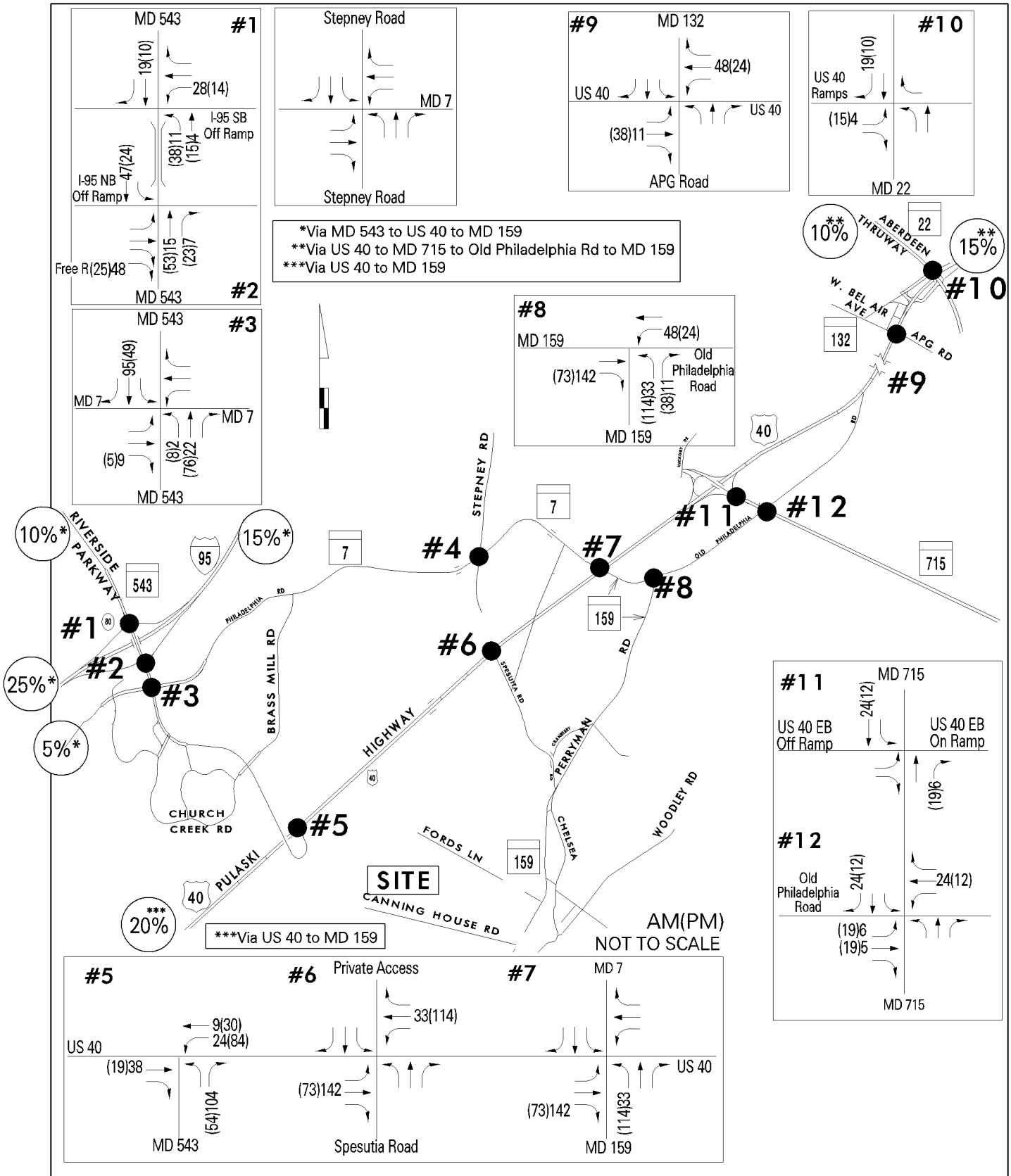
The diverted traffic (Exhibit 7C) and combined site trips (Exhibits 10A & 10B) were added to the total background traffic volumes (Exhibits 7A & 7B) to obtain total future traffic volumes as shown on Exhibits 11A and 11B.



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EXHIBIT 7C

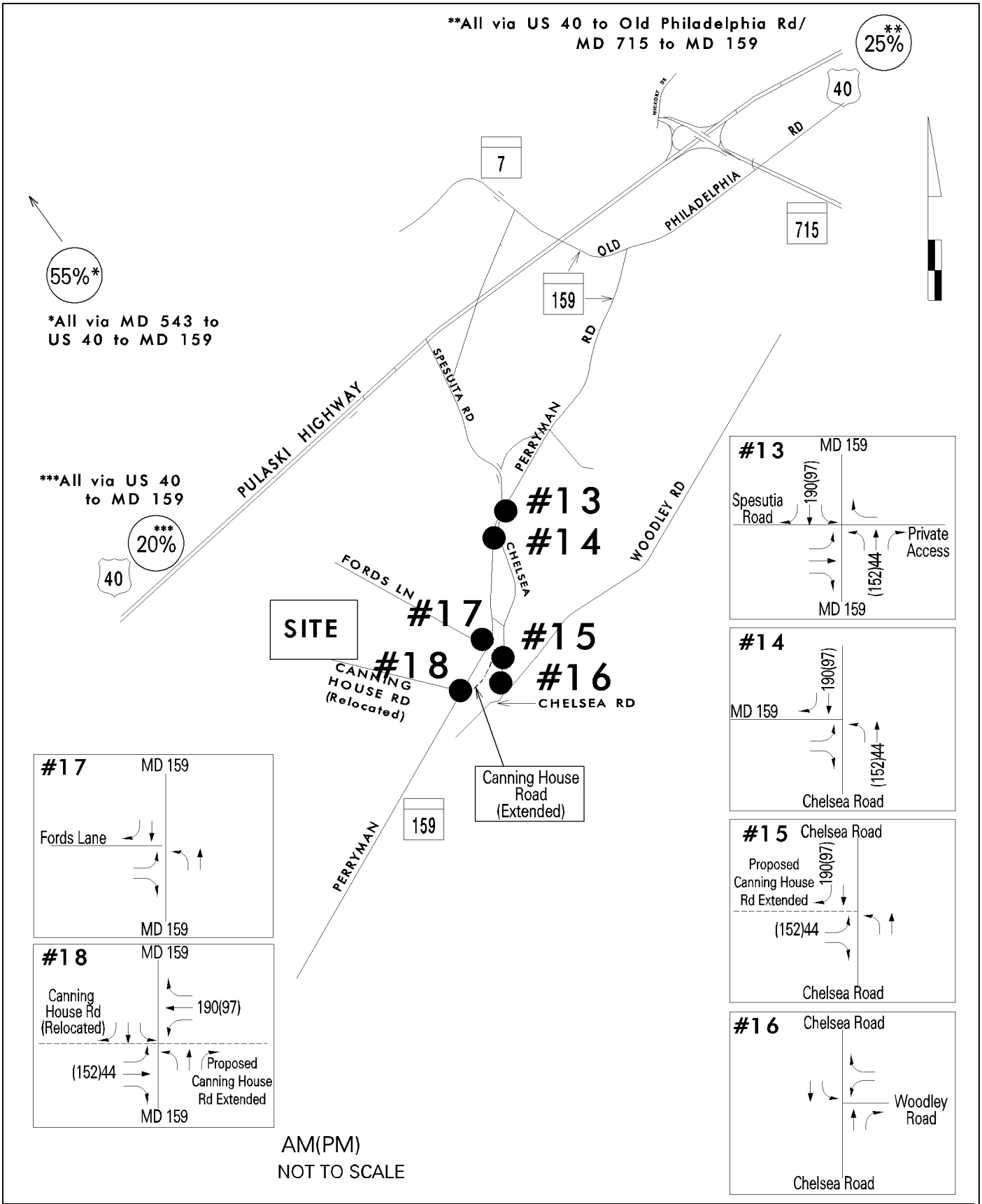
Diverted Total Background Traffic Volumes
(for Canning House Road Extension)



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EXHIBIT 8A

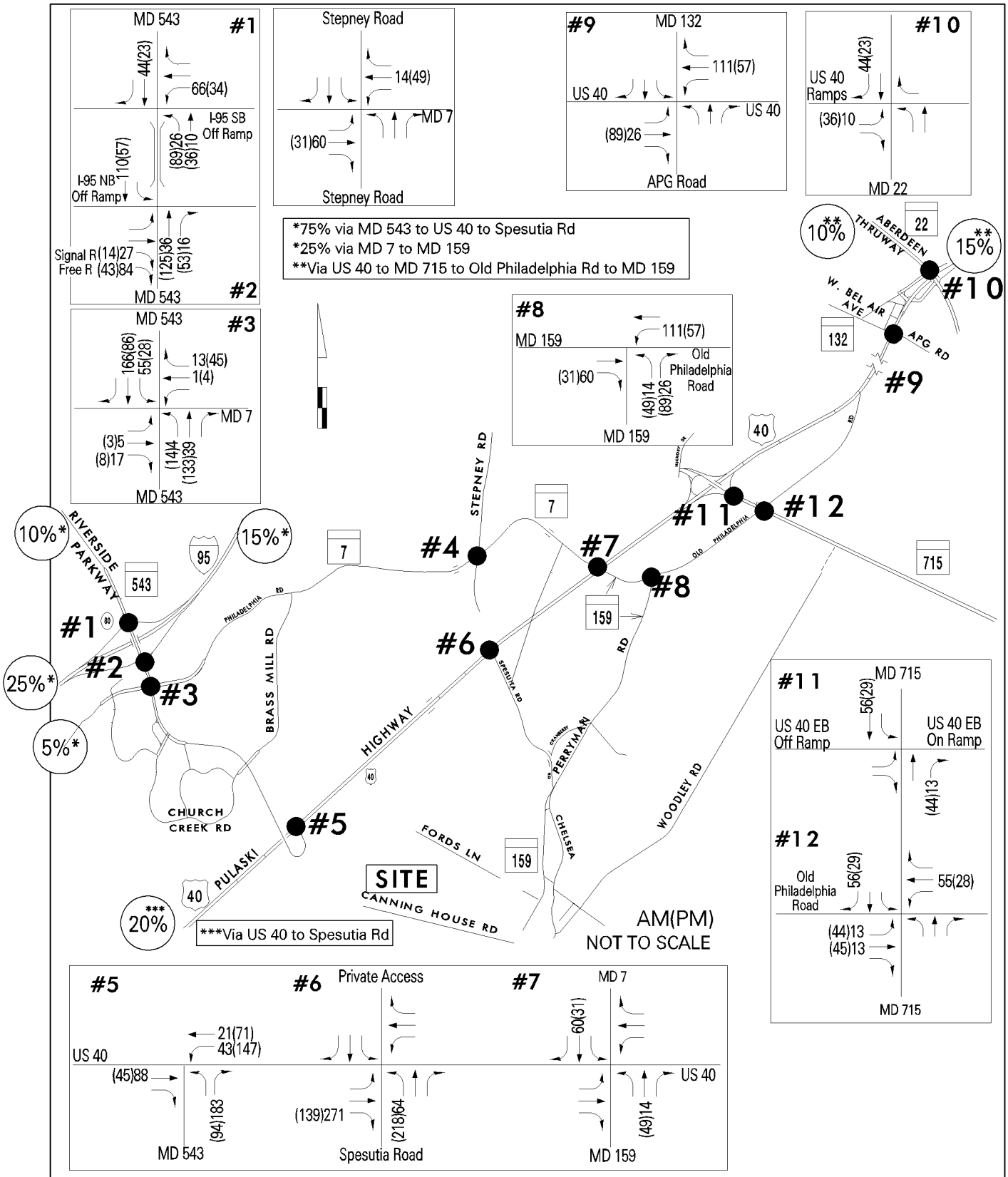
Site Generated Traffic - Truck Trips



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EXHIBIT 8B

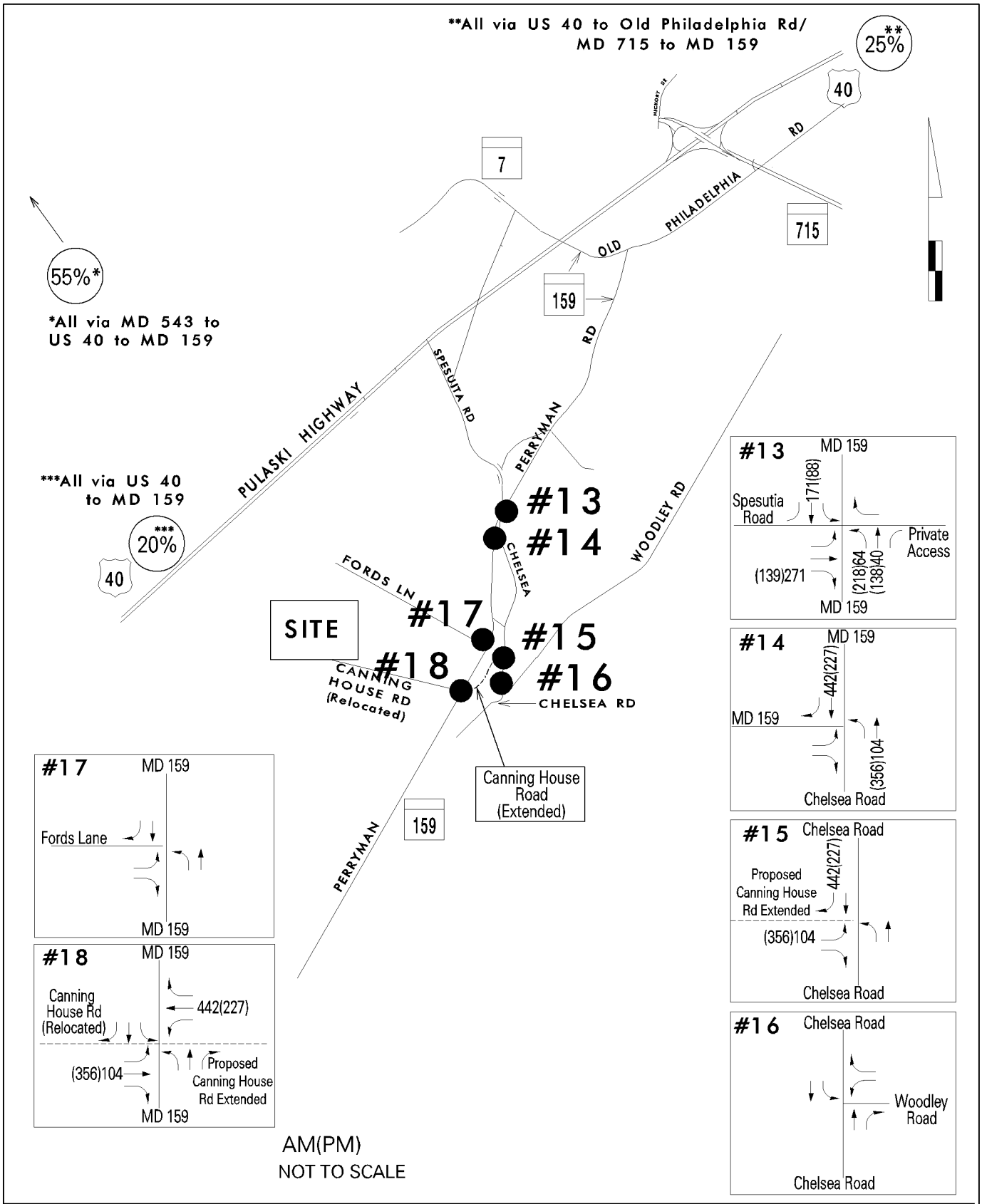
Site Generated Traffic - Truck Trips



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EXHIBIT 9A

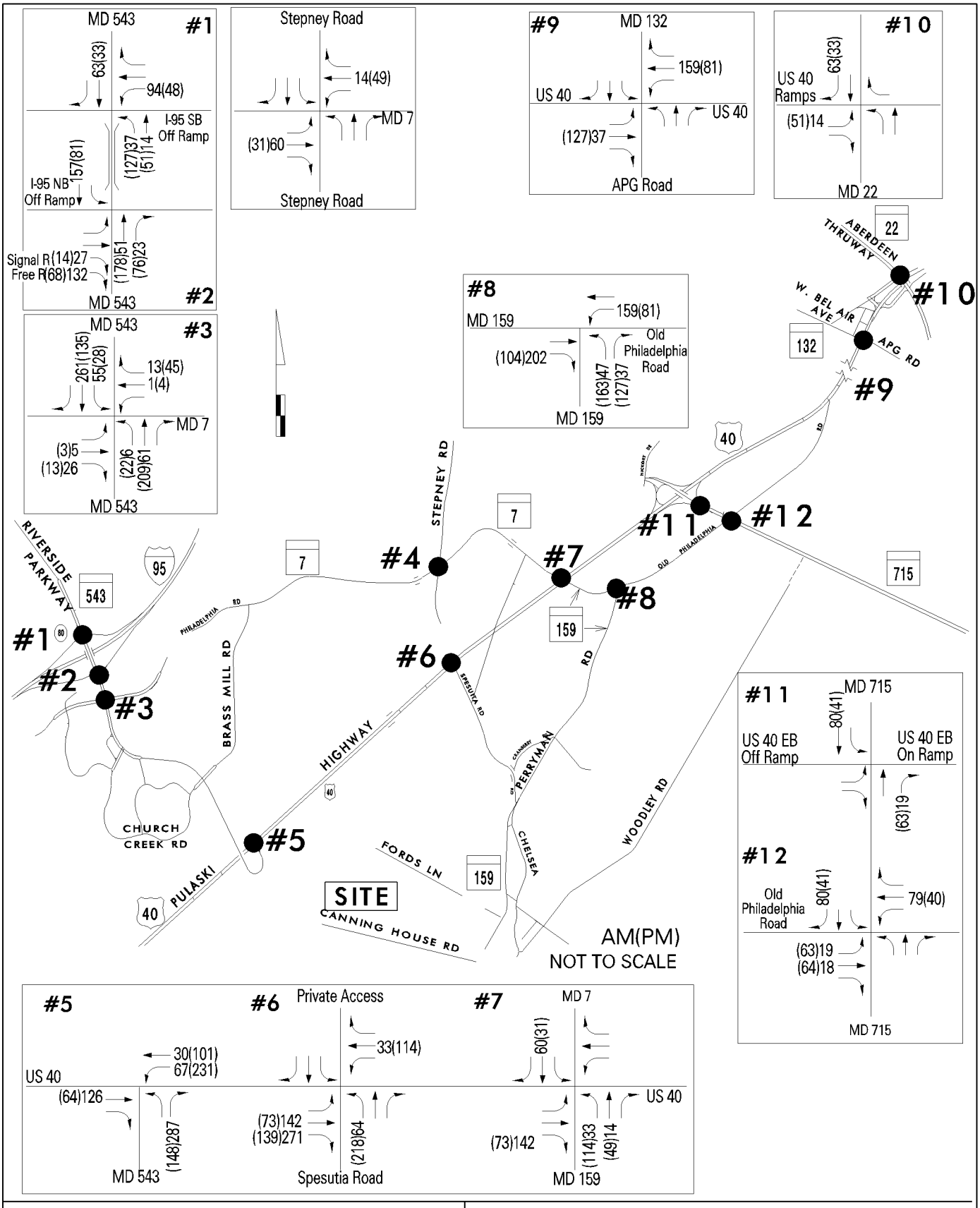
Site Generated Traffic - Passenger Vehicles



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EXHIBIT 9B

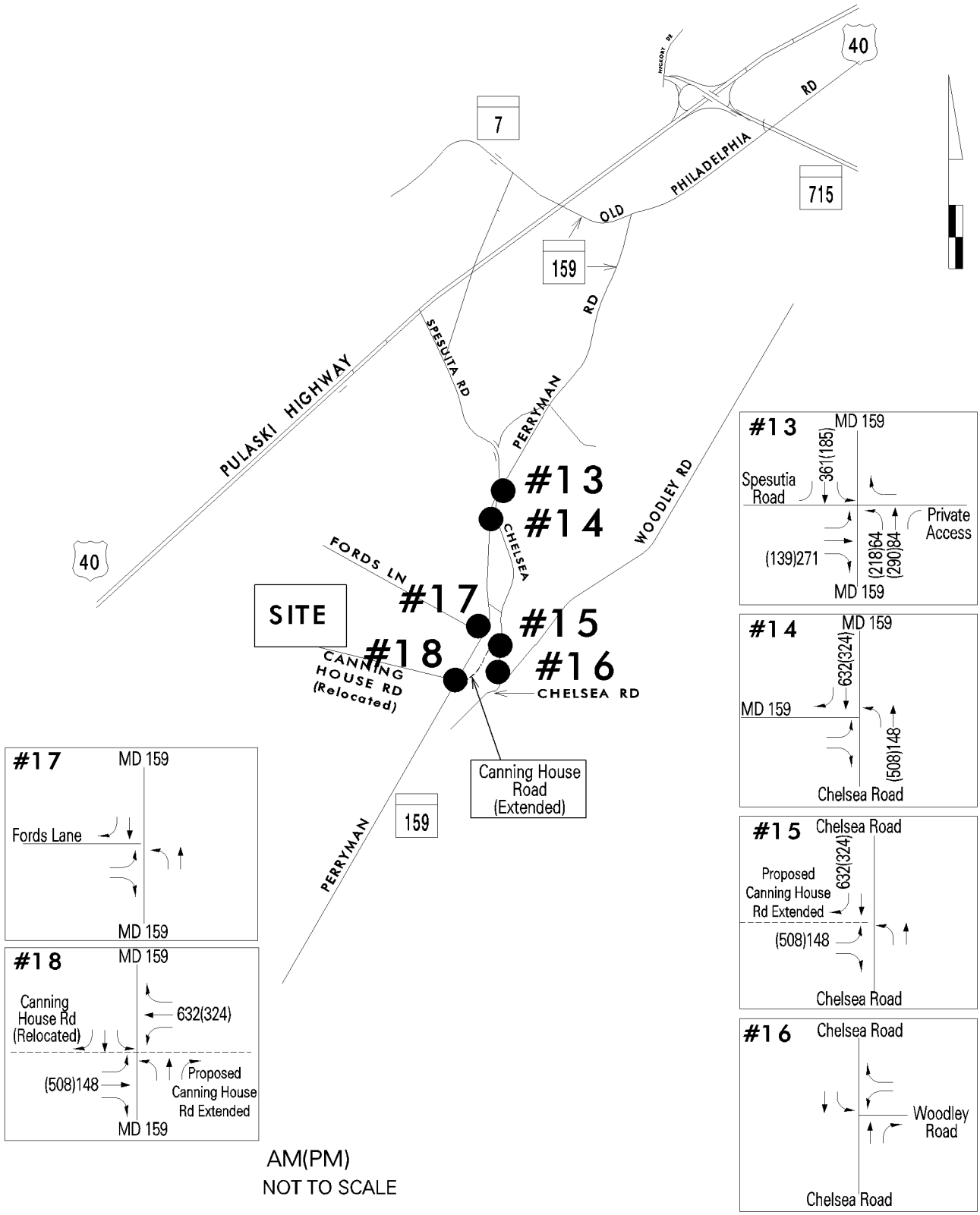
Site Generated Traffic - Passenger Vehicles



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EXHIBIT 10A

Total Site Generated Traffic

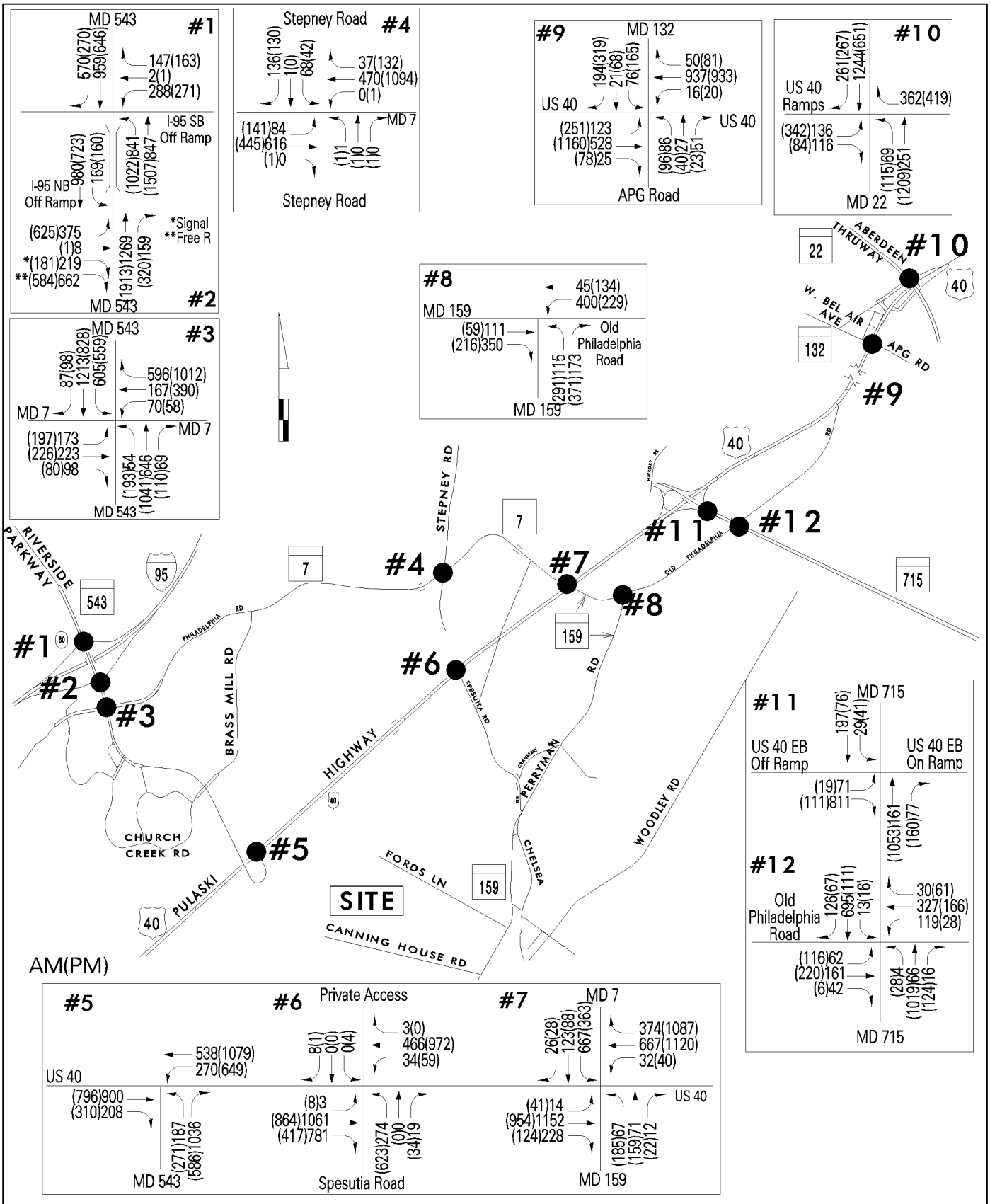


AM(PM)
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EXHIBIT 10B

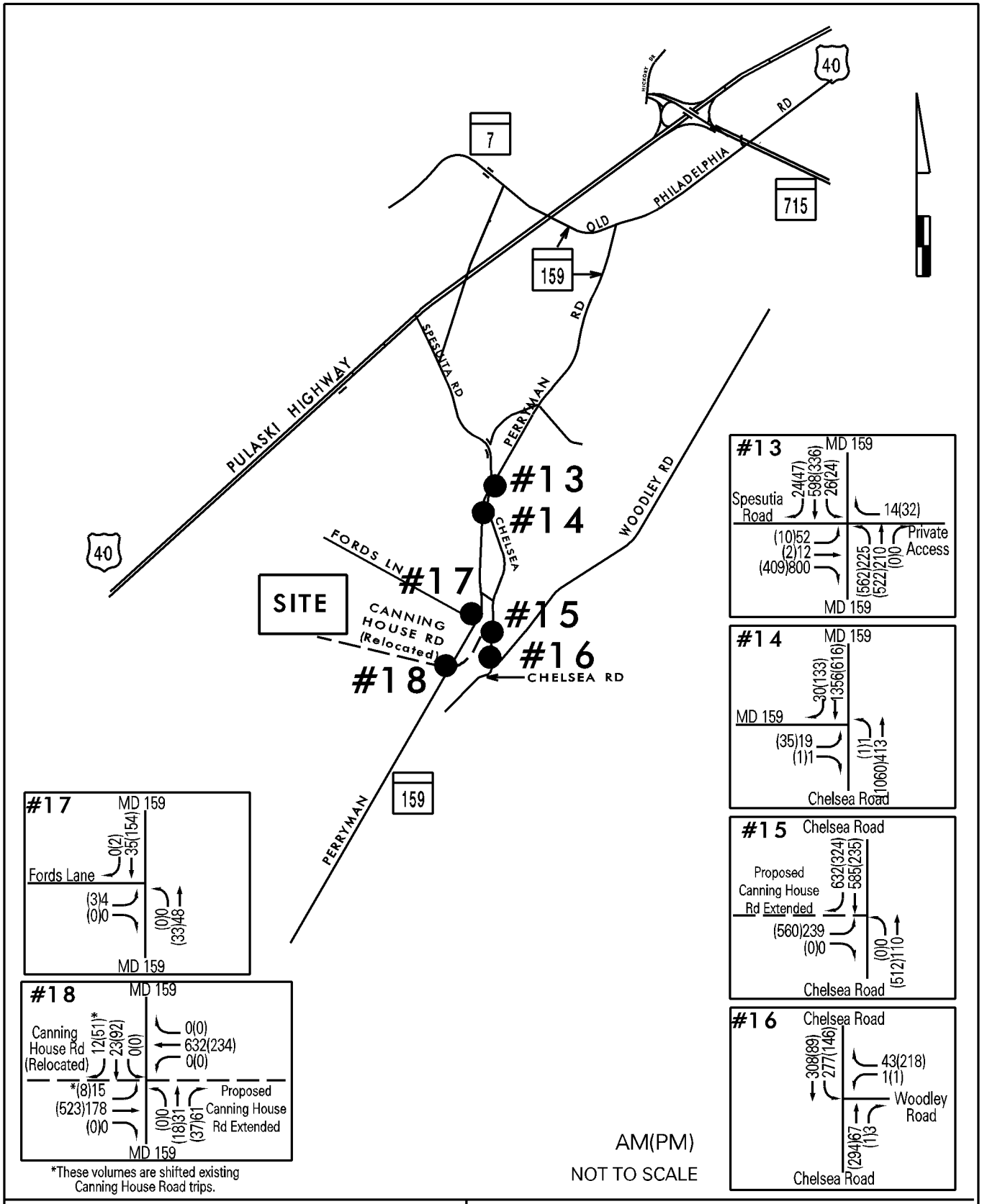
Total Site Generated Traffic



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EXHIBIT 11A

Total Future Traffic Volumes



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EXHIBIT 11B

Total Future Traffic Volumes

INTERSECTION CAPACITY ANALYSIS

The following tables show the key intersection analysis results for the existing, background, and future traffic conditions using the required analysis methodologies. The detailed calculations are included in Appendix I.

CRITICAL LANE VOLUME ANALYSIS – AM PEAK HOUR			
KEY INTERSECTIONS	EXISTING CLV / LOS	BACKGROUND CLV / LOS	FUTURE CLV / LOS
1: I-95 SB Ramps @ MD 543	1119 / B	1093 / B	1206 / C
2: I-95 NB Ramps @ MD 543	664 / A	886 / A	906 / A
3: MD 543 @ MD 7	612 / A	847 / A	917 / A
4: MD 7 @ Stepney Road	577 / A	694 / A	754 / A
5: US 40 @ MD 543	604 / A	741 / A	877 / A
6: US 40 @ Spesutia Road	688 / A	684 / A*	802 / A*
7: US 40 @ MD 7/MD 159	735 / A	872 / A	929 / A
9: US 40 @ MD 132	616 / A	713 / A	800 / A
10: US 40 EB Ramps @ MD 22	778 / A	875 / A	889 / A
11: MD 715 @ US 40 EB Ramps	168 / A	188 / A	268 / A
12: MD 715 @ Old Philadelphia Rd	376 / A	424 / A	508 / A
13: MD 159 @ Spesutia Road	790 / A	491 / A*	916 / A*
14: MD 159 @ Chelsea Road	836 / A	836 / A	1377 / D
15: Chelsea Rd @ Proposed Canning House Rd (Extended)	-	-	824 / A
16: Chelsea Rd @ Woodley Rd	391 / A	391 / A	391 / A
17: MD 159 @ Fords Lane	143 / A	143 / A	52 / A
18: MD 159 @ Canning House Rd	137 / A	137 / A	739 / A (Relocated)
*Includes planned County Spesutia Road improvements, as required by Harford County.			

CRITICAL LANE VOLUME ANALYSIS – PM PEAK HOUR			
KEY INTERSECTIONS	EXISTING CLV / LOS	BACKGROUND CLV / LOS	FUTURE CLV / LOS
1: I-95 SB Ramps @ MD 543	1084 / B	1008 / B	1132 / B
2: I-95 NB Ramps @ MD 543	1062 / B	1230 / C	1301 / D
3: MD 543 @ MD 7	828 / A	1108 / B	1241 / C
4: MD 7 @ Stepney Road	1082 / B	1319 / D	1368 / D
5: US 40 @ MD 543	811 / A	984 / A	1250 / C
6: US 40 @ Spesutia Road	818 / A	762 / A*	942 / A*
7: US 40 @ MD 7/MD 159	695 / A	839 / A	892 / A
9: US 40 @ MD 132	853 / A	981 / A	1025 / B
10: US 40 EB Ramps @ MD 22	849 / A	956 / A	1007 / B
11: MD 715 @ US 40 EB Ramps	568 / A	639 / A	639 / A
12: MD 715 @ Old Philadelphia	408 / A	479 / A	563 / A
13: MD 159 @ Spesutia Road	584 / A	584 / A	987 / A
14: MD 159 @ Chelsea Road	588 / A	589 / A	1096 / B
15: Chelsea Rd @ Proposed Canning House Rd (Extended)	-	-	824 / A
16: Chelsea Rd @ Woodley Rd	660 / A	660 / A	660 / A
17: MD 159 @ Fords Lane	159 / A	159 / A	159 / A
18: MD 159 @ Canning House Rd	166 / A	166 / A	666 / A (Relocated)
*Includes planned County Spesutia Road improvements, as required by Harford County.			

SIDRA ROUNDABOUT ANALYSIS - AM PEAK HOUR			
KEY INTERSECTION	EXISTING DELAY / LOS	BACKGROUND DELAY / LOS	FUTURE DELAY / LOS
8: MD 159 @ Old Philadelphia Rd	6.0 / A	6.4 / A	12.7 / B
SIDRA ROUNDABOUT ANALYSIS - PM PEAK HOUR			
KEY INTERSECTION	EXISTING DELAY / LOS	BACKGROUND DELAY / LOS	FUTURE DELAY / LOS
8: MD 159 @ Old Philadelphia Rd	5.9 / A	6.3 / A	10.5 / B

HIGHWAY CAPACITY MANUAL SOFTWARE (HCS): SIGNAL CONTROL - AM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE Delay / LOS
1: I-95 SB Ramps @ MD 543*	32.7 / C	26.2 / C	31.0 / C
2: I-95 NB Ramps @ MD 543*	11.4 / B	20.8 / B	20.0 / B
3: MD 543 @ MD 7*	27.6 / C	29.2 / C	29.3 / C
4: MD 7 @ Stepney Road	-	10.3 / B**	10.2 / B**
5: US 40 @ MD 543	12.1 / B	13.0 / B	13.3 / B
6: US 40 @ Spesutia Road	16.9 / B	25.3 / C***	27.8 / C***
7: US 40 @ MD 7/MD 159	29.8 / C	31.4 / C	32.2 / C
9: US 40 @ MD 132	23.6 / C	24.6 / C	26.3 / C
10: US 40 EB Ramps @ MD 22	16.3 / B	18.0 / B	18.2 / B
11: MD 715 @ US 40 EB Ramps	3.7 / A	3.7 / A	3.7 / A
12: MD 715 @ Old Philadelphia	23.8 / C	24.1 / C	25.0 / C
HIGHWAY CAPACITY MANUAL SOFTWARE (HCS): SIGNAL CONTROL - PM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE 0elay / LOS
1: I-95 SB Ramps @ MD 543*	37.2 / D	30.5 / C	37.1 / D
2: I-95 NB Ramps @ MD 543*	18.0 / B	23.6 / C	25.9 / C
3: MD 543 @ MD 7*	29.2 / C	34.5 / C	45.8 / D
4: MD 7 @ Stepney Road	-	12.9 / B**	13.9 / B**
5: US 40 @ MD 543	16.7 / B	18.6 / B	20.8 / C
6: US 40 @ Spesutia Road	23.6 / C	30.0 / C***	32.4 / C***
7: US 40 @ MD 7/MD 159	32.8 / C	33.9 / C	34.5 / C
9: US 40 @ MD 132	31.2 / C	34.0 / C	36.6 / D
10: US 40 EB Ramps @ MD 22	15.4 / B	16.4 / B	17.9 / B
11: MD 715 @ US 40 EB Ramps	11.3 / B	11.9 / B	11.2 / B
12: MD 715 @ Old Philadelphia	21.0 / C	21.5 / C	22.8 / C

* These intersections are only analyzed in the Synchro model as required by MDOT SHA for all studies due to the extensive overlapping improvements and coordination of these signalized intersections.

** Includes Capital Project improvement with traffic signal control.

*** Includes planned County Spesutia Road improvements.

HIGHWAY CAPACITY MANUAL SOFTWARE (HCS): STOP CONTROL - AM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE *(with Improvements)* Delay / LOS
4: MD 7 @ Stepney Road			
EB Left - MD 7	8.4 / A	-	-
WB L/T - MD 7	8.5 / A	-	-
NB Approach – L/T/R	29.1 / D	-	-
SB Approach – L & T/R	18.7 / C	-	-
13: MD 159 @ Spesutia Road			
EB Approach – L/T & R	23.5 / C	23.5 / C	433.9 / F *(38.0 / E*)*
WB Approach – R	9.2 / A	9.2 / A	9.7 / A
NB Left - MD 159	8.3 / A	8.3 / A	10.4 / B
SB Left - MD 159	7.7 / A	7.7 / A	7.9 / A
14: MD 159 @ Chelsea Road			
EB Approach - L/R	29.6 / D	29.6 / D	79.7 / F *(28.5 / D with MD-T)*
NB Left - MD 159	9.6 / A	9.6 / A	13.5 / B
15: Chelsea Rd @ Proposed Canning House Rd Extended			
EB Approach – L & R	-	-	22.2 / C
NB Left – Chelsea Rd	-	-	12.0 / B
16: Chelsea Rd @ Woodley Rd			
WB Approach – L & R	9.4 / A	9.4 / A	9.4 / A
SB Left – Chelsea Rd	8.2 / A	8.2 / A	8.2 / A
17: MD 159 @ Fords Lane			
EB Approach - L/R	9.5 / A	9.5 / A	9.0 / A
NB L/T - MD 159	7.3 / A	7.3 / A	7.3 / A
18a: MD 159 @ Canning House Rd			
EB Approach - L/R	9.5 / A	9.5 / A	-
NB L/T - MD 159	7.3 / A	7.3 / A	-
18b: MD 159 @ Canning House Rd (Relocated/Extended)			
EB Approach – Left & Thru/R	-	-	12.5 / B
WB Approach – L/T/R	-	-	17.1 / C
NB Left - MD 159	-	-	7.3 / A
SB Left - MD 159	-	-	7.4 / A
**Includes improvements described in the Conclusions. Right turn headway factor reduced for free right turn movement; however, HCM does not accurately model and calculate the free right turn delay.*			

HIGHWAY CAPACITY MANUAL SOFTWARE (HCS): STOP CONTROL - PM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE *(with Improvements)* Delay / LOS
4: MD 7 @ Stepney Road			
EB Left - MD 7	11.6 / B	-	-
WB L/T - MD 7	8.0 / A	-	-
NB Approach – L/T/R	47.6 / E	-	-
SB Approach – L & T/R	36.9/ E	-	-
13: MD 159 @ Spesutia Road			
EB Approach – L/T & R	12.8 / B	12.8 / B	36.9 / E (26.3 / D*)
WB Approach – R	10.0 / A	10.0 / A	12.9 / B
NB Left - MD 159	8.7 / A	8.7 / A	11.9 / B
SB Left - MD 159	8.0 / A	8.0 / A	9.0 / A
14: MD 159 @ Chelsea Road			
EB Approach - L/R	21.5 / C	21.5 / C	87.9 / F *(13.9 / B with MD-T)*
NB Left - MD 159	8.4 / A	8.4 / A	9.6 / A
15: Chelsea Rd @ Proposed Canning House Rd Ext (MD-T)			
EB Approach – L & R	-	-	34.2 / D
NB Left – Chelsea Rd	-	-	8.7 / A
16: Chelsea Rd @ Woodley Rd			
WB Approach – L & R	11.7 / B	11.7 / B	11.7 / B
SB Left – Chelsea Rd	8.3 / A	8.3 / A	8.3 / A
17: MD 159 @ Fords Lane			
EB Approach - L/R	10.1 / B	10.1 / B	9.7 / A
NB L/T - MD 159	7.6 / A	7.6 / A	7.6 / A
18a: MD 159 @ Canning House Rd			
EB Approach - L/R	9.7 / A	9.7 / A	-
NB L/T - MD 159	7.6 / A	7.6 / A	-
18b: MD 159 @ Canning House Rd (Relocated/Extended)			
EB Approach – Left & Thru/R	-	-	15.6 / C
WB Approach – L/T/R	-	-	9.8 / A
NB Left - MD 159	-	-	7.6 / A
SB Left - MD 159	-	-	7.4 / A
**Includes improvements described in the Conclusions. Right turn headway factor reduced for free right turn movement; however, HCM does not accurately model and calculate the free right turn delay.*			

HIGHWAY CAPACITY MANUAL (HCM 2000): SIGNAL CONTROL - AM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE Delay / LOS
1: I-95 SB Ramps @ MD 543	32.7 / C	26.2 / C	31.0 / C
2: I-95 NB Ramps @ MD 543	11.4 / B	20.8 / B	20.0 / B
3: MD 543 @ MD 7	27.6 / C	29.2 / C	29.3 / C
4: MD 7 @ Stepney Road	-	9.7 / A*	10.0 / A*
5: US 40 @ MD 543	9.7 / A	13.0 / B	15.7 / B
6: US 40 @ Spesutia Road	17.4 / B	16.1 / B**	22.7 / C**
7: US 40 @ MD 7/MD 159	25.6 / C	31.1 / C	33.9 / C
9: US 40 @ MD 132	18.3 / B	19.7 / B	20.6 / C
10: US 40 EB Ramps @ MD 22	10.0 / B	10.7 / B	11.1 / B
11: MD 715 @ US 40 EB Ramps	2.5 / A	2.6 / A	2.6 / A
12: MD 715 @ Old Philadelphia	13.4 / B	13.8 / B	14.3 / B
HIGHWAY CAPACITY MANUAL (HCM 2000): SIGNAL CONTROL - PM PEAK HOUR			
KEY INTERSECTIONS	EXISTING Delay / LOS	BACKGROUND Delay / LOS	FUTURE 0elay / LOS
1: I-95 SB Ramps @ MD 543	37.2 / D	30.5 / C	37.1 / D
2: I-95 NB Ramps @ MD 543	18.0 / B	23.6 / C	25.9 / C
3: MD 543 @ MD 7	29.2 / C	34.5 / C	45.8 / D
4: MD 7 @ Stepney Road	-	19.2 / B*	19.5 / B*
5: US 40 @ MD 543	15.6 / B	20.4 / C	35.6 / D
6: US 40 @ Spesutia Road	43.6 / D	19.3 / B**	26.1 / C**
7: US 40 @ MD 7/MD 159	26.4 / C	42.5 / D	52.2 / D
9: US 40 @ MD 132	24.4 / C	31.1 / C	32.7 / C
10: US 40 EB Ramps @ MD 22	10.8 / B	12.7 / B	15.0 / B
11: MD 715 @ US 40 EB Ramps	6.6 / A	7.4 / A	7.2 / A
12: MD 715 @ Old Philadelphia	13.1 / B	13.9 / B	17.0 / B
*Includes County Capital Plan improvement for signalization. **Includes planned County Spesutia Road improvements, as required by Harford County.			

QUEUING ANALYSIS – SIGNALIZED INTERSECTIONS - HCM

A queuing analysis was conducted at the signalized key intersections, with exclusive left turn lanes. Unless noted, the Highway Capacity Manual software (HCS) back-of-queues are listed for the background future traffic conditions. The detailed calculations are included in Appendix I.

	BACKGROUND 95TH Percentile HCS Queue (ft) AM(PM)	FUTURE 95TH Percentile HCS Queue (ft) AM(PM)	STORAGE (ft)	SITE ADDS (ft)
1: I-95 SB Ramps @ MD 543**				
2: I-95 NB Ramps @ MD 543**				
3: MD 543 @ MD 7**				
4: MD 7 @ Stepney Road				
EB Left	33(154)	34(175)	175	*
SB Left	71(56)	71(56)	150	*
5: US 40 @ MD 543				
WB Left – US 40	199(333)	264(608)	450	158
NB Left – MD 543	97(205)	97(205)	Continuous	*
6: US 40 @ Spesutia Road***				
EB Left – US 40	3(10)	3(10)	350	*
WB Left – US 40	25(47)	25(47)	400	*
NB Left & L/T/R - Spesutia	214(406)	260(586)	Continuous	*
7: US 40 @ MD 7/MD 159				
EB Left – US 40	19(56)	19(56)	350	*
WB Left – US 40	43(55)	43(55)	300	*
NB Left – MD 159	47(86)	94(237)	400	*
SB Left – MD 7	408(241)	408(241)	775**	*
9: US 40 @ MD 132				
EB Left – US 40	60(202)	60(210)	200	8
WB Left – US 40	9(16)	9(16)	185	*
NB Left – APG Rd	86(119)	86(119)	100	**0**
SB Left – MD 132	75(212)	75(212)	150	**0**

*This lane has adequate storage.
**These intersections are only analyzed in the Synchro model as required by MDOT SHA for all studies due to the extensive overlapping improvements and coordination of these signalized intersections. SimTraffic queues are reported at this intersection.
***Includes planned County Spesutia Road improvements (detailed on Exhibits 2A & 2B), as required by Harford County.

	BACKGROUND 95TH Percentile HCS Queue (ft) AM(PM)	FUTURE 95TH Percentile HCS Queue (ft) AM(PM)	STORAGE (ft)	SITE ADDS (ft)
10: US 40 EB Ramps @ MD 22				
EB Left – N. Rogers St	138(296)	157(372)	Continuous	*
NB Left – MD 22	28(40)	28(40)	215	*
11: MD 715 @ US 40 EB Ramps				
EB Left – US 40 EB Ramps	74(19)	74(19)	300	*
SB Left – MD 715	8(11)	8(11)	150	*
12: MD 715 @ Old Philadelphia				
EB Left – Old Phila	50(62)	76(147)	200	*
WB Left – Old Phila	139(30)	140(31)	300	*
NB Left – MD 715	4(30)	4(30)	275	*
SB Left – MD 715	13(17)	13(17)	60	*
*This lane has adequate storage.				

QUEUING ANALYSIS – SIGNALIZED INTERSECTIONS - SimTraffic

The MDOT SHA required that all of the signalized key intersections must be included in the Synchro model. Therefore, the SimTraffic 95th Percentile Back-of-Queue results for the background and future traffic conditions are listed below. A future condition with improvements analysis was modeled that includes a second westbound right turn lane along MD 7 at MD 543. The detailed calculations are included in Appendix I.

	BACKGROUND 95TH Percentile SimTraffic Queue (ft) AM(PM)	FUTURE 95TH Percentile SimTraffic Queue (ft) AM(PM	FUTURE- IMP 95TH Percentile SimTraffic Queue (ft) AM(PM)	STORAGE (ft)	SITE ADDS (ft)
1: I-95 SB Ramps @ MD 543					
WB Left/Thru	129(175)	176(195)	116(210)	Continuous	*
NB Left	364(339)	423(336)	413(356)	800	*
2: I-95 NB Ramps @ MD 543					
EB Left/Thru	267(409)	273(404)	284(383)	Continuous	*
SB Left	303(460)	238(382)	345(470)	575	*
3: MD 543 @ MD 7					
EB Left	213(174)	173(233)	204(188)	200	*
WB Left	154(105)	153(160)	151(123)	430	*
WB Right	-	-	142(343)	865	
NB Left	134(291)	118(484)	140(403)	280	123
SB Left	354(323)	378(346)	376(367)	575	*
4: MD 7 @ Stepney Road					
EB Left	61(145)	71(166)	66(147)	175	*
SB Left	75(93)	76(92)	82(118)	150	*
5: US 40 @ MD 543					
WB Left – US 40	199(366)	260(558)	247(534)	450	84
NB Left – MD 543	109(154)	109(160)	114(176)	Continuous	*
*This lane has adequate storage.					

	BACKGROUND 95TH Percentile SimTraffic Queue (ft) AM(PM)	FUTURE 95TH Percentile SimTraffic Queue (ft) AM(PM	STORAGE (ft)Storage (ft)	SITE ADDS (ft)
6: US 40 @ Spesutia Road**				
EB Left – US 40	9(37)	9(28)	400	*
WB Left – US 40	55(74)	63(76)	360	*
NB Left & L/T/R - Spesutia	122(198)	136(275)	Continuous	*
7: US 40 @ MD 7/MD 159				
EB Left – US 40	39(84)	42(93)	340	*
WB Left – US 40	70(89)	72(84)	300	*
NB Left – MD 159	72(123)	105(223)	400	*
SB Left – MD 7	325(218)	344(221)	775	*
9: US 40 @ MD 132				
EB Left – MD 132	106(298)	123(322)	Continuous	*
WB Left – APG Rd	95(118)	99(123)	110***	*
NB Left – US 40	116(286)	129(295)	200	9
SB Left – US 40	75(46)	38(81)	185	*
10: US 40 EB Ramps @ MD 22				
EB Left – N. Rogers St	143(227)	150(287)	Continuous	*
NB Left – MD 22	76(141)	70(196)	215	*
11: MD 715 @ US 40 EB Ramps				
EB Left – MD 715	41(48)	33(49)	150	*
NB Left – US 40 EB Ramps	77(51)	78(43)	300	*
12: MD 715 @ Old Philadelphia				
EB Left – MD 715	37(40)	37(33)	275	*
WB Left – MD 715	21(59)	17(77)	260	*
NB Left – Old Phila	50(69)	67(104)	200	*
SB Left – Old Phila	116(56)	105(52)	305	*

*This lane has adequate storage.
**Includes planned County Spesutia Road improvements (detailed on Exhibits 2A & 2B), as required by Harford County.
***Based on the SimTraffic queues from APG Road, the heavier left turn volume utilize the continuous storage without blocking the through and right turn movements.

SIGNAL WARRANT ANALYSIS RESULTS

Signal warrant analyses were conducted at the MD 159 at Spesutia Road and MD 159 at Chelsea Road intersections. The warrants were tested for the existing and the future traffic volumes. Future traffic volumes include the existing traffic and the new site trips using ITE diurnal curve data. ITE does not provide data for LUC 155; therefore, we used the ITE diurnal curve data for LUC 154 (High-Cube Transload and Short-Term Storage Warehouse). The warrant results are provided on the following tables and details of the individual warrant tests are included in the study appendix.

TRAFFIC SIGNAL WARRANT SUMMARY MD 159 AT SPESUTIA RD		
WARRANTS	**EXISTING**	**FUTURE**
1-Eight-Hour Vehicular Volume **A**-Minimum Vehicle Volume	NOT SATISFIED (met 0 of the required 8 hrs)	NOT SATISFIED (met 3 of the required 8 hrs)
1-Eight-Hour Vehicular Volume **B**-Interruption of Continuous Traffic	NOT SATISFIED (met 0 of the required 8 hrs)	NOT SATISFIED (met 1 of the required 8 hrs)
1-Eight-Hour Vehicular Volume -Combination of Warrants 1A & 1B	NOT SATISFIED (A: met 0 of the required 8 hrs) (B: met 0 of the required 8 hrs)	NOT SATISFIED (A: met 7 of the required 8 hrs) (B: met 1 of the required 8 hrs)
2-Four-Hour Vehicular Volume	NOT SATISFIED (met 0 of the required 4 hrs)	**SATISFIED** (met 10 of the required 4 hrs)
3-Peak Hour	NOT SATISFIED (met 0 of the required 1 hour)	NOT SATISFIED (met 0 of the required 1 hour)
4-Pedestrian Volume	NOT SATISFIED	NOT SATISFIED
5-School Crossing	NOT APPLICABLE	NOT APPLICABLE
6-Coordinated Signal System	NOT APPLICABLE	NOT APPLICABLE
7-Crash Experience	NOT SATISFIED	NOT SATISFIED
8-Roadway Network	NOT APPLICABLE	NOT APPLICABLE
9-Intersection Near A Grade Crossing	NOT APPLICABLE	NOT APPLICABLE

TRAFFIC SIGNAL WARRANT SUMMARY MD 159 AT CHELSEA RD		
WARRANTS	**EXISTING**	**FUTURE**
1-Eight-Hour Vehicular Volume **A**-Minimum Vehicle Volume	NOT SATISFIED (met 3 of the required 8 hrs)	NOT SATISFIED (met 5 of the required 8 hrs)
1-Eight-Hour Vehicular Volume **B**-Interruption of Continuous Traffic	NOT SATISFIED (met 4 of the required 8 hrs)	**SATISFIED** (met 13 of the required 8 hrs)
1-Eight-Hour Vehicular Volume -Combination of Warrants 1A & 1B	NOT SATISFIED (A: met 11 of the required 8 hrs) (B: met 6 of the required 8 hrs)	**SATISFIED** (A: met 11 of the required 8 hrs) (B: met 13 of the required 8 hrs)
2-Four-Hour Vehicular Volume	NOT SATISFIED (met 3 of the required 4 hrs)	**SATISFIED** (met 12 of the required 4 hrs)
3-Peak Hour	NOT SATISFIED (met 0 of the required 1 hour)	**SATISFIED** (met 4 of the required 1 hour)
4-Pedestrian Volume	NOT SATISFIED	NOT SATISFIED
5-School Crossing	NOT APPLICABLE	NOT APPLICABLE
6-Coordinated Signal System	NOT APPLICABLE	NOT APPLICABLE
7-Crash Experience	NOT SATISFIED	NOT SATISFIED
8-Roadway Network	NOT APPLICABLE	NOT APPLICABLE
9-Intersection Near A Grade Crossing	NOT APPLICABLE	NOT APPLICABLE

CONCLUSIONS AND RECOMMENDATIONS

The Harford County APFO standards require signalized intersections located within the development envelope to operate at a level of service "D" or better and all unsignalized intersections located within the development envelope to operate with a side road minor approach level of service of “D” or better. If the traffic study determines an intersection is rated “E” or lower, than the developer needs to mitigate only the new site generated trips.

Intersection Capacity Results

From a Critical Lane Volume (CLV) analysis standpoint, all key intersections would operate with acceptable levels of service during the future traffic conditions. The future HCS analyses show the *MD 159 at Spesutia Road and the MD 159 at Chelsea Road* intersections would operate with deficient delays.

MD 159 @ Spesutia Road

The analysis contains the County planned improvements that includes widening of Spesutia Road that creates a shared left/thru and a channelized right turn lane with 200 feet of dedicated storage. *With these County improvements, the HCS results show a level of service “F” (433.9 sec/veh) during the future AM peak hour and an “E” (36.9 sec/veh) during the future PM peak hour, along the Spesutia Road approach at future traffic conditions.*

Mitigation: A signal warrant analysis was conducted at this intersection, which determined the major warrants were not met for signal control under the existing or the full build out traffic conditions. However, in order to alleviate any concerns that MDOT-SHA may have regarding this intersection, the Developer agrees to prepare an updated traffic signal warrant analysis after occupancy of each building. If the analysis shows a signal is warranted, the Developer will design and install the traffic signal upon MDOT-SHA and Harford County approval.

Ultimately, if the installation of a traffic signal is not approved by MDOT-SHA, the County will require other mitigation options. A roundabout was considered at this intersection. However, due to right-of-way constraints, a roundabout large enough to service large trucks could not be constructed.

As such, the Developer's alternative mitigation plan is to construct the following geometric improvements. The existing right turn lane from Spesutia Road to MD 159 will be widened and channelization markings added to encourage right turning traffic to flow without stopping. Also, the existing small median along southbound MD 159 will be removed to provide a wider left turn lane for trucks turning into the private property across from Spesutia Road. This lane will also be extended to provide a longer queue area for trucks without blocking southbound vehicles along MD 159 passing through the intersection.

The existing channelized median on the private leg of the intersection will be cut back to improve the turning radius for large vehicles entering the property. Field observations show that these intersection modifications will improve the flow of traffic and shorten delay times for the left turning vehicles from northbound MD 159 and eastbound Spesutia Road. A conceptual mitigation plan is included in the revised TIS.

An HCM analysis was conducted to show the additional impact of the Developer improvements, and the improved operation of the free channelized right turn movement from Spesutia Road. However, HCM does not accurately calculate the free right turn delay. The base critical right turn headway factor for the Spesutia Road right turn movement was reduced to model the benefits resulting from the geometric improvements along MD 159 that encourage the free right turn movement. (HCM defines the critical headway "the minimum time interval in the major street that allows intersection entry to one minor street vehicle".) As shown in the HCM results tables, the analysis with these improvements show an "E" approach LOS (38.1 sec/veh) during the AM peak hour and a "D" approach LOS (26.3 sec/veh) during the PM peak hour along Spesutia Road.

<u>MD 159 @ Chelsea Road</u>

The results of the HCM analyses show an "F" along the MD 159 (minor street) approach LOS during the future AM and PM peak hours. *Consequently, a signal warrant analysis was conducted for the existing and future traffic volumes. Warrants were met for only the future traffic conditions for Warrant 1 (Eight-Hour Volume), Warrant 2 (Four-Hour Volume), and Warrant 3 (Peak Hour Volume).*

Mitigation: *In order to alleviate any concerns that MDOT SHA may have regarding this intersection, the Developer agrees to prepare an updated traffic signal warrant analysis after occupancy of each building. If the analysis shows a traffic signal is warranted, the Developer will design and install the traffic signal upon MDOT-SHA and Harford County approval.*

If the installation of a traffic signal is not approved by MDOT SHA, the County will require other mitigation options. As such, the Developer's alternative mitigation plan is to construct a Maryland T intersection to improve delay along the northbound MD 159 left turn movement onto Chelsea Road. A Maryland T intersection, depicted on the concept plan, would provide acceptable delays at this intersection. The HCS minor approach LOS and delays are improved to an acceptable "D" LOS during the AM peak hour (28.5 seconds per vehicle of delay) and a "B" LOS during the PM peak hour (13.5 seconds per vehicle of delay).

MD 7 @ Spesutia Road

A capital project is established at this intersection and funds are available for the design and construction of a traffic signal at this intersection. As such, the intersection was evaluated with a traffic signal under the background and future traffic conditions. The signal control creates acceptable future levels of service. However, while there are funds available for this intersection if the installation of a traffic signal is not approved by MDOT SHA, other mitigation options must be considered and identified.

Therefore, the developer will extend the southbound Stepney Road left turn lane to provide 25-feet of additional storage plus deceleration and taper. Since a capital project is established, the developer will place in escrow the cost to design and construct the stated geometric improvement.

Access Improvements - Chelsea Road @ Canning Couse (Extended)

The Canning House and Chelsea Road intersection is planned as a Maryland T intersection. The HCS analysis shows a minor approach level of service "C" during the future AM peak and a level of service "D" during the future PM.

Queuing Analysis Results

The queuing analysis results determined the site would create queue storage deficiencies at the following intersections.

- *MD 543 at MD 7: NB MD 543 Left Turn Storage*
- *MD 543 at MD 7: WB MD 7 Right Turn*
- *US 40 at MD 543: WB MD 543 Left Turn Storage*
- *US 40 @ MD 132: NB US 40 Left Turn Storage*

MD 543 @ MD 7: Mitigation: *As shown on the table, the site adds 123 feet to the northbound MD 543 left turn lane. Therefore, the developer will extend the northbound MD 543 left turn storage area by 123 feet of storage.*

Additionally, in order to improve the overall intersection operation, the developer will construct a second westbound right turn lane along MD 7. This improvement was analyzed with the Synchro model (future with improvements). This improvement will be bonded by this Developer if not already bonded by others at the time of use and occupancy.

	BACKGROUND 95TH Percentile SimTraffic Queue (ft) AM(PM)	FUTURE 95TH Percentile SimTraffic Queue (ft) AM(PM	FUTURE- IMP 95TH Percentile SimTraffic Queue (ft) AM(PM)	STORAGE (ft)	SITE ADDS (ft)
MD 543 @ MD 7					
NB Left	134(291)	118(484)	140(403)	280	123

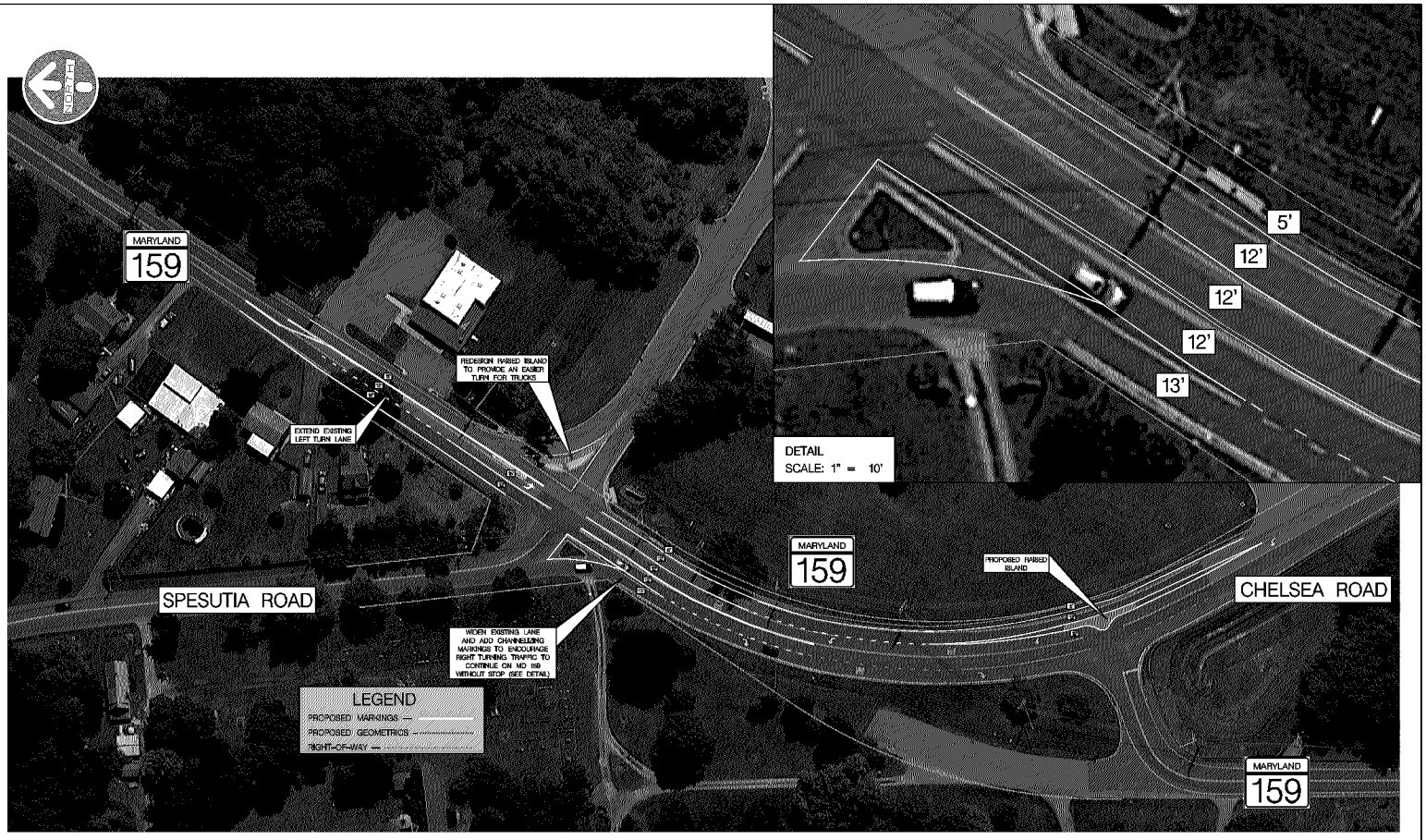
US 40 @ MD 543 Mitigation: *As shown on the table, the site adds 158 feet to the westbound US 40 left turn lane. Therefore, the developer will extend the westbound US 40 left turn storage area by 158 feet of storage.*

	BACKGROUND 95TH Percentile HCS Queue (ft) AM(PM)	FUTURE 95TH Percentile HCS Queue (ft) AM(PM)	STORAGE (ft)	SITE ADDS (ft)
US 40 @ MD 543				
WB Left – US 40	199(333)	264(608)	450	158

US 40 @ MD 132 Mitigation: *As shown on the table, the site adds 9 feet to the northbound US 40 left turn lane. Therefore, the developer will extend the northbound US 40 left turn storage area by the length of on vehicle or 25 feet.*

US 40 @ MD 132	*BACKGROUND 95TH Percentile SimTraffic Queue (ft) AM(PM)*	*FUTURE 95TH Percentile SimTraffic Queue (ft) AM(PM*	*STORAGE (ft)Storage (ft)*	*SITE ADDS (ft)*
NB Left – US 40	*116(286)*	*129(295)*	*200*	*9*

Based on results of this study and the proposed traffic mitigation, the developer meets the APFO standards. Therefore, we request approval of the proposed warehouse project from a traffic impact standpoint.

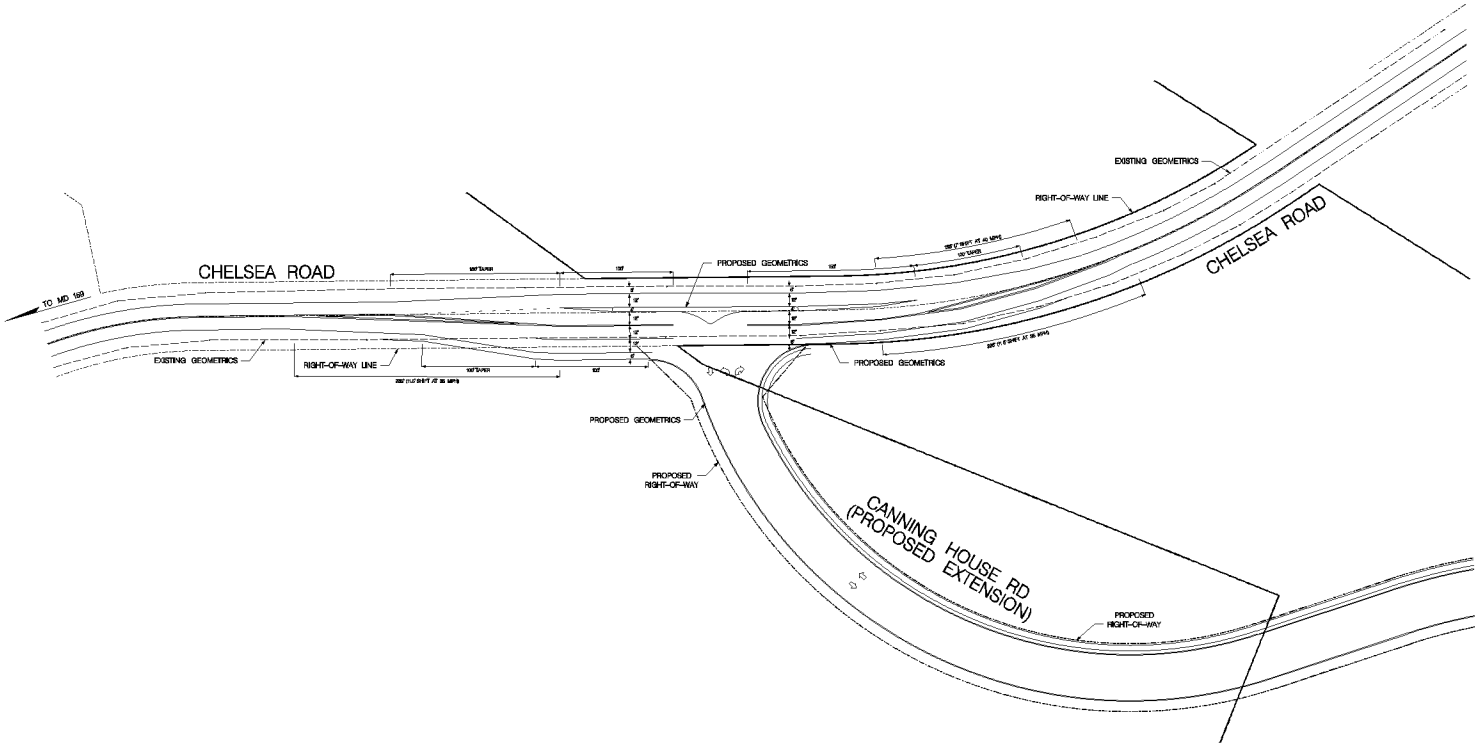


TRAFFIC CONCEPTS, INC.
7525 Connelley Drive
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(410) 760-2011
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CONCEPT PLAN

MD 159 IMPROVEMENTS
HARFORD COUNTY

DRAWN BY: B. PEEK	DESIGNED BY: B. SCHMID	CHECKED BY: J.K. SCHMID
DATE: 9-23-2022	SHEET NO: 1 OF 1	SCALE: 1" = 40'



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

Concept Plan

Chelsea Road at Canning House Road (Extended)
Harford County

DRAWN BY: B. PEEK	DESIGNED BY: B. PEEK	CHECKED BY: J.K. SCHMID
DATE: 8-23-2022	SHEET NO: 1 OF 1	SCALE: 1" = 40'



LEGEND

PROPOSED MARKINGS —

PROPOSED GEOMETRICS – – – – –

TRAFFIC CONCEPTS, INC.
7525 Connelley Drive
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Hanover, MD 21076
(410) 760-2911
EMAIL: TRAFFIC@TRAFFIC-CONCEPTS.COM

CONCEPT PLAN

US 40 AT MD 132
HARFORD COUNTY

DRAWN BY: B. PEEK	DESIGNED BY: B. PEEK	CHECKED BY: J.K. SCHMID
DATE: 9-23-2022	SHEET NO: 1 OF 1	SCALE: 1" = 20'

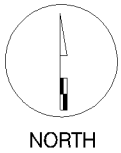
APPENDIX I-A

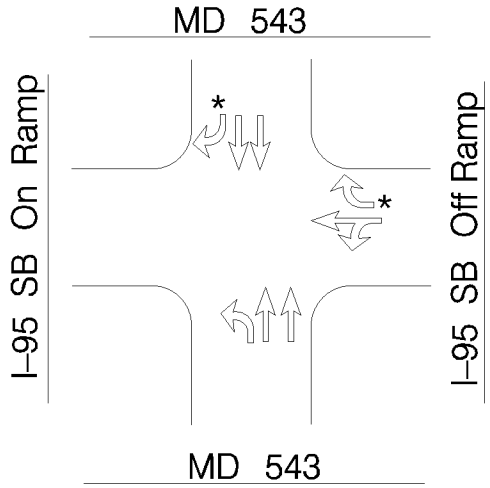
CRITICAL LANE VOLUME ANALYSIS

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

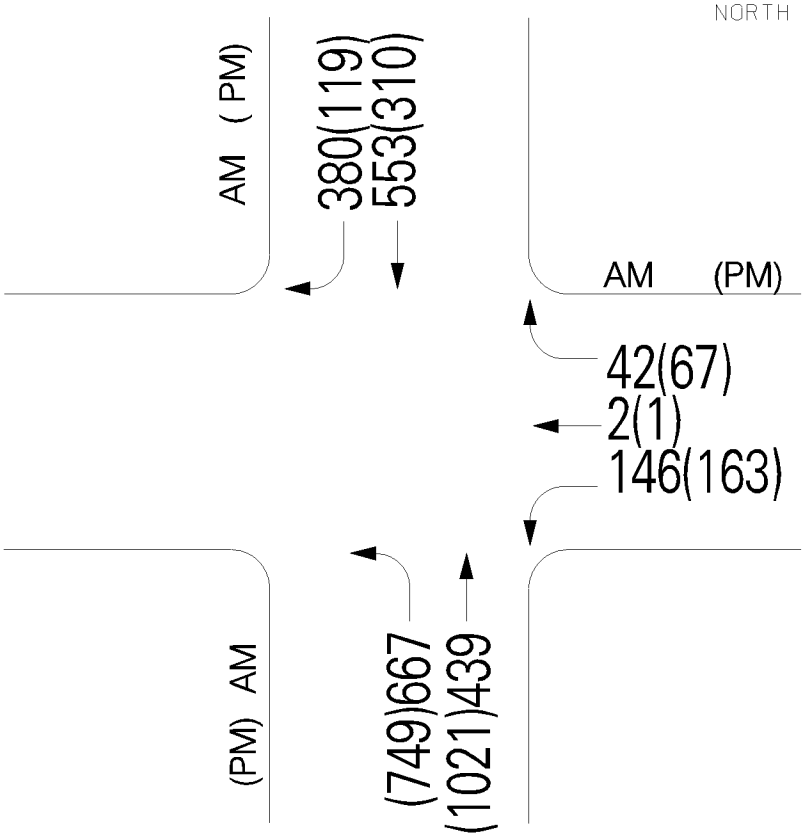
* FREE RIGHT





TRAFFIC VOLUMES





		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	439 * 0.55 =	241	
	SB	553 * 0.55 + 667 * 1 =	971*	
	EB	—	—	B
	WB	(146 + 2) * 1.0 =	148*	1119
PM	NB	1021 * 0.55 =	562	
	SB	310 * 0.55 + 749 * 1 =	920*	
	EB	—	—	B
	WB	(163 + 1) * 1.0 =	164*	1084

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY

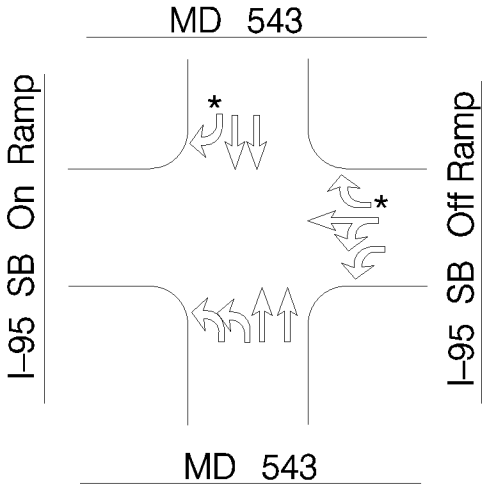
Condition: EXISTING – RECOUNT 2022

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

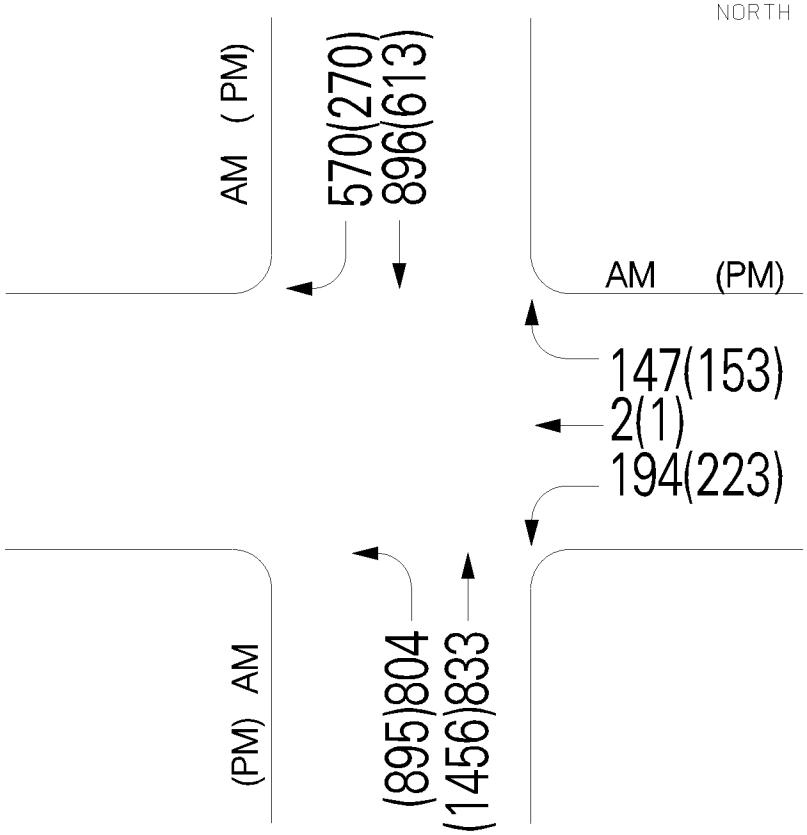
* FREE RIGHT





TRAFFIC VOLUMES





		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	833	*	0.55					=	458	
	SB	896	*	0.55	+	804	*	0.6	=	975*	
	EB				—					—	B
	WB	(194+2)	*	1.0					=	118*	1093
PM	NB	1456	*	0.55					=	801	
	SB	613	*	0.55	+	895	*	0.6	=	874*	
	EB				—					—	B
	WB	(223+1)	*	1.0					=	134*	1008

CRITICAL LANE ANALYSIS

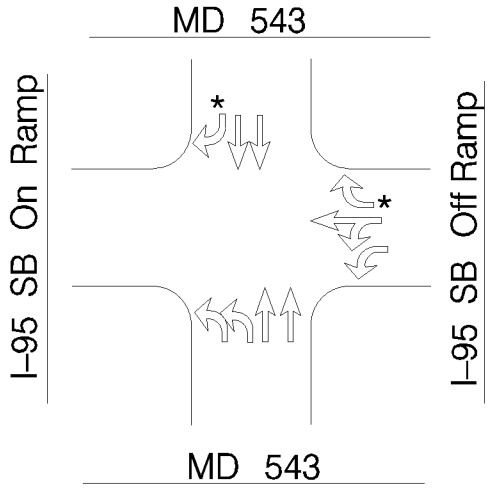
Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC CONCEPTS, Inc.

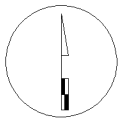
LANE CONFIGURATION

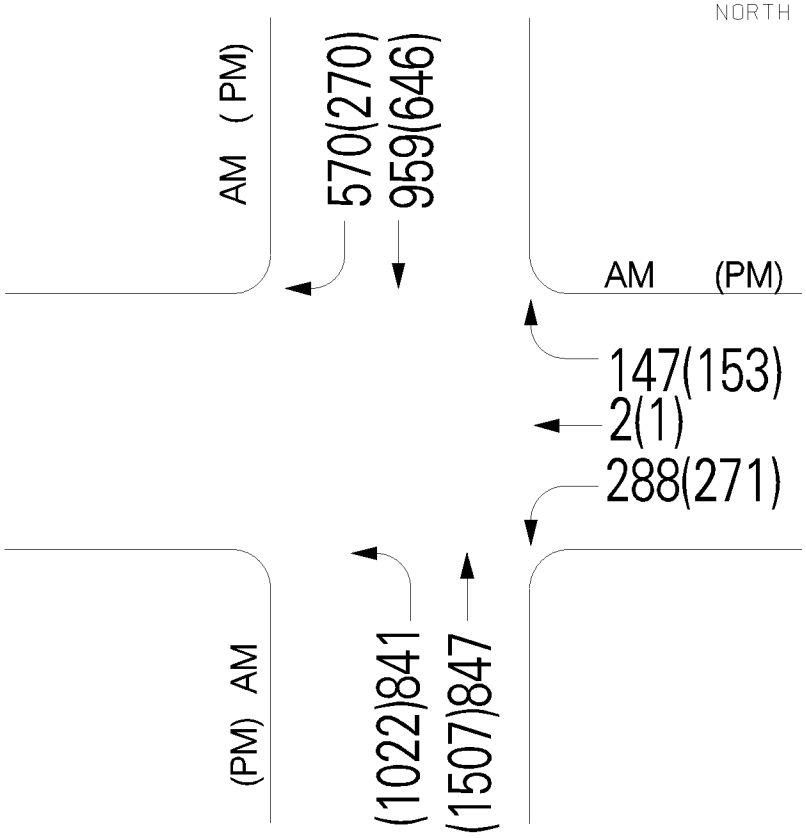
* FREE RIGHT





TRAFFIC VOLUMES





		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	847 * 0.55 =	466	
	SB	959 * 0.55 + 841 * 0.6 =	1032*	
	EB	—	—	C
	WB	(288+2) * 1.0 =	174*	1206
PM	NB	1507 * 0.55 =	829	
	SB	646 * 0.55 + 1022 * 0.6 =	969*	
	EB	—	—	B
	WB	(271+1) * 1.0 =	163*	1132

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE

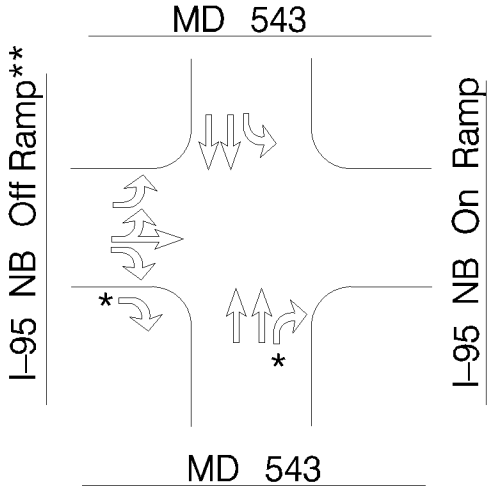
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

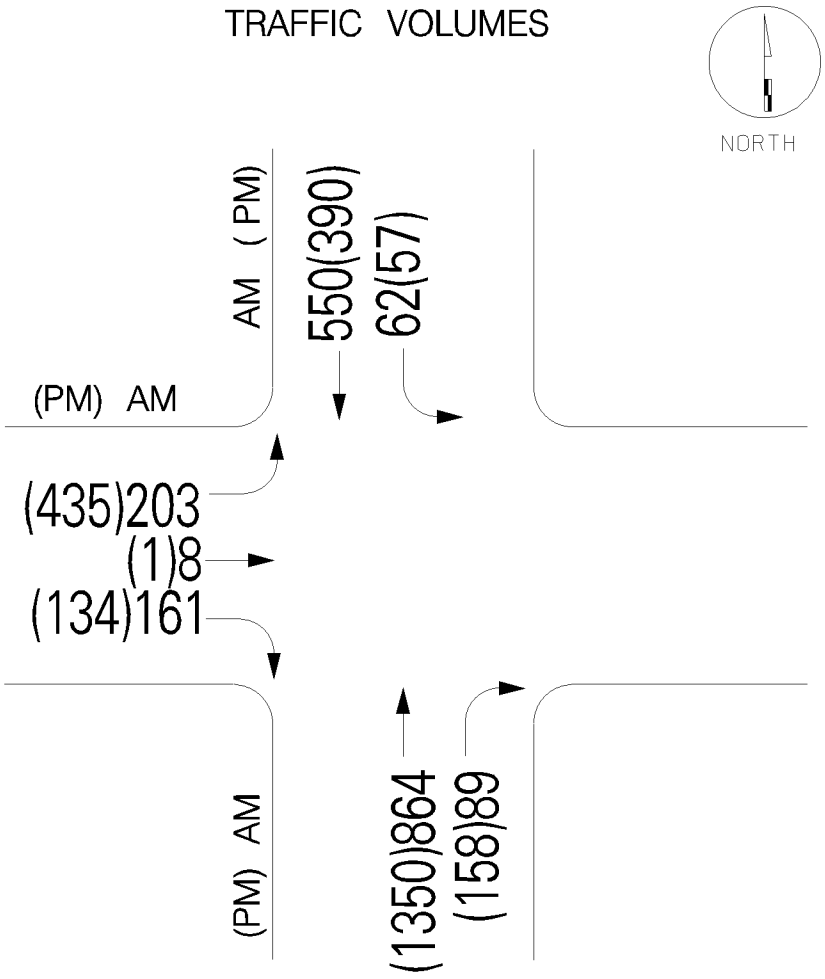
* FREE RIGHT

NORTH

NOTE: The off ramp has a second (free) right turn movement that is channelized and NOT controlled by the signal.



TRAFFIC VOLUMES



		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	864	*	0.55	+	62	*	1	=	537*	
	SB	550	*	0.55					=	303	
	EB	(203+8)	*	0.6					=	127*	A
					—					—	664
PM	NB	1350	*	0.55	+	57	*	1	=	800*	
	SB	390	*	0.55					=	215	
	EB	(435+1)	*	0.6					=	262*	B
					—					—	1062

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING – RECOUNT 2022

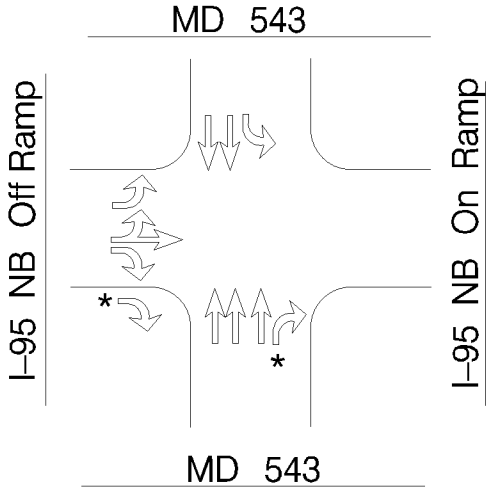
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

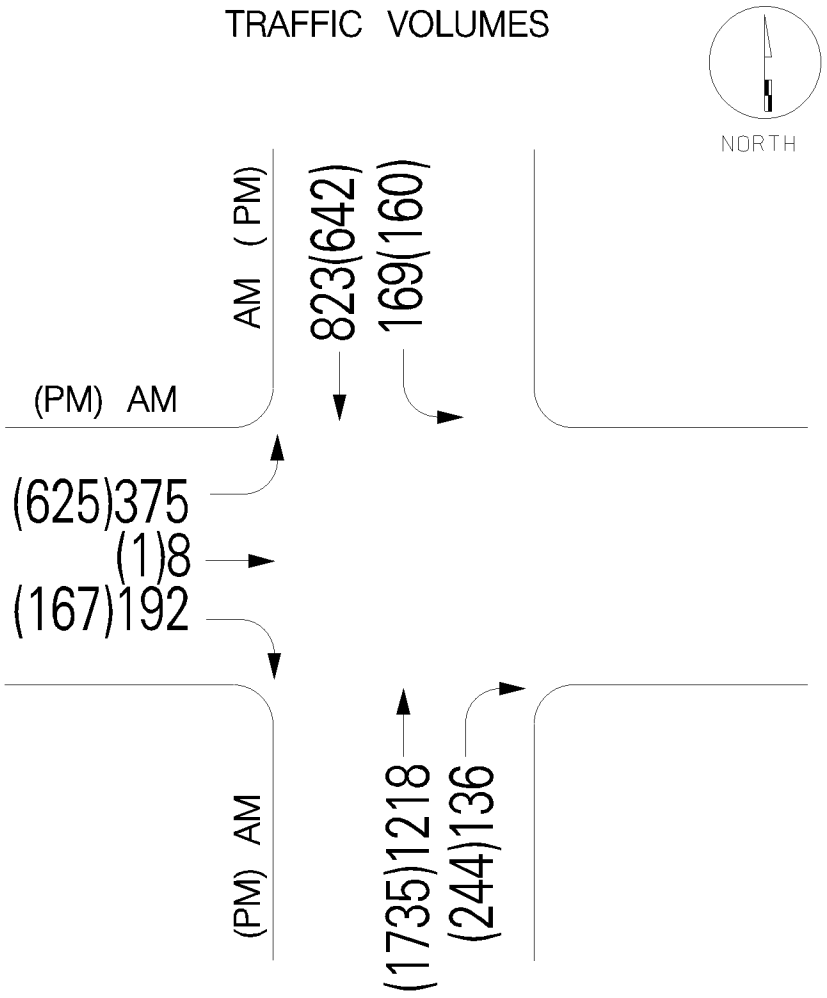
* FREE RIGHT

NORTH

NOTE: The off ramp has a second (free) right turn movement that is channelized and NOT controlled by the signal.



TRAFFIC VOLUMES



		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	1218	*	0.40	+	169	*	1	=	656*	
	SB	823	*	0.55					=	453	
	EB	(375+8)	*	0.6					=	230*	A
					—					—	886
PM	NB	1735	*	0.40	+	160	*	1	=	854*	
	SB	642	*	0.55					=	353	
	EB	(625+1)	*	0.6					=	376*	C
					—					—	1230

CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND

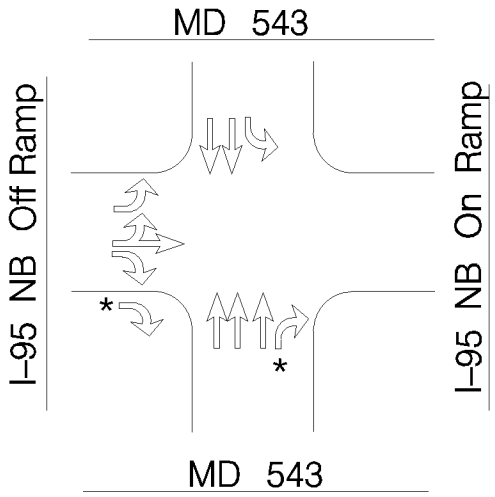
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

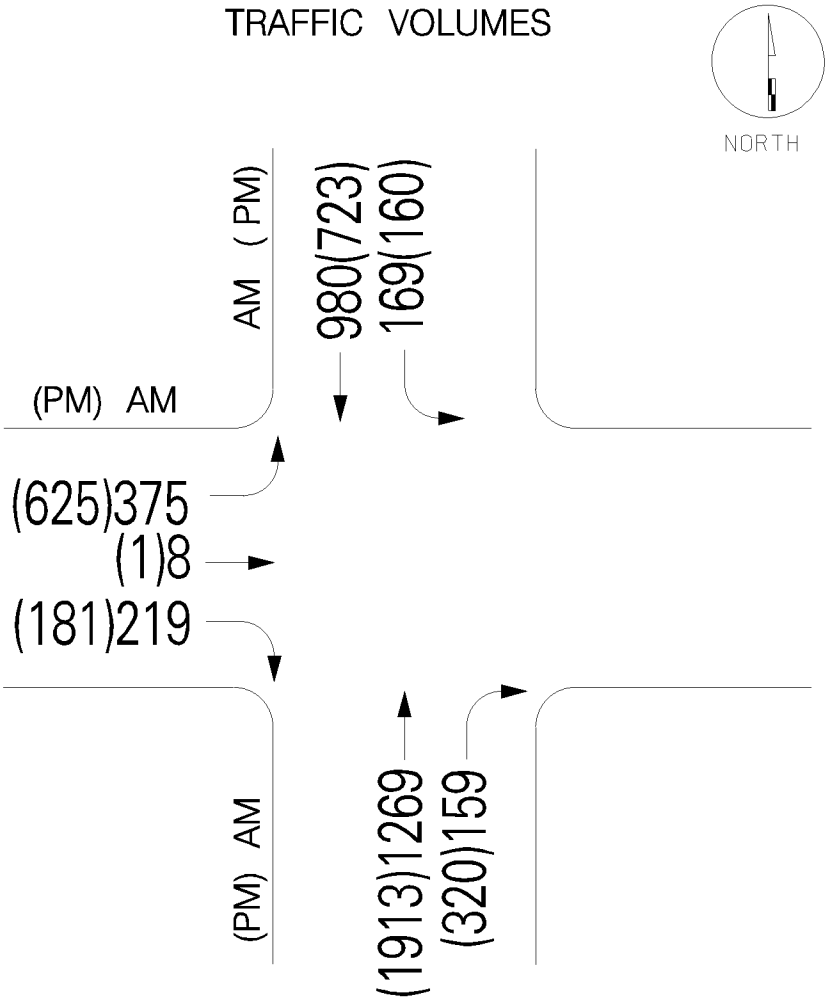
* FREE RIGHT

NORTH

NOTE: The off ramp has a second (free) right turn movement that is channelized and NOT controlled by the signal.



TRAFFIC VOLUMES



		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	1269	*	0.40	+	169	*	1	=	676*	
	SB	980	*	0.55					=	539	
	EB	(375+8)	*	0.6					=	230*	A
					—					—	906
PM	NB	1913	*	0.40	+	160	*	1	=	925*	
	SB	723	*	0.55					=	398	
	EB	(625+1)	*	0.6					=	376*	D
					—					—	1301

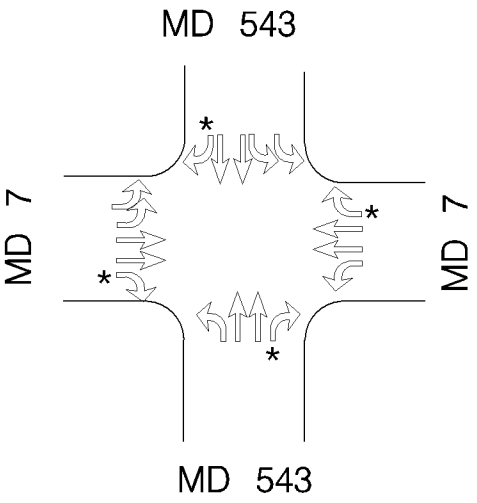
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: FUTURE

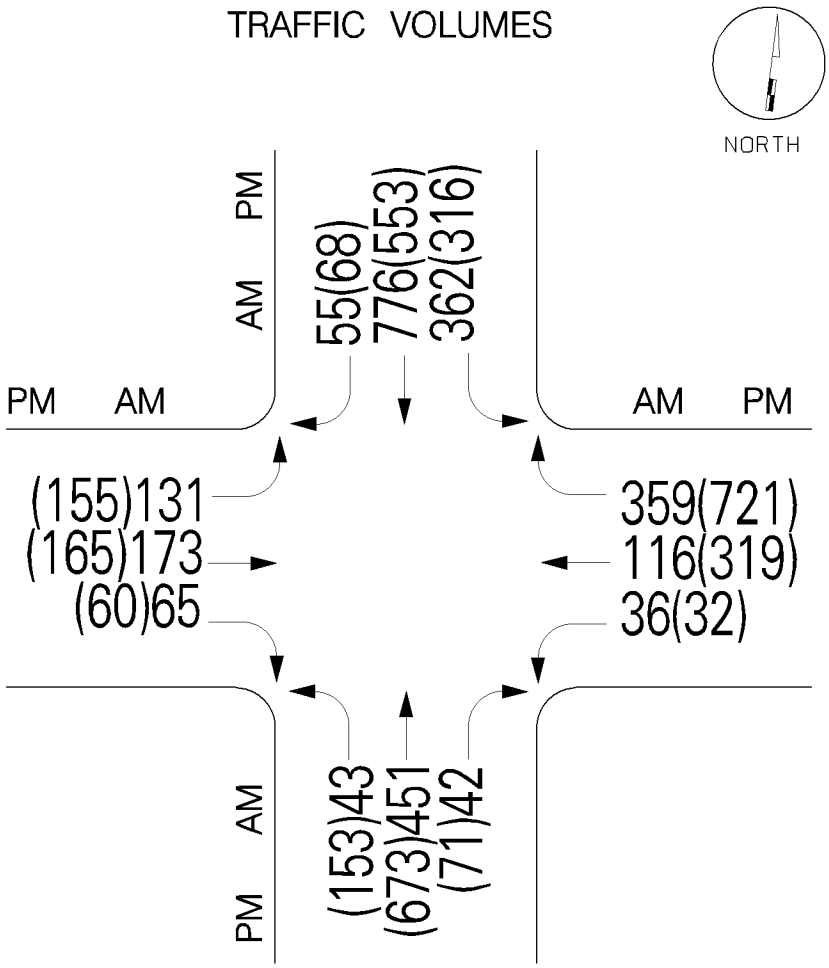
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

* FREE RIGHT



TRAFFIC VOLUMES



		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	451	*	0.55	+	362	*	0.6	=	465	
	SB	776	*	0.55	+	43	*	1	=	470*	
	EB	173	*	0.55	+	36	*	1	=	131	A
	WB	116	*	0.55	+	131	*	0.6	=	142*	612
PM	NB	673	*	0.55	+	316	*	0.6	=	560*	
	SB	553	*	0.55	+	153	*	1	=	457	
	EB	165	*	0.55	+	38	*	1	=	123	A
	WB	339	*	0.55	+	165	*	0.6	=	268*	828

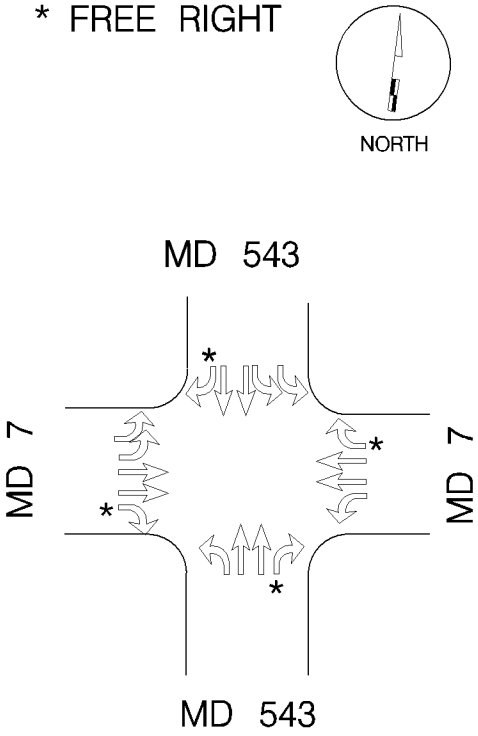
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING – RECOUNT 2022

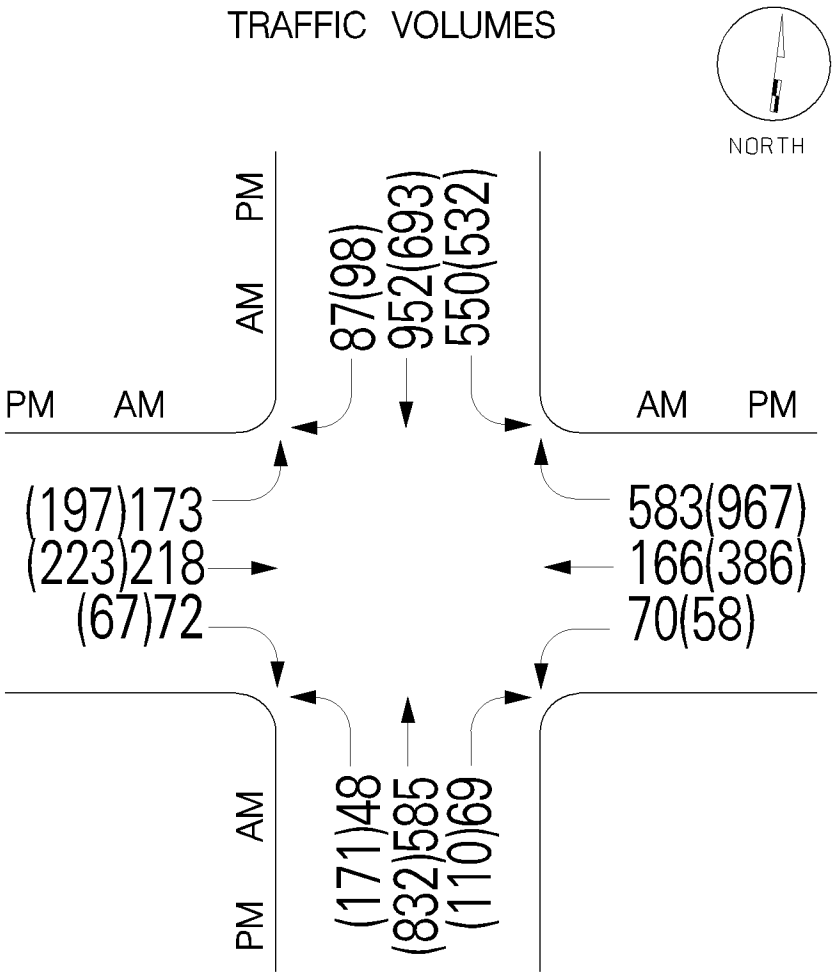
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

* FREE RIGHT



TRAFFIC VOLUMES



		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	585	*	0.55	+	550	*	0.6	=	652*	
	SB	952	*	0.55	+	48	*	1	=	572	
	EB	218	*	0.55	+	70	*	1	=	190	A
	WB	166	*	0.55	+	173	*	0.6	=	195*	847
PM	NB	832	*	0.55	+	532	*	0.6	=	777*	
	SB	693	*	0.55	+	171	*	1	=	552	
	EB	223	*	0.55	+	58	*	1	=	181	B
	WB	386	*	0.55	+	197	*	0.6	=	331*	1108

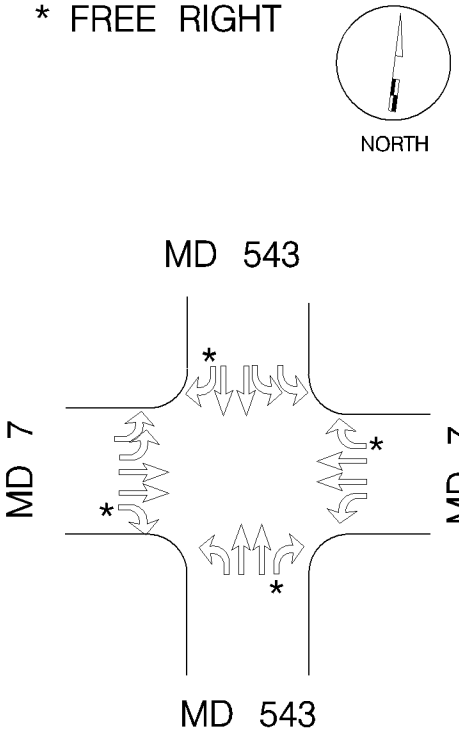
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND

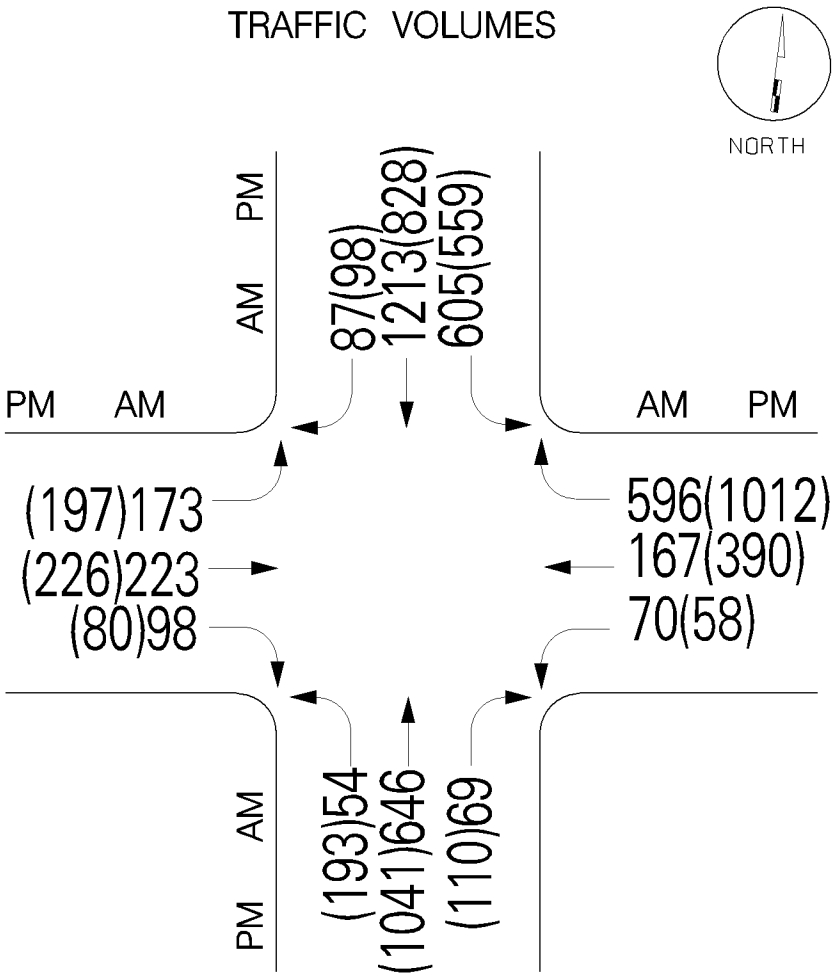
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

* FREE RIGHT



TRAFFIC VOLUMES



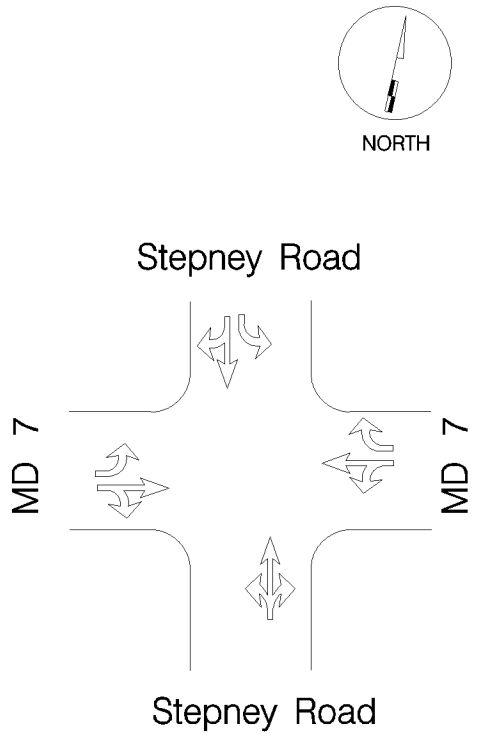
		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =								CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	646	*	0.55	+	605	*	0.6	=	718	
	SB	1213	*	0.55	+	54	*	1	=	721*	
	EB	223	*	0.55	+	70	*	1	=	193	A
	WB	167	*	0.55	+	173	*	0.6	=	196*	917
PM	NB	1041	*	0.55	+	559	*	0.6	=	908*	
	SB	828	*	0.55	+	193	*	1	=	648	
	EB	226	*	0.55	+	58	*	1	=	182	B
	WB	390	*	0.55	+	197	*	0.6	=	333*	1241

CRITICAL LANE ANALYSIS

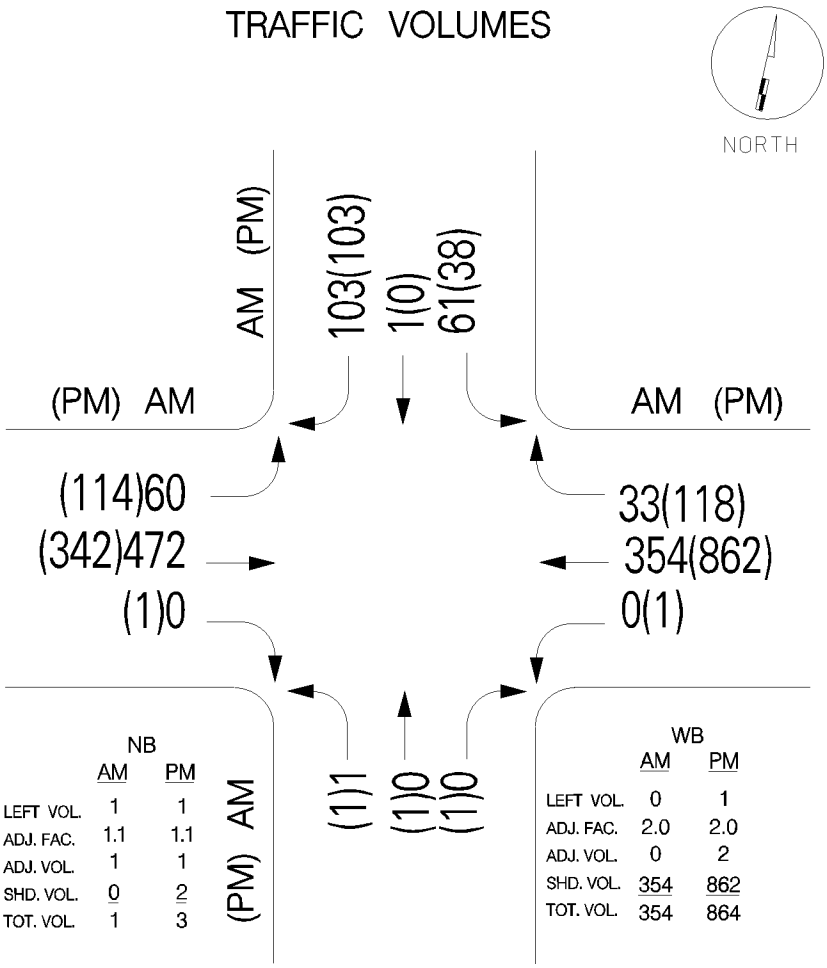
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



NB

	AM	PM
LEFT VOL.	1	1
ADJ. FAC.	1.1	1.1
ADJ. VOL.	1	1
SHD. VOL.	0	2
TOT. VOL.	1	3

WB

	AM	PM
LEFT VOL.	0	1
ADJ. FAC.	2.0	2.0
ADJ. VOL.	0	2
SHD. VOL.	354	862
TOT. VOL.	354	864

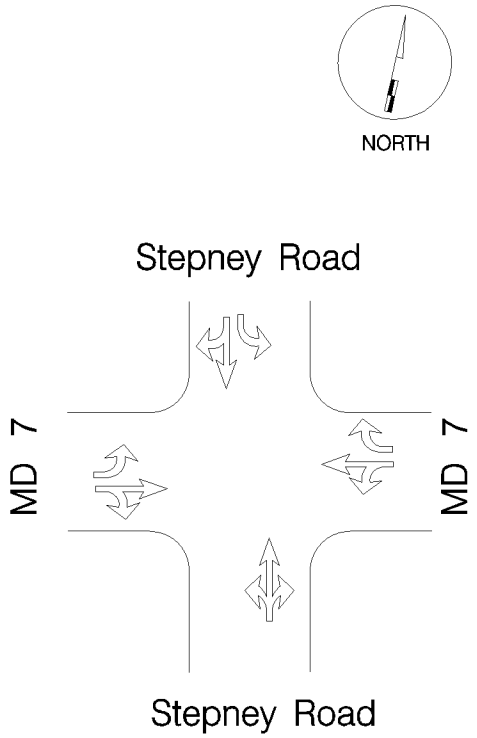
		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	1	*	1	+	61	*	1	=	62	
	SB	(1+103)	*	1	+	1	*	1	=	105*	
	EB	(472+0)	*	1	+	0	*	1	=	472*	A
	WB	354	*	1	+	60	*	1	=	414	577
PM	NB	3	*	1	+	38	*	1	=	41	
	SB	(103+0)	*	1	+	1	*	1	=	104*	
	EB	(342+1)	*	1	+	1	*	1	=	344	B
	WB	864	*	1	+	114	*	1	=	978*	1082

CRITICAL LANE ANALYSIS

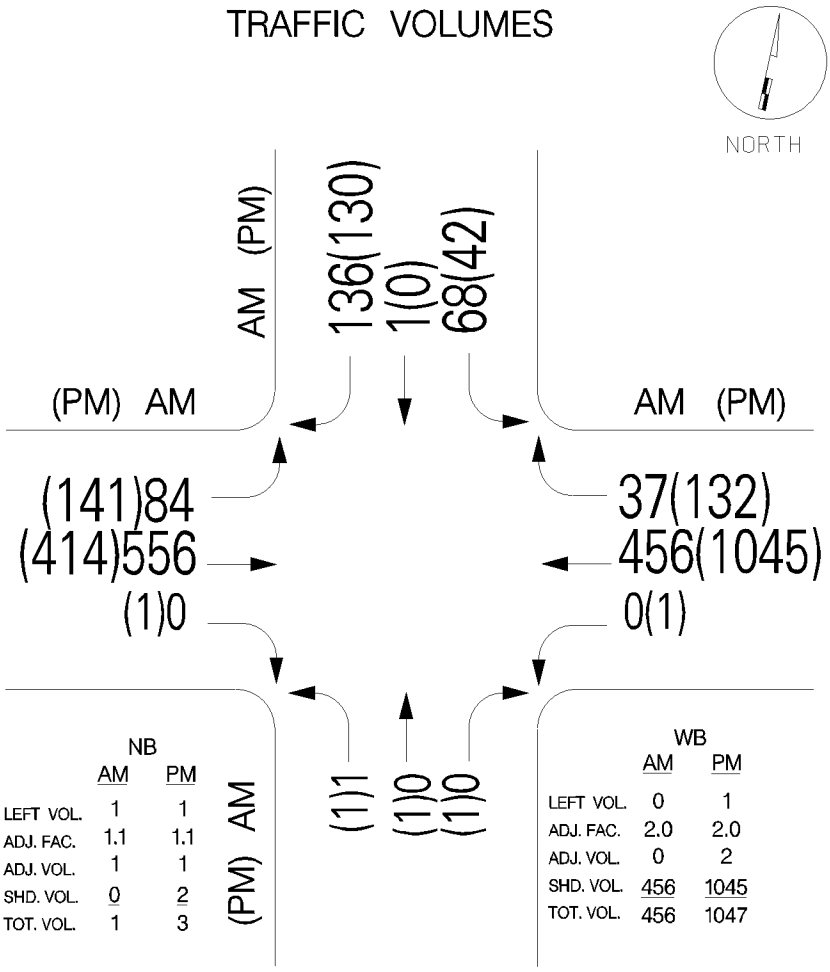
Prepared By: J. CAREY Condition: EXISTING – RECOUNT 2022

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



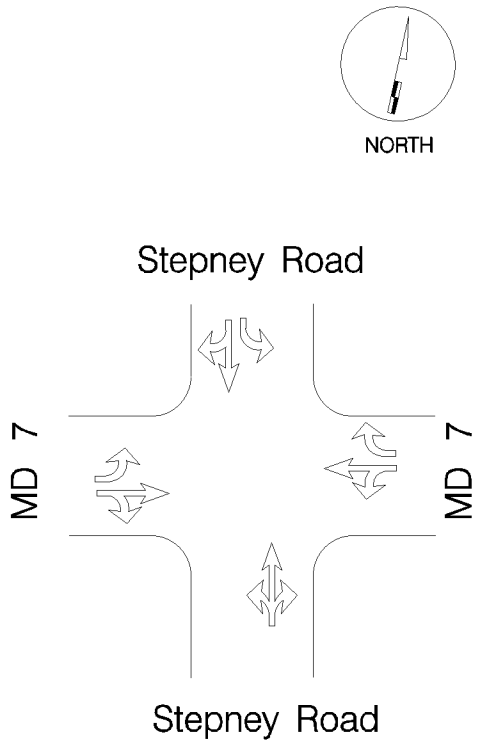
		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	1	*	1	+	68	*	1	=	69	
	SB	(1+136)	*	1	+	1	*	1	=	138*	
	EB	(556+0)	*	1	+	0	*	0	=	556*	A
	WB	456	*	1	+	84	*	1	=	540	694
PM	NB	3	*	1	+	42	*	1	=	45	
	SB	(130+0)	*	1	+	1	*	1	=	131*	
	EB	(414+1)	*	1	+	1	*	1	=	416	B
	WB	1047	*	1	+	141	*	1	=	1188*	1319

CRITICAL LANE ANALYSIS

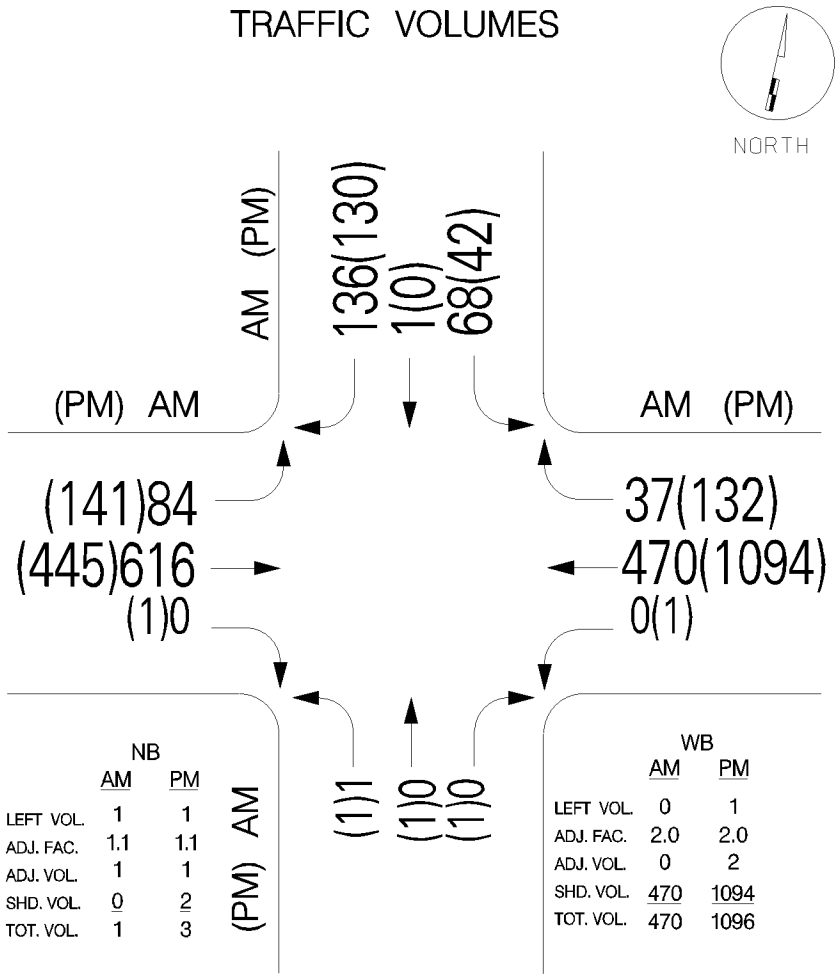
Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



NB

	AM	PM
LEFT VOL.	1	1
ADJ. FAC.	1.1	1.1
ADJ. VOL.	1	1
SHD. VOL.	0	2
TOT. VOL.	1	3

WB

	AM	PM
LEFT VOL.	0	1
ADJ. FAC.	2.0	2.0
ADJ. VOL.	0	2
SHD. VOL.	470	1094
TOT. VOL.	470	1096

		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	1	*	1	+	68	*	1	=	69	
	SB	(1+136)	*	1	+	1	*	1	=	138*	
	EB	(616+0)	*	1	+	0	*	0	=	616*	A
	WB	470	*	1	+	84	*	1	=	554	754
PM	NB	3	*	1	+	42	*	1	=	45	
	SB	(130+0)	*	1	+	1	*	1	=	131*	
	EB	(445+1)	*	1	+	1	*	1	=	447	D
	WB	1096	*	1	+	141	*	1	=	1237*	1368

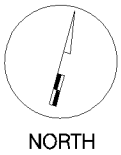
CRITICAL LANE ANALYSIS

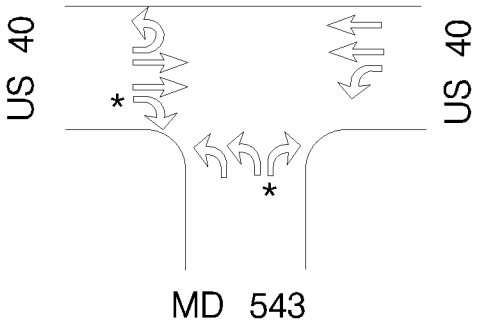
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

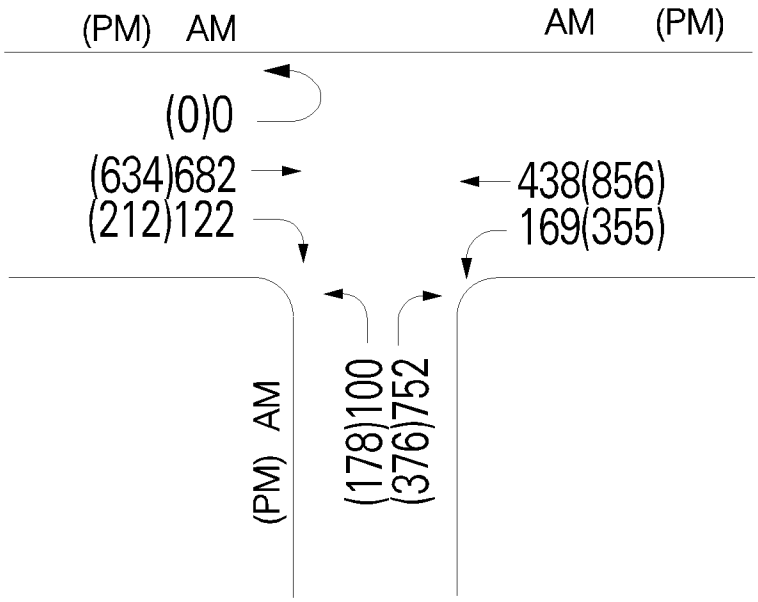
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TRAFFIC VOLUMES





		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	100	*	0.6					=	60*	
	SB				—					—	
	EB	682	*	0.55	+	169	*	1	=	544*	A
	WB	438	*	0.55					=	241	604
PM	NB	178	*	0.6					=	107*	
	SB				—					—	
	EB	634	*	0.55	+	355	*	1	=	704*	A
	WB	856	*	0.55					=	471	811

CRITICAL LANE ANALYSIS

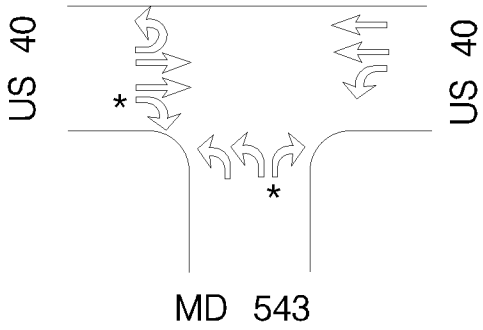
Prepared By: J. CAREY Condition: EXISTING – RECOUNT 2022

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

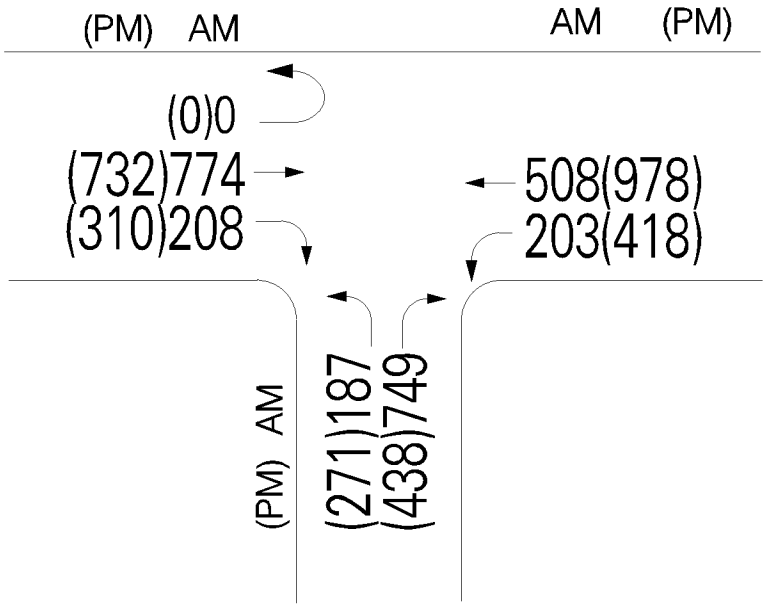
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TRAFFIC VOLUMES





		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	187	*	0.6					=	112*	
	SB				—					—	
	EB	774	*	0.55	+	203	*	1	=	629*	A
	WB	508	*	0.55					=	279	741
PM	NB	271	*	0.6					=	163*	
	SB				—					—	
	EB	732	*	0.55	+	418	*	1	=	821*	A
	WB	978	*	0.55					=	538	984

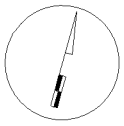
CRITICAL LANE ANALYSIS

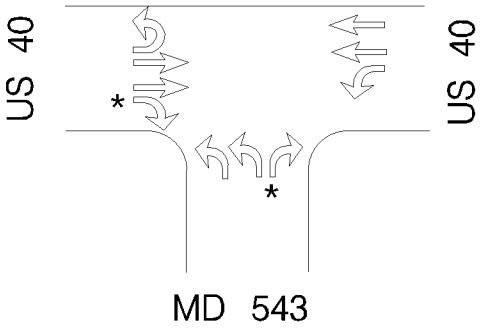
Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

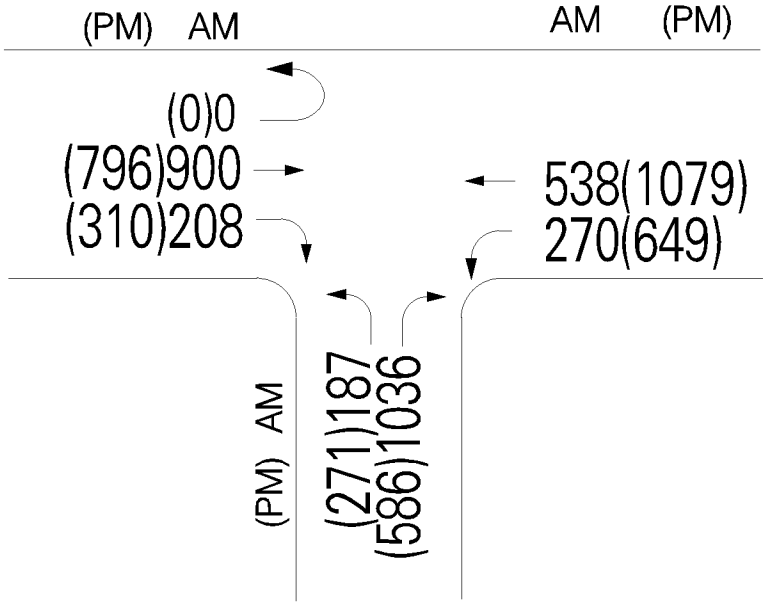
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TRAFFIC VOLUMES





		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	187	*	0.6					=	112*	
	SB				—					—	
	EB	900	*	0.55	+	270	*	1	=	765*	A
	WB	538	*	0.55					=	279	877
PM	NB	271	*	0.6					=	163*	
	SB				—					—	
	EB	796	*	0.55	+	649	*	1	=	1087*	C
	WB	1079	*	0.55					=	593	1250

CRITICAL LANE ANALYSIS

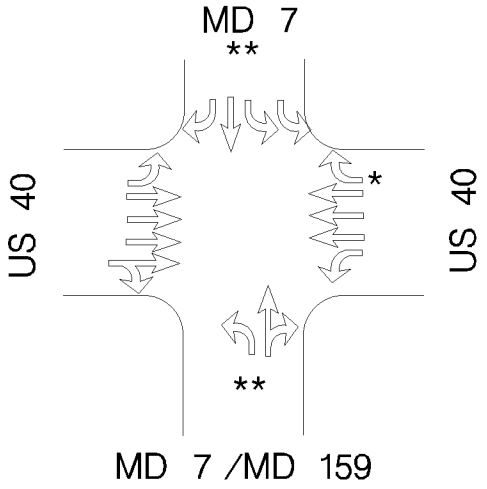
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

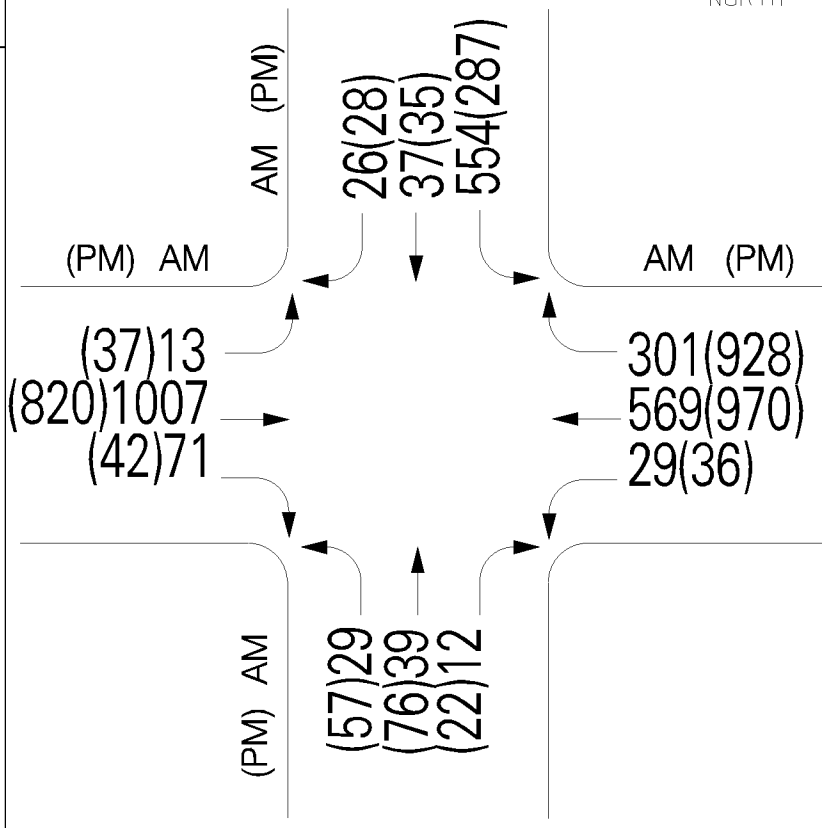
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NORTH



TRAFFIC VOLUMES

NORTH



		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(39+12)	*	1					=	51*	
	SB	554	*	0.6					=	332*	
	EB	(1007+71)	*	0.3	+	29	*	1	=	352*	A
	WB	569	*	0.4	+	13	*	1	=	241	735
PM	NB	(76+22)	*	1					=	98*	
	SB	287	*	0.6					=	172*	
	EB	(820+42)	*	0.3	+	36	*	1	=	295	A
	WB	970	*	0.4	+	37	*	1	=	425*	695

CRITICAL LANE ANALYSIS

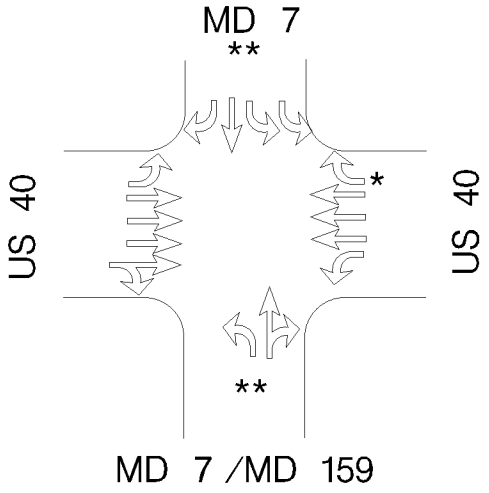
Prepared By: J. CAREY Condition: EXISTING – RECOUNT 2022

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LANE CONFIGURATION

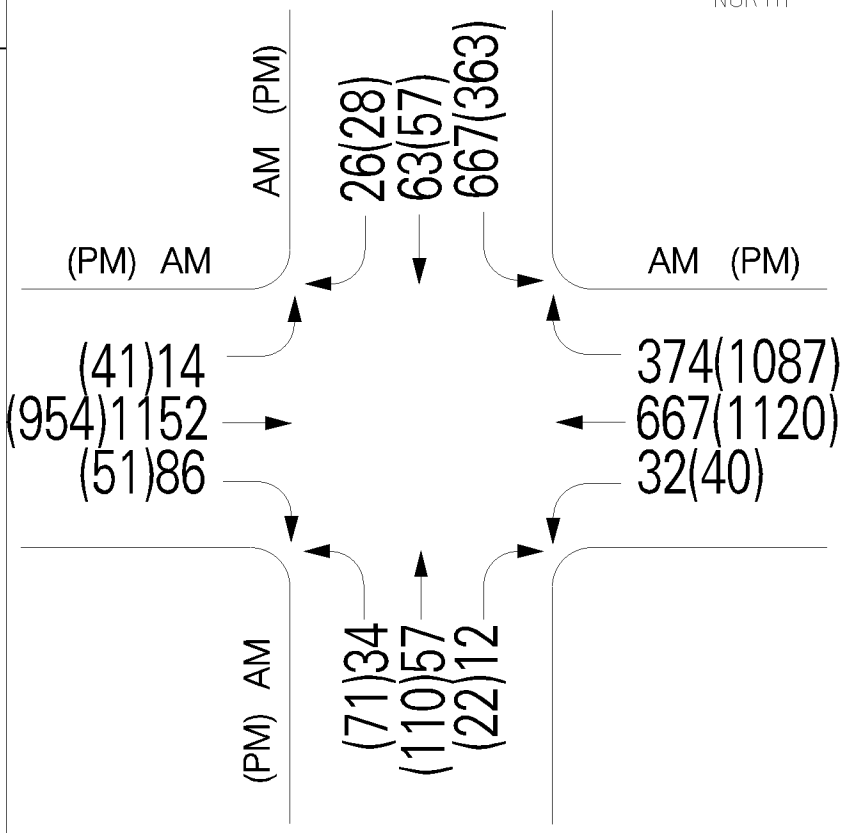
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TRAFFIC VOLUMES

NORTH



		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(57+12)	*	1					=	69*	
	SB	667	*	0.6					=	400*	
	EB	(1152+86)	*	0.3	+	32	*	1	=	403*	A
	WB	667	*	0.4	+	14	*	1	=	281	872
PM	NB	(110+22)	*	1					=	132*	
	SB	363	*	0.6					=	218*	
	EB	(954+51)	*	0.3	+	40	*	1	=	342	A
	WB	1120	*	0.4	+	41	*	1	=	489*	839

CRITICAL LANE ANALYSIS

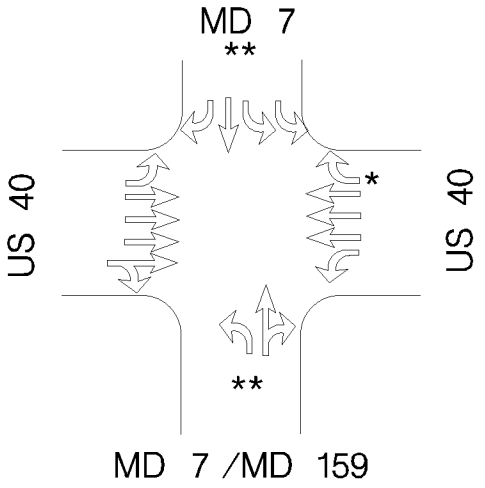
Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

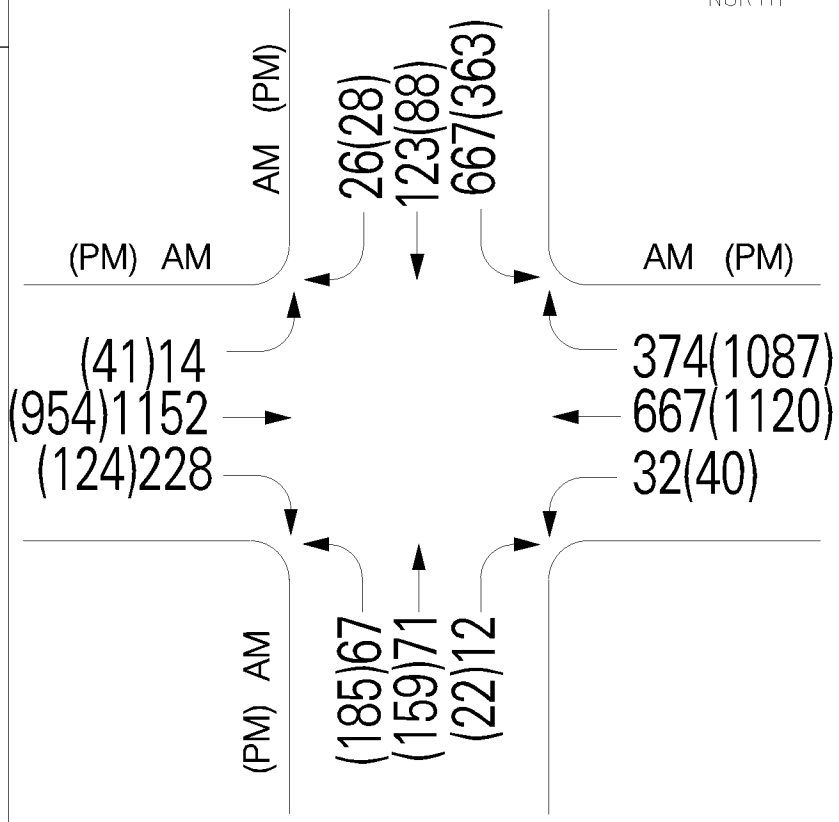
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TRAFFIC VOLUMES





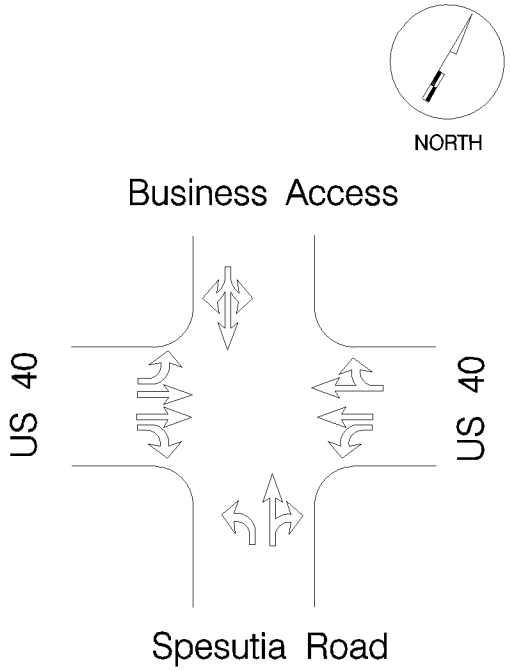
		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(71+12)	*	1					=	83*	
	SB	667	*	0.6					=	400*	
	EB	(1152+228)	*	0.3	+	32	*	1	=	446*	A
	WB	667	*	0.4	+	14	*	1	=	281	929
PM	NB	185	*	1					=	185*	
	SB	363	*	0.6					=	218*	
	EB	(954+124)	*	0.3	+	40	*	1	=	363	A
	WB	1120	*	0.4	+	41	*	1	=	489*	892

CRITICAL LANE ANALYSIS

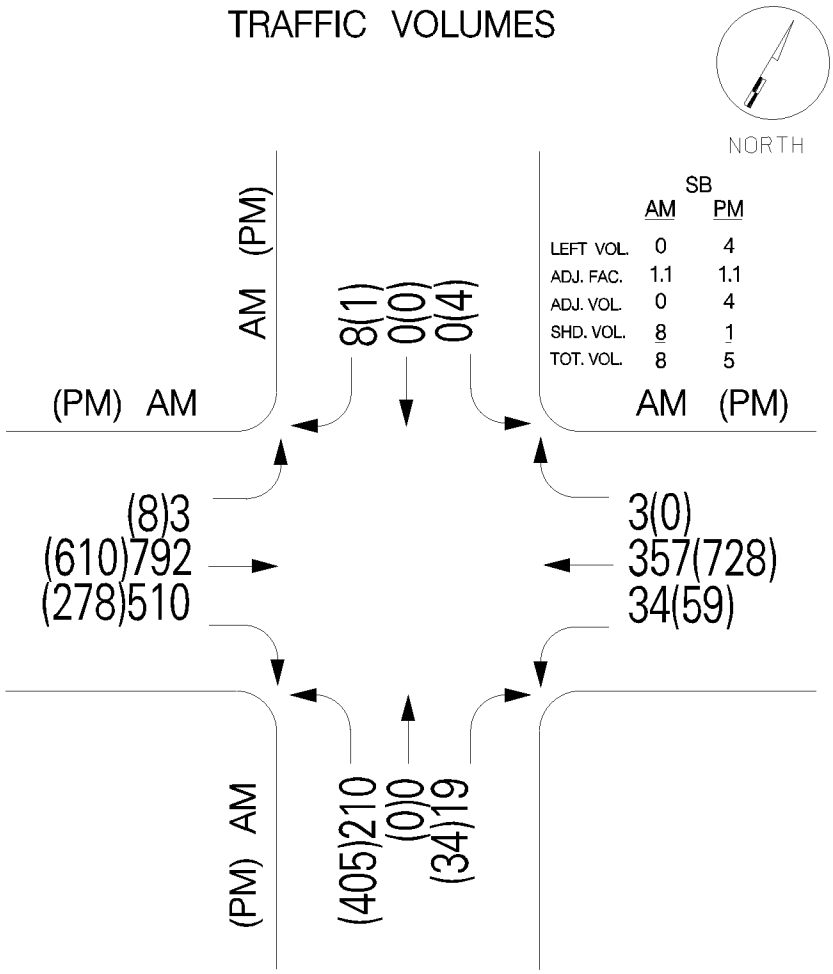
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(19+0)	*	1	+	0	*	1	=	19	
	SB	8	*	1	+	210	*	1	=	218*	
	EB	792	*	0.55	+	34	*	1	=	470*	A
	WB	(357+3)	*	0.55	+	3	*	1	=	201	688
PM	NB	(0+34)	*	1	+	4	*	1	=	38	
	SB	5	*	1	+	405	*	1	=	410*	
	EB	610	*	0.55	+	59	*	1	=	395	A
	WB	(728+0)	*	0.55	+	8	*	1	=	408*	818

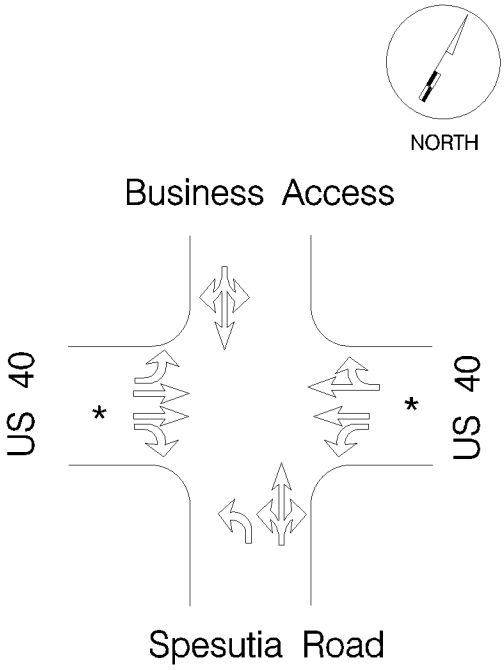
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING – RECOUNT 2022

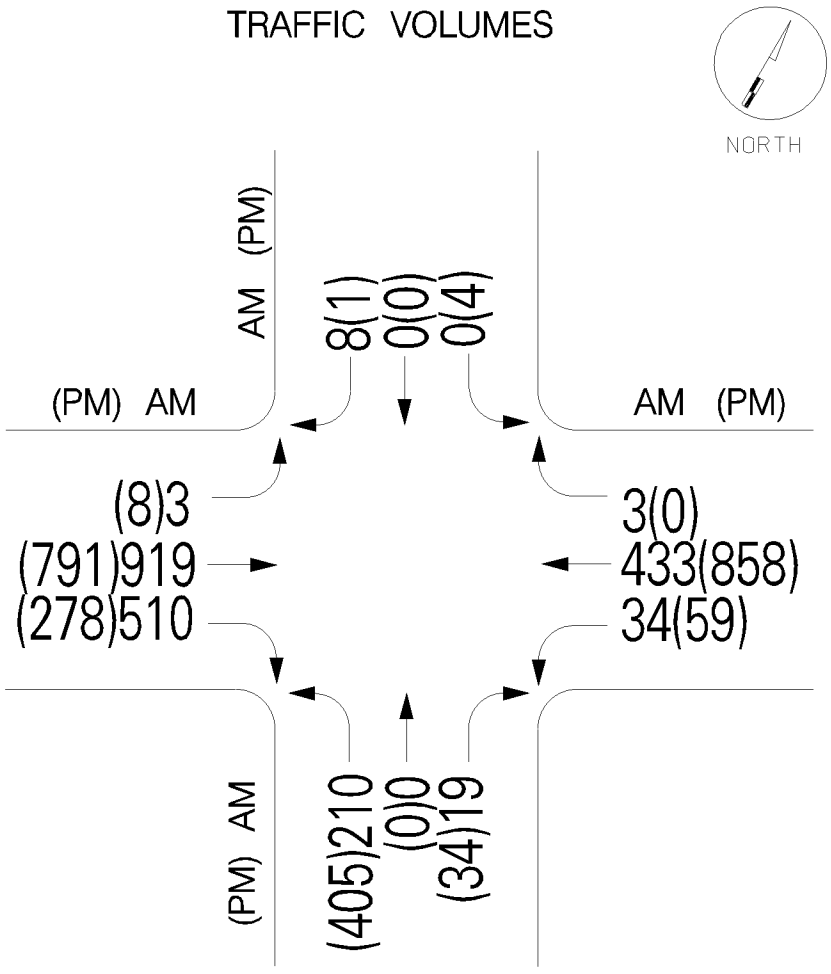
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

* SPLIT PHASED



TRAFFIC VOLUMES



		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(210+19)	*	0.6					=	137*	
	SB	8	*	1					=	8*	
	EB	919	*	0.55	+	34	*	1	=	539*	A
	WB	(433+3)	*	0.55	+	3	*	1	=	243	684
PM	NB	(405+34)	*	0.6					=	263*	
	SB	(4+1)	*	1					=	5*	
	EB	791	*	0.55	+	59	*	1	=	494*	A
	WB	(858+0)	*	0.55	+	8	*	1	=	480	762

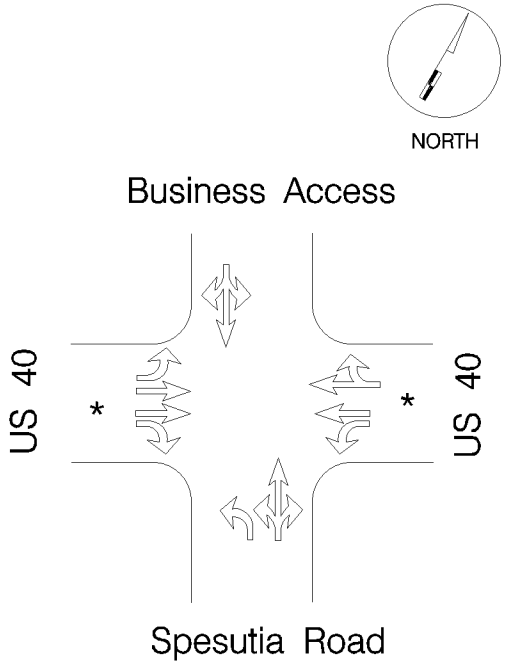
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND

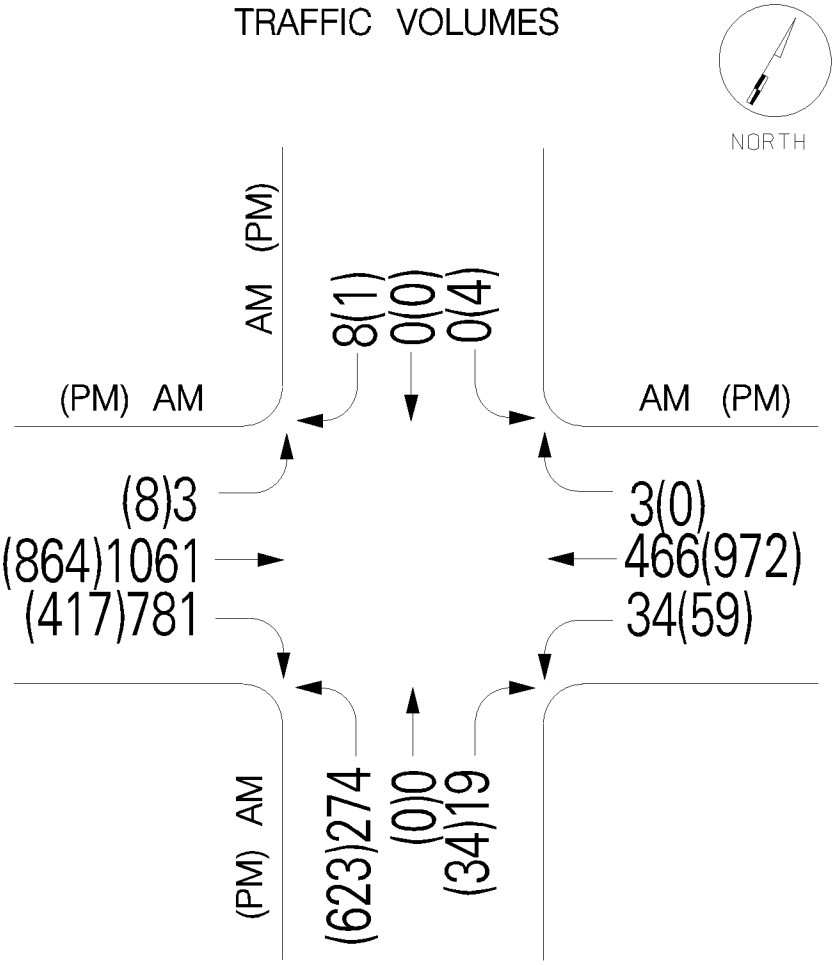
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

* SPLIT PHASED



TRAFFIC VOLUMES



		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(274+19)	*	0.6					=	176*	
	SB	8	*	1					=	8*	
	EB	1061	*	0.55	+	34	*	1	=	618*	A
	WB	(466+3)	*	0.55	+	3	*	1	=	261	802
PM	NB	(623+34)	*	0.6					=	394*	
	SB	(4+1)	*	1					=	5*	
	EB	864	*	0.55	+	59	*	1	=	534	A
	WB	(972+0)	*	0.55	+	8	*	1	=	543*	942

CRITICAL LANE ANALYSIS

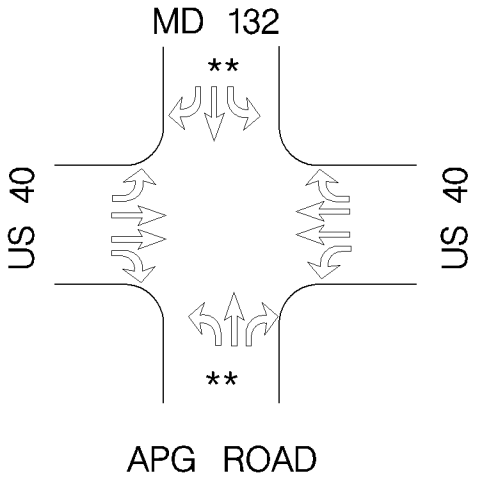
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

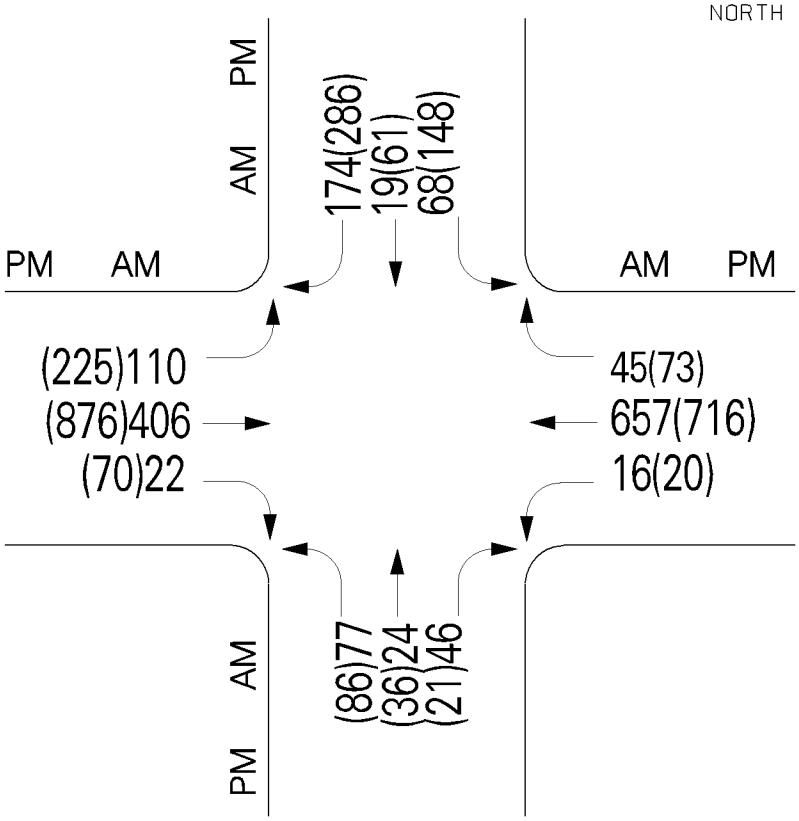
** SPLIT PHASED

NORTH



TRAFFIC VOLUMES

NORTH



		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =								CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	77	*	1					=	77*	
	SB	68	*	1					=	68*	
	EB	406	*	0.55	+	16	*	1	=	239	A
	WB	657	*	0.55	+	110	*	1	=	471*	616
PM	NB	86	*	1					=	86*	
	SB	148	*	1					=	148*	
	EB	876	*	0.55	+	20	*	1	=	502	A
	WB	716	*	0.55	+	225	*	1	=	619*	853

CRITICAL LANE ANALYSIS

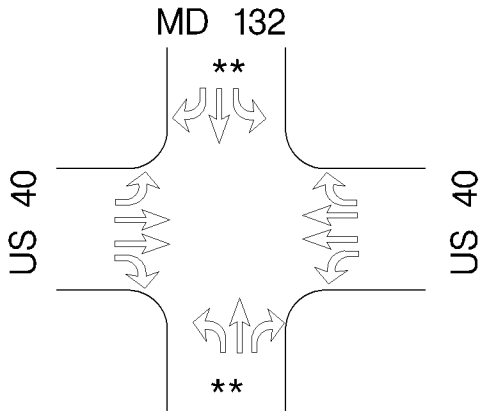
Prepared By: J. CAREY Condition: EXISTING – RECOUNT 2022

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

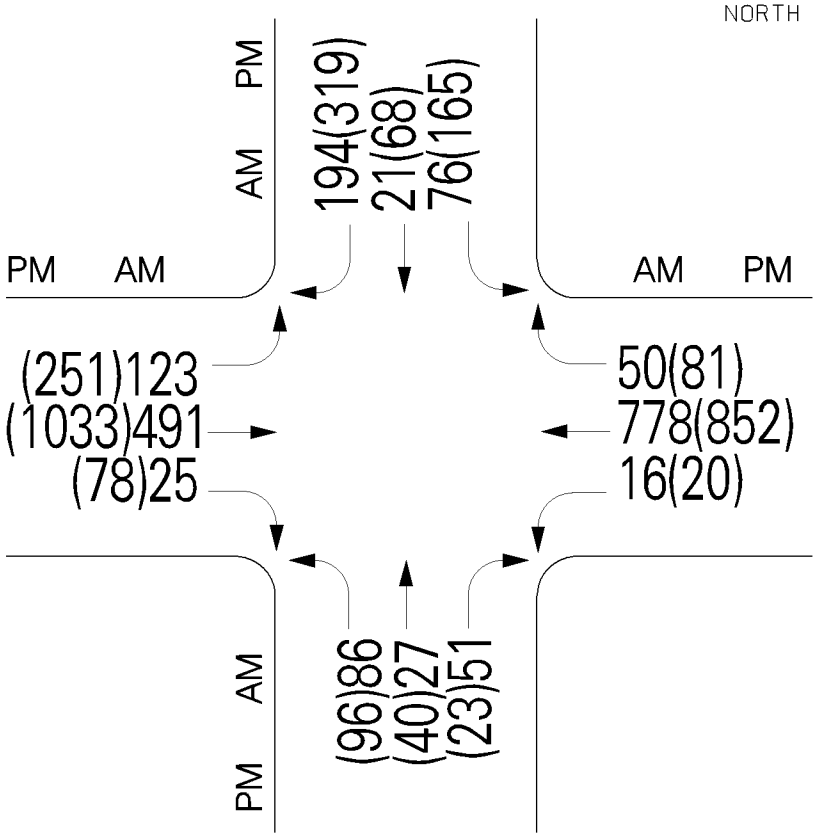
** SPLIT PHASED

NORTH



TRAFFIC VOLUMES

NORTH



		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =								CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	86	*	1					=	86*	
	SB	76	*	1					=	76*	
	EB	491	*	0.55	+	16	*	1	=	286	A
	WB	778	*	0.55	+	123	*	1	=	551*	713
PM	NB	86	*	1					=	96*	
	SB	165	*	1					=	165*	
	EB	1033	*	0.55	+	20	*	1	=	588	A
	WB	852	*	0.55	+	251	*	1	=	720*	981

CRITICAL LANE ANALYSIS

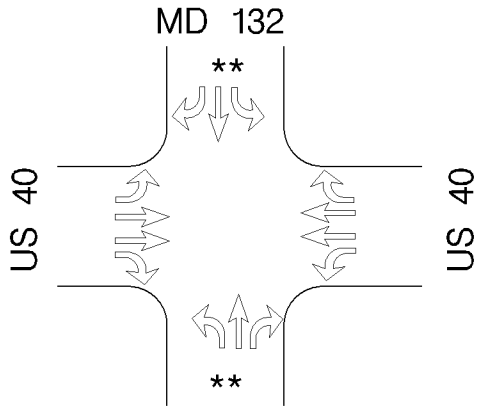
Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

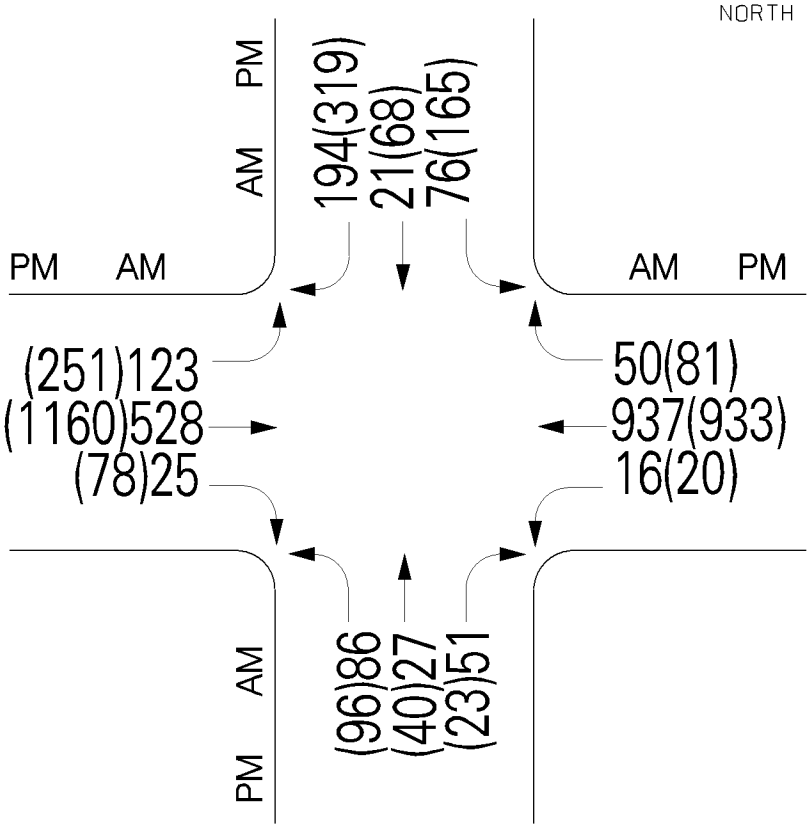
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NORTH



TRAFFIC VOLUMES

NORTH



		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	86	*	1					=	86*	
	SB	76	*	1					=	76*	
	EB	528	*	0.55	+	16	*	1	=	306	A
	WB	937	*	0.55	+	123	*	1	=	638*	800
PM	NB	86	*	1					=	96*	
	SB	165	*	1					=	165*	
	EB	1160	*	0.55	+	20	*	1	=	658	B
	WB	933	*	0.55	+	251	*	1	=	764*	1025

CRITICAL LANE ANALYSIS

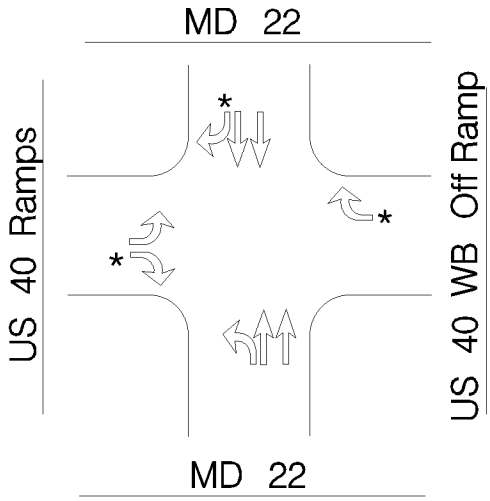
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

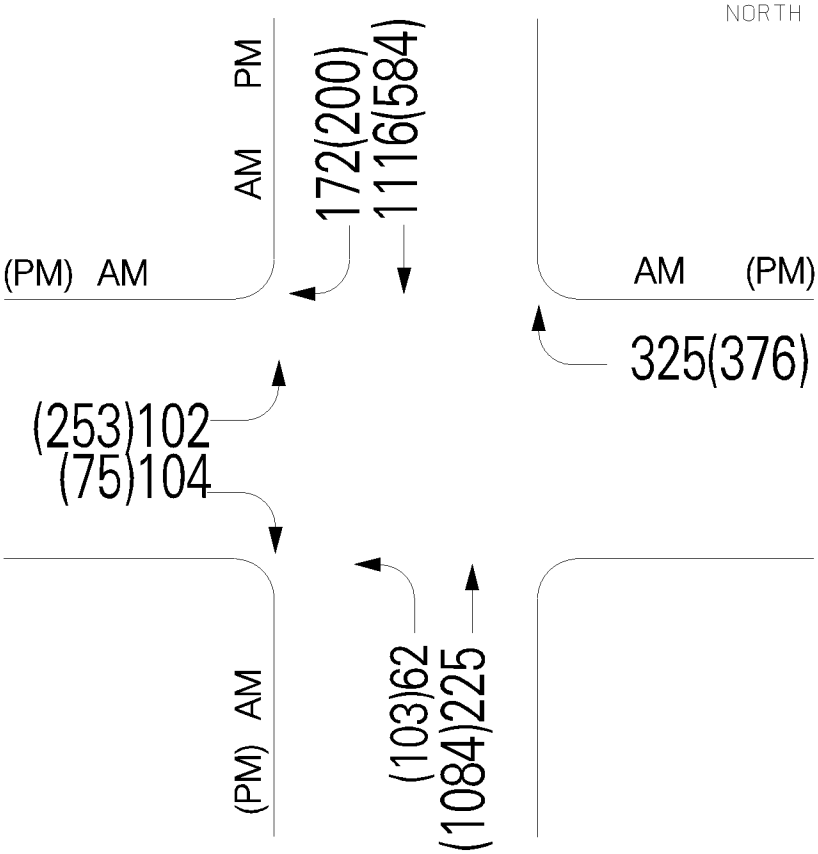
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TRAFFIC VOLUMES





		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =							CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	225	*	0.55				=	124	
	SB	1116	*	0.55	+	62	* 1	=	676*	
	EB	102	*	1				=	102*	A
	WB									778
PM	NB	1084	*	0.55				=	596*	
	SB	584	*	0.55	+	103	* 1	=	424	
	EB	253	*	1				=	253*	A
										849

CRITICAL LANE ANALYSIS

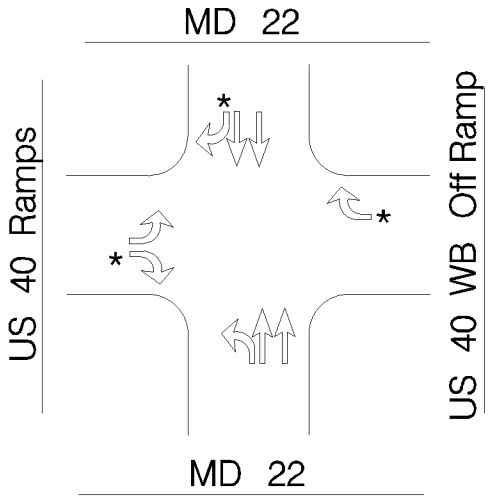
Prepared By: J. CAREY Condition: EXISTING – RECOUNT 2022

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

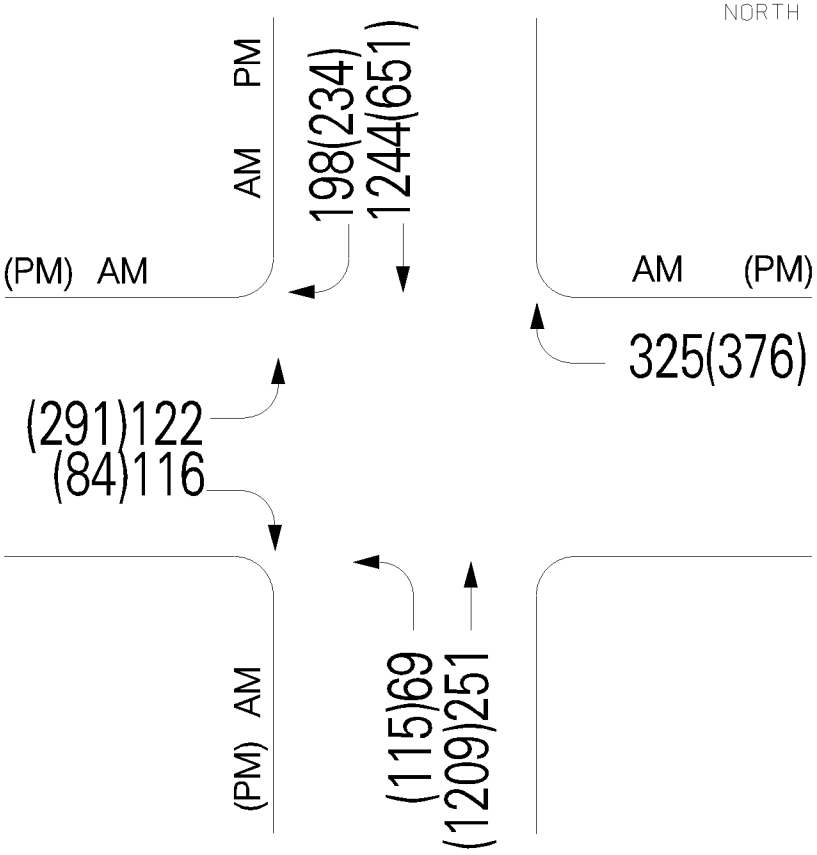
* FREE RIGHT





TRAFFIC VOLUMES





		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	251 * 0.55 =	138	
	SB	1244 * 0.55 + 69 * 1 =	753*	
	EB	122 * 1 =	122*	A
	WB			875
PM	NB	1209 * 0.55 =	665*	
	SB	651 * 0.55 + 115 * 1 =	473	
	EB	291 * 1 =	291*	A
				956

CRITICAL LANE ANALYSIS

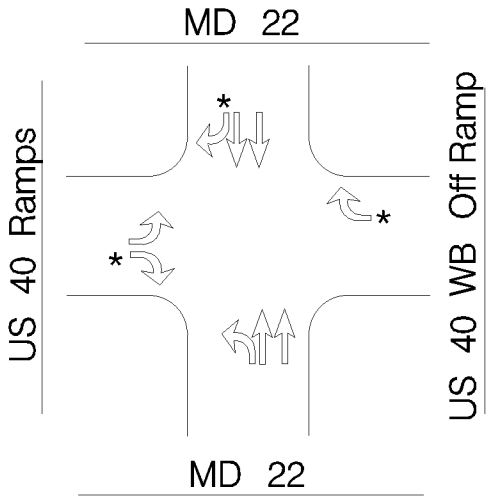
Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

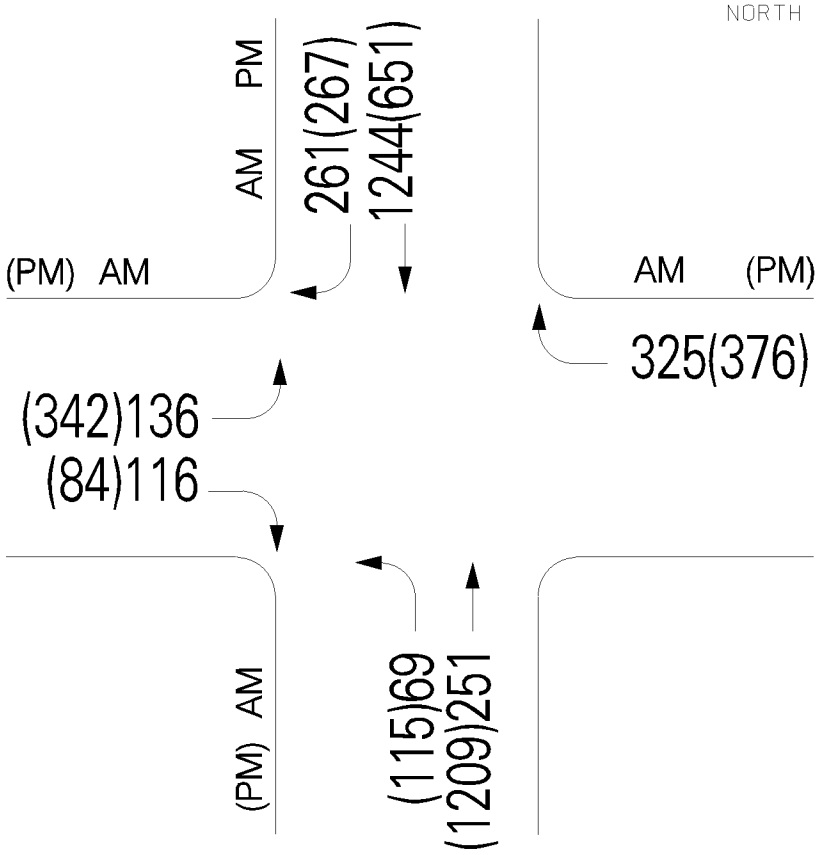
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TRAFFIC VOLUMES





		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	251 * 0.55 =	138	
	SB	1244 * 0.55 + 69 * 1 =	753*	
	EB	136 * 1 =	136*	A
	WB			889
PM	NB	1209 * 0.55 =	665*	
	SB	651 * 0.55 + 115 * 1 =	473	
	EB	342 * 1 =	342*	B
				1007

CRITICAL LANE ANALYSIS

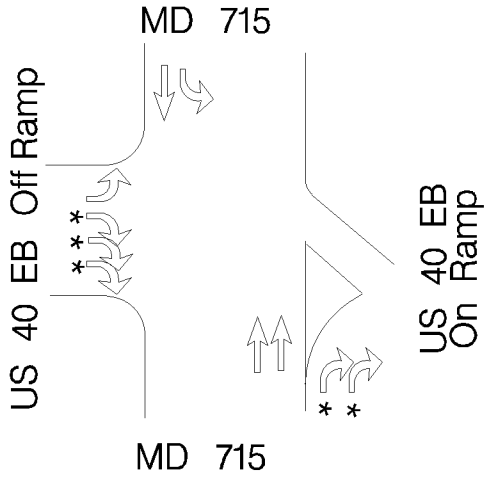
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

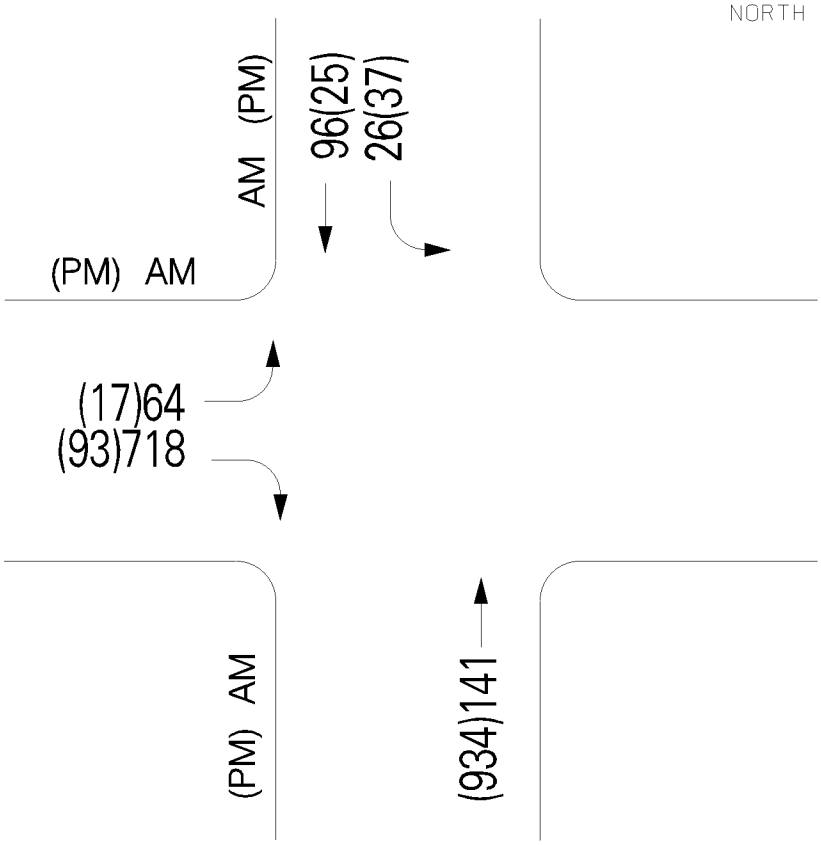
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TRAFFIC VOLUMES





		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	141	*	0.55	+	26	*	1	=	104*	
	SB	91	*	1					=	96	
	EB	64	*	1					=	64*	A
	WB				—					—	168
PM	NB	934	*	0.55	+	37	*	1	=	551*	
	SB	25	*	1					=	25	
	EB	17	*	1					=	17*	A
	WB				—					—	568

CRITICAL LANE ANALYSIS

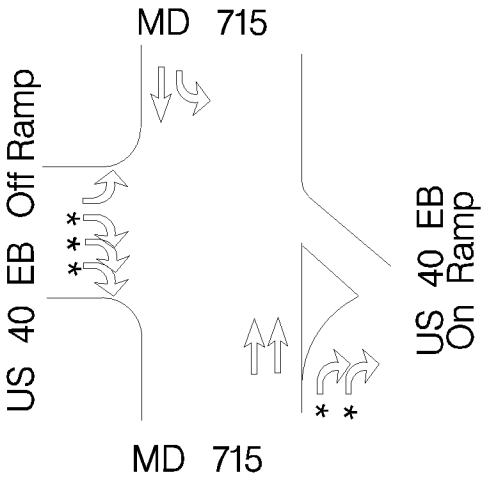
Prepared By: J. CAREY Condition: EXISTING – RECOUNT 2022

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

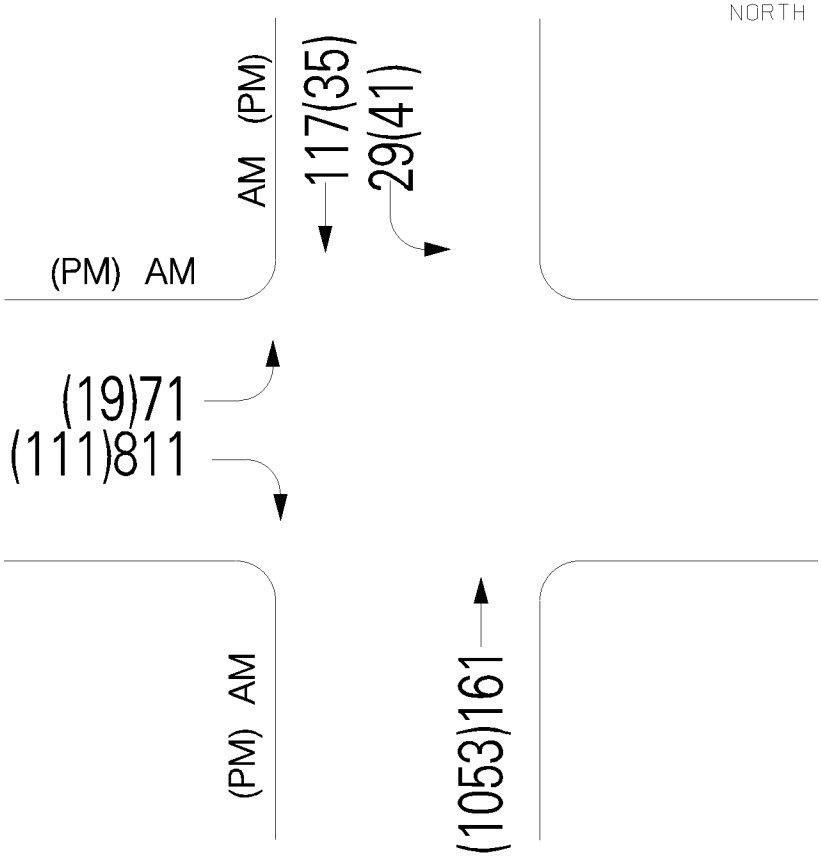
* FREE RIGHT





TRAFFIC VOLUMES





		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	161	*	0.55	+	29	*	1	=	118	
	SB	117	*	1					=	117*	
	EB	71	*	1					=	71*	A
	WB				—					—	188
PM	NB	1053	*	0.55	+	41	*	1	=	620*	
	SB	35	*	1					=	35	
	EB	19	*	1					=	19*	A
	WB				—					—	639

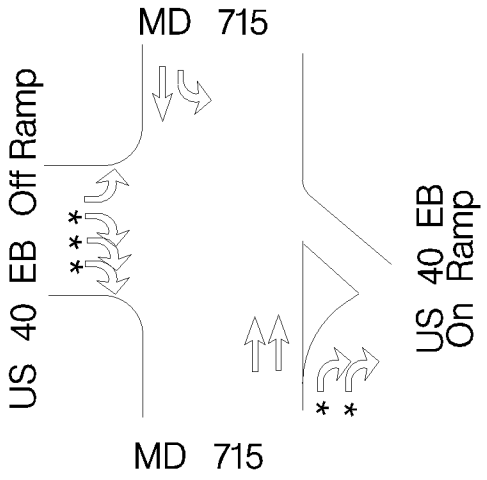
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND

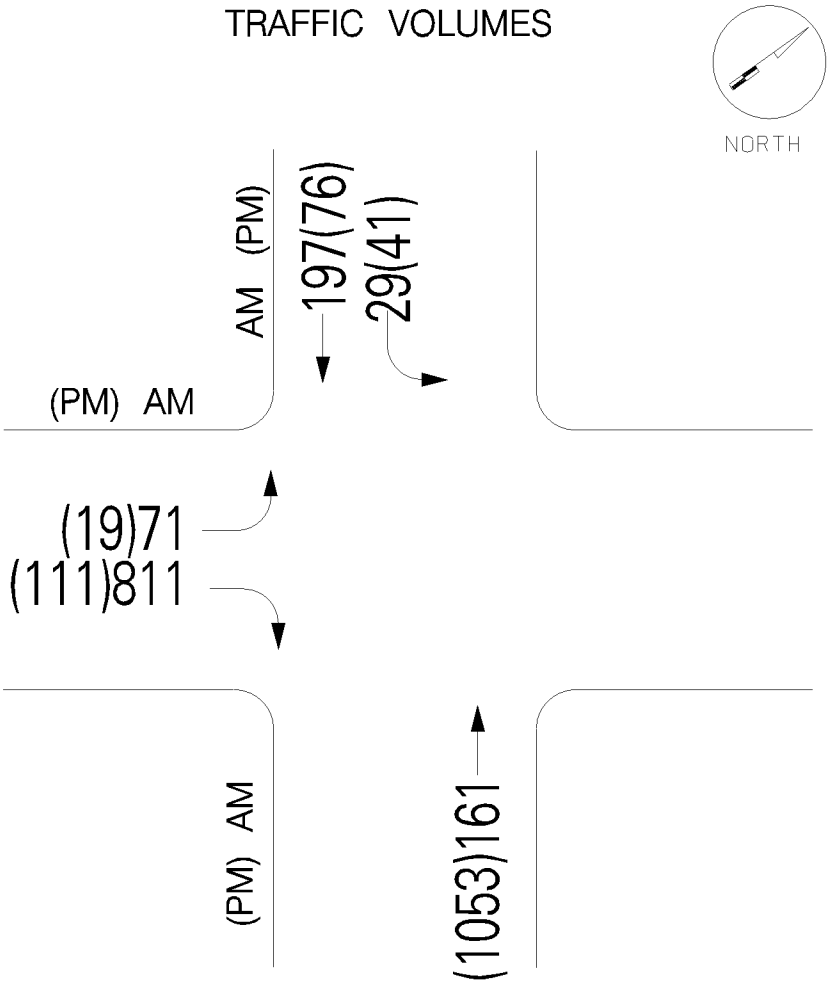
TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

* FREE RIGHT



TRAFFIC VOLUMES



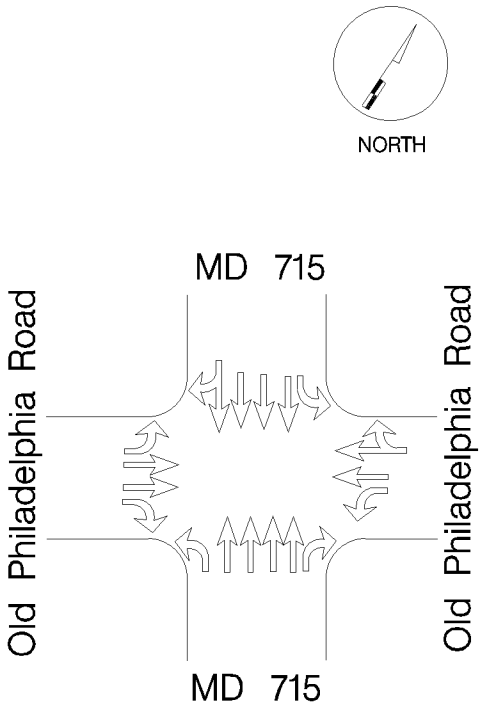
		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	161	*	0.55	+	29	*	1	=	118	
	SB	197	*	1					=	197*	
	EB	71	*	1					=	71*	A
	WB				—					—	268
PM	NB	1053	*	0.55	+	41	*	1	=	620*	
	SB	76	*	1					=	76	
	EB	19	*	1					=	19*	A
	WB				—					—	639

CRITICAL LANE ANALYSIS

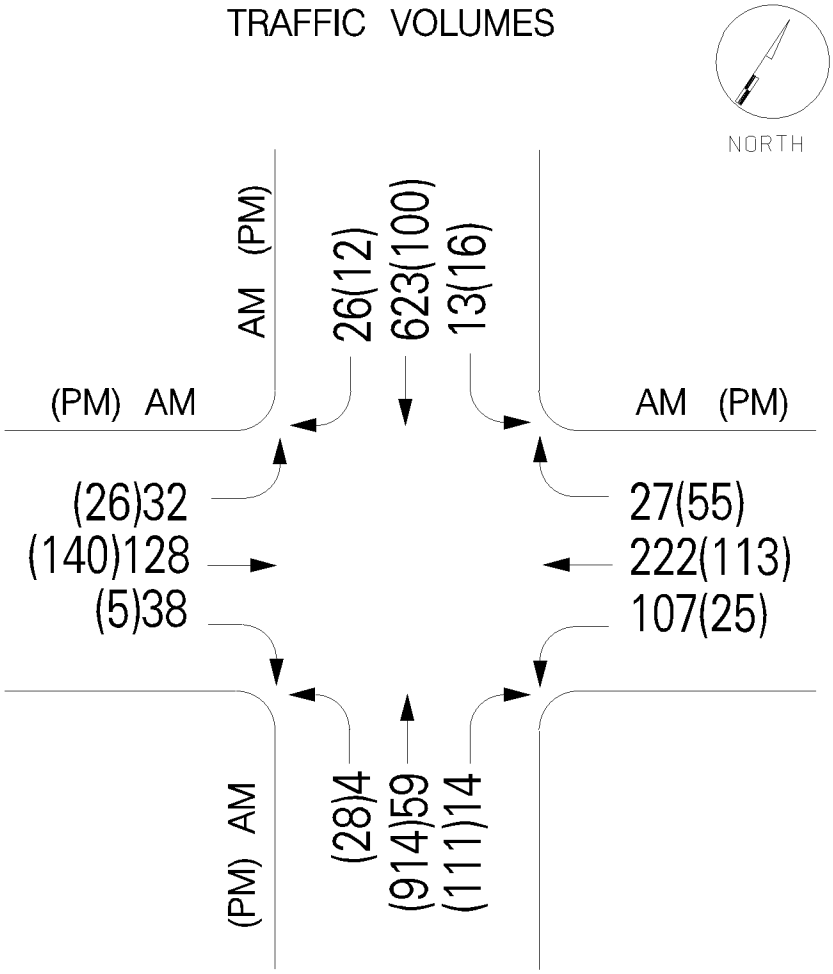
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



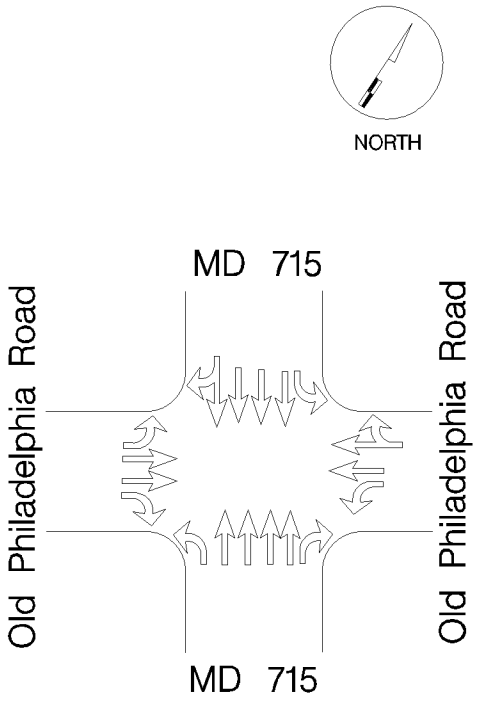
		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	59	*	0.3	+	13	*	1	=	31	
	SB	(623+26)	*	0.3	+	4	*	1	=	199*	
	EB	128	*	0.55	+	107	*	1	=	177*	A
	WB	(222+27)	*	0.55	+	32	*	1	=	169	376
PM	NB	914	*	0.3	+	16	*	1	=	290*	
	SB	(100+12)	*	0.3	+	28	*	1	=	62	
	EB	140	*	0.55	+	25	*	1	=	102	A
	WB	(113+55)	*	0.55	+	26	*	1	=	118*	408

CRITICAL LANE ANALYSIS

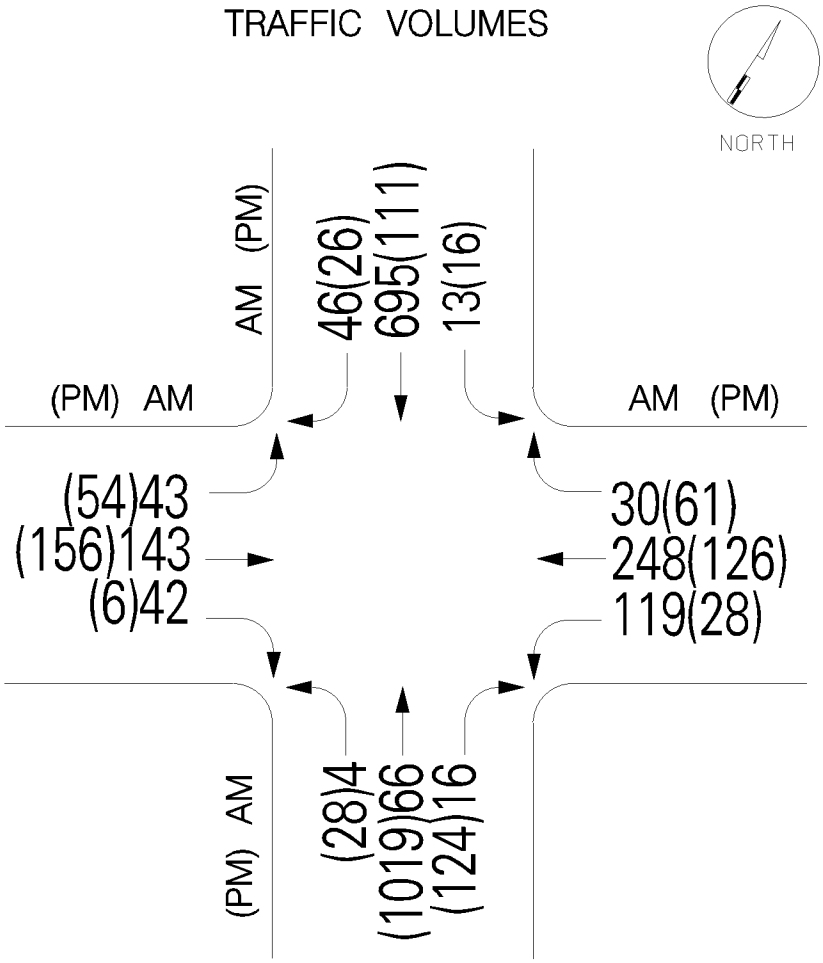
Prepared By: J. CAREY Condition: EXISTING – RECOUNT 2022

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



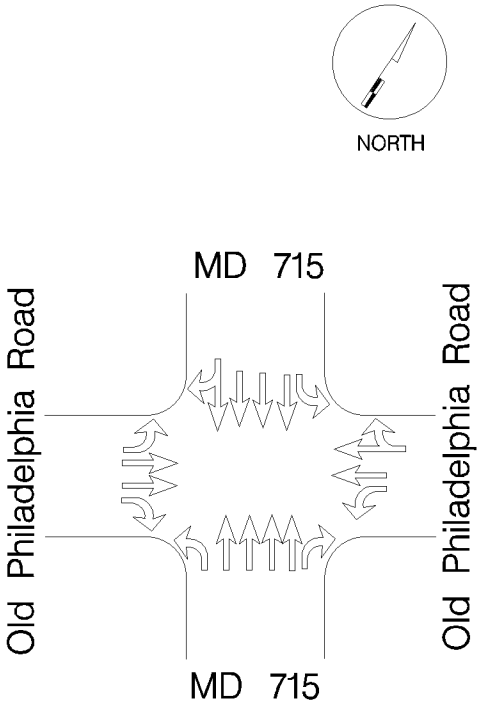
		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	66	*	0.3	+	13	*	1	=	33	
	SB	(695+46)	*	0.3	+	4	*	1	=	226*	
	EB	143	*	0.55	+	119	*	1	=	198*	A
	WB	(248+30)	*	0.55	+	43	*	1	=	196	424
PM	NB	1019	*	0.3	+	16	*	1	=	322*	
	SB	(111+26)	*	0.3	+	28	*	1	=	69	
	EB	156	*	0.55	+	28	*	1	=	114	A
	WB	(126+61)	*	0.55	+	54	*	1	=	157*	479

CRITICAL LANE ANALYSIS

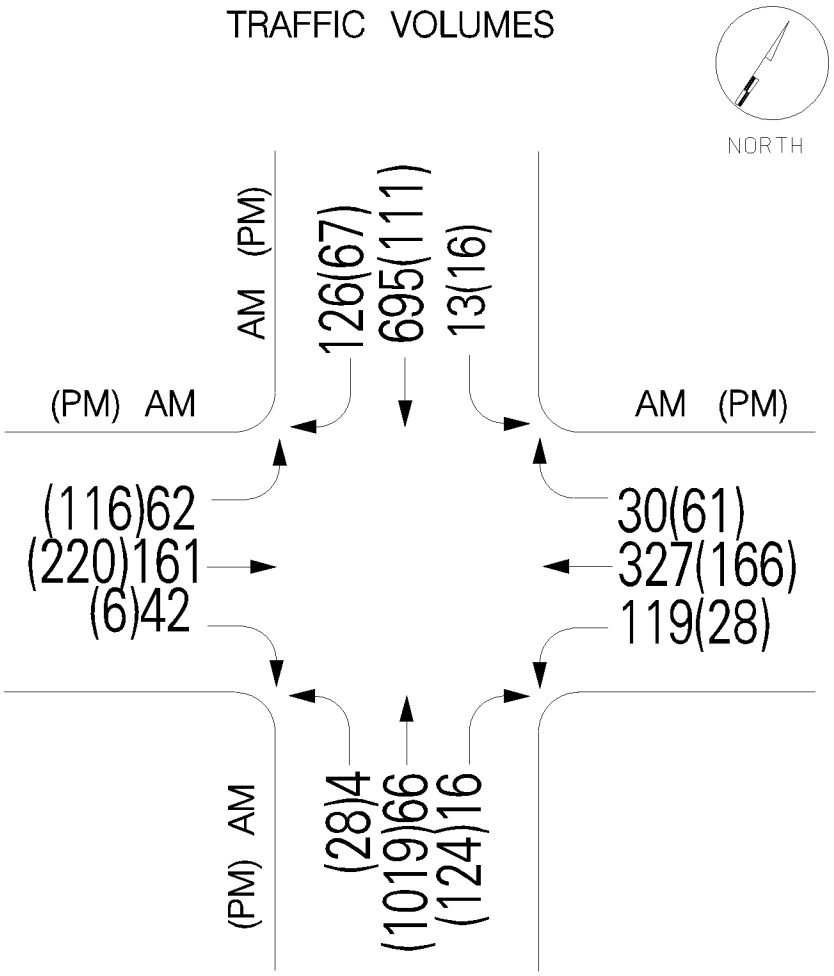
Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



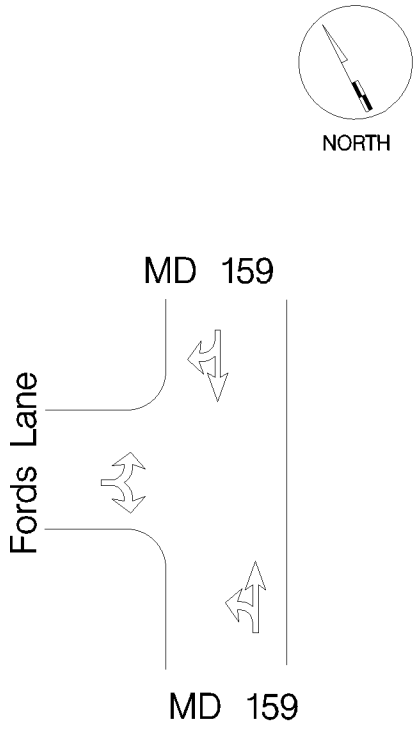
		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	66	*	0.3	+	13	*	1	=	33	
	SB	(695+126)	*	0.3	+	4	*	1	=	250*	
	EB	161	*	0.55	+	119	*	1	=	208	A
	WB	(327+30)	*	0.55	+	62	*	1	=	258*	508
PM	NB	1019	*	0.3	+	16	*	1	=	322*	
	SB	(111+67)	*	0.3	+	28	*	1	=	81	
	EB	220	*	0.55	+	28	*	1	=	149	A
	WB	(166+61)	*	0.55	+	116	*	1	=	241*	563

CRITICAL LANE ANALYSIS

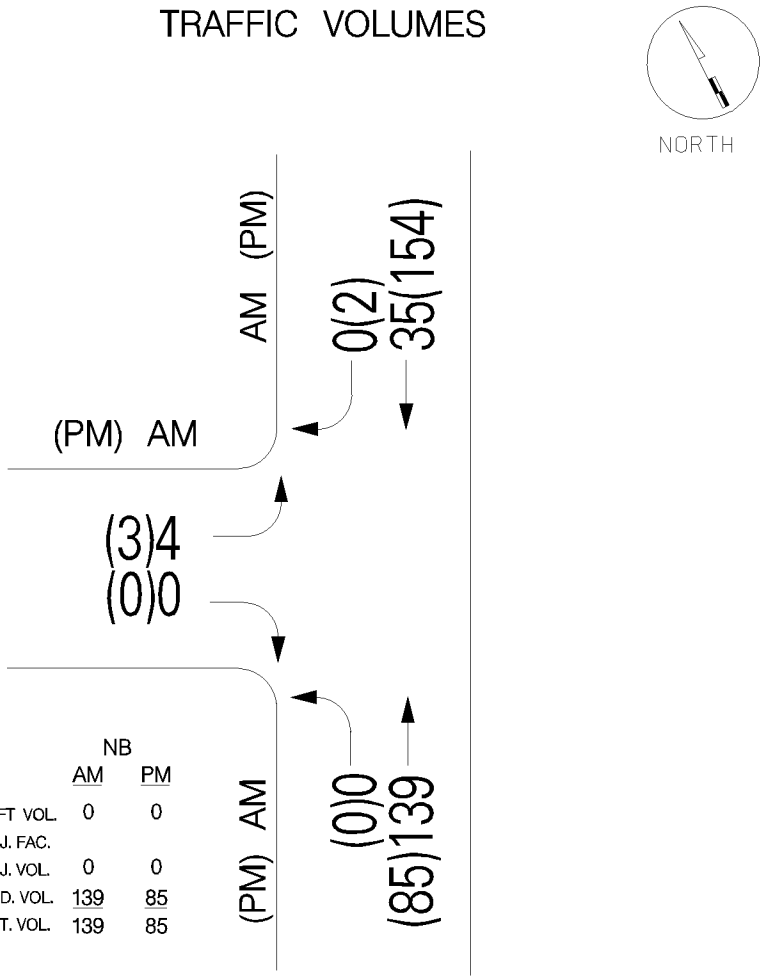
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



	NB AM	NB PM
LEFT VOL.	0	0
ADJ. FAC.		
ADJ. VOL.	0	0
SHD. VOL.	139	85
TOT. VOL.	139	85

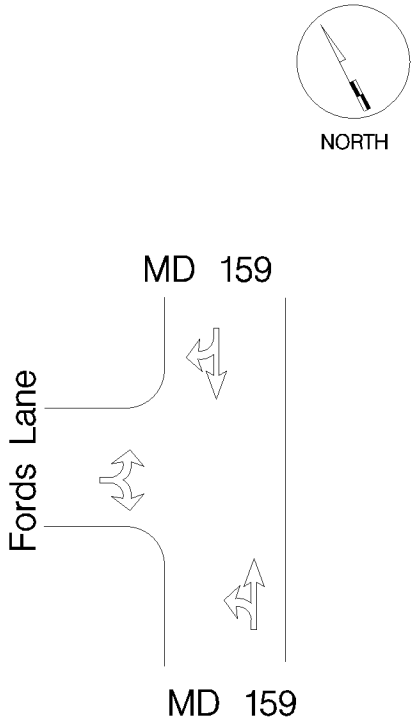
		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	139	*	1					=	139*	
	SB	(35+0)	*	1	+	0	*	1	=	35	
	EB	(4+0)	*	1					=	4*	A
	WB				—					—	143
PM	NB	85	*	1					=	85	
	SB	(154+2)	*	1	+	0	*	1	=	156*	
	EB	(3+0)	*	1					=	3*	A
	WB				—					—	159

CRITICAL LANE ANALYSIS

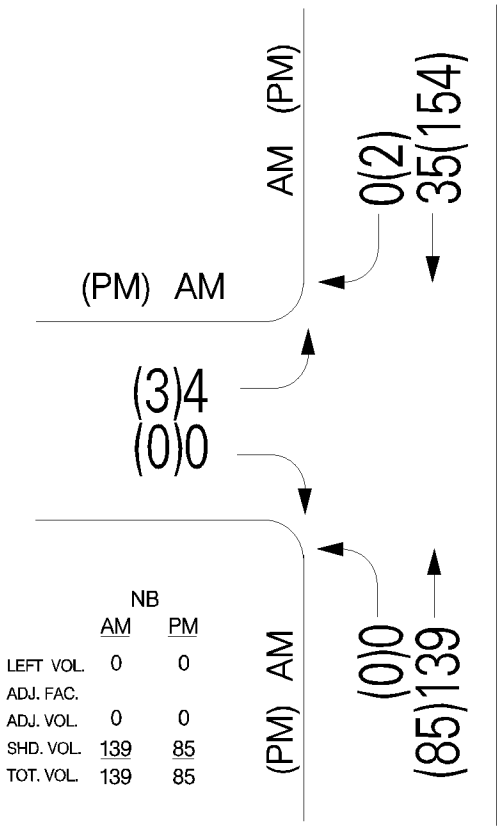
Prepared By: J. CAREY Condition: EXISTING – RECOUNT 2022

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



	NB AM	NB PM
LEFT VOL.	0	0
ADJ. FAC.		
ADJ. VOL.	0	0
SHD. VOL.	139	85
TOT. VOL.	139	85

		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	139	*	1					=	139*	
	SB	(35+0)	*	1	+	0	*	1	=	35	
	EB	(4+0)	*	1					=	4*	A
	WB				—					—	143
PM	NB	85	*	1					=	85	
	SB	(154+2)	*	1	+	0	*	1	=	156*	
	EB	(3+0)	*	1					=	3*	A
	WB				—					—	159

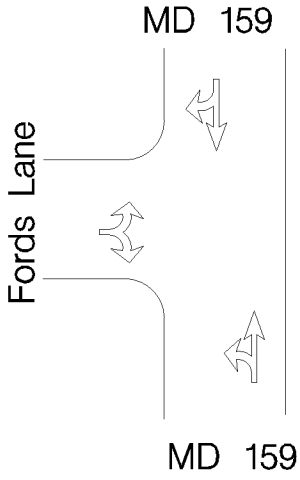
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC CONCEPTS, Inc.

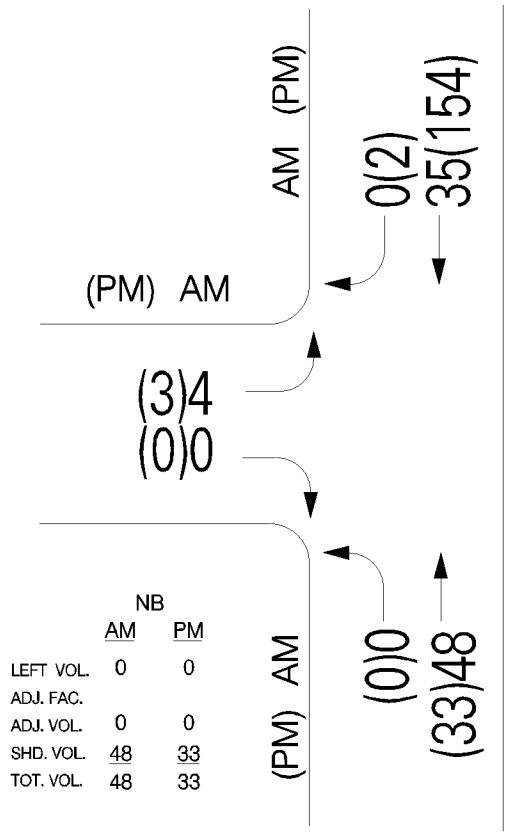
LANE CONFIGURATION





TRAFFIC VOLUMES





	NB AM	NB PM
LEFT VOL.	0	0
ADJ. FAC.		
ADJ. VOL.	0	0
SHD. VOL.	48	33
TOT. VOL.	48	33

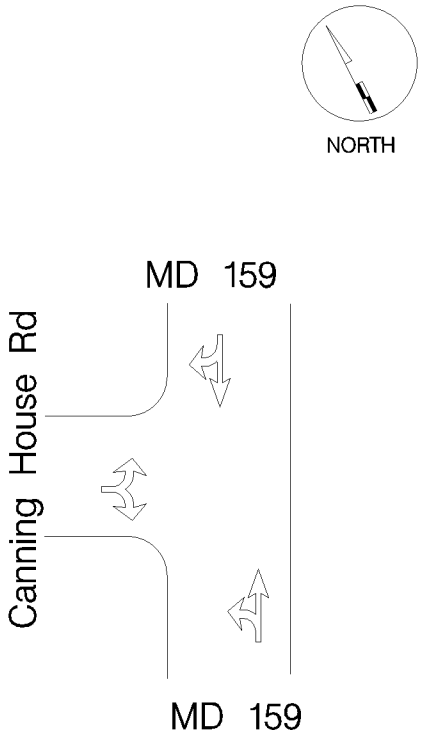
		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	48	*	1					=	48*	
	SB	(35+0)	*	1	+	0	*	1	=	35	
	EB	(4+0)	*	1					=	4*	A
	WB				—					—	52
PM	NB	33	*	1					=	33	
	SB	(154+2)	*	1	+	0	*	1	=	156*	
	EB	(3+0)	*	1					=	3*	A
	WB				—					—	159

CRITICAL LANE ANALYSIS

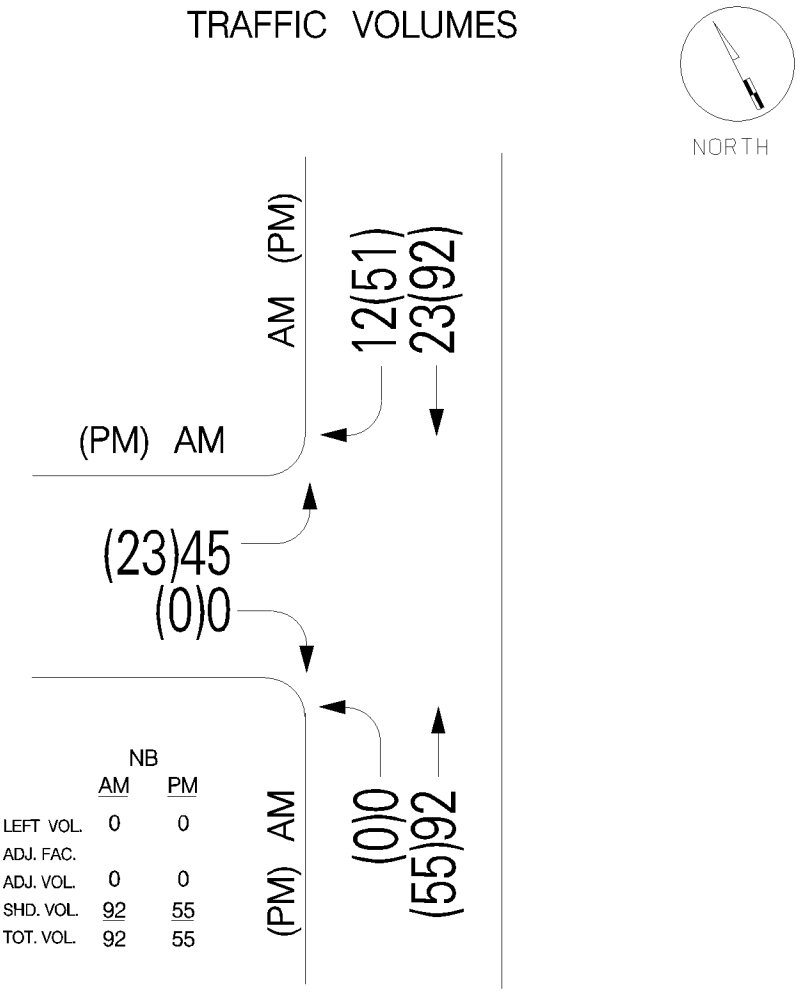
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



	NB AM	NB PM
LEFT VOL.	0	0
ADJ. FAC.		
ADJ. VOL.	0	0
SHD. VOL.	92	55
TOT. VOL.	92	55

		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	92	*	1					=	92*	
	SB	(23+12)	*	1	+	0	*	1	=	35	
	EB	(45+0)	*	1					=	45*	A
	WB				—					—	137
PM	NB	55	*	1					=	55	
	SB	(51+92)	*	1	+	0	*	1	=	143*	
	EB	(23+0)	*	1					=	23*	A
	WB				—					—	166

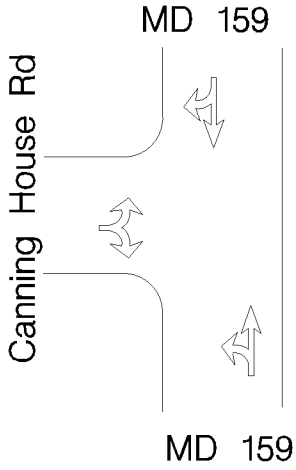
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING – RECOUNT 2022

TRAFFIC CONCEPTS, Inc.

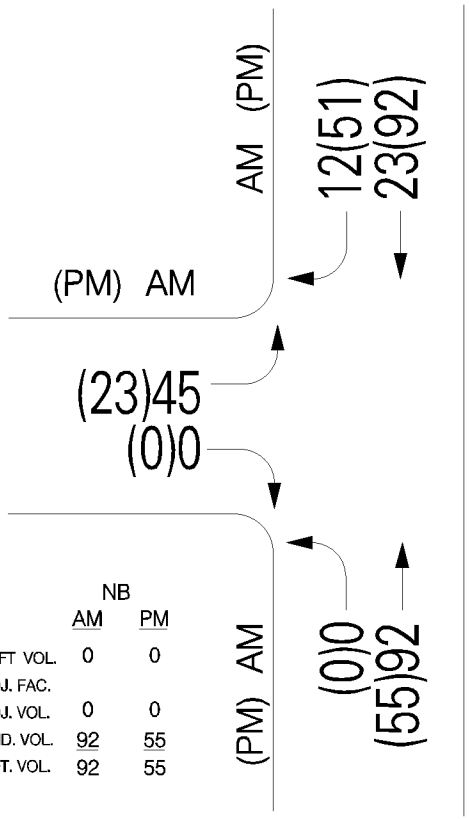
LANE CONFIGURATION





TRAFFIC VOLUMES





	NB AM	NB PM
LEFT VOL.	0	0
ADJ. FAC.		
ADJ. VOL.	0	0
SHD. VOL.	92	55
TOT. VOL.	92	55

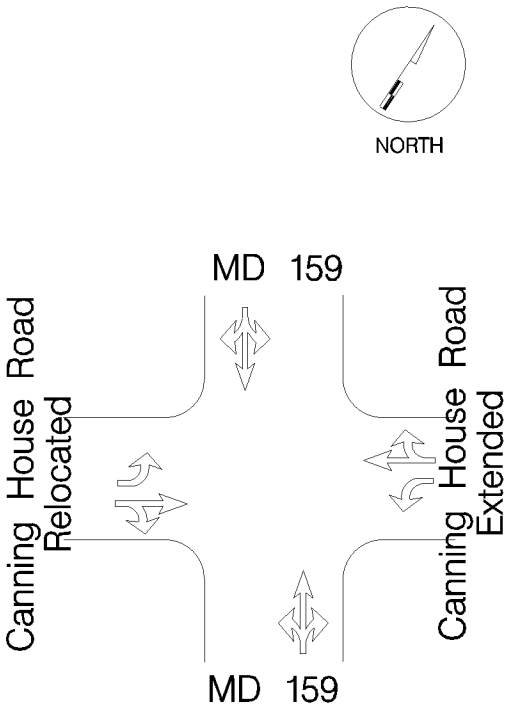
		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	92	*	1					=	92*	
	SB	(23+12)	*	1	+	0	*	1	=	35	
	EB	(45+0)	*	1					=	45*	A
	WB				—					—	137
PM	NB	55	*	1					=	55	
	SB	(51+92)	*	1	+	0	*	1	=	143*	
	EB	(23+0)	*	1					=	23*	A
	WB				—					—	166

CRITICAL LANE ANALYSIS

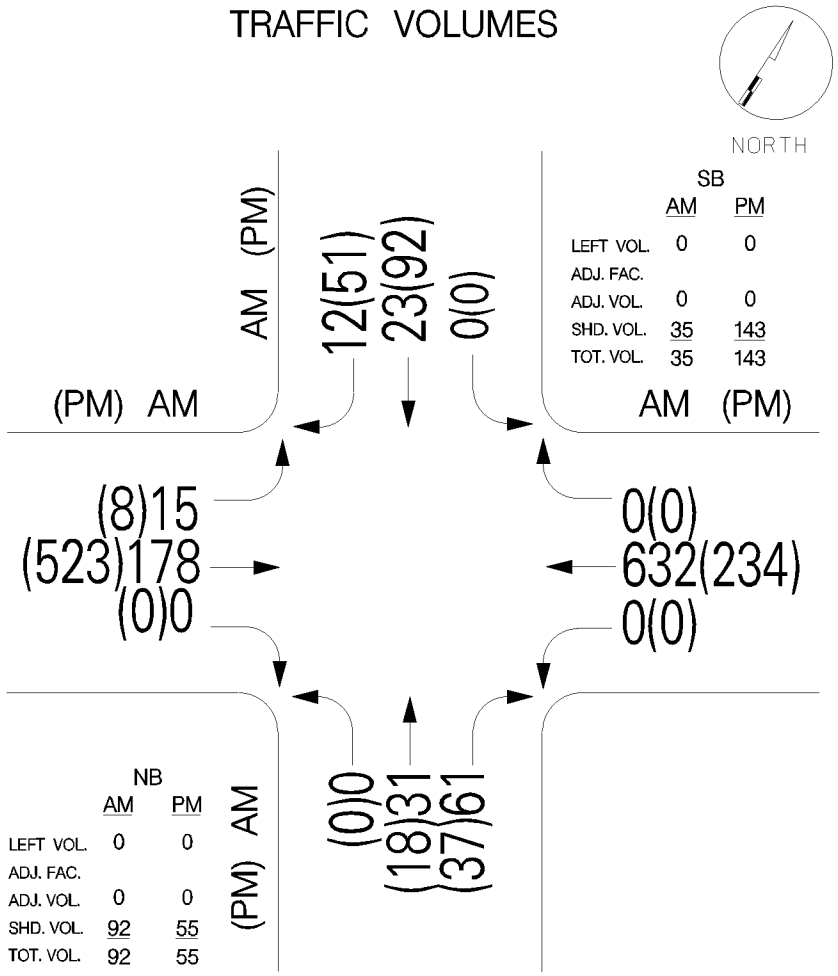
Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	92	*	1	+	0	*	1	=	92*	
	SB	35	*	1	+	0	*	1	=	35	
	EB	(178+0)	*	1	+	0	*	1	=	178	A
	WB	(632+0)	*	1	+	15	*	1	=	647*	739
PM	NB	55	*	1	+	0	*	1	=	55	
	SB	143	*	1	+	0	*	1	=	143*	
	EB	(523+0)	*	1	+	0	*	1	=	523*	A
	WB	(234+0)	*	1	+	8	*	1	=	242	666

CRITICAL LANE ANALYSIS

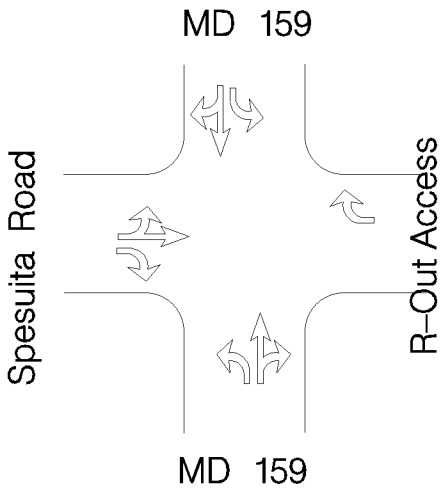
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

*illegal movement

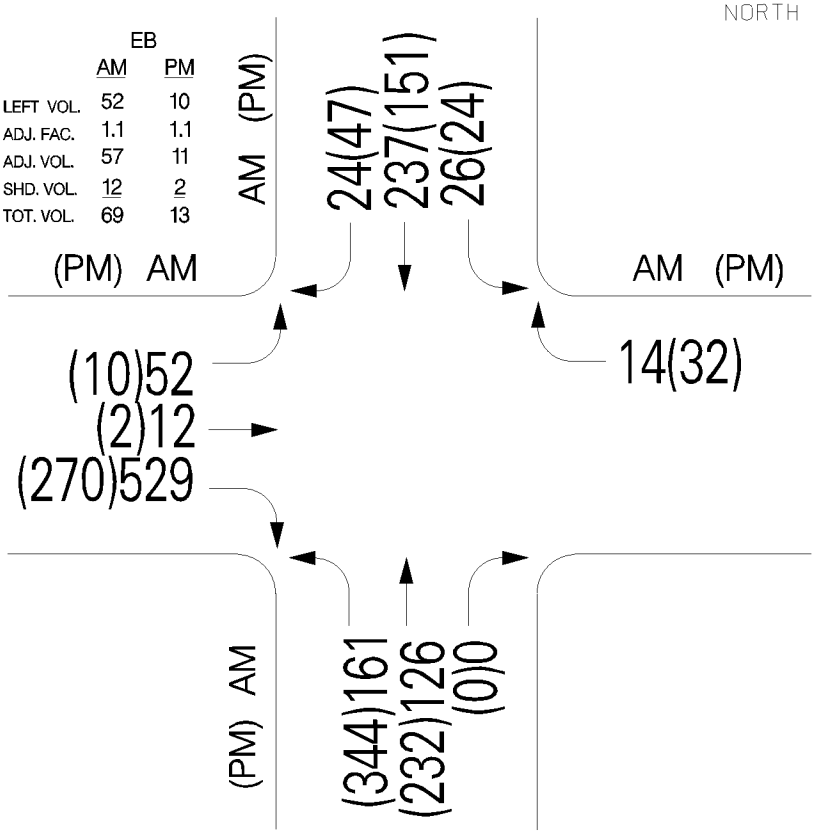




TRAFFIC VOLUMES



EB	AM	PM
LEFT VOL.	52	10
ADJ. FAC.	1.1	1.1
ADJ. VOL.	57	11
SHD. VOL.	12	2
TOT. VOL.	69	13



		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(126 + 0)	*	1	+	26	*	1	=	152	
	SB	(237 + 24)	*	1	+	161	*	1	=	422*	
	EB	(529–161)	*	1					=	368*	A
	WB	14	*	1	+	52	*	1	=	66	790
PM	NB	(232 + 0)	*	1	+	24	*	1	=	242	
	SB	(151 + 47)	*	1	+	344	*	1	=	542*	
	EB	13	*	1					=	13	A
	WB	32	*	1	+	10	*	1	=	42*	584

CRITICAL LANE ANALYSIS

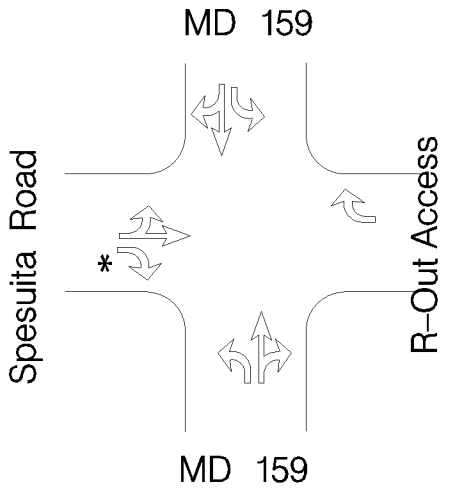
Prepared By: J. CAREY Condition: EXISTING – RECOUNT

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

*free right

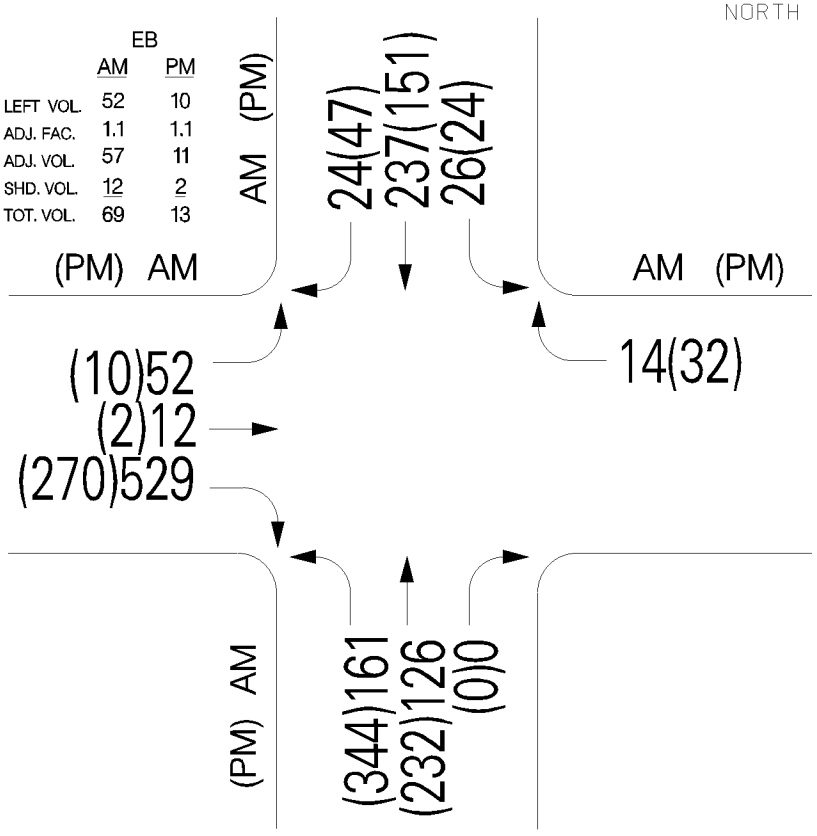




TRAFFIC VOLUMES



EB	AM	PM
LEFT VOL.	52	10
ADJ. FAC.	1.1	1.1
ADJ. VOL.	57	11
SHD. VOL.	12	2
TOT. VOL.	69	13



		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(126+0)	*	1	+	26	*	1	=	152	
	SB	(237+24)	*	1	+	161	*	1	=	422*	
	EB	69	*	1					=	69*	A
	WB	14	*	1	+	52	*	1	=	66	491
PM	NB	(232+0)	*	1	+	24	*	1	=	242	
	SB	(151+47)	*	1	+	344	*	1	=	542*	
	EB	13	*	1					=	13	A
	WB	32	*	1	+	10	*	1	=	42*	584

CRITICAL LANE ANALYSIS

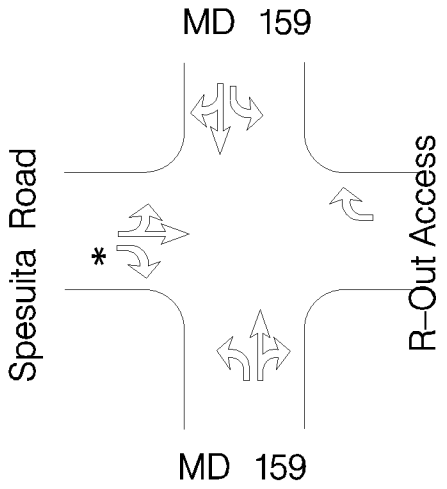
Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION

*free right

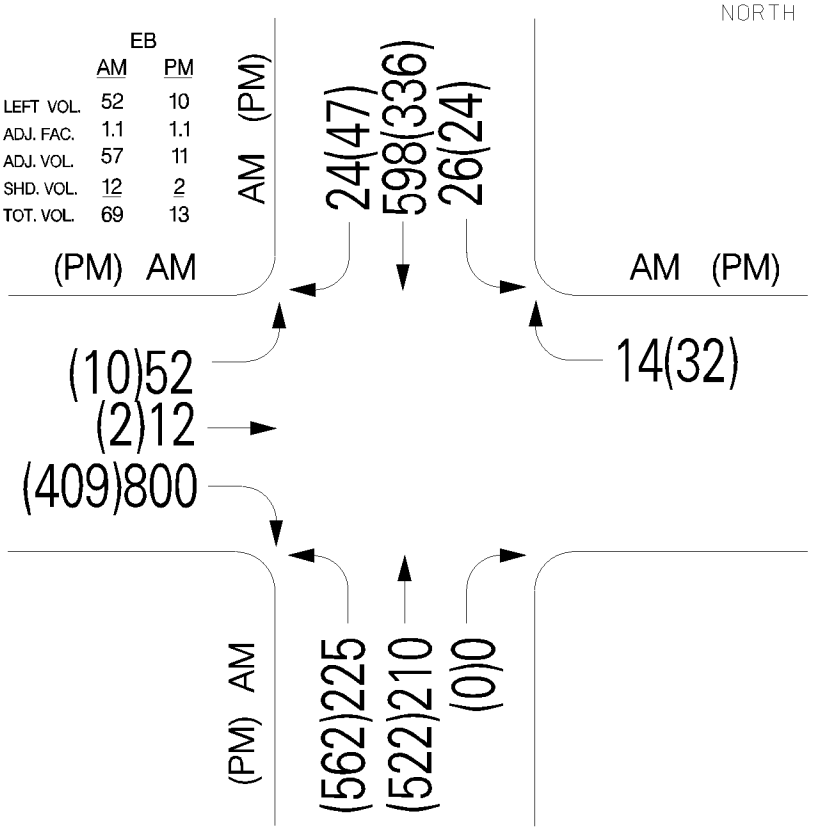




TRAFFIC VOLUMES



EB	AM	PM
LEFT VOL.	52	10
ADJ. FAC.	1.1	1.1
ADJ. VOL.	57	11
SHD. VOL.	12	2
TOT. VOL.	69	13



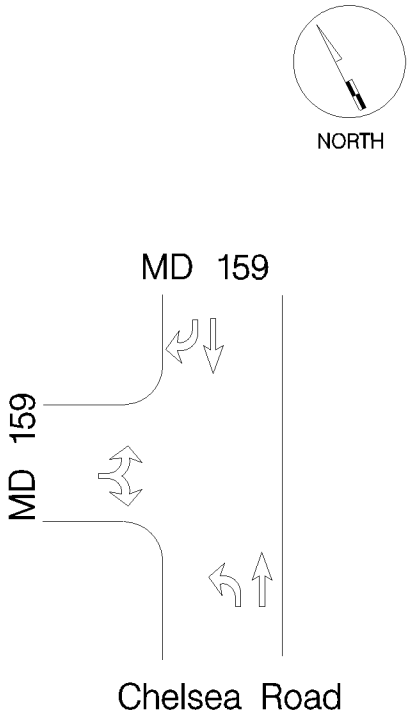
		TOTAL VOLUME	*	LUF	+	OPPOSING LEFTS	*	LUF	=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(210+0)	*	1	+	26	*	1	=	236	
	SB	(598+24)	*	1	+	225	*	1	=	847*	
	EB	69	*	1					=	69*	A
	WB	14	*	1	+	52	*	1	=	66	916
PM	NB	(522+0)	*	1	+	24	*	1	=	546	
	SB	(336+47)	*	1	+	562	*	1	=	945*	
	EB	13	*	1					=	13	A
	WB	32	*	1	+	10	*	1	=	42*	987

CRITICAL LANE ANALYSIS

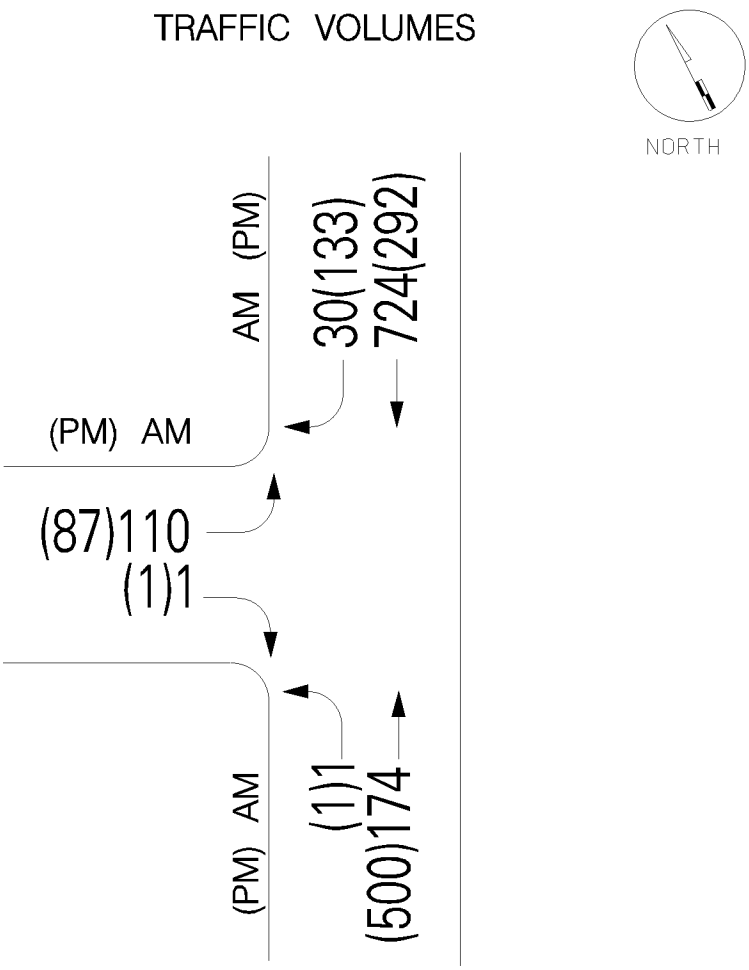
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	174	*	1					=	174	
	SB	724	*	1	+	1	*	1	=	725*	
	EB	(110+1)	*	1					=	111*	A
	WB				—					—	836
PM	NB	500	*	1					=	500*	
	SB	292	*	1	+	1	*	1	=	293	
	EB	(87+1)	*	1					=	88*	A
	WB				—					—	588

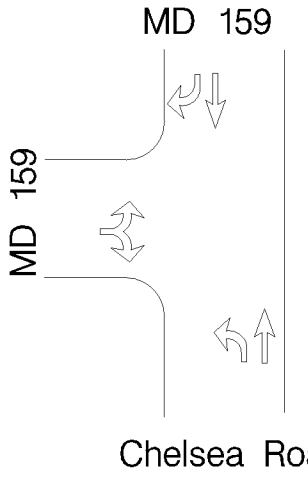
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING – RECOUNT 2022

TRAFFIC CONCEPTS, Inc.

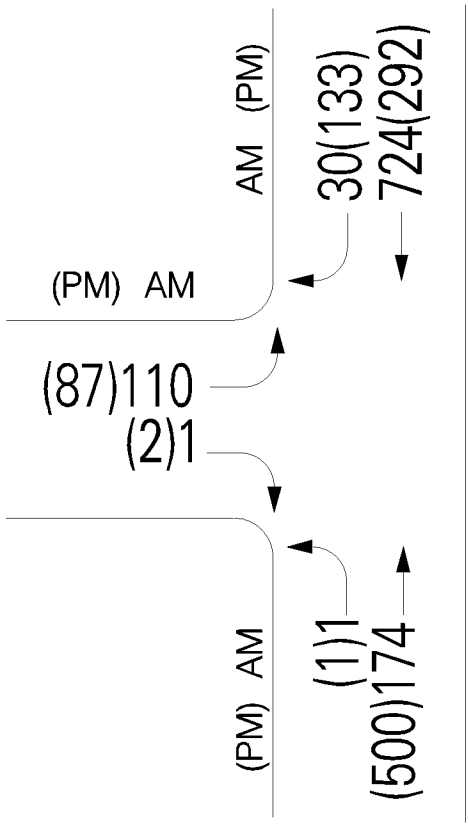
LANE CONFIGURATION





TRAFFIC VOLUMES





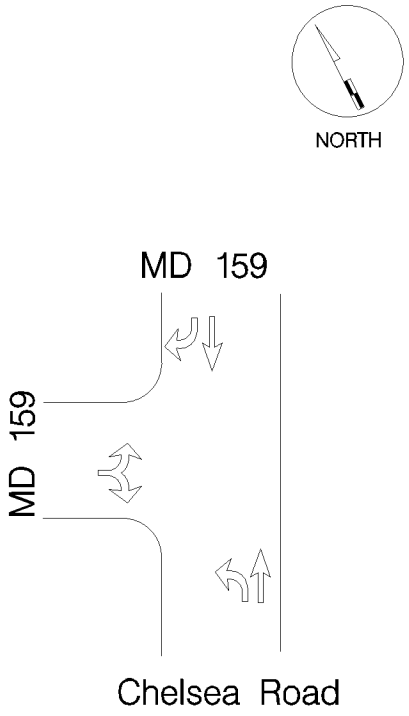
		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	174	*	1					=	174	
	SB	724	*	1	+	1	*	1	=	725*	
	EB	(110+1)	*	1					=	111*	A
	WB				—					—	836
PM	NB	500	*	1					=	500*	
	SB	292	*	1	+	1	*	1	=	293	
	EB	(87+2)	*	1					=	89*	A
	WB				—					—	589

CRITICAL LANE ANALYSIS

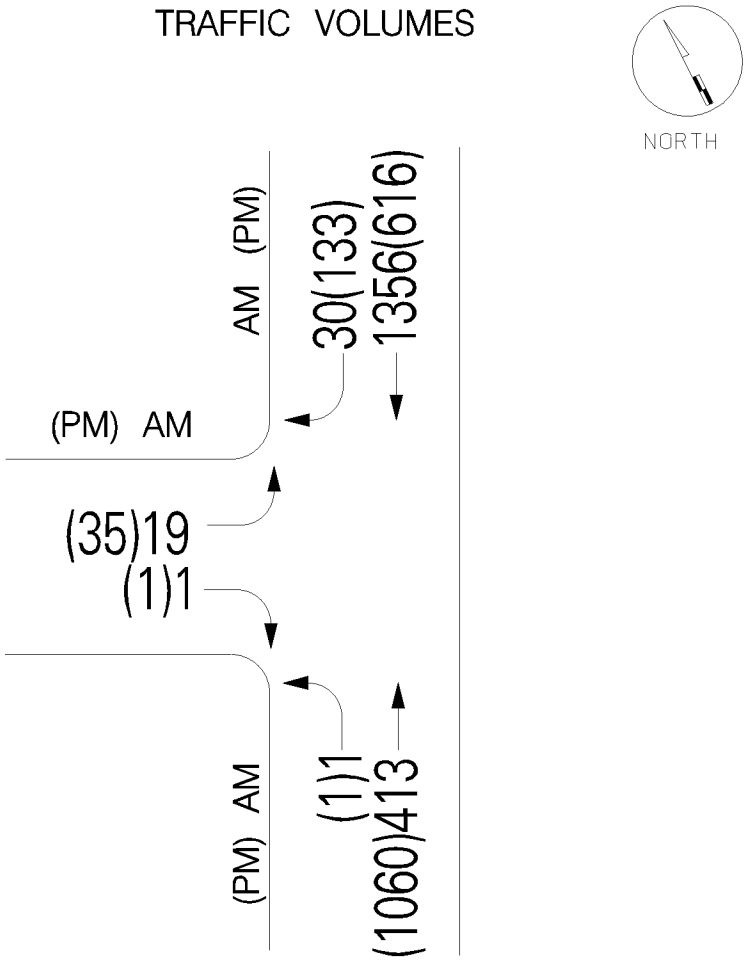
Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



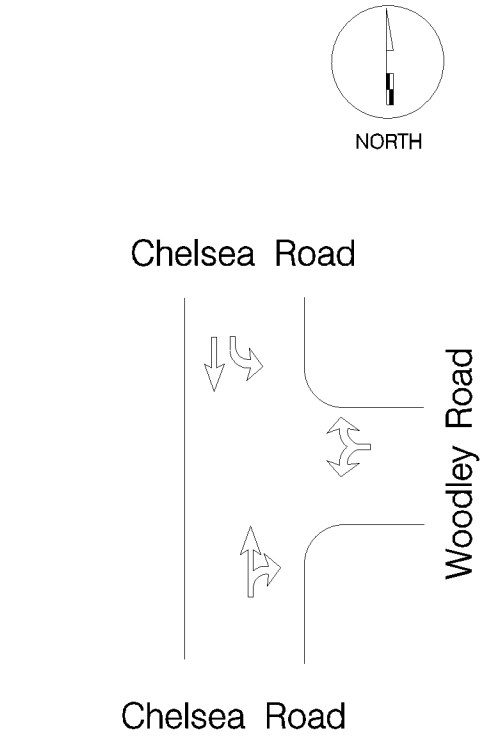
		TOTAL VOLUME * LUF			+	OPPOSING LEFTS * LUF			=	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	413	*	1					=	413	
	SB	1356	*	1	+	1	*	1	=	1357*	
	EB	(19+1)	*	1					=	20*	D
	WB				—					—	1377
PM	NB	1060	*	1					=	1060*	
	SB	616	*	1	+	1	*	1	=	617	
	EB	(35+1)	*	1					=	36*	B
	WB				—					—	1096

CRITICAL LANE ANALYSIS

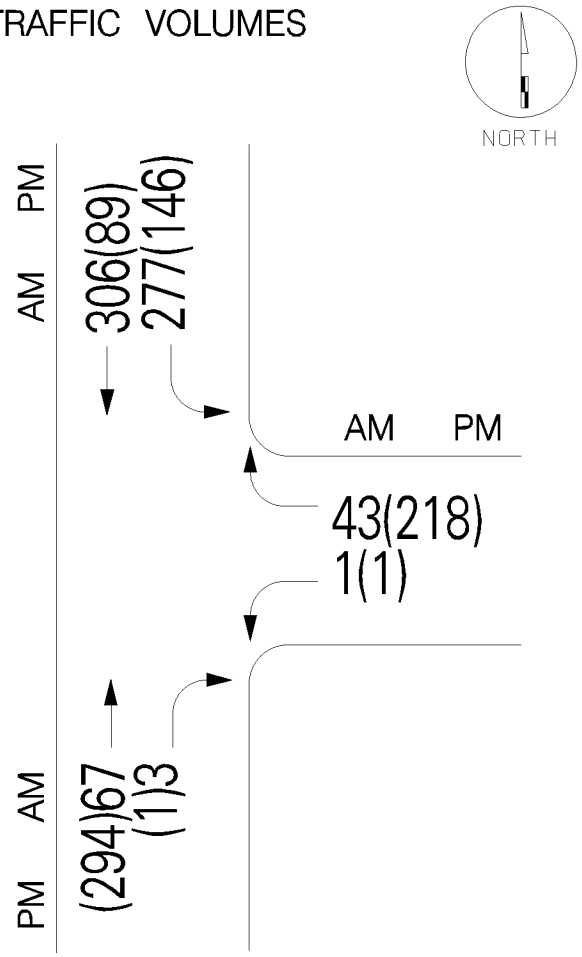
Prepared By: J. CAREY Condition: FUTURE

TRAFFIC CONCEPTS, Inc.

LANE CONFIGURATION



TRAFFIC VOLUMES



		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(67+3) * 1 + 277 * 1 =	347*	
	SB	306 * 1 =	306	
	EB	— =	—	A
	WB	(1+43) * 1	44*	391
PM	NB	(294+1) * 1 + 146 * 1 =	441*	
	SB	89 * 1 =	89	
	EB	— =	—	A
	WB	(1+218) * 1	219*	660

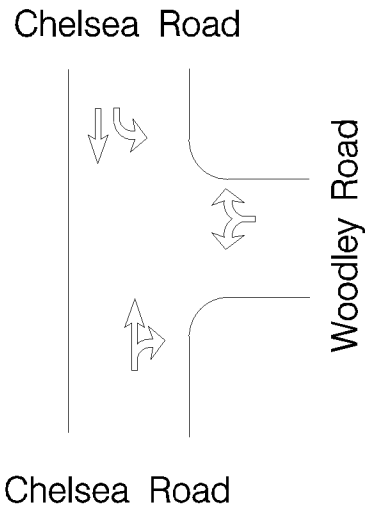
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: EXISTING RECOUNT

TRAFFIC CONCEPTS, Inc.

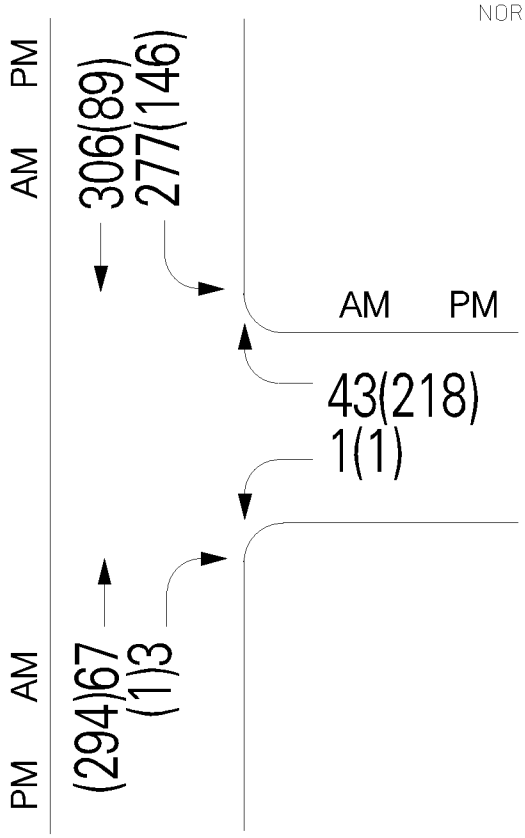
LANE CONFIGURATION





TRAFFIC VOLUMES





		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =								CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(67+3)	*	1	+	277	*	1	=	347*	
	SB	306	*	1					=	306	
	EB				—				=	—	A
	WB	(1+43)	*	1						44*	391
PM	NB	(294+1)	*	1	+	146	*	1	=	441*	
	SB	89	*	1					=	89	
	EB				—				=	—	A
	WB	(1+218)	*	1						219*	660

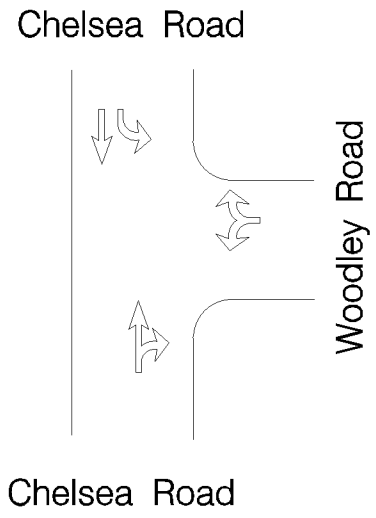
CRITICAL LANE ANALYSIS

Prepared By: J. CAREY Condition: BACKGROUND

TRAFFIC CONCEPTS, Inc.

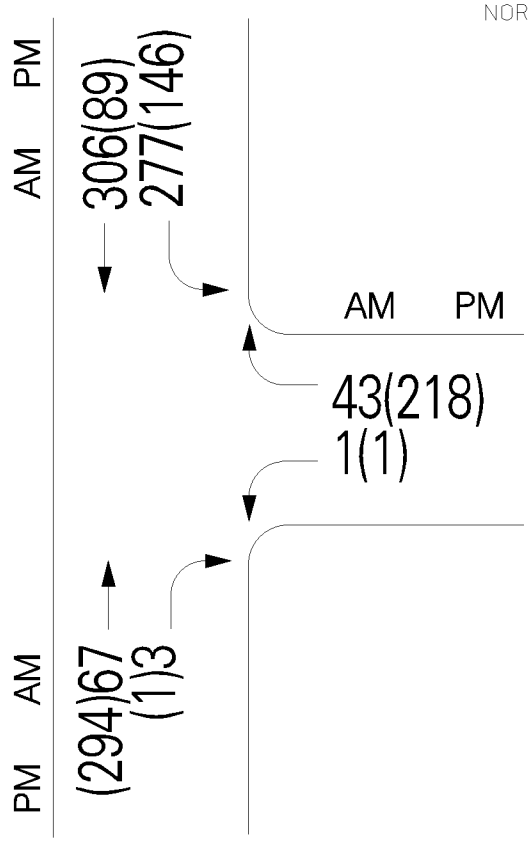
LANE CONFIGURATION





TRAFFIC VOLUMES





		TOTAL VOLUME * LUF + OPPOSING LEFTS * LUF =	CRITICAL LANE VOLUME	LEVEL OF SERVICE
AM	NB	(67+3) * 1 + 277 * 1 =	347*	
	SB	306 * 1 =	306	
	EB	— =	—	A
	WB	(1+43) * 1	44*	391
PM	NB	(294+1) * 1 + 146 * 1 =	441*	
	SB	89 * 1 =	89	
	EB	— =	—	A
	WB	(1+218) * 1	219*	660

CRITICAL LANE ANALYSIS

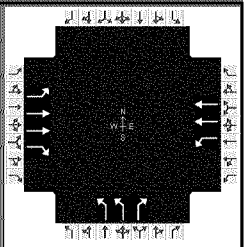
Prepared By: J. CAREY Condition: FUTURE

APPENDIX I-B

HCS REPORTS

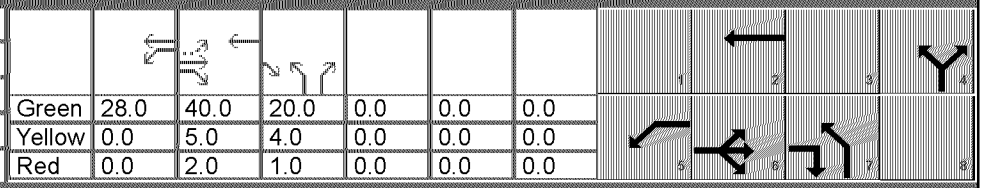
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 6:30
Intersection	US 40 & MD 543	File Name	us 40 & md 543 - Ex AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	682	122	169	438		100		652			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	28.0	40.0	20.0	0.0	0.0	0.0						
Yellow	0.0	5.0	4.0	0.0	0.0	0.0						
Red	0.0	2.0	1.0	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	682	122	169	438		100		652			
Initial Queue (Q_b), veh/h	0	0	0	0	0		0		0			
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900		1900		1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	0	10	10	10	10		10		0			
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3	3	3	3		3		3			
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00		1.00		1.00			
Lane Width (*W*), ft	11.0	12.0	13.0	13.0	12.0		10.0		12.0			
Turn Bay Length, ft	200	0	1035	450	0		0		0			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	45	45	45	45	45		45		45			

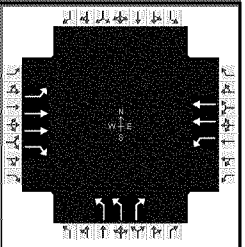
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		40.0	28.0	68.0	20.0	20.0		
Yellow Change Interval (*Y*), s		5.0	0.0	5.0	4.0	4.0		
Red Clearance Interval (R_c), s		2.0	0.0	2.0	2.0	1.0		
Minimum Green (G_{min}), s		25	10	25	5	5		
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0			
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0			
Passage (*PT*), s		2.0	2.0	2.0	2.0	2.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	No	Yes	No	Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

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

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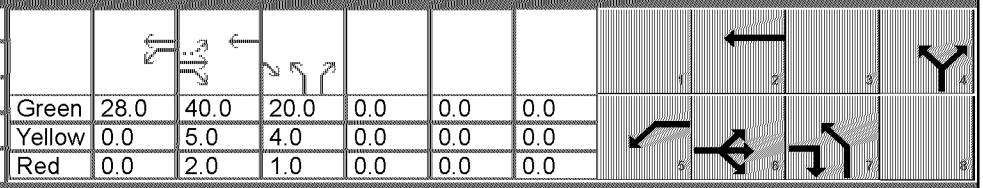
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 6:30
Intersection	US 40 & MD 543	File Name	us 40 & md 543 - Ex AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	682	122	169	438		100		652			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	28.0	40.0	20.0	0.0	0.0	0.0
Yellow	0.0	5.0	4.0	0.0	0.0	0.0
Red	0.0	2.0	1.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6	5	2		4		
Case Number		5.3	2.0	4.0		9.0		
Phase Duration, s		47.0	28.0	75.0		25.0		
Change Period, ($Y+R_c$), s		7.0	0.0	7.0		5.0		
Max Allow Headway (*MAH*), s		3.0	3.0	3.0		3.2		
Queue Clearance Time (g_s), s		18.8	10.4	7.1		24.0		
Green Extension Time (g_e), s		3.1	0.3	3.2		0.0		
Phase Call Probability		1.00	1.00	1.00		1.00		
Max Out Probability		0.00	0.00	0.00		1.00		

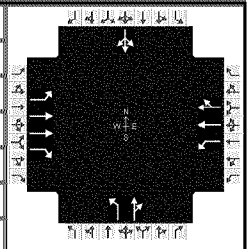
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2		7		14			
Adjusted Flow Rate (*v*), veh/h	0	749	134	186	481		110		716			
Adjusted Saturation Flow Rate (*s*), veh/h/ln	928	1668	1544	1735	1668		1620					
Queue Service Time (g_s), s	0.0	16.8	3.4	8.4	5.1		2.7					
Cycle Queue Clearance Time (g_c), s	0.0	16.8	3.4	8.4	5.1		2.7					
Green Ratio (*g/C*)	0.42	0.42	0.64	0.30	0.70		0.22					
Capacity (*c*), veh/h	72	1401	988	521	2335		713					
Volume-to-Capacity Ratio (*X*)	0.000	0.535	0.136	0.357	0.206		0.154					
Back of Queue (*Q*), ft/ln (95 th percentile)	0	274	46.3	161.5	65.6		50.1					
Back of Queue (*Q*), veh/ln (95 th percentile)	0.0	10.1	1.7	6.0	2.4		1.9					
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.04	0.36	0.00		0.00					
Uniform Delay (d_1), s/veh	0.0	21.7	7.1	27.4	5.6		31.5					
Incremental Delay (d_2), s/veh	0.0	0.2	0.0	0.2	0.0		0.0					
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0					
Control Delay (*d*), s/veh	0.0	21.9	7.1	27.6	5.6		31.5		0.0			
Level of Service (LOS)		C	A	C	A		C		A			
Approach Delay, s/veh / LOS	19.7	B		11.7	B		4.2	A		0.0		
Intersection Delay, s/veh / LOS	12.1						B					

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

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HCS7 Signalized Intersection Input Data

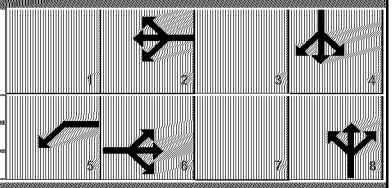
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.90
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 6:15
Intersection	US 40 & Spesutia Road	File Name	US 40 & Spesutia - Ex AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	792	510	34	357	3	210	0	19	0	0	8

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



							
Green	8.0	50.0	24.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	2.0	0.0	0.0	0.0	

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	792	510	34	357	3	210	0	19	0	0	8
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	0	0	10		0	0			10	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	11.0	12.0	15.0	12.0	12.0		10.0	11.0			12.0	
Turn Bay Length, ft	300	0	300	400	0		300	0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	30	30	30	30	30	30

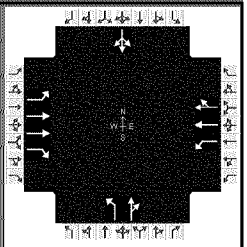
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		50.0	8.0	58.0		24.0		24.0
Yellow Change Interval (*Y*), s		5.0	4.0	0.0		4.0		4.0
Red Clearance Interval (R_c), s		2.0	1.0	0.0		2.0		2.0
Minimum Green (G_{min}), s		25	5	25		5		5
Start-Up Lost Time (*l1*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0	2.0	2.0		2.0		2.0
Recall Mode		Min	Off	Min		Off		Off
Dual Entry		Yes	No	Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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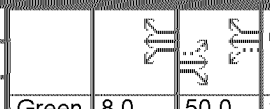
HCS7 Signalized Intersection Results Summary

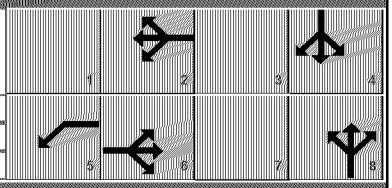
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.90
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 6:15
Intersection	US 40 & Spesutia Road	File Name	US 40 & Spesutia - Ex AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	792	510	34	357	3	210	0	19	0	0	8

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



							
Green	8.0	50.0	24.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	2.0	0.0	0.0	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6	5	2		8		4
Case Number		5.3	1.0	4.0		6.0		8.0
Phase Duration, s		57.0	13.0	70.0		30.0		30.0
Change Period, (*Y+R c*), s		7.0	5.0	7.0		6.0		6.0
Max Allow Headway (*MAH*), s		3.0	2.9	3.0		3.1		3.1
Queue Clearance Time (*g s*), s		26.6	2.8	6.5		17.0		2.4
Green Extension Time (*g e*), s		4.2	0.0	4.3		0.3		0.5
Phase Call Probability		1.00	1.00	1.00		1.00		1.00
Max Out Probability		0.02	0.01	0.00		0.03		0.00

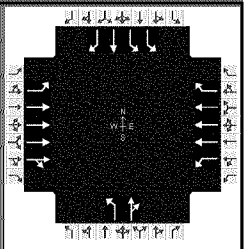
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	3	880	567	38	200	200	233	21			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	922	1668	1675	1810	1752	1747	1428	1610			0	
Queue Service Time (*g s*), s	0.2	17.2	24.6	0.8	4.5	4.5	14.5	1.0			0.0	
Cycle Queue Clearance Time (*g c*), s	0.2	17.2	24.6	0.8	4.5	4.5	15.0	1.0			0.0	
Green Ratio (*g/C*)	0.52	0.52	0.52	0.64	0.65	0.65	0.26	0.26				
Capacity (*c*), veh/h	552	1734	871	476	1139	1135	437	419				
Volume-to-Capacity Ratio (*X*)	0.006	0.507	0.651	0.079	0.176	0.176	0.534	0.050			0.000	
Back of Queue (*Q*), ft/ln (95 th percentile)	1.5	255.9	326	10.5	63.1	59.5	218.3	17.1			0	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.1	9.5	13.0	0.4	2.3	2.3	8.7	0.7			0.0	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.01	0.00	1.09	0.03	0.00	0.00	0.73	0.00			0.00	
Uniform Delay (*d 1*), s/veh	11.6	15.6	17.4	8.6	7.3	6.9	33.1	27.7				
Incremental Delay (*d 2*), s/veh	0.0	0.1	1.4	0.0	0.0	0.0	0.7	0.0			0.0	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh	11.6	15.7	18.8	8.6	7.3	6.9	33.8	27.8				
Level of Service (LOS)	B	B	B	A	A	A	C	C				
Approach Delay, s/veh / LOS	16.9	B		7.2	A		33.3	C		27.6	C	
Intersection Delay, s/veh / LOS	16.9						B					

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

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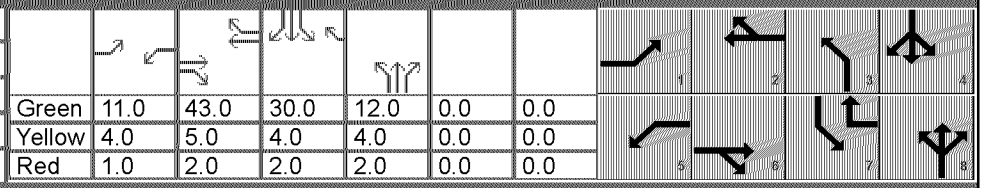
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Apr 27, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.96
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 7:15
Intersection	US 40 at MD 7/MD 159	File Name	US 40 at MD 7 - ex AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	13	1007	71	29	568	301	29	39	12	553	37	26

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.0	43.0	30.0	12.0	0.0	0.0						
Yellow	4.0	5.0	4.0	4.0	0.0	0.0						
Red	1.0	2.0	2.0	2.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	13	1007	71	29	568	301	29	39	12	553	37	26
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10		10	10	2	10	10		10	10	10
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	11.0		12.0	12.0	12.0
Turn Bay Length, ft	350	0		300	0	0	400	0		775	0	600
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	40	40	40	40	40	40

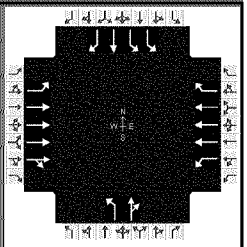
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	11.0	43.0	11.0	43.0	12.0	12.0	30.0	30.0
Yellow Change Interval (*Y*), s	4.0	5.0	4.0	5.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s	1.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s	5	30	5	30	5	10	5	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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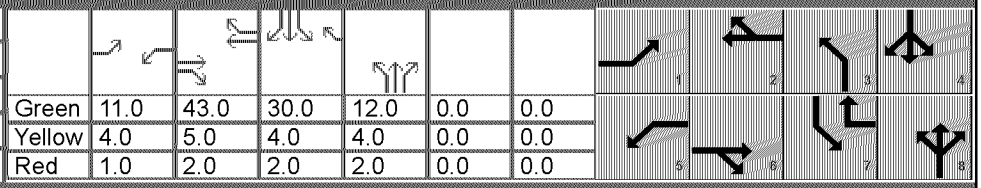
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Apr 27, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.96
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 7:15
Intersection	US 40 at MD 7/MD 159	File Name	US 40 at MD 7 - ex AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	13	1007	71	29	568	301	29	39	12	553	37	26

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.0	43.0	30.0	12.0	0.0	0.0
Yellow	4.0	5.0	4.0	4.0	0.0	0.0
Red	1.0	2.0	2.0	2.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		8		4
Case Number	2.0	4.0	2.0	3.0		10.0		9.0
Phase Duration, s	16.0	50.0	16.0	50.0		18.0		36.0
Change Period, (*Y+R c*), s	5.0	7.0	5.0	7.0		6.0		6.0
Max Allow Headway (*MAH*), s	2.9	2.9	2.9	2.9		3.1		3.1
Queue Clearance Time (*g s*), s	2.9	16.6	4.0	12.6		5.5		21.0
Green Extension Time (*g e*), s	0.0	5.0	0.0	5.0		0.1		1.2
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	0.00	0.02	0.00	0.01		0.01		0.03

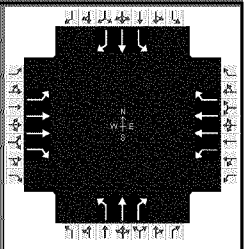
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	14	850	273	30	592	314	30	53		576	39	27
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1752	1670	1668	1591		1668	1681		1620	1752	1485
Queue Service Time (*g s*), s	0.9	14.5	14.6	2.0	10.6		2.0	3.5		19.0	2.0	1.6
Cycle Queue Clearance Time (*g c*), s	0.9	14.5	14.6	2.0	10.6		2.0	3.5		19.0	2.0	1.6
Green Ratio (*g/C*)	0.11	0.38	0.38	0.11	0.38		0.12	0.12		0.27	0.27	0.27
Capacity (*c*), veh/h	181	1971	626	181	1789		195	196		864	467	396
Volume-to-Capacity Ratio (*X*)	0.075	0.431	0.435	0.167	0.331		0.155	0.271		0.667	0.083	0.068
Back of Queue (*Q*), ft/ln (95 th percentile)	17.2	259.2	237.8	38.8	184		39.4	70.3		326.7	40.6	28.4
Back of Queue (*Q*), veh/ln (95 th percentile)	0.6	9.6	9.4	1.4	6.8		1.5	2.6		12.1	1.5	1.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.05	0.00	0.00	0.13	0.00		0.10	0.00		0.42	0.00	0.05
Uniform Delay (*d 1*), s/veh	48.1	28.6	28.0	48.6	27.4		47.7	48.3		39.2	33.0	32.9
Incremental Delay (*d 2*), s/veh	0.1	0.1	0.2	0.2	0.0		0.1	0.3		1.6	0.0	0.0
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (*d*), s/veh	48.2	28.7	28.2	48.7	27.4	10.0	47.8	48.6		40.8	33.0	32.9
Level of Service (LOS)	D	C	C	D	C	A	D	D		D	C	C
Approach Delay, s/veh / LOS	28.8	C		22.3	C		48.3	D		40.0	D	
Intersection Delay, s/veh / LOS	29.8						C					

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

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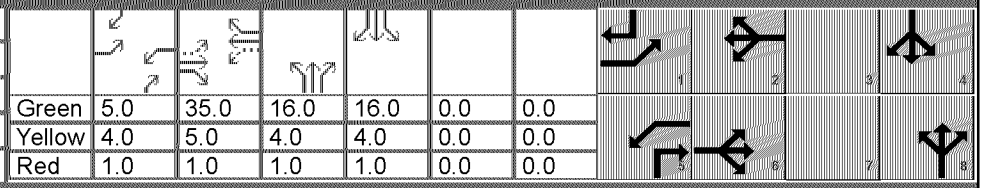
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.98
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 7:00
Intersection	US 40 at MD 132	File Name	US 40 at MD 132 - Ex AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	406	22	16	657	45	77	24	46	68	19	174

Signal Information			
Cycle, s	98.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.0	35.0	16.0	16.0	0.0	0.0						
Yellow	4.0	5.0	4.0	4.0	0.0	0.0						
Red	1.0	1.0	1.0	1.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	406	22	16	657	45	77	24	46	68	19	174
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	10	10	10	10	10	10	10	10	10	10
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	10.0	12.0	11.0	10.0	12.0	11.0	11.0	11.0	15.0	10.0	10.0	10.0
Turn Bay Length, ft	200	0	425	185	0	170	100	0	0	50	50	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	40	40	40	40	40	40

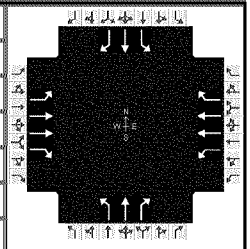
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	10.0	40.0	5.0	35.0		16.0		16.0
Yellow Change Interval (*Y*), s	4.0	5.0	4.0	5.0		4.0		4.0
Red Clearance Interval (R_c), s	1.0	1.0	1.0	1.0		1.0		1.0
Minimum Green (G_{min}), s	5	20	5	20		8		8
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s	2.0	2.0	2.0	2.0		2.0		2.0
Recall Mode	Off	Min	Off	Min		Off		Off
Dual Entry	No	Yes	No	Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

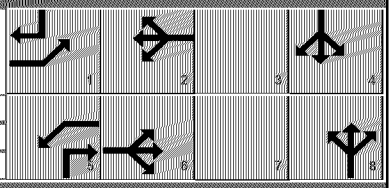
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.98
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 7:00
Intersection	US 40 at MD 132	File Name	US 40 at MD 132 - Ex AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	406	22	16	657	45	77	24	46	68	19	174

Signal Information			
Cycle, s	98.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.0	35.0	16.0	16.0	0.0	0.0	
Yellow	4.0	5.0	4.0	4.0	0.0	0.0	
Red	1.0	1.0	1.0	1.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		9.0
Phase Duration, s	15.0	46.0	10.0	41.0		21.0		21.0
Change Period, ($Y+R_c$), s	5.0	6.0	5.0	6.0		5.0		5.0
Max Allow Headway (*MAH*), s	2.9	2.9	2.9	2.9		3.1		3.2
Queue Clearance Time (g_s), s	5.4	9.9	2.5	17.3		6.0		11.2
Green Extension Time (g_e), s	0.1	2.4	0.0	2.3		0.2		0.2
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	0.10	0.00	1.00	0.00		0.00		0.27

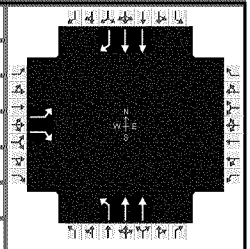
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	112	414	22	16	670	46	79	24	47	69	19	178
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1668	1485	1668	1668	1485	1668	1752	1544	1668	1752	1485
Queue Service Time (g_s), s	3.4	7.9	0.9	0.5	15.3	1.9	4.0	1.1	2.3	3.5	0.9	9.2
Cycle Queue Clearance Time (g_c), s	3.4	7.9	0.9	0.5	15.3	1.9	4.0	1.1	2.3	3.5	0.9	9.2
Green Ratio (*g/C*)	0.52	0.43	0.43	0.45	0.38	0.38	0.18	0.18	0.26	0.18	0.18	0.31
Capacity (*c*), veh/h	436	1429	636	472	1259	561	306	322	394	306	322	454
Volume-to-Capacity Ratio (*X*)	0.257	0.290	0.035	0.035	0.532	0.082	0.256	0.076	0.119	0.226	0.060	0.391
Back of Queue (*Q*), ft/ln (95 th percentile)	53.3	132.9	12.9	8.8	251.2	29.9	76.3	22.9	40.1	66.9	18.1	153.7
Back of Queue (*Q*), veh/ln (95 th percentile)	2.0	4.9	0.5	0.3	9.3	1.1	2.8	0.8	1.5	2.5	0.7	5.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.27	0.00	0.03	0.05	0.00	0.18	0.76	0.00	0.00	1.34	0.36	3.07
Uniform Delay (d_1), s/veh	13.9	18.9	16.2	15.3	24.5	19.6	34.3	33.1	28.0	34.1	33.0	26.8
Incremental Delay (d_2), s/veh	0.1	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.1	0.0	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	14.0	18.9	16.3	15.3	24.7	19.6	34.4	33.2	28.1	34.2	33.0	27.0
Level of Service (LOS)	B	B	B	B	C	B	C	C	C	C	C	C
Approach Delay, s/veh / LOS	17.8	B		24.2	C		32.2	C		29.3	C	
Intersection Delay, s/veh / LOS	23.6						C					

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

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HCS7 Signalized Intersection Input Data

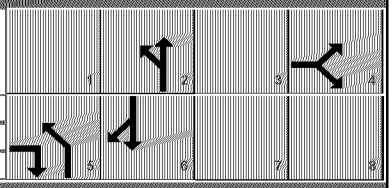
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 7:15
Intersection	US 40 EB & MD 22 Sign…	File Name	md 22 & us 40 EB - Ex AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	102		104				62	225			1116	172

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.0	50.0	15.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.0	1.0	1.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	102		104				62	225			1116	172
Initial Queue (Q_b), veh/h	0		0				0	0			0	0
Base Saturation Flow Rate (s_o), veh/h	1900		1900				1900	1900			1900	1900
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	10		2				10	10			10	10
Ped / Bike / RTOR, /h	0	0		0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3				3	3			3	3
Upstream Filtering (*I*)	1.00		1.00				1.00	1.00			1.00	1.00
Lane Width (*W*), ft	12.0		12.0				11.0	12.0			12.0	12.0
Turn Bay Length, ft	0		0				215	0			0	220
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	50		50				50	50			50	50

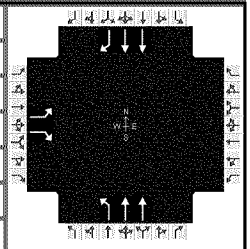
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		15.0			18.0	65.0		50.0
Yellow Change Interval (*Y*), s		4.0			4.0	5.0		5.0
Red Clearance Interval (R_c), s		1.0			2.0	1.0		1.0
Minimum Green (G_{min}), s		5			5	25		25
Start-Up Lost Time (*l*t), s	2.0				2.0	2.0		2.0
Extension of Effective Green (*e*), s	4.0				4.0	4.0		4.0
Passage (*PT*), s		2.0			2.0	2.0		2.0
Recall Mode		Off			Off	Min		Min
Dual Entry		Yes			No	Yes		Yes
Walk (*Walk*), s		0.0		0.0				0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				0.0

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

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HCS7 Signalized Intersection Results Summary

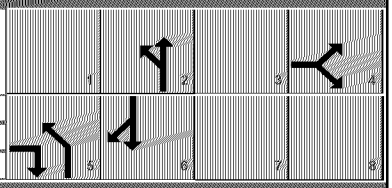
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 7:15
Intersection	US 40 EB & MD 22 Sign…	File Name	md 22 & us 40 EB - Ex AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	102		104				62	225			1116	172

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.0	50.0	15.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.0	1.0	1.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		20.0			24.0	80.0		56.0
Change Period, ($Y+R_c$), s		5.0			6.0	6.0		6.0
Max Allow Headway (*MAH*), s		3.1			3.0	2.9		2.9
Queue Clearance Time (g_s), s		8.0			3.1	3.9		29.9
Green Extension Time (g_e), s		0.2			0.1	4.3		4.0
Phase Call Probability		1.00			1.00	1.00		1.00
Max Out Probability		0.02			0.00	0.00		0.02

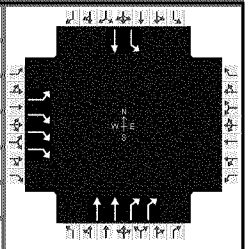
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (*v*), veh/h	112		114				68	247			1226	189
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668						1668	1668			1668	1485
Queue Service Time (g_s), s	6.0						1.1	1.9			27.9	7.0
Cycle Queue Clearance Time (g_c), s	6.0						1.1	1.9			27.9	7.0
Green Ratio (*g/C*)	0.17						0.74	0.76			0.52	0.52
Capacity (*c*), veh/h	284						508	2535			1734	772
Volume-to-Capacity Ratio (*X*)	0.395						0.134	0.098			0.707	0.245
Back of Queue (*Q*), ft/ln (95 th percentile)	113.6						18.1	19			394.4	100.9
Back of Queue (*Q*), veh/ln (95 th percentile)	4.2						0.7	0.7			14.6	3.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00						0.08	0.00			0.00	0.46
Uniform Delay (d_1), s/veh	36.9						8.9	3.4			18.2	13.2
Incremental Delay (d_2), s/veh	0.3						0.0	0.0			1.1	0.1
Initial Queue Delay (d_3), s/veh	0.0						0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh	37.3		0.0				8.9	3.4			19.4	13.3
Level of Service (LOS)	D		A				A	A			B	B
Approach Delay, s/veh / LOS	18.4	B		0.0			4.6	A		18.5	B	
Intersection Delay, s/veh / LOS	16.3						B					

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

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HCS7 Signalized Intersection Input Data

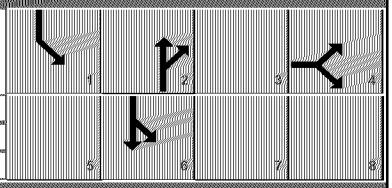
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 7:15
Intersection	MD 715 at US 40 EB Ra…	File Name	md 715 & us 40 EB - Ex AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	64		718					141	49	26	96	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	55.0	18.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	1.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	64		718					141	49	26	96	
Initial Queue (Q_b), veh/h	0		0					0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h	1900		1900					1900	1900	1900	1900	
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	10		2					10	0	10	10	
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3					3	3	3	3	
Upstream Filtering (*I*)	1.00		1.00					1.00	1.00	1.00	1.00	
Lane Width (*W*), ft	15.0		12.0					12.0	12.0	12.0	12.0	
Turn Bay Length, ft	300		0					0	0	150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	50		50					40	40	40	40	

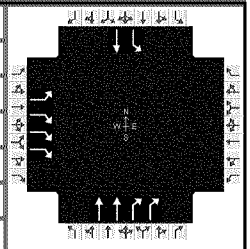
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		18.0				55.0	10.0	65.0
Yellow Change Interval (*Y*), s		4.0				5.0	4.0	5.0
Red Clearance Interval (R_c), s		1.0				2.0	1.0	2.0
Minimum Green (G_{min}), s		8				25	5	25
Start-Up Lost Time (*l1*), s	2.0					2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0					4.0	4.0	4.0
Passage (*PT*), s		2.0				2.0	2.0	2.0
Recall Mode		Off				Min	Off	Min
Dual Entry		Yes				Yes	No	Yes
Walk (*Walk*), s		0.0		0.0				0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				0.0

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

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HCS7 Signalized Intersection Results Summary

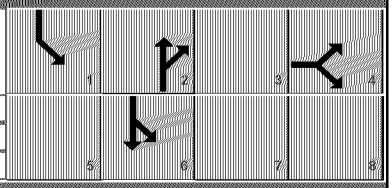
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 7:15
Intersection	MD 715 at US 40 EB Ra…	File Name	md 715 & us 40 EB - Ex AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	64		718					141	49	26	96	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	55.0	18.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	1.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		9.0				7.3	1.0	4.0
Phase Duration, s		23.0				62.0	15.0	77.0
Change Period, ($Y+R_c$), s		5.0				7.0	5.0	7.0
Max Allow Headway (*MAH*), s		3.2				3.0	3.1	3.0
Queue Clearance Time (g_s), s		20.5				4.1	2.5	3.8
Green Extension Time (g_e), s		0.0				0.6	0.0	0.6
Phase Call Probability		1.00				1.00	1.00	1.00
Max Out Probability		1.00				0.00	0.00	0.00

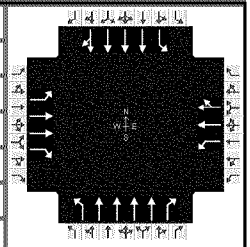
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2	12	1	6	
Adjusted Flow Rate (*v*), veh/h	70		789					155	54	29	105	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1735							1668		1668	1752	
Queue Service Time (g_s), s	3.4							2.1		0.5	1.8	
Cycle Queue Clearance Time (g_c), s	3.4							2.1		0.5	1.8	
Green Ratio (*g/C*)	0.20							0.57		0.71	0.72	
Capacity (*c*), veh/h	347							1901		906	1261	
Volume-to-Capacity Ratio (*X*)	0.203							0.081		0.032	0.084	
Back of Queue (*Q*), ft/ln (95 th percentile)	66.1							34.1		6.7	24.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	2.4							1.3		0.2	0.9	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.22							0.00		0.04	0.00	
Uniform Delay (d_1), s/veh	33.4							9.7		4.4	4.5	
Incremental Delay (d_2), s/veh	0.1							0.0		0.0	0.0	
Initial Queue Delay (d_3), s/veh	0.0							0.0		0.0	0.0	
Control Delay (*d*), s/veh	33.5		0.0					9.7	0.0	4.4	4.5	
Level of Service (LOS)	C		A					A	A	A	A	
Approach Delay, s/veh / LOS	2.7	A		0.0			7.2	A		4.4	A	
Intersection Delay, s/veh / LOS	3.7						A					

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

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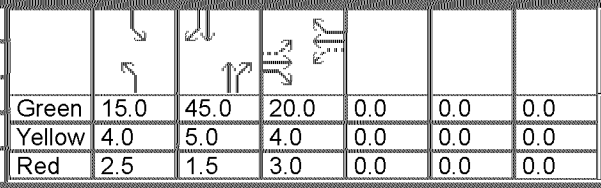
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.93
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 7:15
Intersection	MD 715 at Old Philadelp…	File Name	MD 715 at Old Phil - Ex AM.xus		
Project Description	3762				

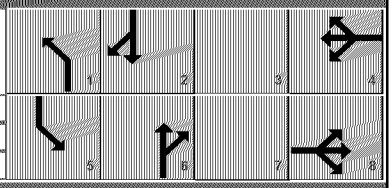


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	32	128	38	107	222	27	4	59	14	13	623	26

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	15.0	45.0	20.0	0.0	0.0	0.0						
Yellow	4.0	5.0	4.0	0.0	0.0	0.0						
Red	2.5	1.5	3.0	0.0	0.0	0.0						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	32	128	38	107	222	27	4	59	14	13	623	26
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	10	10	10		10	10	10	10	10	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	11.0	12.0	12.0	10.0	10.0		12.0	12.0	12.0	11.0	12.0	
Turn Bay Length, ft	200	0	375	300	0		275	0	275	60	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	30	30	30	35	35	35	45	45	45	45	45	45

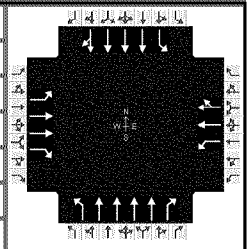
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		20.0		20.0	15.0	45.0	15.0	45.0
Yellow Change Interval (*Y*), s		4.0		4.0	4.0	5.0	4.0	5.0
Red Clearance Interval (R_c), s		3.0		3.0	2.5	1.5	2.5	1.5
Minimum Green (G_{min}), s		8		8	5	20	5	20
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0		2.0	2.0	2.0	2.0	2.0
Recall Mode		Off		Off	Off	Min	Off	Min
Dual Entry		Yes		Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.93
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 7:15
Intersection	MD 715 at Old Philadelp…	File Name	MD 715 at Old Phil - Ex AM.xus		
Project Description	3762				

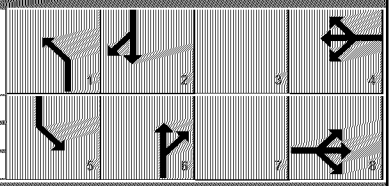


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	32	128	38	107	222	27	4	59	14	13	623	26

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	15.0	45.0	20.0	0.0	0.0	0.0						
Yellow	4.0	5.0	4.0	0.0	0.0	0.0						
Red	2.5	1.5	3.0	0.0	0.0	0.0						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		5.0		6.0	2.0	3.0	2.0	4.0
Phase Duration, s		27.0		27.0	21.5	51.5	21.5	51.5
Change Period, (*Y+R c*), s		7.0		7.0	6.5	6.5	6.5	6.5
Max Allow Headway (*MAH*), s		3.3		3.3	3.0	2.9	3.0	2.9
Queue Clearance Time (*g s*), s		11.6		14.2	2.2	2.5	2.7	8.0
Green Extension Time (*g e*), s		1.0		0.8	0.0	1.7	0.0	1.7
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		0.07		0.26	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	34	138	41	115	135	133	4	63	15	14	526	172
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1041	1668	1485	1172	1752	1685	1668	1591	1485	1668	1752	1702
Queue Service Time (*g s*), s	2.9	3.4	2.2	8.9	6.5	6.7	0.2	0.5	0.5	0.7	5.9	6.0
Cycle Queue Clearance Time (*g c*), s	9.6	3.4	2.2	12.2	6.5	6.7	0.2	0.5	0.5	0.7	5.9	6.0
Green Ratio (*g/C*)	0.22	0.22	0.22	0.22	0.22	0.22	0.17	0.47	0.47	0.17	0.47	0.47
Capacity (*c*), veh/h	232	734	327	291	385	371	284	2990	698	284	2470	800
Volume-to-Capacity Ratio (*X*)	0.149	0.188	0.125	0.396	0.351	0.358	0.015	0.021	0.022	0.049	0.213	0.215
Back of Queue (*Q*), ft/ln (95 th percentile)	36	65.7	38.6	122.1	132.9	123.1	4.1	8.7	8.3	13.4	105.7	98.1
Back of Queue (*Q*), veh/ln (95 th percentile)	1.3	2.4	1.4	4.5	4.9	4.8	0.2	0.3	0.3	0.5	3.9	3.9
Queue Storage Ratio (*RQ*) (95 th percentile)	0.18	0.00	0.10	0.41	0.00	0.00	0.01	0.00	0.03	0.22	0.00	0.00
Uniform Delay (*d 1*), s/veh	37.1	31.7	31.3	36.7	33.0	33.0	34.5	14.7	14.2	34.7	16.1	15.6
Incremental Delay (*d 2*), s/veh	0.1	0.0	0.1	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	37.2	31.8	31.3	37.0	33.2	33.2	34.5	14.7	14.2	34.8	16.2	15.7
Level of Service (LOS)	D	C	C	D	C	C	C	B	B	C	B	B
Approach Delay, s/veh / LOS	32.6	C		34.3	C		15.7	B		16.4	B	
Intersection Delay, s/veh / LOS	23.8						C					

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

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HCS7 Two-Way Stop-Control Report

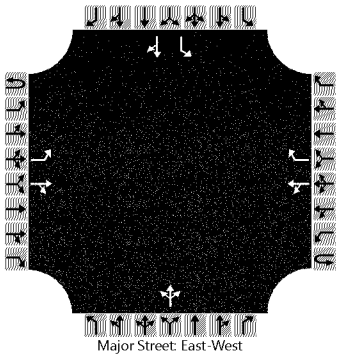
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/22
Analysis Year	2022
Time Analyzed	Existing AM
Intersection Orientation	East-West
Project Description	3762

Site Information

Intersection	MD 7 at Stepney Rd
Jurisdiction	Harford Co, MD
East/West Street	MD 7
North/South Street	Stepney Rd
Peak Hour Factor	0.93
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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	1		0	1	0		1	1	0
Configuration		L		TR		LT		R			LTR			L		TR
Volume (veh/h)		60	472	0		0	354	33		1	0	0		61	1	103
Percent Heavy Vehicles (%)		5				5				5	5	5		5	0	5
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.15				4.15				7.15	6.55	6.25		7.15	6.50	6.25
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.25				2.25				3.55	4.05	3.35		3.55	4.00	3.35

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		65				0					1			66		112
Capacity, c (veh/h)		1127				1042					151			204		660
v/c Ratio		0.06				0.00					0.01			0.32		0.17
95% Queue Length, Q_{95} (veh)		0.2				0.0					0.0			1.3		0.6
Control Delay (s/veh)		8.4				8.5					29.1			30.8		11.6
Level of Service (LOS)		A				A					D			D		B
Approach Delay (s/veh)	0.9				0.0				29.1				18.7			
Approach LOS									D				C			

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HCS7 Two-Way Stop-Control Report

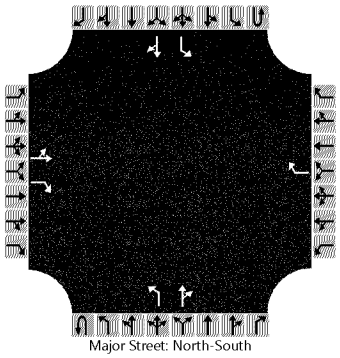
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	4/18/21
Analysis Year	2021
Time Analyzed	Existing AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Spesutia Rd
Jurisdiction	Harford Co, MD
East/West Street	Spesutia Rd-Access
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	1		0	0	1	0	1	1	0	0	1	1	0
Configuration		LT		R				R		L		TR		L		TR
Volume (veh/h)		52	12	529				14		161	126	0		26	237	24
Percent Heavy Vehicles (%)		0	0	0				15		0				15		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				Yes											
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2				6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20				6.35		4.10				4.25		
Base Follow-Up Headway (sec)		3.5	4.0	3.3				3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30				3.44		2.20				2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		71		588				16		179				29		
Capacity, c (veh/h)		251		767				875		1283				1367		
v/c Ratio		0.28		0.77				0.02		0.14				0.02		
95% Queue Length, Q_{95} (veh)		1.1		7.4				0.1		0.5				0.1		
Control Delay (s/veh)		24.9		23.3				9.2		8.3				7.7		
Level of Service (LOS)		C		C				A		A				A		
Approach Delay (s/veh)	23.5				9.2				4.6				0.7			
Approach LOS	C				A											

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HCS7 Two-Way Stop-Control Report

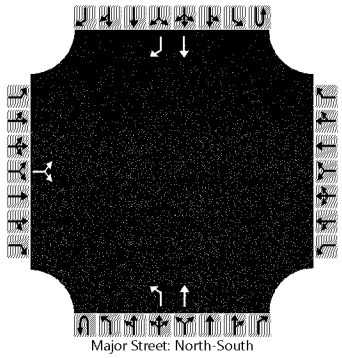
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/9/2022
Analysis Year	2022
Time Analyzed	Existing AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Chelsea Rd
Jurisdiction	Harford Co, MD
East/West Street	MD 159
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	1	1	0	0	0	1	1
Configuration			LR							L	T				T	R
Volume (veh/h)		110		1						1	174				724	30
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			123							1						
Capacity, c (veh/h)			266							784						
v/c Ratio			0.46							0.00						
95% Queue Length, Q_{95} (veh)			2.3							0.0						
Control Delay (s/veh)			29.6							9.6						
Level of Service (LOS)			D							A						
Approach Delay (s/veh)	29.6								0.1							
Approach LOS	D															

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HCS7 Two-Way Stop-Control Report

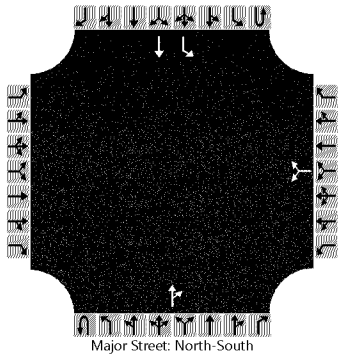
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/9/2022
Analysis Year	2022
Time Analyzed	Existing AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	Chelsea Rd at Woodley Rd
Jurisdiction	Harford Co, MD
East/West Street	Woodley Rd
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	0		0	1	0	0	0	1	0	0	1	1	0
Configuration							LR					TR		L	T	
Volume (veh/h)						1		43			67	3		277	308	
Percent Heavy Vehicles (%)						15		15						15		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.55		6.35						4.25		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.64		3.44						2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							49							308		
Capacity, c (veh/h)							871							1442		
v/c Ratio							0.06							0.21		
95% Queue Length, Q_{95} (veh)							0.2							0.8		
Control Delay (s/veh)							9.4							8.2		
Level of Service (LOS)							A							A		
Approach Delay (s/veh)						9.4							3.9			
Approach LOS						A										

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HCS7 Two-Way Stop-Control Report

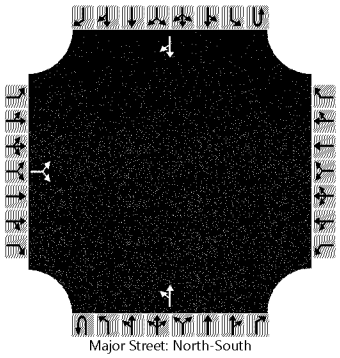
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/2022
Analysis Year	2022
Time Analyzed	Existing AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Fords Lane
Jurisdiction	Harford Co, MD
East/West Street	Fords Lane
North/South Street	MD 159
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		4		0						0	139				35	0
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			4							0						
Capacity, c (veh/h)			799							1555						
v/c Ratio			0.01							0.00						
95% Queue Length, Q_{95} (veh)			0.0							0.0						
Control Delay (s/veh)			9.5							7.3						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.5								0.0						
Approach LOS		A														

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HCS7 Two-Way Stop-Control Report

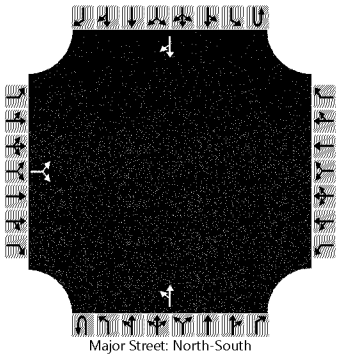
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/2022
Analysis Year	2022
Time Analyzed	Existing AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Canning House
Jurisdiction	Harford Co, MD
East/West Street	Canning House
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		45		0						0	92				23	12
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

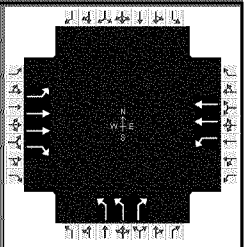
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			50							0						
Capacity, c (veh/h)			852							1552						
v/c Ratio			0.06							0.00						
95% Queue Length, Q_{95} (veh)			0.2							0.0						
Control Delay (s/veh)			9.5							7.3						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)	9.5								0.0							
Approach LOS	A															

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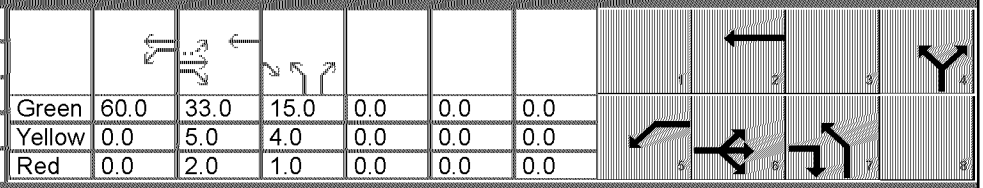
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Apr 27, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.92
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 3:45
Intersection	US 40 & MD 543	File Name	us 40 & md 543 - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	634	212	355	856		178		376			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	60.0	33.0		15.0	0.0	0.0	0.0					
Yellow	0.0	5.0		4.0	0.0	0.0	0.0					
Red	0.0	2.0		1.0	0.0	0.0	0.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	634	212	355	856		178		376			
Initial Queue (Q_b), veh/h	0	0	0	0	0		0		0			
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900		1900		1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	0	10	2	10	10		10		0			
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3	3	3	3		3		3			
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00		1.00		1.00			
Lane Width (*W*), ft	11.0	12.0	13.0	13.0	12.0		10.0		12.0			
Turn Bay Length, ft	200	0	1035	450	0		0		0			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	45	45	45	45	45		45		45			

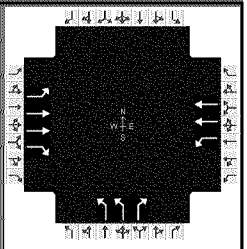
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		33.0	60.0	93.0	15.0	15.0		
Yellow Change Interval (*Y*), s		5.0	0.0	5.0	4.0	4.0		
Red Clearance Interval (R_c), s		2.0	0.0	2.0	2.0	1.0		
Minimum Green (G_{min}), s		25	10	25	5	5		
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0			
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0			
Passage (*PT*), s		2.0	2.0	2.0	2.0	2.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	No	Yes	No	Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

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

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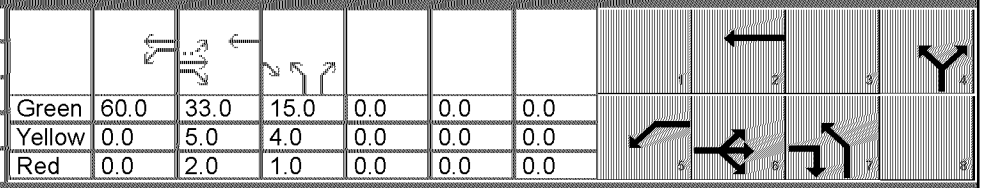
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Apr 27, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.92
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 3:45
Intersection	US 40 & MD 543	File Name	us 40 & md 543 - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	634	212	355	856		178		376			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Green	60.0	33.0		15.0	0.0		0.0	0.0				
Yellow	0.0	5.0		4.0	0.0		0.0	0.0				
Red	0.0	2.0		1.0	0.0		0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6	5	2		4		
Case Number		5.3	2.0	4.0		9.0		
Phase Duration, s		40.0	60.0	100.0		20.0		
Change Period, (*Y+R c*), s		7.0	0.0	7.0		5.0		
Max Allow Headway (*MAH*), s		3.0	3.0	3.0		3.2		
Queue Clearance Time (*g s*), s		24.1	18.6	11.7		19.0		
Green Extension Time (*g e*), s		3.4	0.7	4.9		0.0		
Phase Call Probability		1.00	1.00	1.00		1.00		
Max Out Probability		0.31	0.00	0.00		1.00		

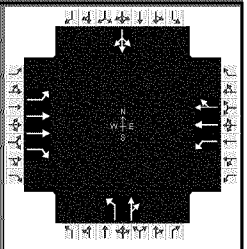
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2		7		14			
Adjusted Flow Rate (*v*), veh/h	0	689	230	386	930		193		409			
Adjusted Saturation Flow Rate (*s*), veh/h/ln	611	1668		1735	1668		1620					
Queue Service Time (*g s*), s	0.0	22.1		16.6	9.7		6.5					
Cycle Queue Clearance Time (*g c*), s	0.0	22.1		16.6	9.7		6.5					
Green Ratio (*g/C*)	0.29	0.29		0.52	0.79		0.14					
Capacity (*c*), veh/h	60	973		896	2641		459					
Volume-to-Capacity Ratio (*X*)	0.000	0.708		0.430	0.352		0.422					
Back of Queue (*Q*), ft/ln (95 th percentile)	0	375.4		279.7	106		125.8					
Back of Queue (*Q*), veh/ln (95 th percentile)	0.0	13.9		10.4	3.9		4.7					
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.62	0.00		0.00					
Uniform Delay (*d 1*), s/veh	0.0	37.9		18.0	3.8		47.0					
Incremental Delay (*d 2*), s/veh	0.0	2.1		0.1	0.0		0.2					
Initial Queue Delay (*d 3*), s/veh	0.0	0.0		0.0	0.0		0.0					
Control Delay (*d*), s/veh	0.0	40.0	0.0	18.1	3.9		47.2		0.0			
Level of Service (LOS)		D	A	B	A		D		A			
Approach Delay, s/veh / LOS	30.0	C		8.0	A		15.2	B		0.0		
Intersection Delay, s/veh / LOS	16.7						B					

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

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HCS7 Signalized Intersection Input Data

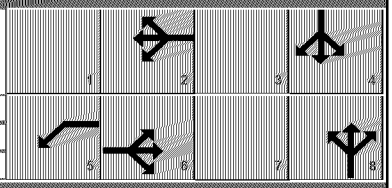
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.93
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 4:45
Intersection	US 40 & Spesutia Road	File Name	US 40 & Spesutia - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	8	670	278	59	728	0	405	0	34	4	0	1

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



							
Green	8.0	55.0	39.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	2.0	0.0	0.0	0.0	

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	8	670	278	59	728	0	405	0	34	4	0	1
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	0	0	10		0	0			10	
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	11.0	12.0	15.0	12.0	12.0		10.0	11.0			12.0	
Turn Bay Length, ft	350	0	300	400	0		300	0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	30	30	30	30	30	30

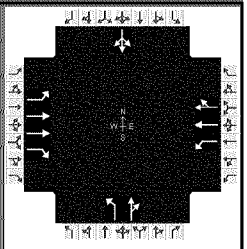
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		55.0	8.0	63.0		39.0		39.0
Yellow Change Interval (*Y*), s		5.0	4.0	0.0		4.0		4.0
Red Clearance Interval (R_c), s		2.0	1.0	0.0		2.0		2.0
Minimum Green (G_{min}), s		25	5	25		5		5
Start-Up Lost Time (*l1*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0	2.0	2.0		2.0		2.0
Recall Mode		Min	Off	Min		Off		Off
Dual Entry		Yes	No	Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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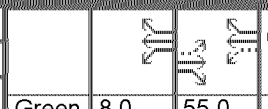
HCS7 Signalized Intersection Results Summary

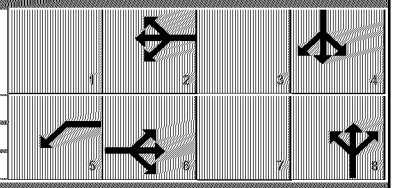
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.93
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 4:45
Intersection	US 40 & Spesutia Road	File Name	US 40 & Spesutia - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	8	670	278	59	728	0	405	0	34	4	0	1

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On





Green	8.0	55.0	39.0	0.0	0.0	0.0
Yellow	4.0	5.0	4.0	0.0	0.0	0.0
Red	1.0	2.0	2.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6	5	2		8		4
Case Number		5.3	1.0	4.0		6.0		8.0
Phase Duration, s		62.0	13.0	75.0		45.0		45.0
Change Period, (*Y+R c*), s		7.0	5.0	7.0		6.0		6.0
Max Allow Headway (*MAH*), s		2.9	2.9	2.9		3.1		3.1
Queue Clearance Time (*g s*), s		19.4	3.9	16.4		38.9		3.8
Green Extension Time (*g e*), s		4.4	0.0	4.4		0.0		0.9
Phase Call Probability		1.00	1.00	1.00		1.00		1.00
Max Out Probability		0.00	0.13	0.00		1.00		0.00

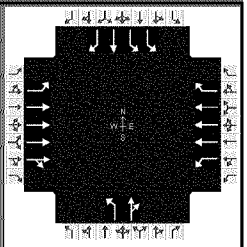
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	9	720	299	63	783	0	435	37			5	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	647	1668	1675	1810	1752	0	1439	1610			1282	
Queue Service Time (*g s*), s	0.9	17.4	13.7	1.9	14.4	0.0	35.1	1.8			0.0	
Cycle Queue Clearance Time (*g c*), s	2.3	17.4	13.7	1.9	14.4	0.0	36.9	1.8			1.8	
Green Ratio (*g/C*)	0.48	0.48	0.48	0.57	0.58		0.34	0.34			0.34	
Capacity (*c*), veh/h	360	1584	795	456	2044		529	550			492	
Volume-to-Capacity Ratio (*X*)	0.024	0.455	0.376	0.139	0.383	0.000	0.823	0.066			0.011	
Back of Queue (*Q*), ft/ln (95 th percentile)	5.9	278	214.1	30.3	234.1	0	492	32.2			5	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.2	10.3	8.6	1.2	8.7	0.0	19.7	1.3			0.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.02	0.00	0.71	0.08	0.00	0.00	1.64	0.00			0.00	
Uniform Delay (*d 1*), s/veh	17.5	21.1	20.1	12.9	13.9		39.1	26.6			26.1	
Incremental Delay (*d 2*), s/veh	0.0	0.1	0.1	0.1	0.0	0.0	9.5	0.0			0.0	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh	17.5	21.2	20.2	13.0	13.9		48.5	26.6			26.1	
Level of Service (LOS)	B	C	C	B	B		D	C			C	
Approach Delay, s/veh / LOS	20.9	C		13.8	B		46.8	D		26.1	C	
Intersection Delay, s/veh / LOS	23.6						C					

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

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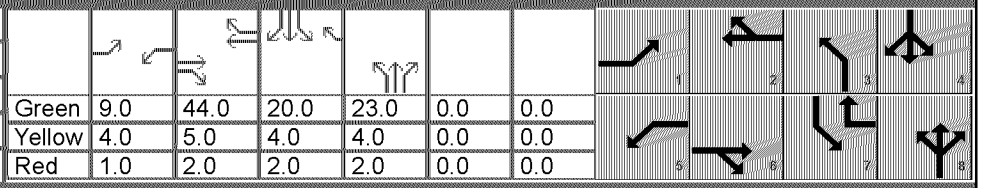
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.97
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 3:45
Intersection	US 40 at MD 7-MD 159	File Name	US 40 at MD 7 - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	37	820	42	36	970	928	57	76	22	287	35	28

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.0	44.0	20.0	23.0	0.0	0.0
Yellow	4.0	5.0	4.0	4.0	0.0	0.0
Red	1.0	2.0	2.0	2.0	0.0	0.0

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	37	820	42	36	970	928	57	76	22	287	35	28
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		R	0		None			None			None	
Heavy Vehicles (P_{HV}), %	10	10		10	10	2	10	10		10	10	10
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	11.0		12.0	12.0	12.0
Turn Bay Length, ft	350	0		300	0	0	400	0		775	0	600
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	40	40	40	40	40	40

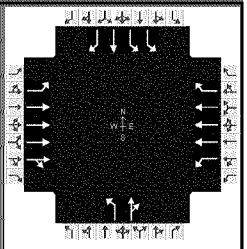
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	9.0	44.0	9.0	44.0	23.0	23.0	20.0	20.0
Yellow Change Interval (*Y*), s	4.0	5.0	4.0	5.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s	1.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s	5	30	5	30	5	10	5	10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

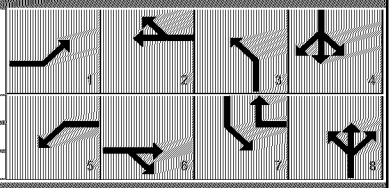
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.97
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 3:45
Intersection	US 40 at MD 7-MD 159	File Name	US 40 at MD 7 - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	37	820	42	36	970	928	57	76	22	287	35	28

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On





	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Green	9.0	44.0	20.0	23.0	0.0	0.0		
Yellow	4.0	5.0	4.0	4.0	0.0	0.0		
Red	1.0	2.0	2.0	2.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		8		4
Case Number	2.0	4.0	2.0	3.0		10.0		9.0
Phase Duration, s	14.0	51.0	14.0	51.0		29.0		26.0
Change Period, ($Y+R_c$), s	5.0	7.0	5.0	7.0		6.0		6.0
Max Allow Headway (*MAH*), s	2.9	3.0	2.9	3.0		3.1		3.1
Queue Clearance Time (g_s), s	4.6	13.3	4.5	48.0		8.1		11.8
Green Extension Time (g_e), s	0.0	9.2	0.0	0.0		0.2		0.5
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	0.06	0.11	0.05	1.00		0.00		0.01

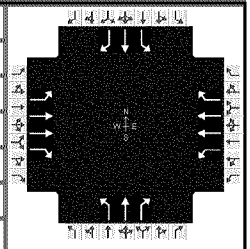
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	38	688	201	37	1000	957	59	101		296	36	29
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1752	1518	1668	1591		1668	1684		1620	1752	1485
Queue Service Time (g_s), s	2.6	11.1	11.3	2.5	19.6		3.5	6.1		9.8	2.1	1.9
Cycle Queue Clearance Time (g_c), s	2.6	11.1	11.3	2.5	19.6		3.5	6.1		9.8	2.1	1.9
Green Ratio (*g/C*)	0.09	0.38	0.38	0.09	0.38		0.21	0.21		0.18	0.18	0.18
Capacity (*c*), veh/h	153	2015	582	153	1829		348	351		594	321	272
Volume-to-Capacity Ratio (*X*)	0.249	0.341	0.345	0.243	0.547		0.169	0.288		0.498	0.112	0.106
Back of Queue (*Q*), ft/ln (95 th percentile)	50.4	210.5	176	49	306.7		68.5	120.9		189.9	43	34.4
Back of Queue (*Q*), veh/ln (95 th percentile)	1.9	7.8	6.9	1.8	11.4		2.5	4.5		7.0	1.6	1.3
Queue Storage Ratio (*RQ*) (95 th percentile)	0.14	0.00	0.00	0.16	0.00		0.17	0.00		0.25	0.00	0.06
Uniform Delay (d_1), s/veh	50.7	26.9	26.3	50.6	29.6		39.0	40.0		44.0	40.9	40.8
Incremental Delay (d_2), s/veh	0.3	0.0	0.1	0.3	0.2		0.1	0.2		0.2	0.1	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (*d*), s/veh	51.0	26.9	26.4	50.9	29.8	35.0	39.1	40.2		44.3	40.9	40.9
Level of Service (LOS)	D	C	C	D	C	C	D	D		D	D	D
Approach Delay, s/veh / LOS	27.8	C		32.7	C		39.8	D		43.7	D	
Intersection Delay, s/veh / LOS	32.8						C					

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

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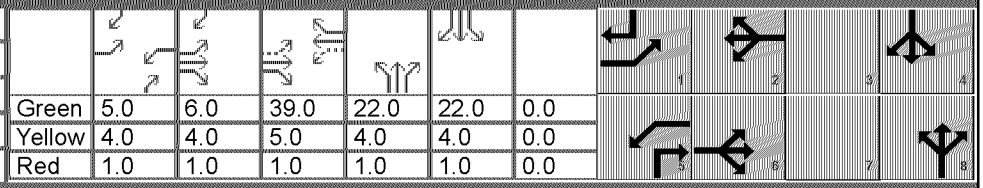
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.98
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 4:15
Intersection	US 40 at MD 132	File Name	US 40 at MD 132 - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	225	876	70	20	716	73	86	36	21	148	61	286

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.0	6.0	39.0	22.0	22.0	0.0	
Yellow	4.0	4.0	5.0	4.0	4.0	0.0	
Red	1.0	1.0	1.0	1.0	1.0	0.0	

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	225	876	70	20	716	73	86	36	21	148	61	286
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	10	10	10	10	10	10	10	10	10	10
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	10.0	12.0	11.0	10.0	12.0	11.0	11.0	11.0	15.0	10.0	10.0	10.0
Turn Bay Length, ft	200	0	425	185	0	170	100	0	0	50	50	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	40	40	40	40	40	40

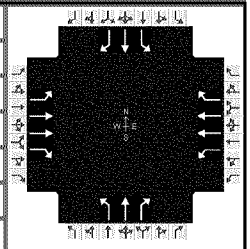
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	16.0	50.0	5.0	39.0		22.0		22.0
Yellow Change Interval (*Y*), s	4.0	5.0	4.0	5.0		4.0		4.0
Red Clearance Interval (R_c), s	1.0	1.0	1.0	1.0		1.0		1.0
Minimum Green (G_{min}), s	5	20	5	20		8		10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s	2.0	2.0	2.0	2.0		2.0		2.0
Recall Mode	Off	Min	Off	Min		Off		Off
Dual Entry	No	Yes	No	Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

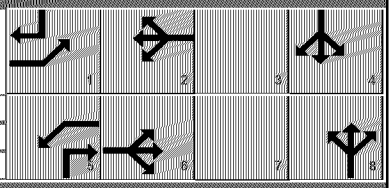
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.98
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 4:15
Intersection	US 40 at MD 132	File Name	US 40 at MD 132 - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	225	876	70	20	716	73	86	36	21	148	61	286

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.0	6.0	39.0	22.0	22.0	0.0	
Yellow	4.0	4.0	5.0	4.0	4.0	0.0	
Red	1.0	1.0	1.0	1.0	1.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		9.0
Phase Duration, s	21.0	56.0	10.0	45.0		27.0		27.0
Change Period, ($Y+R_c$), s	5.0	6.0	5.0	6.0		5.0		5.0
Max Allow Headway (*MAH*), s	2.9	2.9	2.9	2.9		3.1		3.2
Queue Clearance Time (g_s), s	11.4	26.9	2.9	24.2		7.3		21.1
Green Extension Time (g_e), s	0.2	4.1	0.0	3.8		0.2		0.1
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	0.19	0.01	1.00	0.07		0.00		1.00

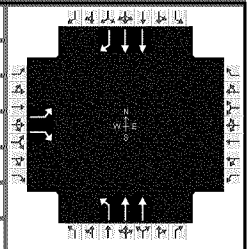
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	230	894	71	20	731	74	88	37	21	151	62	292
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1668	1485	1668	1668	1485	1668	1752	1544	1668	1752	1485
Queue Service Time (g_s), s	9.4	24.9	3.4	0.9	22.2	4.2	5.3	2.1	1.3	9.6	3.5	19.1
Cycle Queue Clearance Time (g_c), s	9.4	24.9	3.4	0.9	22.2	4.2	5.3	2.1	1.3	9.6	3.5	19.1
Green Ratio (*g/C*)	0.51	0.43	0.43	0.40	0.34	0.34	0.20	0.20	0.26	0.20	0.20	0.35
Capacity (*c*), veh/h	417	1445	643	270	1140	507	334	350	399	334	350	520
Volume-to-Capacity Ratio (*X*)	0.551	0.618	0.111	0.076	0.641	0.147	0.263	0.105	0.054	0.453	0.178	0.562
Back of Queue (*Q*), ft/ln (95 th percentile)	164.5	383	54.4	16.2	360.1	68.7	105.5	42.7	22.7	189.8	73.4	298.3
Back of Queue (*Q*), veh/ln (95 th percentile)	6.1	14.2	2.0	0.6	13.3	2.5	3.9	1.6	0.8	7.0	2.7	11.0
Queue Storage Ratio (*RQ*) (95 th percentile)	0.82	0.00	0.13	0.09	0.00	0.40	1.06	0.00	0.00	3.80	1.47	5.97
Uniform Delay (d_1), s/veh	20.5	27.0	20.2	23.3	34.1	27.4	40.5	39.2	33.5	42.2	39.8	31.6
Incremental Delay (d_2), s/veh	0.9	0.6	0.0	0.0	1.0	0.0	0.2	0.0	0.0	0.4	0.1	0.9
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	21.4	27.6	20.3	23.3	35.0	27.4	40.7	39.3	33.5	42.6	39.9	32.4
Level of Service (LOS)	C	C	C	C	D	C	D	D	C	D	D	C
Approach Delay, s/veh / LOS	26.0	C		34.0	C		39.3	D		36.4	D	
Intersection Delay, s/veh / LOS	31.2						C					

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

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HCS7 Signalized Intersection Input Data

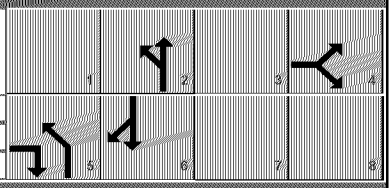
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.94
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:00
Intersection	US 40 EB & MD 22 Sign…	File Name	md 22 & us 40 EB - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	253		75				103	1084			584	200

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.0	40.0	25.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.0	1.0	1.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	253		75				103	1084			584	200
Initial Queue (Q_b), veh/h	0		0				0	0			0	0
Base Saturation Flow Rate (s_o), veh/h	1900		1900				1900	1900			1900	1900
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	10		2				10	10			10	10
Ped / Bike / RTOR, /h	0	0		0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3				3	3			3	3
Upstream Filtering (*I*)	1.00		1.00				1.00	1.00			1.00	1.00
Lane Width (*W*), ft	12.0		12.0				11.0	12.0			12.0	12.0
Turn Bay Length, ft	0		0				215	0			0	220
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	50		50				50	50			50	50

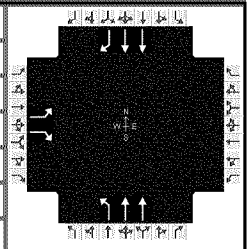
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		25.0			18.0	58.0		40.0
Yellow Change Interval (*Y*), s		4.0			4.0	5.0		5.0
Red Clearance Interval (R_c), s		1.0			2.0	1.0		1.0
Minimum Green (G_{min}), s		5			5	25		25
Start-Up Lost Time (*l*t), s	2.0				2.0	2.0		2.0
Extension of Effective Green (*e*), s	4.0				4.0	4.0		4.0
Passage (*PT*), s		2.0			2.0	2.0		2.0
Recall Mode		Off			Off	Min		Min
Dual Entry		Yes			No	Yes		Yes
Walk (*Walk*), s		0.0		0.0				0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				0.0

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

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HCS7 Signalized Intersection Results Summary

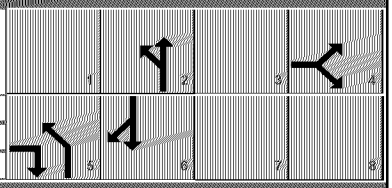
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.94
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:00
Intersection	US 40 EB & MD 22 Sign…	File Name	md 22 & us 40 EB - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	253		75				103	1084			584	200

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.0	40.0	25.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.0	1.0	1.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		30.0			24.0	70.0		46.0
Change Period, ($Y+R_c$), s		5.0			6.0	6.0		6.0
Max Allow Headway (*MAH*), s		3.0			3.0	2.9		2.9
Queue Clearance Time (g_s), s		16.0			4.5	20.0		15.3
Green Extension Time (g_e), s		0.4			0.1	5.3		5.1
Phase Call Probability		1.00			1.00	1.00		1.00
Max Out Probability		0.01			0.00	0.00		0.02

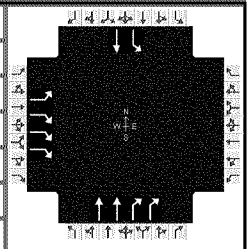
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (*v*), veh/h	269		80				110	1153			621	213
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668						1668	1668			1668	1485
Queue Service Time (g_s), s	14.0						2.5	18.0			13.3	9.7
Cycle Queue Clearance Time (g_c), s	14.0						2.5	18.0			13.3	9.7
Green Ratio (*g/C*)	0.27						0.64	0.66			0.42	0.42
Capacity (*c*), veh/h	450						622	2201			1401	624
Volume-to-Capacity Ratio (*X*)	0.597						0.176	0.524			0.443	0.341
Back of Queue (*Q*), ft/ln (95 th percentile)	251.5						35.6	235.8			223.3	149.5
Back of Queue (*Q*), veh/ln (95 th percentile)	9.3						1.3	8.7			8.3	5.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00						0.17	0.00			0.00	0.68
Uniform Delay (d_1), s/veh	31.8						8.3	9.2			20.7	19.6
Incremental Delay (d_2), s/veh	1.5						0.0	0.1			0.1	0.1
Initial Queue Delay (d_3), s/veh	0.0						0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh	33.3		0.0				8.4	9.3			20.8	19.8
Level of Service (LOS)	C		A				A	A			C	B
Approach Delay, s/veh / LOS	25.7	C		0.0			9.3	A		20.5	C	
Intersection Delay, s/veh / LOS	15.4						B					

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

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HCS7 Signalized Intersection Input Data

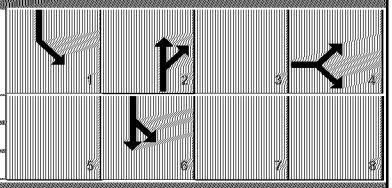
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.93
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 4:00
Intersection	MD 715 at US 40 EB Ra…	File Name	md 715 & us 40 EB - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	17		93					934	76	37	25	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	55.0	18.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	1.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	17		93					934	76	37	25	
Initial Queue (Q_b), veh/h	0		0					0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h	1900		1900					1900	1900	1900	1900	
Parking (N_m), man/h		None					0	L + R	0		None	
Heavy Vehicles (P_{HV}), %	10		2					10	0	10	10	
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3					3	3	3	3	
Upstream Filtering (*I*)	1.00		1.00					1.00	1.00	1.00	1.00	
Lane Width (*W*), ft	15.0		12.0					12.0	12.0	12.0	12.0	
Turn Bay Length, ft	300		0					0	0	0	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	50		50					40	40	40	40	

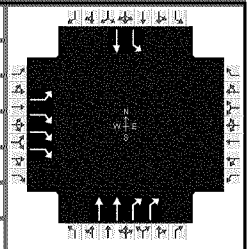
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		18.0				55.0	10.0	65.0
Yellow Change Interval (*Y*), s		4.0				5.0	4.0	5.0
Red Clearance Interval (R_c), s		1.0				2.0	1.0	2.0
Minimum Green (G_{min}), s		8				25	5	25
Start-Up Lost Time (*l*t), s	2.0					2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0					4.0	4.0	4.0
Passage (*PT*), s		2.0				2.0	2.0	2.0
Recall Mode		Off				Min	Off	Min
Dual Entry		Yes				Yes	No	Yes
Walk (*Walk*), s		0.0		0.0				0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				0.0

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

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HCS7 Signalized Intersection Results Summary

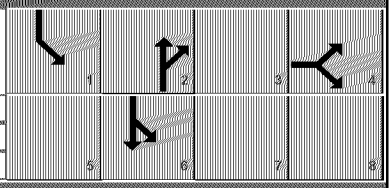
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.93
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 4:00
Intersection	MD 715 at US 40 EB Ra…	File Name	md 715 & us 40 EB - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	17		93					934	76	37	25	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	55.0	18.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	1.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		9.0				7.3	1.0	4.0
Phase Duration, s		23.0				62.0	15.0	77.0
Change Period, (*Y+R c*), s		5.0				7.0	5.0	7.0
Max Allow Headway (*MAH*), s		3.2				3.0	3.1	3.0
Queue Clearance Time (*g s*), s		3.9				20.5	2.7	2.4
Green Extension Time (*g e*), s		0.2				2.8	0.0	2.8
Phase Call Probability		1.00				1.00	1.00	1.00
Max Out Probability		0.00				0.00	0.00	0.00

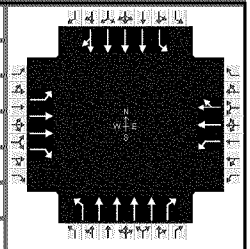
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2	12	1	6	
Adjusted Flow Rate (*v*), veh/h	18		100					1004	82	40	27	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1735							1668		1668	1752	
Queue Service Time (*g s*), s	0.9							18.5		0.7	0.4	
Cycle Queue Clearance Time (*g c*), s	0.9							18.5		0.7	0.4	
Green Ratio (*g/C*)	0.20							0.57		0.71	0.72	
Capacity (*c*), veh/h	347							1901		474	1261	
Volume-to-Capacity Ratio (*X*)	0.053							0.528		0.084	0.021	
Back of Queue (*Q*), ft/ln (95 th percentile)	16.6							277.7		9.5	5.9	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.6							10.3		0.4	0.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.06							0.00		0.00	0.00	
Uniform Delay (*d 1*), s/veh	32.3							13.2		6.6	4.3	
Incremental Delay (*d 2*), s/veh	0.0							0.1		0.0	0.0	
Initial Queue Delay (*d 3*), s/veh	0.0							0.0		0.0	0.0	
Control Delay (*d*), s/veh	32.4		0.0					13.4	0.0	6.6	4.3	
Level of Service (LOS)	C		A					B	A	A	A	
Approach Delay, s/veh / LOS	5.0	A		0.0			12.4	B		5.7	A	
Intersection Delay, s/veh / LOS	11.3						B					

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

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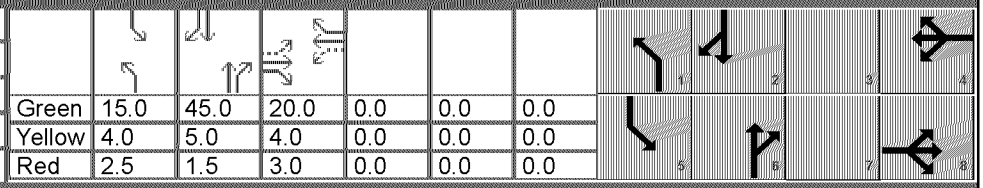
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.92
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 4:00
Intersection	MD 715 at Old Philadelp…	File Name	MD 715 at Old Phil - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	26	140	5	25	113	55	28	914	111	16	100	12

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	15.0	45.0	20.0	0.0	0.0	0.0						
Yellow	4.0	5.0	4.0	0.0	0.0	0.0						
Red	2.5	1.5	3.0	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	26	140	5	25	113	55	28	914	111	16	100	12
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	10	10	10		10	10	10	10	10	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	11.0	12.0	12.0	10.0	10.0		12.0	12.0	12.0	11.0	12.0	
Turn Bay Length, ft	200	0	375	300	0		275	0	275	60	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	30	30	30	35	35	35	45	45	45	45	45	45

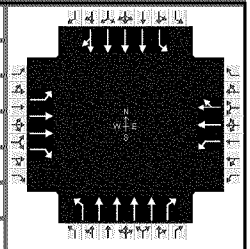
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		20.0		20.0	15.0	45.0	15.0	45.0
Yellow Change Interval (*Y*), s		4.0		4.0	4.0	5.0	4.0	5.0
Red Clearance Interval (R_c), s		3.0		3.0	2.5	1.5	2.5	1.5
Minimum Green (G_{min}), s		8		8	5	20	5	20
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0		2.0	2.0	2.0	2.0	2.0
Recall Mode		Off		Off	Off	Min	Off	Min
Dual Entry		Yes		Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

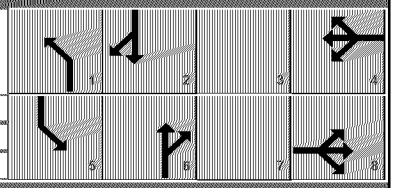
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.92
Urban Street		Analysis Year	Existing Condition	Analysis Period	1> 4:00
Intersection	MD 715 at Old Philadelp…	File Name	MD 715 at Old Phil - Ex PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	26	140	5	25	113	55	28	914	111	16	100	12

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On





Green	15.0	45.0	20.0	0.0	0.0	0.0						
Yellow	4.0	5.0	4.0	0.0	0.0	0.0						
Red	2.5	1.5	3.0	0.0	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		5.0		6.0	2.0	3.0	2.0	4.0
Phase Duration, s		27.0		27.0	21.5	51.5	21.5	51.5
Change Period, (*Y+R c*), s		7.0		7.0	6.5	6.5	6.5	6.5
Max Allow Headway (*MAH*), s		3.2		3.2	3.0	3.0	3.0	3.0
Queue Clearance Time (*g s*), s		8.9		7.7	3.5	11.8	2.9	3.0
Green Extension Time (*g e*), s		0.7		0.7	0.0	3.1	0.0	3.1
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		0.00		0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	28	152	5	27	93	89	30	993	121	17	92	30
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1125	1668	1485	1157	1752	1564	1668	1591	1485	1668	1752	1626
Queue Service Time (*g s*), s	2.1	3.7	0.3	2.0	4.4	4.7	1.5	9.8	4.7	0.9	0.9	1.0
Cycle Queue Clearance Time (*g c*), s	6.9	3.7	0.3	5.7	4.4	4.7	1.5	9.8	4.7	0.9	0.9	1.0
Green Ratio (*g/C*)	0.22	0.22	0.22	0.22	0.22	0.22	0.17	0.47	0.47	0.17	0.47	0.47
Capacity (*c*), veh/h	266	734	327	283	385	344	284	2990	698	284	2470	764
Volume-to-Capacity Ratio (*X*)	0.106	0.207	0.017	0.096	0.242	0.260	0.107	0.332	0.173	0.061	0.037	0.040
Back of Queue (*Q*), ft/ln (95 th percentile)	28.5	73	5	26.7	89.3	81.1	29.6	159.8	71.4	16.7	16.9	15.7
Back of Queue (*Q*), veh/ln (95 th percentile)	1.1	2.7	0.2	1.0	3.3	3.2	1.1	5.9	2.6	0.6	0.6	0.6
Queue Storage Ratio (*RQ*) (95 th percentile)	0.14	0.00	0.01	0.09	0.00	0.00	0.11	0.00	0.26	0.28	0.00	0.00
Uniform Delay (*d 1*), s/veh	35.1	31.9	30.5	34.2	32.1	32.3	35.1	17.2	15.3	34.8	14.8	14.3
Incremental Delay (*d 2*), s/veh	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	35.2	31.9	30.5	34.3	32.2	32.4	35.1	17.2	15.3	34.8	14.8	14.3
Level of Service (LOS)	D	C	C	C	C	C	D	B	B	C	B	B
Approach Delay, s/veh / LOS	32.4	C		32.6	C		17.5	B		17.2	B	
Intersection Delay, s/veh / LOS	21.0						C					

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

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HCS7 Two-Way Stop-Control Report

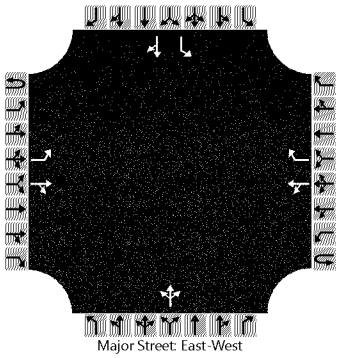
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/22
Analysis Year	2026
Time Analyzed	Existing PM
Intersection Orientation	East-West
Project Description	3762

Site Information

Intersection	MD 7 at Stepney Rd
Jurisdiction	Harford Co, MD
East/West Street	MD 7
North/South Street	Stepney Rd
Peak Hour Factor	0.96
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	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	1		0	1	0		1	1	0
Configuration		L		TR		LT		R			LTR			L		TR
Volume (veh/h)		115	342	1		1	862	118		1	1	1		38	0	103
Percent Heavy Vehicles (%)		5				5				5	5	5		5	0	5
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.15				4.15				7.15	6.55	6.25		7.15	6.50	6.25
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.25				2.25				3.55	4.05	3.35		3.55	4.00	3.35

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		120				1					3			40		107
Capacity, c (veh/h)		668				1185					88			85		334
v/c Ratio		0.18				0.00					0.04			0.47		0.32
95% Queue Length, Q_{95} (veh)		0.6				0.0					0.1			2.0		1.4
Control Delay (s/veh)		11.6				8.0					47.6			80.6		20.8
Level of Service (LOS)		B				A					E			F		C
Approach Delay (s/veh)	2.9				0.0				47.6				36.9			
Approach LOS									E				E			

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HCS7 Two-Way Stop-Control Report

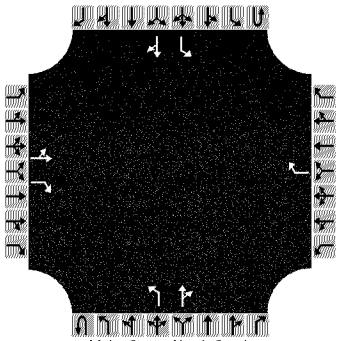
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	4/18/22
Analysis Year	2021
Time Analyzed	Existing PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Spesutia Rd
Jurisdiction	Harford Co, MD
East/West Street	Spesutia Rd-Access
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	1		0	0	1	0	1	1	0	0	1	1	0
Configuration		LT		R				R		L		TR		L		TR
Volume (veh/h)		10	2	270				32		344	232	0		24	151	47
Percent Heavy Vehicles (%)		0	0	0				15		0				15		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				Yes											
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2				6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20				6.35		4.10				4.25		
Base Follow-Up Headway (sec)		3.5	4.0	3.3				3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30				3.44		2.20				2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13		300				36		382				27		
Capacity, c (veh/h)		108		853				750		1361				1235		
v/c Ratio		0.12		0.35				0.05		0.28				0.02		
95% Queue Length, Q_{95} (veh)		0.4		1.6				0.1		1.2				0.1		
Control Delay (s/veh)		43.2		11.5				10.0		8.7				8.0		
Level of Service (LOS)		E		B				B		A				A		
Approach Delay (s/veh)	12.8				10.0				5.2				0.9			
Approach LOS	B				B											

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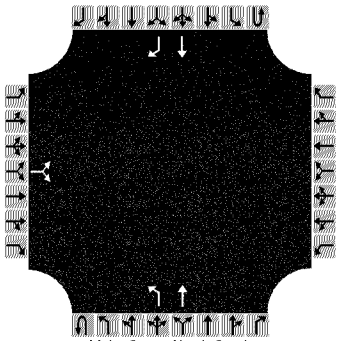
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	4/18/22
Analysis Year	2022
Time Analyzed	Existing PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Chelsea Rd
Jurisdiction	Harford Co, MD
East/West Street	MD 159
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	1	1	0	0	0	1	1
Configuration			LR							L	T				T	R
Volume (veh/h)		87		1						1	500				292	133
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized														No		
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			98							1						
Capacity, c (veh/h)			314							1074						
v/c Ratio			0.31							0.00						
95% Queue Length, Q_{95} (veh)			1.3							0.0						
Control Delay (s/veh)			21.5							8.4						
Level of Service (LOS)			C							A						
Approach Delay (s/veh)		21.5								0.0						
Approach LOS		C														

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HCS7 Two-Way Stop-Control Report

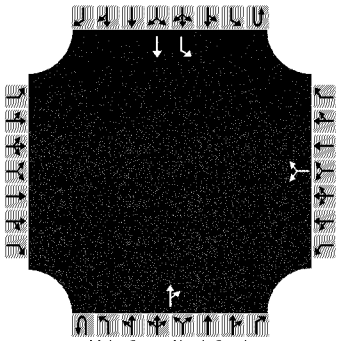
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/9/2022
Analysis Year	2022
Time Analyzed	Existing PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	Chelsea Rd at Woodley Rd
Jurisdiction	Harford Co, MD
East/West Street	Woodley Rd
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	0		0	1	0	0	0	1	0	0	1	1	0
Configuration							LR					TR		L	T	
Volume (veh/h)						1		218			204	1		146	89	
Percent Heavy Vehicles (%)						15		15						15		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.55		6.35						4.25		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.64		3.44						2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							243							162		
Capacity, c (veh/h)							777							1267		
v/c Ratio							0.31							0.13		
95% Queue Length, Q_{95} (veh)							1.3							0.4		
Control Delay (s/veh)							11.7							8.3		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						11.7								5.1		
Approach LOS						B										

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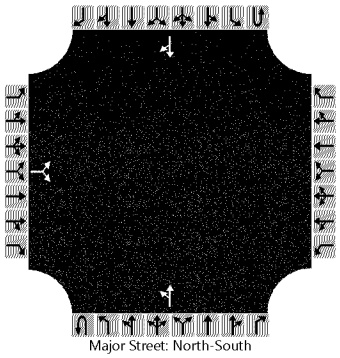
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/2022
Analysis Year	2022
Time Analyzed	Existing PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Fords Lane
Jurisdiction	Harford Co, MD
East/West Street	Fords Lane
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		3		0						0	85				154	2
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			3							0						
Capacity, c (veh/h)			716							1385						
v/c Ratio			0.00							0.00						
95% Queue Length, Q_{95} (veh)			0.0							0.0						
Control Delay (s/veh)			10.1							7.6						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.1								0.0						
Approach LOS		B														

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HCS7 Two-Way Stop-Control Report

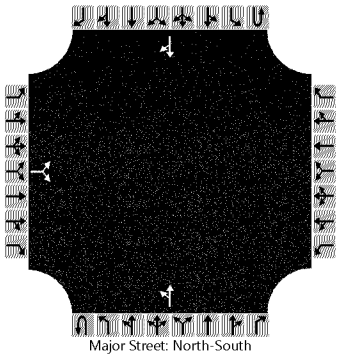
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/2022
Analysis Year	2022
Time Analyzed	Existing PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Canning House
Jurisdiction	Harford Co, MD
East/West Street	Canning House
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		23		0						0	55				92	51
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

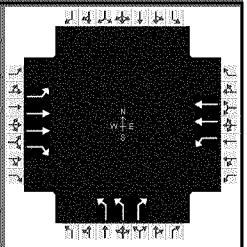
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			26							0						
Capacity, c (veh/h)			790							1402						
v/c Ratio			0.03							0.00						
95% Queue Length, Q_{95} (veh)			0.1							0.0						
Control Delay (s/veh)			9.7							7.6						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)	9.7								0.0							
Approach LOS	A															

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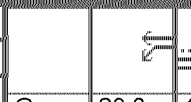
HCS7 Signalized Intersection Input Data

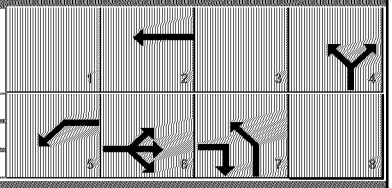
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 6:30
Intersection	US 40 & MD 543	File Name	us 40 & md 543 - Back AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	774	208	203	508		187		749			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On





	EB			WB			NB			SB		
Green	28.0	40.0		20.0	0.0		0.0			0.0		
Yellow	0.0	5.0		4.0	0.0		0.0			0.0		
Red	0.0	2.0		1.0	0.0		0.0			0.0		

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	774	208	203	508		187		749			
Initial Queue (Q_b), veh/h	0	0	0	0	0		0		0			
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900		1900		1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	0	10	10	10	10		10		0			
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3	3	3	3		3		3			
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00		1.00		1.00			
Lane Width (*W*), ft	11.0	12.0	13.0	13.0	12.0		10.0		12.0			
Turn Bay Length, ft	200	0	1035	450	0		0		0			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	45	45	45	45	45		45		45			

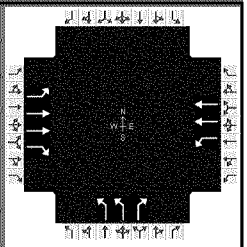
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		40.0	28.0	68.0	20.0	20.0		
Yellow Change Interval (*Y*), s		5.0	0.0	5.0	4.0	4.0		
Red Clearance Interval (R_c), s		2.0	0.0	2.0	2.0	1.0		
Minimum Green (G_{min}), s		25	10	25	5	5		
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0			
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0			
Passage (*PT*), s		2.0	2.0	2.0	2.0	2.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	No	Yes	No	Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

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

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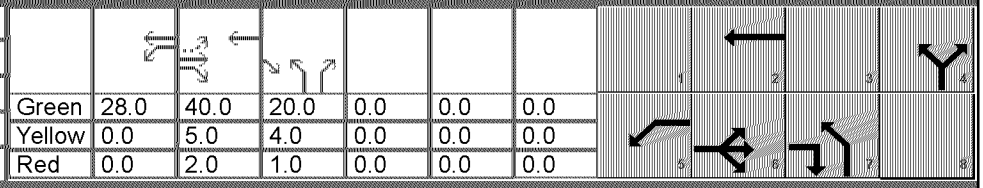
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 6:30
Intersection	US 40 & MD 543	File Name	us 40 & md 543 - Back AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	774	208	203	508		187		749			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	28.0	40.0	20.0	0.0	0.0	0.0
Yellow	0.0	5.0	4.0	0.0	0.0	0.0
Red	0.0	2.0	1.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6	5	2		4		
Case Number		5.3	2.0	4.0		9.0		
Phase Duration, s		47.0	28.0	75.0		25.0		
Change Period, (*Y+R c*), s		7.0	0.0	7.0		5.0		
Max Allow Headway (*MAH*), s		3.0	3.0	3.0		3.2		
Queue Clearance Time (*g s*), s		21.9	12.3	8.0		24.0		
Green Extension Time (*g e*), s		3.8	0.3	4.1		0.0		
Phase Call Probability		1.00	1.00	1.00		1.00		
Max Out Probability		0.03	0.00	0.00		1.00		

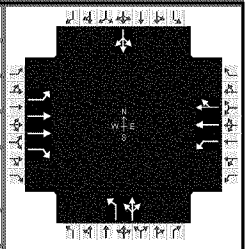
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2		7		14			
Adjusted Flow Rate (*v*), veh/h	0	851	229	223	558		205		823			
Adjusted Saturation Flow Rate (*s*), veh/h/ln	865	1668	1544	1735	1668		1620					
Queue Service Time (*g s*), s	0.0	19.9	6.3	10.3	6.0		5.3					
Cycle Queue Clearance Time (*g c*), s	0.0	19.9	6.3	10.3	6.0		5.3					
Green Ratio (*g/C*)	0.42	0.42	0.64	0.30	0.70		0.22					
Capacity (*c*), veh/h	72	1401	988	521	2335		713					
Volume-to-Capacity Ratio (*X*)	0.000	0.607	0.231	0.429	0.239		0.288					
Back of Queue (*Q*), ft/ln (95 th percentile)	0	315.5	84.5	199	77.6		96.9					
Back of Queue (*Q*), veh/ln (95 th percentile)	0.0	11.7	3.1	7.4	2.9		3.6					
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.08	0.44	0.00		0.00					
Uniform Delay (*d 1*), s/veh	0.0	22.6	7.6	28.1	5.7		32.5					
Incremental Delay (*d 2*), s/veh	0.0	0.5	0.0	0.2	0.0		0.1					
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0		0.0					
Control Delay (*d*), s/veh	0.0	23.1	7.6	28.3	5.7		32.6		0.0			
Level of Service (LOS)		C	A	C	A		C		A			
Approach Delay, s/veh / LOS	19.8	B		12.2	B		6.5	A		0.0		
Intersection Delay, s/veh / LOS	13.0						B					

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

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HCS7 Signalized Intersection Input Data

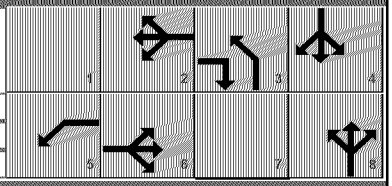
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.90
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 6:15
Intersection	US 40 & Spesutia Road	File Name	US 40 & Spesutia - Back AM +Co Imp - Split-phas…		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	919	510	34	433	3	210	0	19	0	0	8

Signal Information			
Cycle, s	135.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On





	EB			WB			NB			SB		
Green	8.0	55.0		8.0	40.0		0.0	0.0				
Yellow	4.0	5.0		4.0	4.0		0.0	0.0				
Red	1.0	2.0		2.0	2.0		0.0	0.0				

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	919	510	34	433	3	210	0	19	0	0	8
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	0	0	10		0	0			10	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	11.0	12.0	15.0	12.0	12.0		10.0	11.0			12.0	
Turn Bay Length, ft	300	0	300	400	0		300	0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	30	30	30	30	30	30

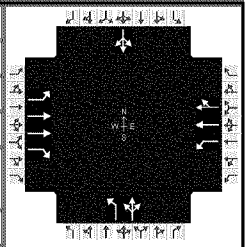
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		55.0	8.0	63.0	40.0	40.0		8.0
Yellow Change Interval (*Y*), s		5.0	4.0	0.0	4.0	4.0		4.0
Red Clearance Interval (R_c), s		2.0	1.0	0.0	2.0	2.0		2.0
Minimum Green (G_{min}), s		25	5	25	6	5		5
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0	2.0	2.0	2.0	2.0		2.0
Recall Mode		Min	Off	Min	Off	Off		Off
Dual Entry		Yes	No	Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

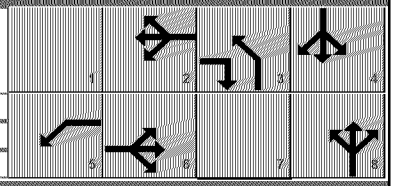
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.90
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 6:15
Intersection	US 40 & Spesutia Road	File Name	US 40 & Spesutia - Back AM +Co Imp - Split-phas…		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	919	510	34	433	3	210	0	19	0	0	8

Signal Information			
Cycle, s	135.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On





	EB		WB			
Green	8.0	55.0	8.0	40.0	0.0	0.0
Yellow	4.0	5.0	4.0	4.0	0.0	0.0
Red	1.0	2.0	2.0	2.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6	5	2		8		4
Case Number		5.3	1.0	4.0		10.0		12.0
Phase Duration, s		62.0	13.0	75.0		46.0		14.0
Change Period, (*Y+R c*), s		7.0	5.0	7.0		6.0		6.0
Max Allow Headway (*MAH*), s		2.9	2.9	2.9		3.3		3.4
Queue Clearance Time (*g s*), s		36.4	3.4	12.4		12.1		2.8
Green Extension Time (*g e*), s		4.7	0.0	5.0		0.5		0.0
Phase Call Probability		1.00	1.00	1.00		1.00		1.00
Max Out Probability		0.08	0.04	0.00		0.00		0.02

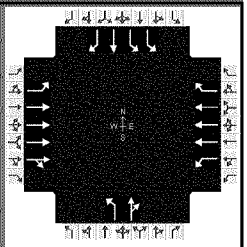
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	3	1021	567	38	242	242	117	138			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	853	1668	1675	1810	1752	1747	1810	1779			0	
Queue Service Time (*g s*), s	0.3	34.4	18.4	1.4	10.4	10.4	6.4	10.1			0.0	
Cycle Queue Clearance Time (*g c*), s	0.3	34.4	18.4	1.4	10.4	10.4	6.4	10.1			0.0	
Green Ratio (*g/C*)	0.42	0.42	0.73	0.51	0.52	0.52	0.31	0.31				
Capacity (*c*), veh/h	414	1408	1228	281	908	906	563	553				
Volume-to-Capacity Ratio (*X*)	0.008	0.725	0.461	0.134	0.267	0.267	0.207	0.249			0.000	
Back of Queue (*Q*), ft/ln (95 th percentile)	2.9	520.5	222.3	25.1	192.8	181.4	129.1	213.5			0	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.1	19.3	8.9	1.0	7.1	7.1	5.2	8.5			0.0	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.01	0.00	0.74	0.06	0.00	0.00	0.43	0.00			0.00	
Uniform Delay (*d 1*), s/veh	22.6	32.5	7.3	21.7	18.7	18.2	34.2	49.1				
Incremental Delay (*d 2*), s/veh	0.0	1.6	0.1	0.1	0.1	0.1	0.1	0.1			0.0	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh	22.6	34.1	7.4	21.8	18.7	18.2	34.3	49.2				
Level of Service (LOS)	C	C	A	C	B	B	C	D				
Approach Delay, s/veh / LOS	24.6	C		18.7	B		42.4	D		58.3	E	
Intersection Delay, s/veh / LOS	25.3						C					

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

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HCS7 Signalized Intersection Input Data

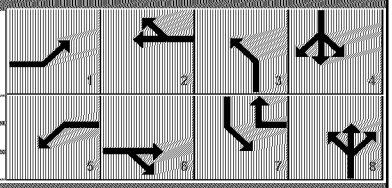
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Apr 27, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.96
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 7:15
Intersection	US 40 at MD 7/MD 159	File Name	US 40 at MD 7 - Back AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	14	1152	86	32	667	374	34	57	12	667	63	26

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	11.0	43.0	30.0	12.0	0.0	0.0	
Yellow	4.0	5.0	4.0	4.0	0.0	0.0	
Red	1.0	2.0	2.0	2.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	14	1152	86	32	667	374	34	57	12	667	63	26
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10		10	10	2	10	10		10	10	10
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	11.0		12.0	12.0	12.0
Turn Bay Length, ft	350	0		300	0	0	400	0		775	0	600
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	40	40	40	40	40	40

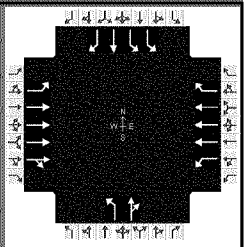
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	11.0	43.0	11.0	43.0	12.0	12.0	30.0	30.0
Yellow Change Interval (*Y*), s	4.0	5.0	4.0	5.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s	1.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s	5	30	5	30	5	10	5	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Apr 27, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.96
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 7:15
Intersection	US 40 at MD 7/MD 159	File Name	US 40 at MD 7 - Back AM.xus		
Project Description	3762				

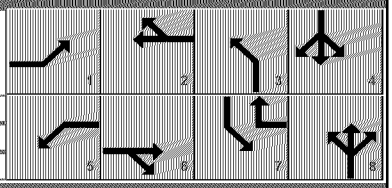


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	14	1152	86	32	667	374	34	57	12	667	63	26

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.0	43.0	30.0	12.0	0.0	0.0
Yellow	4.0	5.0	4.0	4.0	0.0	0.0
Red	1.0	2.0	2.0	2.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		8		4
Case Number	2.0	4.0	2.0	3.0		10.0		9.0
Phase Duration, s	16.0	50.0	16.0	50.0		18.0		36.0
Change Period, ($Y+R_c$), s	5.0	7.0	5.0	7.0		6.0		6.0
Max Allow Headway (*MAH*), s	2.9	2.9	2.9	2.9		3.0		3.1
Queue Clearance Time (g_s), s	2.9	19.3	4.2	16.0		6.7		26.0
Green Extension Time (g_e), s	0.0	6.1	0.0	6.2		0.1		0.9
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	0.00	0.06	0.00	0.04		0.05		0.64

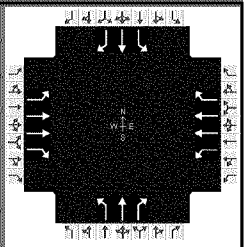
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	15	978	312	33	695	390	35	72		695	66	27
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1752	1666	1668	1591		1668	1699		1620	1752	1485
Queue Service Time (g_s), s	0.9	17.1	17.3	2.2	12.8		2.3	4.7		24.0	3.4	1.6
Cycle Queue Clearance Time (g_c), s	0.9	17.1	17.3	2.2	12.8		2.3	4.7		24.0	3.4	1.6
Green Ratio (*g/C*)	0.11	0.38	0.38	0.11	0.38		0.12	0.12		0.27	0.27	0.27
Capacity (*c*), veh/h	181	1971	625	181	1789		195	198		864	467	396
Volume-to-Capacity Ratio (*X*)	0.081	0.496	0.499	0.184	0.388		0.182	0.363		0.804	0.140	0.068
Back of Queue (*Q*), ft/ln (95 th percentile)	18.5	297.3	270.7	42.9	218		46.3	96.3		408.1	70.1	28.4
Back of Queue (*Q*), veh/ln (95 th percentile)	0.7	11.0	10.7	1.6	8.1		1.7	3.6		15.1	2.6	1.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.05	0.00	0.00	0.14	0.00		0.12	0.00		0.53	0.00	0.05
Uniform Delay (d_1), s/veh	48.1	29.5	28.8	48.7	28.1		47.8	48.9		41.1	33.5	32.9
Incremental Delay (d_2), s/veh	0.1	0.1	0.2	0.2	0.1		0.2	0.4		5.2	0.1	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (*d*), s/veh	48.2	29.6	29.1	48.9	28.1	10.0	48.0	49.3		46.2	33.6	32.9
Level of Service (LOS)	D	C	C	D	C	A	D	D		D	C	C
Approach Delay, s/veh / LOS	29.6	C		22.4	C		48.9	D		44.7	D	
Intersection Delay, s/veh / LOS	31.4						C					

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

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HCS7 Signalized Intersection Input Data

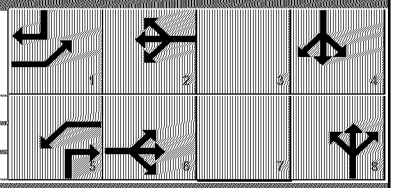
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.98
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 7:00
Intersection	US 40 at MD 132	File Name	US 40 at MD 132 - Back AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	123	491	25	16	778	50	86	27	51	76	21	194

Signal Information			
Cycle, s	98.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.0	35.0	16.0	16.0	0.0	0.0	
Yellow	4.0	5.0	4.0	4.0	0.0	0.0	
Red	1.0	1.0	1.0	1.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	123	491	25	16	778	50	86	27	51	76	21	194
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	10	10	10	10	10	10	10	10	10	10
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	10.0	12.0	11.0	10.0	12.0	11.0	11.0	11.0	15.0	10.0	10.0	10.0
Turn Bay Length, ft	200	0	425	185	0	170	100	0	0	50	50	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	40	40	40	40	40	40

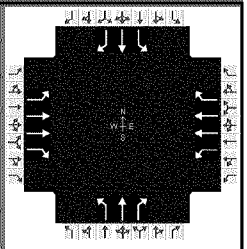
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	10.0	40.0	5.0	35.0		16.0		16.0
Yellow Change Interval (*Y*), s	4.0	5.0	4.0	5.0		4.0		4.0
Red Clearance Interval (R_c), s	1.0	1.0	1.0	1.0		1.0		1.0
Minimum Green (G_{min}), s	5	20	5	20		8		8
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s	2.0	2.0	2.0	2.0		2.0		2.0
Recall Mode	Off	Min	Off	Min		Off		Off
Dual Entry	No	Yes	No	Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

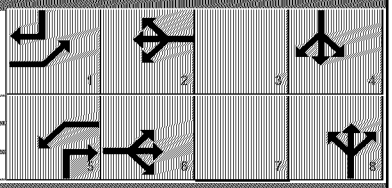
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.98
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 7:00
Intersection	US 40 at MD 132	File Name	US 40 at MD 132 - Back AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	123	491	25	16	778	50	86	27	51	76	21	194

Signal Information			
Cycle, s	98.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.0	35.0	16.0	16.0	0.0	0.0	
Yellow	4.0	5.0	4.0	4.0	0.0	0.0	
Red	1.0	1.0	1.0	1.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		9.0
Phase Duration, s	15.0	46.0	10.0	41.0		21.0		21.0
Change Period, (*Y+R c*), s	5.0	6.0	5.0	6.0		5.0		5.0
Max Allow Headway (*MAH*), s	2.9	2.9	2.9	2.9		3.1		3.2
Queue Clearance Time (*g s*), s	5.8	11.9	2.5	21.1		6.4		12.5
Green Extension Time (*g e*), s	0.1	3.0	0.0	2.8		0.2		0.2
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	0.20	0.00	1.00	0.03		0.00		0.78

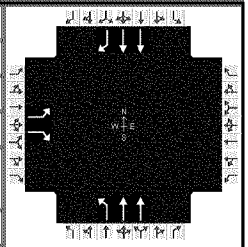
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	126	501	26	16	794	51	88	28	52	78	21	198
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1668	1485	1668	1668	1485	1668	1752	1544	1668	1752	1485
Queue Service Time (*g s*), s	3.8	9.9	1.0	0.5	19.1	2.2	4.4	1.3	2.5	3.9	1.0	10.5
Cycle Queue Clearance Time (*g c*), s	3.8	9.9	1.0	0.5	19.1	2.2	4.4	1.3	2.5	3.9	1.0	10.5
Green Ratio (*g/C*)	0.52	0.43	0.43	0.45	0.38	0.38	0.18	0.18	0.26	0.18	0.18	0.31
Capacity (*c*), veh/h	395	1429	636	434	1259	561	306	322	394	306	322	454
Volume-to-Capacity Ratio (*X*)	0.318	0.350	0.040	0.038	0.630	0.091	0.286	0.086	0.132	0.253	0.067	0.436
Back of Queue (*Q*), ft/ln (95 th percentile)	60.2	165.9	14.6	8.8	301.7	33.3	85.6	25.8	44.6	75.3	20	174.1
Back of Queue (*Q*), veh/ln (95 th percentile)	2.2	6.1	0.5	0.3	11.2	1.2	3.2	1.0	1.7	2.8	0.7	6.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.30	0.00	0.03	0.05	0.00	0.20	0.86	0.00	0.00	1.51	0.40	3.48
Uniform Delay (*d 1*), s/veh	15.0	19.4	16.3	15.4	25.6	19.7	34.5	33.2	28.1	34.2	33.1	27.2
Incremental Delay (*d 2*), s/veh	0.2	0.1	0.0	0.0	0.8	0.0	0.2	0.0	0.1	0.2	0.0	0.2
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	15.2	19.5	16.3	15.4	26.4	19.7	34.7	33.2	28.2	34.4	33.1	27.5
Level of Service (LOS)	B	B	B	B	C	B	C	C	C	C	C	C
Approach Delay, s/veh / LOS	18.5	B		25.8	C		32.4	C		29.7	C	
Intersection Delay, s/veh / LOS	24.6						C					

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

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HCS7 Signalized Intersection Input Data

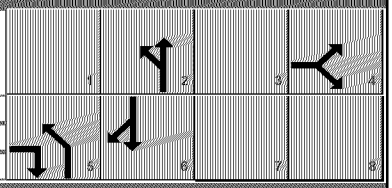
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 7:15
Intersection	US 40 EB & MD 22 Sign…	File Name	md 22 & us 40 EB - Back AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	122		116				69	251			1244	198

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.0	50.0	15.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.0	1.0	1.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	122		116				69	251			1244	198
Initial Queue (Q_b), veh/h	0		0				0	0			0	0
Base Saturation Flow Rate (s_o), veh/h	1900		1900				1900	1900			1900	1900
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	10		2				10	10			10	10
Ped / Bike / RTOR, /h	0	0		0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3				3	3			3	3
Upstream Filtering (*I*)	1.00		1.00				1.00	1.00			1.00	1.00
Lane Width (*W*), ft	12.0		12.0				11.0	12.0			12.0	12.0
Turn Bay Length, ft	0		0				215	0			0	220
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	50		50				50	50			50	50

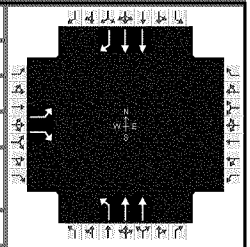
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		15.0			18.0	65.0		50.0
Yellow Change Interval (*Y*), s		4.0			4.0	5.0		5.0
Red Clearance Interval (R_c), s		1.0			2.0	1.0		1.0
Minimum Green (G_{min}), s		5			5	25		25
Start-Up Lost Time (*l*t), s	2.0				2.0	2.0		2.0
Extension of Effective Green (*e*), s	4.0				4.0	4.0		4.0
Passage (*PT*), s		2.0			2.0	2.0		2.0
Recall Mode		Off			Off	Min		Min
Dual Entry		Yes			No	Yes		Yes
Walk (*Walk*), s		0.0		0.0				0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				0.0

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

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HCS7 Signalized Intersection Results Summary

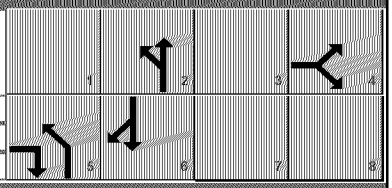
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 7:15
Intersection	US 40 EB & MD 22 Sign…	File Name	md 22 & us 40 EB - Back AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	122		116				69	251			1244	198

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.0	50.0	15.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.0	1.0	1.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		20.0			24.0	80.0		56.0
Change Period, ($Y+R_c$), s		5.0			6.0	6.0		6.0
Max Allow Headway (*MAH*), s		3.1			3.0	2.9		2.9
Queue Clearance Time (g_s), s		9.3			3.2	4.2		35.3
Green Extension Time (g_e), s		0.2			0.1	5.0		4.3
Phase Call Probability		1.00			1.00	1.00		1.00
Max Out Probability		0.09			0.00	0.00		0.10

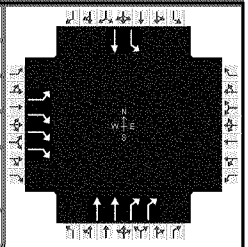
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (*v*), veh/h	134		127				76	276			1367	218
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668						1668	1668			1668	1485
Queue Service Time (g_s), s	7.3						1.2	2.2			33.3	8.2
Cycle Queue Clearance Time (g_c), s	7.3						1.2	2.2			33.3	8.2
Green Ratio (*g/C*)	0.17						0.74	0.76			0.52	0.52
Capacity (*c*), veh/h	284						475	2535			1734	772
Volume-to-Capacity Ratio (*X*)	0.473						0.160	0.109			0.788	0.282
Back of Queue (*Q*), ft/ln (95 th percentile)	138						28.2	21.3			464.2	118.8
Back of Queue (*Q*), veh/ln (95 th percentile)	5.1						1.0	0.8			17.2	4.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00						0.13	0.00			0.00	0.54
Uniform Delay (d_1), s/veh	37.5						11.4	3.4			19.5	13.5
Incremental Delay (d_2), s/veh	0.5						0.1	0.0			2.3	0.1
Initial Queue Delay (d_3), s/veh	0.0						0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh	37.9		0.0				11.4	3.4			21.8	13.6
Level of Service (LOS)	D		A				B	A			C	B
Approach Delay, s/veh / LOS	19.4	B		0.0			5.1	A		20.7	C	
Intersection Delay, s/veh / LOS	18.0						B					

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

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HCS7 Signalized Intersection Input Data

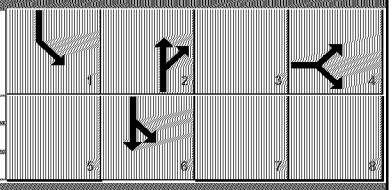
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 7:15
Intersection	MD 715 at US 40 EB Ra…	File Name	md 715 & us 40 EB - Back AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	71		811					161	58	29	117	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	55.0	18.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	1.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	71		811					161	58	29	117	
Initial Queue (Q_b), veh/h	0		0					0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h	1900		1900					1900	1900	1900	1900	
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	10		2					10	0	10	10	
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3					3	3	3	3	
Upstream Filtering (*I*)	1.00		1.00					1.00	1.00	1.00	1.00	
Lane Width (*W*), ft	15.0		12.0					12.0	12.0	12.0	12.0	
Turn Bay Length, ft	300		0					0	0	150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	50		50					40	40	40	40	

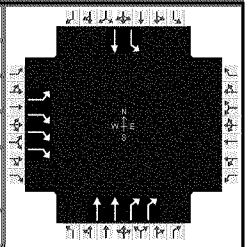
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		18.0				55.0	10.0	65.0
Yellow Change Interval (*Y*), s		4.0				5.0	4.0	5.0
Red Clearance Interval (R_c), s		1.0				2.0	1.0	2.0
Minimum Green (G_{min}), s		8				25	5	25
Start-Up Lost Time (*l1*), s	2.0					2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0					4.0	4.0	4.0
Passage (*PT*), s		2.0				2.0	2.0	2.0
Recall Mode		Off				Min	Off	Min
Dual Entry		Yes				Yes	No	Yes
Walk (*Walk*), s		0.0		0.0				0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				0.0

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

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HCS7 Signalized Intersection Results Summary

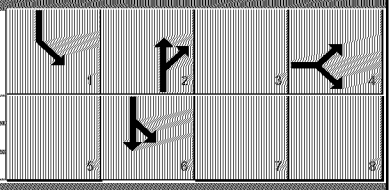
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 7:15
Intersection	MD 715 at US 40 EB Ra…	File Name	md 715 & us 40 EB - Back AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	71		811					161	58	29	117	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	55.0	18.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	1.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		9.0				7.3	1.0	4.0
Phase Duration, s		23.0				62.0	15.0	77.0
Change Period, ($Y+R_c$), s		5.0				7.0	5.0	7.0
Max Allow Headway (*MAH*), s		3.2				3.0	3.1	3.0
Queue Clearance Time (g_s), s		22.0				4.4	2.6	4.2
Green Extension Time (g_e), s		0.0				0.7	0.0	0.7
Phase Call Probability		1.00				1.00	1.00	1.00
Max Out Probability		1.00				0.00	0.00	0.00

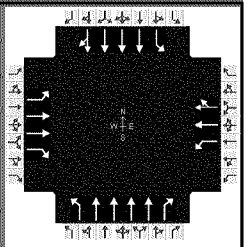
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2	12	1	6	
Adjusted Flow Rate (*v*), veh/h	78		891					177	64	32	129	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1735							1668		1668	1752	
Queue Service Time (g_s), s	3.8							2.4		0.6	2.2	
Cycle Queue Clearance Time (g_c), s	3.8							2.4		0.6	2.2	
Green Ratio (*g/C*)	0.20							0.57		0.71	0.72	
Capacity (*c*), veh/h	347							1901		890	1261	
Volume-to-Capacity Ratio (*X*)	0.225							0.093		0.036	0.102	
Back of Queue (*Q*), ft/ln (95 th percentile)	73.7							39.2		7.5	30.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	2.7							1.5		0.3	1.1	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.25							0.00		0.05	0.00	
Uniform Delay (d_1), s/veh	33.5							9.8		4.4	4.5	
Incremental Delay (d_2), s/veh	0.1							0.0		0.0	0.0	
Initial Queue Delay (d_3), s/veh	0.0							0.0		0.0	0.0	
Control Delay (*d*), s/veh	33.6		0.0					9.8	0.0	4.4	4.5	
Level of Service (LOS)	C		A					A	A	A	A	
Approach Delay, s/veh / LOS	2.7	A		0.0			7.2	A		4.5	A	
Intersection Delay, s/veh / LOS	3.7						A					

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

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HCS7 Signalized Intersection Input Data

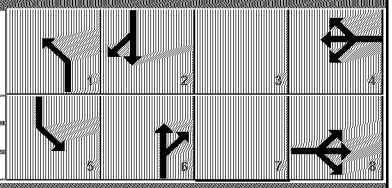
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.93
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 7:15
Intersection	MD 715 at Old Philadelp…	File Name	MD 715 at Old Phil - Back AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	43	143	42	119	248	30	4	66	16	13	695	46

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.0	45.0	20.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.5	1.5	3.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	43	143	42	119	248	30	4	66	16	13	695	46
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	10	10	10		10	10	10	10	10	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	11.0	12.0	12.0	10.0	10.0		12.0	12.0	12.0	11.0	12.0	
Turn Bay Length, ft	200	0	375	300	0		275	0	275	60	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	30	30	30	35	35	35	45	45	45	45	45	45

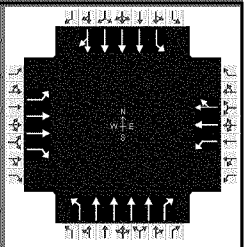
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		20.0		20.0	15.0	45.0	15.0	45.0
Yellow Change Interval (*Y*), s		4.0		4.0	4.0	5.0	4.0	5.0
Red Clearance Interval (R_c), s		3.0		3.0	2.5	1.5	2.5	1.5
Minimum Green (G_{min}), s		8		8	5	20	5	20
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0		2.0	2.0	2.0	2.0	2.0
Recall Mode		Off		Off	Off	Min	Off	Min
Dual Entry		Yes		Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

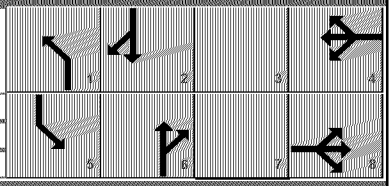
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.93
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 7:15
Intersection	MD 715 at Old Philadelp…	File Name	MD 715 at Old Phil - Back AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	43	143	42	119	248	30	4	66	16	13	695	46

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.0	45.0	20.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.5	1.5	3.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		5.0		6.0	2.0	3.0	2.0	4.0
Phase Duration, s		27.0		27.0	21.5	51.5	21.5	51.5
Change Period, (*Y+R c*), s		7.0		7.0	6.5	6.5	6.5	6.5
Max Allow Headway (*MAH*), s		3.3		3.3	3.0	2.9	3.0	2.9
Queue Clearance Time (*g s*), s		13.6		16.0	2.2	2.6	2.7	9.0
Green Extension Time (*g e*), s		1.0		0.7	0.0	2.0	0.0	2.0
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		0.23		0.70	0.00	0.00	0.00	0.00

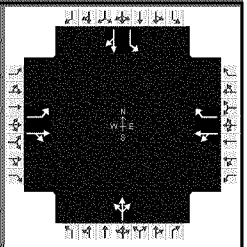
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	46	154	45	128	151	148	4	71	17	14	602	195
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1012	1668	1485	1155	1752	1686	1668	1591	1485	1668	1752	1675
Queue Service Time (*g s*), s	4.1	3.8	2.4	10.2	7.4	7.5	0.2	0.6	0.6	0.7	6.9	7.0
Cycle Queue Clearance Time (*g c*), s	11.6	3.8	2.4	14.0	7.4	7.5	0.2	0.6	0.6	0.7	6.9	7.0
Green Ratio (*g/C*)	0.22	0.22	0.22	0.22	0.22	0.22	0.17	0.47	0.47	0.17	0.47	0.47
Capacity (*c*), veh/h	219	734	327	283	385	371	284	2990	698	284	2470	787
Volume-to-Capacity Ratio (*X*)	0.211	0.210	0.138	0.453	0.392	0.399	0.015	0.024	0.025	0.049	0.244	0.247
Back of Queue (*Q*), ft/ln (95 th percentile)	49.7	73.7	42.8	138.6	150.2	138.8	4.1	9.7	9.5	13.4	122.9	112.9
Back of Queue (*Q*), veh/ln (95 th percentile)	1.8	2.7	1.6	5.1	5.6	5.5	0.2	0.4	0.4	0.5	4.6	4.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.25	0.00	0.11	0.46	0.00	0.00	0.01	0.00	0.03	0.22	0.00	0.00
Uniform Delay (*d 1*), s/veh	38.3	31.9	31.4	37.6	33.3	33.3	34.5	14.7	14.2	34.7	16.4	15.9
Incremental Delay (*d 2*), s/veh	0.2	0.1	0.1	0.4	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.1
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	38.5	31.9	31.4	38.0	33.5	33.6	34.5	14.7	14.2	34.8	16.4	16.0
Level of Service (LOS)	D	C	C	D	C	C	C	B	B	C	B	B
Approach Delay, s/veh / LOS	33.1	C		34.9	C		15.6	B		16.6	B	
Intersection Delay, s/veh / LOS	24.1						C					

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

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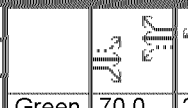
HCS7 Signalized Intersection Input Data

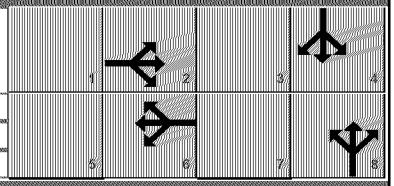
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	5/12/2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.97
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 7:15
Intersection	MD 7 at Stepney Rd	File Name	md 7 at stepney - Back AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	84	556	0	0	456	37	1	0	0	68	1	136

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On





	EB			WB			NB			SB		
Green	70.0	20.0		0.0	0.0	0.0	0.0					
Yellow	4.0	4.0		0.0	0.0	0.0	0.0					
Red	1.0	1.0		0.0	0.0	0.0	0.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	84	556	0	0	456	37	1	0	0	68	1	136
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	5	5			5	5		5		5	5	
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0		0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	10.0	12.0			12.0	10.0		12.0		10.0	10.0	
Turn Bay Length, ft	200	0			0	250		0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	35	35	35

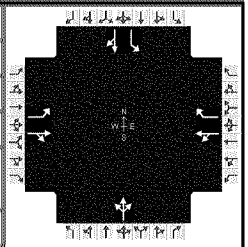
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		70.0		70.0		20.0		20.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		1.0		1.0		1.0		1.0
Minimum Green (G_{min}), s		20		20		8		8
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Min		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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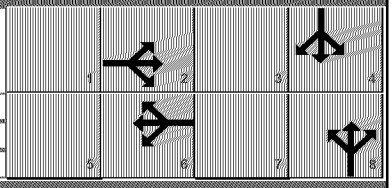
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	5/12/2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.97
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 7:15
Intersection	MD 7 at Stepney Rd	File Name	md 7 at stepney - Back AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	84	556	0	0	456	37	1	0	0	68	1	136

Signal Information					EB		WB		NB		SB	
Cycle, s	100.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	70.0	20.0	0.0	0.0	0.0	0.0		
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	0.0	0.0	0.0	0.0		



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		7.0		8.0		6.0
Phase Duration, s		75.0		75.0		25.0		25.0
Change Period, (*Y+R c*), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		3.1		3.1		3.3		3.3
Queue Clearance Time (*g s*), s		15.7		11.7		9.9		13.5
Green Extension Time (*g e*), s		2.6		2.6		0.3		0.2
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.05

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	87	0			0	38		1		70	141	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	901	0			0	1547		785		1739	1549	
Queue Service Time (*g s*), s	4.0	0.0			0.0	0.7		0.1		3.6	7.8	
Cycle Queue Clearance Time (*g c*), s	13.7	0.0			0.0	0.7		7.9		11.5	7.8	
Green Ratio (*g/C*)	0.72					0.72		0.22		0.22	0.22	
Capacity (*c*), veh/h	633					1114		245		317	341	
Volume-to-Capacity Ratio (*X*)	0.137	0.000			0.000	0.034		0.004		0.221	0.414	
Back of Queue (*Q*), ft/ln (95 th percentile)	33.4	0			0	8.6		0.9		71.4	136.3	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.3	0.0			0.0	0.3		0.0		2.7	5.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.17	0.00			0.00	0.03		0.00		0.48	0.00	
Uniform Delay (*d 1*), s/veh	7.9					4.0		36.8		38.4	33.5	
Incremental Delay (*d 2*), s/veh	0.0	0.0			0.0	0.0		0.0		0.1	0.3	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Control Delay (*d*), s/veh	7.9					4.0		36.8		38.6	33.8	
Level of Service (LOS)	A					A		D		D	C	
Approach Delay, s/veh / LOS	6.1	A		5.2	A		36.8	D		35.4	D	
Intersection Delay, s/veh / LOS	10.3						B					

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

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HCS7 Two-Way Stop-Control Report

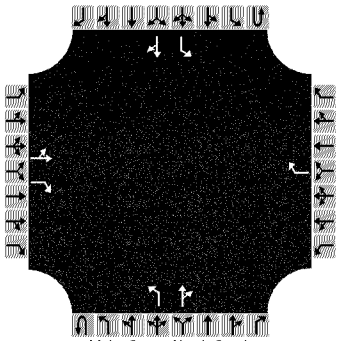
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	4/18/21
Analysis Year	Back
Time Analyzed	Background AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Spesutia Rd
Jurisdiction	Harford Co, MD
East/West Street	Spesutia Rd-Access
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	1		0	0	1	0	1	1	0	0	1	1	0
Configuration		LT		R				R		L		TR		L		TR
Volume (veh/h)		52	12	529				14		161	126	0		26	237	24
Percent Heavy Vehicles (%)		0	0	0				15		0				15		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				Yes											
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2				6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20				6.35		4.10				4.25		
Base Follow-Up Headway (sec)		3.5	4.0	3.3				3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30				3.44		2.20				2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		71		588				16		179				29		
Capacity, c (veh/h)		251		767				875		1283				1367		
v/c Ratio		0.28		0.77				0.02		0.14				0.02		
95% Queue Length, Q_{95} (veh)		1.1		7.4				0.1		0.5				0.1		
Control Delay (s/veh)		24.9		23.3				9.2		8.3				7.7		
Level of Service (LOS)		C		C				A		A				A		
Approach Delay (s/veh)	23.5				9.2				4.6				0.7			
Approach LOS	C				A											

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HCS7 Two-Way Stop-Control Report

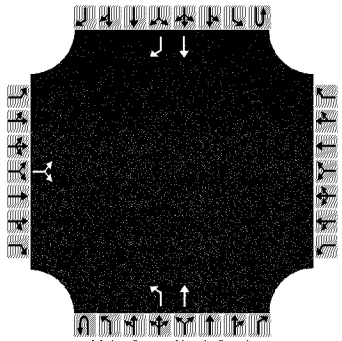
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/9/2022
Analysis Year	Back
Time Analyzed	Background AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Chelsea Rd
Jurisdiction	Harford Co, MD
East/West Street	MD 159
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	1	1	0	0	0	1	1
Configuration			LR							L	T				T	R
Volume (veh/h)		110		1						1	174				724	30
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			123							1						
Capacity, c (veh/h)			266							784						
v/c Ratio			0.46							0.00						
95% Queue Length, Q_{95} (veh)			2.3							0.0						
Control Delay (s/veh)			29.6							9.6						
Level of Service (LOS)			D							A						
Approach Delay (s/veh)	29.6								0.1							
Approach LOS	D															

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HCS7 Two-Way Stop-Control Report

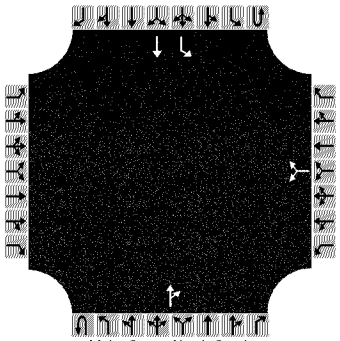
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/9/2022
Analysis Year	Back
Time Analyzed	Background AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	Chelsea Rd at Woodley Rd
Jurisdiction	Harford Co, MD
East/West Street	Woodley Rd
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	0		0	1	0	0	0	1	0	0	1	1	0
Configuration							LR					TR		L	T	
Volume (veh/h)						1		43			67	3		277	308	
Percent Heavy Vehicles (%)						15		15						15		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.55		6.35						4.25		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.64		3.44						2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							49							308		
Capacity, c (veh/h)							871							1442		
v/c Ratio							0.06							0.21		
95% Queue Length, Q_{95} (veh)							0.2							0.8		
Control Delay (s/veh)							9.4							8.2		
Level of Service (LOS)							A							A		
Approach Delay (s/veh)						9.4							3.9			
Approach LOS						A										

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HCS7 Two-Way Stop-Control Report

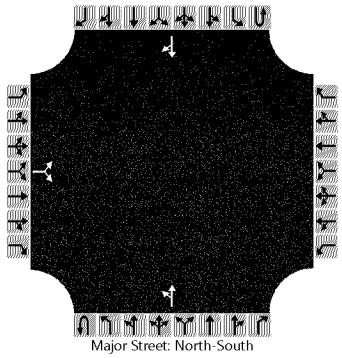
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/2022
Analysis Year	Back
Time Analyzed	Background AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Fords Lane
Jurisdiction	Harford Co, MD
East/West Street	Fords Lane
North/South Street	MD 159
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		4		0						0	139				35	0
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			4							0						
Capacity, c (veh/h)			799							1555						
v/c Ratio			0.01							0.00						
95% Queue Length, Q_{95} (veh)			0.0							0.0						
Control Delay (s/veh)			9.5							7.3						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.5								0.0						
Approach LOS		A														

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HCS7 Two-Way Stop-Control Report

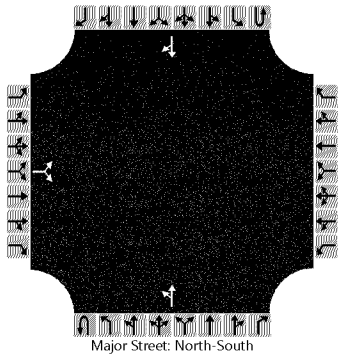
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/2022
Analysis Year	Back
Time Analyzed	Background AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Canning House
Jurisdiction	Harford Co, MD
East/West Street	Canning House
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		45		0						0	92				23	12
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

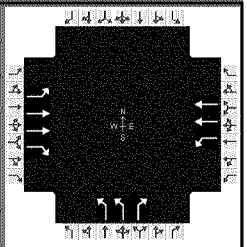
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			50							0						
Capacity, c (veh/h)			852							1552						
v/c Ratio			0.06							0.00						
95% Queue Length, Q_{95} (veh)			0.2							0.0						
Control Delay (s/veh)			9.5							7.3						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)	9.5								0.0							
Approach LOS	A															

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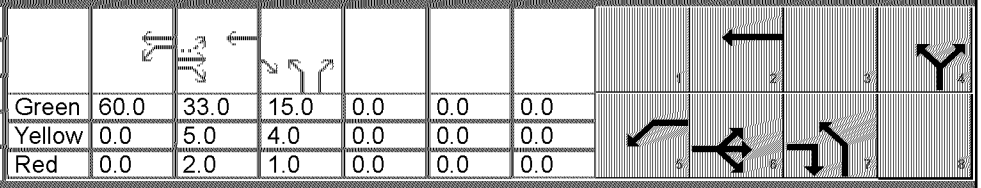
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Apr 27, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.92
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 3:45
Intersection	US 40 & MD 543	File Name	us 40 & md 543 - Back PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	732	310	418	978		271		438			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	60.0	33.0		15.0	0.0	0.0	0.0					
Yellow	0.0	5.0		4.0	0.0	0.0	0.0					
Red	0.0	2.0		1.0	0.0	0.0	0.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	732	310	418	978		271		438			
Initial Queue (Q_b), veh/h	0	0	0	0	0		0		0			
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900		1900		1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	0	10	2	10	10		10		0			
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3	3	3	3		3		3			
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00		1.00		1.00			
Lane Width (*W*), ft	11.0	12.0	13.0	13.0	12.0		10.0		12.0			
Turn Bay Length, ft	200	0	1035	450	0		0		0			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	45	45	45	45	45		45		45			

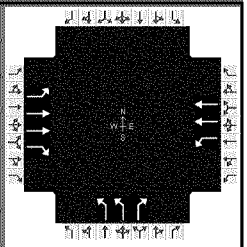
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		33.0	60.0	93.0	15.0	15.0		
Yellow Change Interval (*Y*), s		5.0	0.0	5.0	4.0	4.0		
Red Clearance Interval (R_c), s		2.0	0.0	2.0	2.0	1.0		
Minimum Green (G_{min}), s		25	10	25	5	5		
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0			
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0			
Passage (*PT*), s		2.0	2.0	2.0	2.0	2.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	No	Yes	No	Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

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

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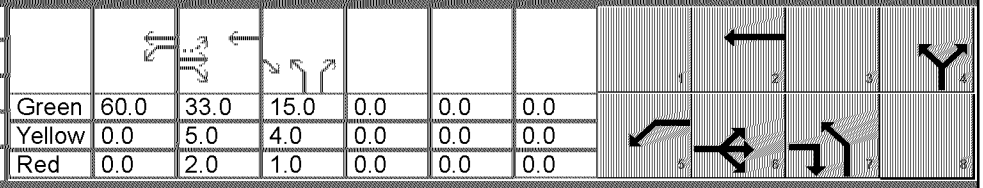
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Apr 27, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.92
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 3:45
Intersection	US 40 & MD 543	File Name	us 40 & md 543 - Back PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	732	310	418	978		271		438			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	60.0	33.0	15.0	0.0	0.0	0.0
Yellow	0.0	5.0	4.0	0.0	0.0	0.0
Red	0.0	2.0	1.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6	5	2		4		
Case Number		5.3	2.0	4.0		9.0		
Phase Duration, s		40.0	60.0	100.0		20.0		
Change Period, (*Y+R c*), s		7.0	0.0	7.0		5.0		
Max Allow Headway (*MAH*), s		3.0	3.0	3.0		3.2		
Queue Clearance Time (*g s*), s		28.6	22.6	13.7		19.0		
Green Extension Time (*g e*), s		2.6	0.8	6.3		0.0		
Phase Call Probability		1.00	1.00	1.00		1.00		
Max Out Probability		0.82	0.00	0.00		1.00		

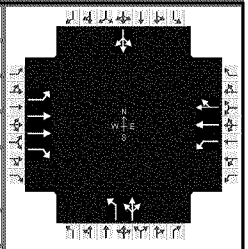
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2		7		14			
Adjusted Flow Rate (*v*), veh/h	0	796	337	454	1063		295		476			
Adjusted Saturation Flow Rate (*s*), veh/h/ln	539	1668		1735	1668		1620					
Queue Service Time (*g s*), s	0.0	26.6		20.6	11.7		10.3					
Cycle Queue Clearance Time (*g c*), s	0.0	26.6		20.6	11.7		10.3					
Green Ratio (*g/C*)	0.29	0.29		0.52	0.79		0.14					
Capacity (*c*), veh/h	60	973		896	2641		459					
Volume-to-Capacity Ratio (*X*)	0.000	0.818		0.507	0.403		0.642					
Back of Queue (*Q*), ft/ln (95 th percentile)	0	449.5		333.3	128.4		204.5					
Back of Queue (*Q*), veh/ln (95 th percentile)	0.0	16.6		12.3	4.8		7.6					
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.74	0.00		0.00					
Uniform Delay (*d 1*), s/veh	0.0	39.5		19.0	4.0		48.6					
Incremental Delay (*d 2*), s/veh	0.0	5.2		0.2	0.0		2.4					
Initial Queue Delay (*d 3*), s/veh	0.0	0.0		0.0	0.0		0.0					
Control Delay (*d*), s/veh	0.0	44.7	0.0	19.2	4.1		51.0		0.0			
Level of Service (LOS)		D	A	B	A		D		A			
Approach Delay, s/veh / LOS	31.4	C		8.6	A		19.5	B		0.0		
Intersection Delay, s/veh / LOS	18.6						B					

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

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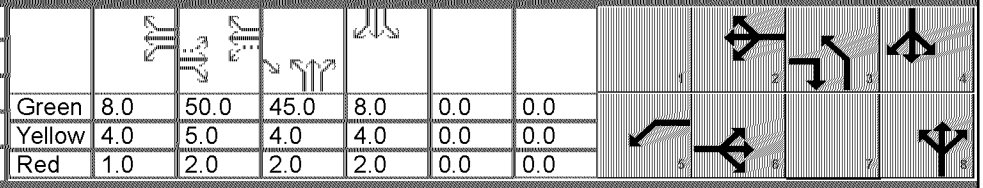
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.93
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 4:45
Intersection	US 40 & Spesutia Road	File Name	US 40 & Spesutia - Back PM + cO Imp - Split-pha…		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	8	791	278	59	858	0	405	0	34	4	0	1

Signal Information			
Cycle, s	135.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



	EB			WB			NB			SB		
Green	8.0	50.0		45.0	8.0	0.0	0.0					
Yellow	4.0	5.0		4.0	4.0	0.0	0.0					
Red	1.0	2.0		2.0	2.0	0.0	0.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	8	791	278	59	858	0	405	0	34	4	0	1
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	0	0	10		0	0			10	
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	11.0	12.0	15.0	12.0	12.0		10.0	11.0			12.0	
Turn Bay Length, ft	350	0	300	400	0		300	0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	30	30	30	30	30	30

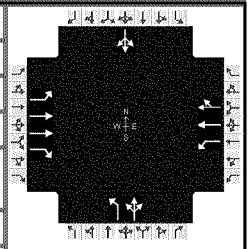
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		50.0	8.0	58.0	45.0	45.0		8.0
Yellow Change Interval (*Y*), s		5.0	4.0	0.0	4.0	4.0		4.0
Red Clearance Interval (R_c), s		2.0	1.0	0.0	2.0	2.0		2.0
Minimum Green (G_{min}), s		25	5	25	6	5		5
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0	2.0	2.0	2.0	2.0		2.0
Recall Mode		Min	Off	Min	Off	Off		Off
Dual Entry		Yes	No	Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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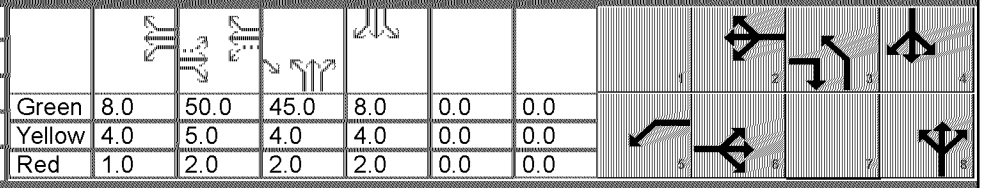
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.93
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 4:45
Intersection	US 40 & Spesutia Road	File Name	US 40 & Spesutia - Back PM + cO Imp - Split-pha…		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	8	791	278	59	858	0	405	0	34	4	0	1

Signal Information			
Cycle, s	135.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



	EB			WB			NB			SB		
Green	8.0	50.0		45.0	8.0	0.0	0.0					
Yellow	4.0	5.0		4.0	4.0	0.0	0.0					
Red	1.0	2.0		2.0	2.0	0.0	0.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6	5	2		8		4
Case Number		5.3	1.0	4.0		10.0		12.0
Phase Duration, s		57.0	13.0	70.0		51.0		14.0
Change Period, (*Y+R c*), s		7.0	5.0	7.0		6.0		6.0
Max Allow Headway (*MAH*), s		2.9	2.9	2.9		3.3		3.2
Queue Clearance Time (*g s*), s		30.4	4.6	27.0		24.0		2.4
Green Extension Time (*g e*), s		5.0	0.0	5.3		1.0		0.0
Phase Call Probability		1.00	1.00	1.00		1.00		1.00
Max Out Probability		0.06	0.45	0.01		0.00		0.00

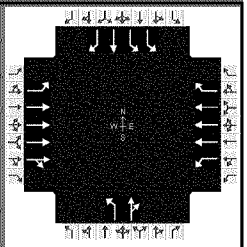
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	9	851	299	63	923	0	174	298			5	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	568	1668	1675	1810	1752	0	1810	1785			1628	
Queue Service Time (*g s*), s	1.5	28.4	7.8	2.6	25.0	0.0	9.4	22.0			0.4	
Cycle Queue Clearance Time (*g c*), s	13.5	28.4	7.8	2.6	25.0	0.0	9.4	22.0			0.4	
Green Ratio (*g/C*)	0.39	0.39	0.73	0.47	0.48		0.35	0.35			0.07	
Capacity (*c*), veh/h	221	1285	1228	302	1687		630	621			121	
Volume-to-Capacity Ratio (*X*)	0.039	0.662	0.243	0.210	0.547	0.000	0.277	0.479			0.045	
Back of Queue (*Q*), ft/ln (95 th percentile)	9.6	445.2	98.5	46.9	400.6	0	187.5	406.1			8.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.4	16.5	3.9	1.9	14.8	0.0	7.5	16.2			0.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.03	0.00	0.33	0.12	0.00	0.00	0.63	0.00			0.00	
Uniform Delay (*d 1*), s/veh	34.0	34.2	5.8	23.1	25.2		31.7	52.7			58.1	
Incremental Delay (*d 2*), s/veh	0.0	1.0	0.0	0.1	0.2	0.0	0.1	0.2			0.1	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh	34.0	35.3	5.9	23.3	25.4		31.8	52.9			58.1	
Level of Service (LOS)	C	D	A	C	C		C	D			E	
Approach Delay, s/veh / LOS	27.7	C		25.3	C		45.1	D		58.1	E	
Intersection Delay, s/veh / LOS	30.0						C					

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

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HCS7 Signalized Intersection Input Data

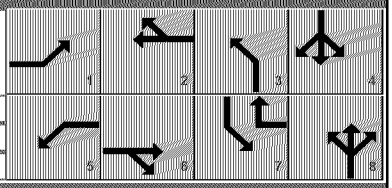
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.97
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 3:45
Intersection	US 40 at MD 7-MD 159	File Name	US 40 at MD 7 - Back PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	41	954	51	40	1120	1087	71	110	22	363	57	28

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	9.0	44.0	20.0	23.0	0.0	0.0	
Yellow	4.0	5.0	4.0	4.0	0.0	0.0	
Red	1.0	2.0	2.0	2.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	41	954	51	40	1120	1087	71	110	22	363	57	28
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		R	0		None			None			None	
Heavy Vehicles (P_{HV}), %	10	10		10	10	2	10	10		10	10	10
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	11.0		12.0	12.0	12.0
Turn Bay Length, ft	350	0		300	0	0	400	0		775	0	600
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	40	40	40	40	40	40

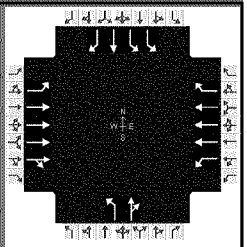
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	9.0	44.0	9.0	44.0	23.0	23.0	20.0	20.0
Yellow Change Interval (*Y*), s	4.0	5.0	4.0	5.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s	1.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s	5	30	5	30	5	10	5	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

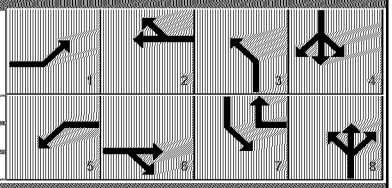
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.97
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 3:45
Intersection	US 40 at MD 7-MD 159	File Name	US 40 at MD 7 - Back PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	41	954	51	40	1120	1087	71	110	22	363	57	28

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	9.0	44.0	20.0	23.0	0.0	0.0	
Yellow	4.0	5.0	4.0	4.0	0.0	0.0	
Red	1.0	2.0	2.0	2.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		8		4
Case Number	2.0	4.0	2.0	3.0		10.0		9.0
Phase Duration, s	14.0	51.0	14.0	51.0		29.0		26.0
Change Period, ($Y+R_c$), s	5.0	7.0	5.0	7.0		6.0		6.0
Max Allow Headway (*MAH*), s	2.9	3.0	2.9	3.0		3.0		3.1
Queue Clearance Time (g_s), s	4.8	15.5	4.8	48.0		10.3		14.8
Green Extension Time (g_e), s	0.0	12.0	0.0	0.0		0.3		0.6
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	0.10	0.27	0.09	1.00		0.00		0.21

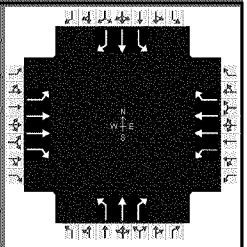
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	42	803	233	41	1155	1121	73	136		374	59	29
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1752	1515	1668	1591		1668	1701		1620	1752	1485
Queue Service Time (g_s), s	2.8	13.3	13.5	2.8	23.6		4.4	8.3		12.8	3.4	1.9
Cycle Queue Clearance Time (g_c), s	2.8	13.3	13.5	2.8	23.6		4.4	8.3		12.8	3.4	1.9
Green Ratio (*g/C*)	0.09	0.38	0.38	0.09	0.38		0.21	0.21		0.18	0.18	0.18
Capacity (*c*), veh/h	153	2015	581	153	1829		348	354		594	321	272
Volume-to-Capacity Ratio (*X*)	0.276	0.398	0.402	0.270	0.631		0.211	0.384		0.630	0.183	0.106
Back of Queue (*Q*), ft/ln (95 th percentile)	56	242.6	205.9	54.6	358		86.2	166.7		240.7	70.9	34.4
Back of Queue (*Q*), veh/ln (95 th percentile)	2.1	9.0	8.1	2.0	13.3		3.2	6.2		8.9	2.6	1.3
Queue Storage Ratio (*RQ*) (95 th percentile)	0.16	0.00	0.00	0.18	0.00		0.22	0.00		0.31	0.00	0.06
Uniform Delay (d_1), s/veh	50.8	27.6	27.0	50.8	30.8		39.3	40.9		45.2	41.4	40.8
Incremental Delay (d_2), s/veh	0.4	0.0	0.2	0.3	0.5		0.1	0.3		1.6	0.1	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (*d*), s/veh	51.2	27.6	27.1	51.1	31.4	35.0	39.4	41.1		46.9	41.5	40.9
Level of Service (LOS)	D	C	C	D	C	C	D	D		D	D	D
Approach Delay, s/veh / LOS	28.4	C		33.5	C		40.5	D		45.8	D	
Intersection Delay, s/veh / LOS	33.9						C					

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

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HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.98
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 4:15
Intersection	US 40 at MD 132	File Name	US 40 at MD 132 - Back PM.xus		
Project Description	3762				

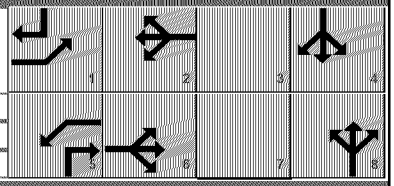


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	251	1033	78	20	852	81	96	40	23	165	68	319

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.0	6.0	39.0	22.0	22.0	0.0						
Yellow	4.0	4.0	5.0	4.0	4.0	0.0						
Red	1.0	1.0	1.0	1.0	1.0	0.0						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	251	1033	78	20	852	81	96	40	23	165	68	319
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	10	10	10	10	10	10	10	10	10	10
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	10.0	12.0	11.0	10.0	12.0	11.0	11.0	11.0	15.0	10.0	10.0	10.0
Turn Bay Length, ft	200	0	425	185	0	170	100	0	0	50	50	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	40	40	40	40	40	40

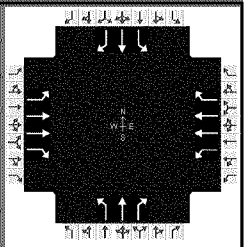
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	16.0	50.0	5.0	39.0		22.0		22.0
Yellow Change Interval (*Y*), s	4.0	5.0	4.0	5.0		4.0		4.0
Red Clearance Interval (R_c), s	1.0	1.0	1.0	1.0		1.0		1.0
Minimum Green (G_{min}), s	5	20	5	20		8		10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s	2.0	2.0	2.0	2.0		2.0		2.0
Recall Mode	Off	Min	Off	Min		Off		Off
Dual Entry	No	Yes	No	Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

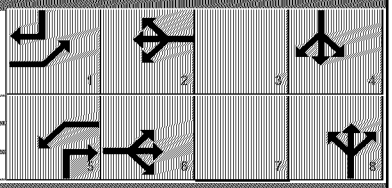
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.98
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 4:15
Intersection	US 40 at MD 132	File Name	US 40 at MD 132 - Back PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	251	1033	78	20	852	81	96	40	23	165	68	319

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.0	6.0	39.0	22.0	22.0	0.0	
Yellow	4.0	4.0	5.0	4.0	4.0	0.0	
Red	1.0	1.0	1.0	1.0	1.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		9.0
Phase Duration, s	21.0	56.0	10.0	45.0		27.0		27.0
Change Period, ($Y+R_c$), s	5.0	6.0	5.0	6.0		5.0		5.0
Max Allow Headway (*MAH*), s	2.9	2.9	2.9	2.9		3.1		3.2
Queue Clearance Time (g_s), s	12.7	33.4	2.9	29.9		8.0		23.9
Green Extension Time (g_e), s	0.1	4.8	0.0	3.8		0.2		0.0
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	0.70	0.09	1.00	0.33		0.00		1.00

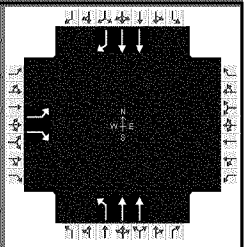
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	256	1054	80	20	869	83	98	41	23	168	69	326
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1668	1485	1668	1668	1485	1668	1752	1544	1668	1752	1485
Queue Service Time (g_s), s	10.7	31.4	3.9	0.9	27.9	4.7	6.0	2.3	1.4	10.8	4.0	21.9
Cycle Queue Clearance Time (g_c), s	10.7	31.4	3.9	0.9	27.9	4.7	6.0	2.3	1.4	10.8	4.0	21.9
Green Ratio (*g/C*)	0.51	0.43	0.43	0.40	0.34	0.34	0.20	0.20	0.26	0.20	0.20	0.35
Capacity (*c*), veh/h	376	1445	643	227	1140	507	334	350	399	334	350	520
Volume-to-Capacity Ratio (*X*)	0.682	0.729	0.124	0.090	0.763	0.163	0.294	0.116	0.059	0.505	0.198	0.626
Back of Queue (*Q*), ft/ln (95 th percentile)	202.2	470.6	61	16.2	442.9	76.6	118.8	47.6	24.9	212	82.4	337.8
Back of Queue (*Q*), veh/ln (95 th percentile)	7.5	17.4	2.3	0.6	16.4	2.8	4.4	1.8	0.9	7.9	3.1	12.5
Queue Storage Ratio (*RQ*) (95 th percentile)	1.01	0.00	0.14	0.09	0.00	0.45	1.19	0.00	0.00	4.24	1.65	6.76
Uniform Delay (d_1), s/veh	23.2	28.9	20.4	24.5	36.0	27.5	40.8	39.3	33.5	42.7	40.0	32.5
Incremental Delay (d_2), s/veh	4.1	1.7	0.0	0.1	2.8	0.1	0.2	0.1	0.0	0.5	0.1	1.8
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	27.3	30.6	20.4	24.5	38.8	27.6	41.0	39.4	33.5	43.2	40.1	34.3
Level of Service (LOS)	C	C	C	C	D	C	D	D	C	D	D	C
Approach Delay, s/veh / LOS	29.4	C		37.5	D		39.5	D		37.7	D	
Intersection Delay, s/veh / LOS	34.0						C					

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

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HCS7 Signalized Intersection Input Data

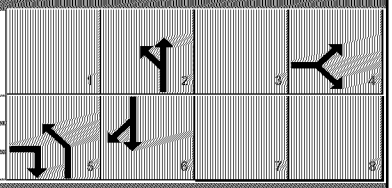
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.94
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 4:00
Intersection	US 40 EB & MD 22 Sign…	File Name	md 22 & us 40 EB - Back PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	291		84				115	1209			651	234

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.0	40.0	25.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.0	1.0	1.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	291		84				115	1209			651	234
Initial Queue (Q_b), veh/h	0		0				0	0			0	0
Base Saturation Flow Rate (s_o), veh/h	1900		1900				1900	1900			1900	1900
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	10		2				10	10			10	10
Ped / Bike / RTOR, /h	0	0		0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3				3	3			3	3
Upstream Filtering (*I*)	1.00		1.00				1.00	1.00			1.00	1.00
Lane Width (*W*), ft	12.0		12.0				11.0	12.0			12.0	12.0
Turn Bay Length, ft	0		0				215	0			0	220
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	50		50				50	50			50	50

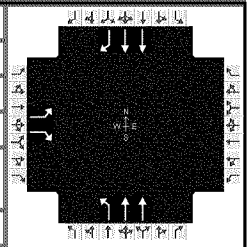
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		25.0			18.0	58.0		40.0
Yellow Change Interval (*Y*), s		4.0			4.0	5.0		5.0
Red Clearance Interval (R_c), s		1.0			2.0	1.0		1.0
Minimum Green (G_{min}), s		5			5	25		25
Start-Up Lost Time (*l*t), s	2.0				2.0	2.0		2.0
Extension of Effective Green (*e*), s	4.0				4.0	4.0		4.0
Passage (*PT*), s		2.0			2.0	2.0		2.0
Recall Mode		Off			Off	Min		Min
Dual Entry		Yes			No	Yes		Yes
Walk (*Walk*), s		0.0		0.0				0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				0.0

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

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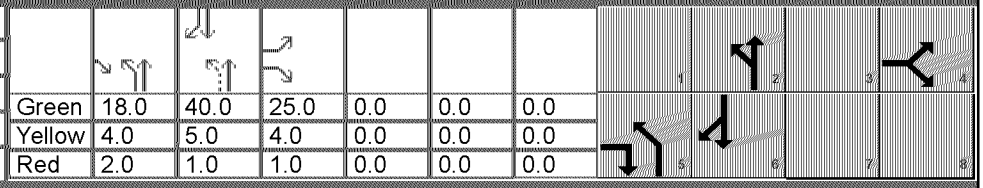
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.94
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 4:00
Intersection	US 40 EB & MD 22 Sign…	File Name	md 22 & us 40 EB - Back PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	291		84				115	1209			651	234

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	18.0	40.0	25.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.0	1.0	1.0	0.0	0.0	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		30.0			24.0	70.0		46.0
Change Period, (*Y+R c*), s		5.0			6.0	6.0		6.0
Max Allow Headway (*MAH*), s		3.0			3.0	2.9		2.9
Queue Clearance Time (*g s*), s		18.6			4.8	23.3		17.2
Green Extension Time (*g e*), s		0.4			0.1	6.3		5.9
Phase Call Probability		1.00			1.00	1.00		1.00
Max Out Probability		0.09			0.00	0.01		0.05

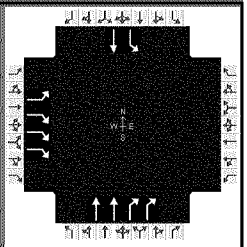
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (*v*), veh/h	310		89				122	1286			693	249
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668						1668	1668			1668	1485
Queue Service Time (*g s*), s	16.6						2.8	21.3			15.2	11.7
Cycle Queue Clearance Time (*g c*), s	16.6						2.8	21.3			15.2	11.7
Green Ratio (*g/C*)	0.27						0.64	0.66			0.42	0.42
Capacity (*c*), veh/h	450						594	2201			1401	624
Volume-to-Capacity Ratio (*X*)	0.687						0.206	0.584			0.494	0.399
Back of Queue (*Q*), ft/ln (95 th percentile)	296.1						40.1	271.6			248.9	180.4
Back of Queue (*Q*), veh/ln (95 th percentile)	11.0						1.5	10.1			9.2	6.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00						0.19	0.00			0.00	0.82
Uniform Delay (*d 1*), s/veh	32.7						8.8	9.8			21.2	20.2
Incremental Delay (*d 2*), s/veh	3.6						0.1	0.3			0.1	0.2
Initial Queue Delay (*d 3*), s/veh	0.0						0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh	36.4		0.0				8.8	10.1			21.3	20.4
Level of Service (LOS)	D		A				A	B			C	C
Approach Delay, s/veh / LOS	28.2	C		0.0			10.0	A		21.1	C	
Intersection Delay, s/veh / LOS	16.4						B					

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

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HCS7 Signalized Intersection Input Data

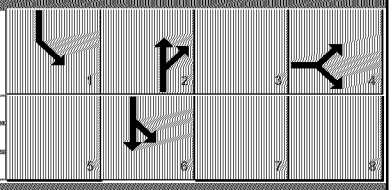
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.93
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 4:00
Intersection	MD 715 at US 40 EB Ra…	File Name	md 715 & us 40 EB - Back PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	19		111					1053	97	41	35	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	55.0	18.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	1.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	19		111					1053	97	41	35	
Initial Queue (Q_b), veh/h	0		0					0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h	1900		1900					1900	1900	1900	1900	
Parking (N_m), man/h		None					0	L + R	0		None	
Heavy Vehicles (P_{HV}), %	10		2					10	0	10	10	
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3					3	3	3	3	
Upstream Filtering (*I*)	1.00		1.00					1.00	1.00	1.00	1.00	
Lane Width (*W*), ft	15.0		12.0					12.0	12.0	12.0	12.0	
Turn Bay Length, ft	300		0					0	0	0	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	50		50					40	40	40	40	

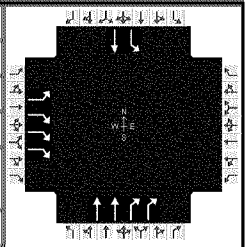
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		18.0				55.0	10.0	65.0
Yellow Change Interval (*Y*), s		4.0				5.0	4.0	5.0
Red Clearance Interval (R_c), s		1.0				2.0	1.0	2.0
Minimum Green (G_{min}), s		8				25	5	25
Start-Up Lost Time (*l*t), s	2.0					2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0					4.0	4.0	4.0
Passage (*PT*), s		2.0				2.0	2.0	2.0
Recall Mode		Off				Min	Off	Min
Dual Entry		Yes				Yes	No	Yes
Walk (*Walk*), s		0.0		0.0				0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				0.0

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

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HCS7 Signalized Intersection Results Summary

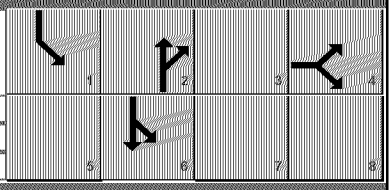
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.93
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 4:00
Intersection	MD 715 at US 40 EB Ra…	File Name	md 715 & us 40 EB - Back PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	19		111					1053	97	41	35	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	55.0	18.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	1.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		9.0				7.3	1.0	4.0
Phase Duration, s		23.0				62.0	15.0	77.0
Change Period, ($Y+R_c$), s		5.0				7.0	5.0	7.0
Max Allow Headway (*MAH*), s		3.2				3.0	3.1	3.0
Queue Clearance Time (g_s), s		4.3				24.1	2.8	2.6
Green Extension Time (g_e), s		0.2				3.4	0.0	3.4
Phase Call Probability		1.00				1.00	1.00	1.00
Max Out Probability		0.00				0.00	0.00	0.00

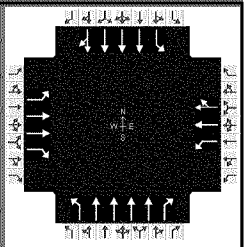
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2	12	1	6	
Adjusted Flow Rate (*v*), veh/h	20		119					1132	104	44	38	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1735							1668		1668	1752	
Queue Service Time (g_s), s	1.0							22.1		0.8	0.6	
Cycle Queue Clearance Time (g_c), s	1.0							22.1		0.8	0.6	
Green Ratio (*g/C*)	0.20							0.57		0.71	0.72	
Capacity (*c*), veh/h	347							1901		435	1261	
Volume-to-Capacity Ratio (*X*)	0.059							0.596		0.101	0.030	
Back of Queue (*Q*), ft/ln (95 th percentile)	18.6							322.1		10.5	8.3	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.7							11.9		0.4	0.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.06							0.00		0.00	0.00	
Uniform Delay (d_1), s/veh	32.4							14.0		7.5	4.3	
Incremental Delay (d_2), s/veh	0.0							0.4		0.0	0.0	
Initial Queue Delay (d_3), s/veh	0.0							0.0		0.0	0.0	
Control Delay (*d*), s/veh	32.4		0.0					14.4	0.0	7.6	4.3	
Level of Service (LOS)	C		A					B	A	A	A	
Approach Delay, s/veh / LOS	4.7	A		0.0			13.1	B		6.1	A	
Intersection Delay, s/veh / LOS	11.9						B					

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

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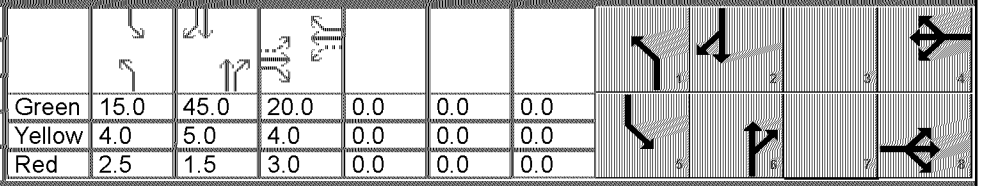
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.92
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 4:00
Intersection	MD 715 at Old Philadelp…	File Name	MD 715 at Old Phil - Back PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	54	156	6	28	126	61	28	1019	124	16	111	26

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



	EB			WB			NB			SB		
Green	15.0	45.0		20.0	0.0	0.0	0.0					
Yellow	4.0	5.0		4.0	0.0	0.0	0.0					
Red	2.5	1.5		3.0	0.0	0.0	0.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	54	156	6	28	126	61	28	1019	124	16	111	26
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	10	10	10		10	10	10	10	10	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	11.0	12.0	12.0	10.0	10.0		12.0	12.0	12.0	11.0	12.0	
Turn Bay Length, ft	200	0	375	300	0		275	0	275	60	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	30	30	30	35	35	35	45	45	45	45	45	45

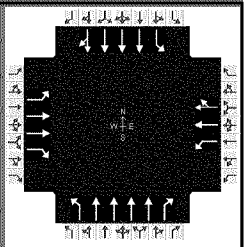
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		20.0		20.0	15.0	45.0	15.0	45.0
Yellow Change Interval (*Y*), s		4.0		4.0	4.0	5.0	4.0	5.0
Red Clearance Interval (R_c), s		3.0		3.0	2.5	1.5	2.5	1.5
Minimum Green (G_{min}), s		8		8	5	20	5	20
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0		2.0	2.0	2.0	2.0	2.0
Recall Mode		Off		Off	Off	Min	Off	Min
Dual Entry		Yes		Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

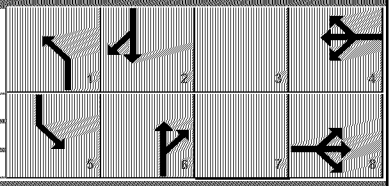
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.92
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 4:00
Intersection	MD 715 at Old Philadelp…	File Name	MD 715 at Old Phil - Back PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	54	156	6	28	126	61	28	1019	124	16	111	26

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.0	45.0	20.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.5	1.5	3.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		5.0		6.0	2.0	3.0	2.0	4.0
Phase Duration, s		27.0		27.0	21.5	51.5	21.5	51.5
Change Period, (*Y+R c*), s		7.0		7.0	6.5	6.5	6.5	6.5
Max Allow Headway (*MAH*), s		3.2		3.2	3.0	3.0	3.0	3.0
Queue Clearance Time (*g s*), s		12.0		8.4	3.5	13.2	2.9	3.3
Green Extension Time (*g e*), s		0.7		0.9	0.0	3.6	0.0	3.6
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		0.05		0.01	0.00	0.00	0.00	0.00

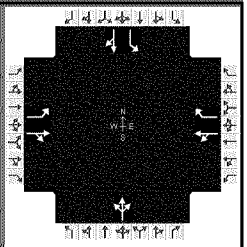
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	59	170	7	30	104	99	30	1108	135	17	112	37
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1104	1668	1485	1139	1752	1564	1668	1591	1485	1668	1752	1538
Queue Service Time (*g s*), s	4.7	4.2	0.3	2.3	4.9	5.3	1.5	11.2	5.3	0.9	1.2	1.3
Cycle Queue Clearance Time (*g c*), s	10.0	4.2	0.3	6.4	4.9	5.3	1.5	11.2	5.3	0.9	1.2	1.3
Green Ratio (*g/C*)	0.22	0.22	0.22	0.22	0.22	0.22	0.17	0.47	0.47	0.17	0.47	0.47
Capacity (*c*), veh/h	256	734	327	275	385	344	284	2990	698	284	2470	723
Volume-to-Capacity Ratio (*X*)	0.229	0.231	0.020	0.111	0.269	0.289	0.107	0.370	0.193	0.061	0.045	0.051
Back of Queue (*Q*), ft/ln (95 th percentile)	61.5	81.8	6	30.2	100.3	90.8	29.6	181.6	80.9	16.7	20.7	19.2
Back of Queue (*Q*), veh/ln (95 th percentile)	2.3	3.0	0.2	1.1	3.7	3.6	1.1	6.7	3.0	0.6	0.8	0.8
Queue Storage Ratio (*RQ*) (95 th percentile)	0.31	0.00	0.02	0.10	0.00	0.00	0.11	0.00	0.29	0.28	0.00	0.00
Uniform Delay (*d 1*), s/veh	36.6	32.0	30.6	34.7	32.3	32.5	35.1	17.6	15.4	34.8	14.9	14.4
Incremental Delay (*d 2*), s/veh	0.2	0.1	0.0	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	36.8	32.1	30.6	34.8	32.5	32.7	35.1	17.6	15.5	34.8	14.9	14.4
Level of Service (LOS)	D	C	C	C	C	C	D	B	B	C	B	B
Approach Delay, s/veh / LOS	33.2	C		32.8	C		17.8	B		16.9	B	
Intersection Delay, s/veh / LOS	21.5						C					

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

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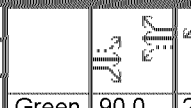
HCS7 Signalized Intersection Input Data

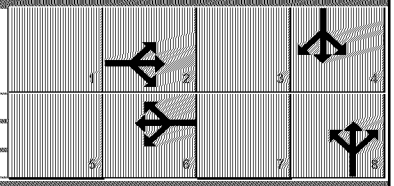
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	5/12/2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.97
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 4:00
Intersection	MD 7 at Stepney Rd	File Name	md 7 at stepney - Back PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	141	414	1	1	1045	132	1	1	1	42	0	130

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On





	EB			WB			NB			SB		
Green	90.0	20.0		0.0	0.0	0.0	0.0					
Yellow	4.0	4.0		0.0	0.0	0.0	0.0					
Red	1.0	1.0		0.0	0.0	0.0	0.0					

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	141	414	1	1	1045	132	1	1	1	42	0	130
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	5	5			5	5		5		5	5	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	10.0	12.0			12.0	10.0		12.0		10.0	10.0	
Turn Bay Length, ft	200	0			0	250		0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	35	35	35

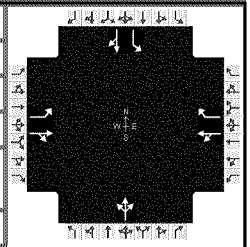
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		90.0		90.0		20.0		20.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		1.0		1.0		1.0		1.0
Minimum Green (G_{min}), s		20		20		8		8
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Min		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

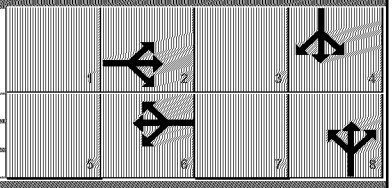
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	5/12/2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.97
Urban Street		Analysis Year	Background Condition	Analysis Period	1> 4:00
Intersection	MD 7 at Stepney Rd	File Name	md 7 at stepney - Back PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	141	414	1	1	1045	132	1	1	1	42	0	130

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	90.0	20.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		7.0		8.0		6.0
Phase Duration, s		95.0		95.0		25.0		25.0
Change Period, (*Y+R c*), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		3.3		3.3		3.3		3.3
Queue Clearance Time (*g s*), s		69.6		42.4		11.3		14.8
Green Extension Time (*g e*), s		5.7		6.4		0.2		0.2
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.13		0.01		0.01		0.15

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	145	428			1078	136		3		43	134	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	511	1825			1826	1547		1172		1381	1547	
Queue Service Time (*g s*), s	27.2	8.6			0.0	2.7		0.0		3.5	9.3	
Cycle Queue Clearance Time (*g c*), s	67.6	8.6			40.4	2.7		9.3		12.8	9.3	
Green Ratio (*g/C*)	0.77	0.77			0.77	0.77		0.18		0.18	0.18	
Capacity (*c*), veh/h	280	1399			1430	1186		255		206	284	
Volume-to-Capacity Ratio (*X*)	0.519	0.306			0.754	0.115		0.012		0.210	0.472	
Back of Queue (*Q*), ft/ln (95 th percentile)	153.9	122.6			495.1	32.8		3.5		56.4	167.2	
Back of Queue (*Q*), veh/ln (95 th percentile)	5.9	4.7			19.0	1.3		0.1		2.2	6.4	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.77	0.00			0.00	0.13		0.00		0.38	0.00	
Uniform Delay (*d 1*), s/veh	27.2	4.3			8.0	3.6		40.2		49.5	43.8	
Incremental Delay (*d 2*), s/veh	0.8	0.0			2.1	0.0		0.0		0.2	0.5	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Control Delay (*d*), s/veh	28.0	4.3			10.1	3.6		40.2		49.7	44.3	
Level of Service (LOS)	C	A			B	A		D		D	D	
Approach Delay, s/veh / LOS	10.3	B		9.3	A		40.2	D		45.6	D	
Intersection Delay, s/veh / LOS	12.9						B					

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

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HCS7 Two-Way Stop-Control Report

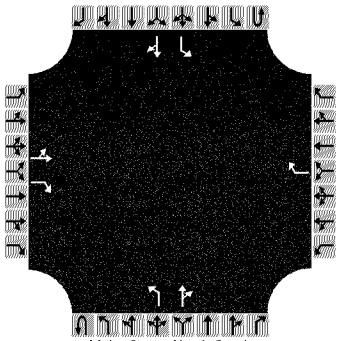
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	4/18/22
Analysis Year	Back
Time Analyzed	Background PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Spesutia Rd
Jurisdiction	Harford Co, MD
East/West Street	Spesutia Rd-Access
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	1		0	0	1	0	1	1	0	0	1	1	0
Configuration		LT		R				R		L		TR		L		TR
Volume (veh/h)		10	2	270				32		344	232	0		24	151	47
Percent Heavy Vehicles (%)		0	0	0				15		0				15		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				Yes											
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2				6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20				6.35		4.10				4.25		
Base Follow-Up Headway (sec)		3.5	4.0	3.3				3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30				3.44		2.20				2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13		300				36		382				27		
Capacity, c (veh/h)		108		853				750		1361				1235		
v/c Ratio		0.12		0.35				0.05		0.28				0.02		
95% Queue Length, Q_{95} (veh)		0.4		1.6				0.1		1.2				0.1		
Control Delay (s/veh)		43.2		11.5				10.0		8.7				8.0		
Level of Service (LOS)		E		B				B		A				A		
Approach Delay (s/veh)	12.8				10.0				5.2				0.9			
Approach LOS	B				B											

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HCS7 Two-Way Stop-Control Report

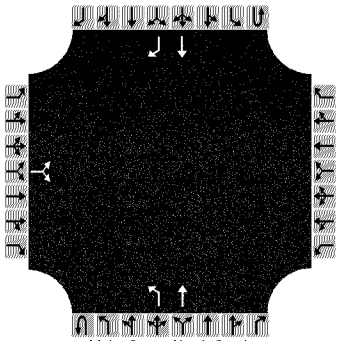
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/9/2022
Analysis Year	Back
Time Analyzed	Background PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Chelsea Rd
Jurisdiction	Harford Co, MD
East/West Street	MD 159
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	1	1	0	0	0	1	1
Configuration			LR							L	T				T	R
Volume (veh/h)		87		1						1	500				292	133
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			98							1						
Capacity, c (veh/h)			314							1074						
v/c Ratio			0.31							0.00						
95% Queue Length, Q_{95} (veh)			1.3							0.0						
Control Delay (s/veh)			21.5							8.4						
Level of Service (LOS)			C							A						
Approach Delay (s/veh)	21.5								0.0							
Approach LOS	C															

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HCS7 Two-Way Stop-Control Report

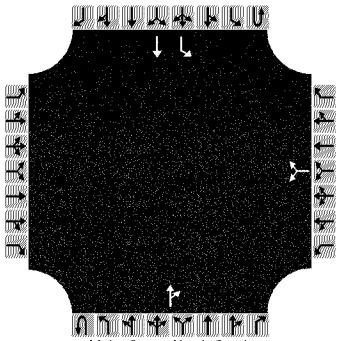
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/9/2022
Analysis Year	Back
Time Analyzed	Background PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	Chelsea Rd at Woodley Rd
Jurisdiction	Harford Co, MD
East/West Street	Woodley Rd
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	0		0	1	0	0	0	1	0	0	1	1	0
Configuration							LR					TR		L	T	
Volume (veh/h)						1		218			204	1		146	89	
Percent Heavy Vehicles (%)						15		15						15		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.55		6.35						4.25		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.64		3.44						2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							243							162		
Capacity, c (veh/h)							777							1267		
v/c Ratio							0.31							0.13		
95% Queue Length, Q_{95} (veh)							1.3							0.4		
Control Delay (s/veh)							11.7							8.3		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						11.7								5.1		
Approach LOS						B										

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HCS7 Two-Way Stop-Control Report

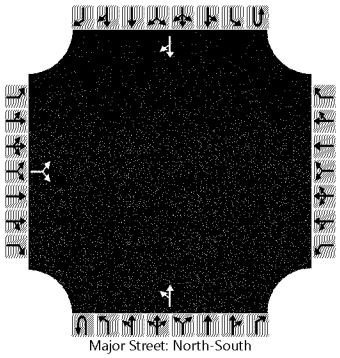
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/2022
Analysis Year	Back
Time Analyzed	Background PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Fords Lane
Jurisdiction	Harford Co, MD
East/West Street	Fords Lane
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		3		0						0	85				154	2
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			3							0						
Capacity, c (veh/h)			716							1385						
v/c Ratio			0.00							0.00						
95% Queue Length, Q_{95} (veh)			0.0							0.0						
Control Delay (s/veh)			10.1							7.6						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.1								0.0						
Approach LOS		B														

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HCS7 Two-Way Stop-Control Report

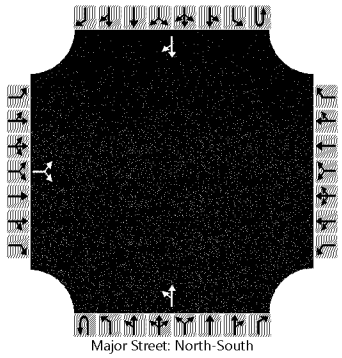
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/2022
Analysis Year	Back
Time Analyzed	Background PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Canning House
Jurisdiction	Harford Co, MD
East/West Street	Canning House
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		23		0						0	55				92	51
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

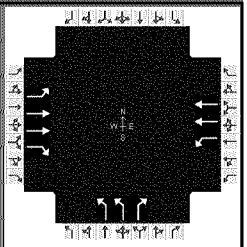
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			26							0						
Capacity, c (veh/h)			790							1402						
v/c Ratio			0.03							0.00						
95% Queue Length, Q_{95} (veh)			0.1							0.0						
Control Delay (s/veh)			9.7							7.6						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.7								0.0						
Approach LOS		A														

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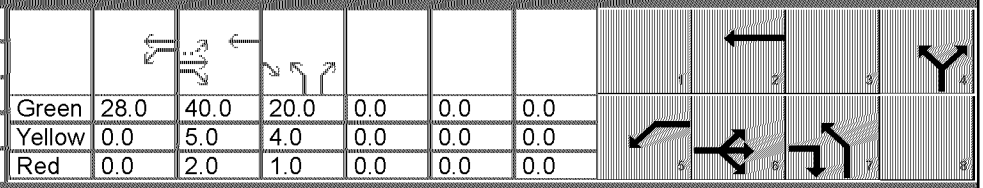
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 6:30
Intersection	US 40 & MD 543	File Name	us 40 & md 543 - Fu AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	900	208	270	538		187		1036			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	28.0	40.0	20.0	0.0	0.0	0.0
Yellow	0.0	5.0	4.0	0.0	0.0	0.0
Red	0.0	2.0	1.0	0.0	0.0	0.0

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	900	208	270	538		187		1036			
Initial Queue (Q_b), veh/h	0	0	0	0	0		0		0			
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900		1900		1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	0	10	10	10	10		10		0			
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3	3	3	3		3		3			
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00		1.00		1.00			
Lane Width (*W*), ft	11.0	12.0	13.0	13.0	12.0		10.0		12.0			
Turn Bay Length, ft	200	0	1035	450	0		0		0			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	45	45	45	45	45		45		45			

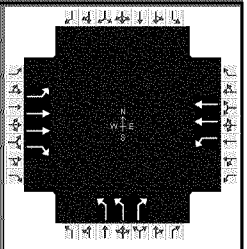
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		40.0	28.0	68.0	20.0	20.0		
Yellow Change Interval (*Y*), s		5.0	0.0	5.0	4.0	4.0		
Red Clearance Interval (R_c), s		2.0	0.0	2.0	2.0	1.0		
Minimum Green (G_{min}), s		25	10	25	5	5		
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0			
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0			
Passage (*PT*), s		2.0	2.0	2.0	2.0	2.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	No	Yes	No	Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

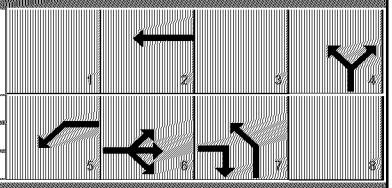
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 6:30
Intersection	US 40 & MD 543	File Name	us 40 & md 543 - Fu AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	900	208	270	538		187		1036			

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	28.0	40.0	20.0	0.0	0.0	0.0	
Yellow	0.0	5.0	4.0	0.0	0.0	0.0	
Red	0.0	2.0	1.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6	5	2		4		
Case Number		5.3	2.0	4.0		9.0		
Phase Duration, s		47.0	28.0	75.0		25.0		
Change Period, ($Y+R_c$), s		7.0	0.0	7.0		5.0		
Max Allow Headway (*MAH*), s		3.0	3.0	3.0		3.2		
Queue Clearance Time (g_s), s		26.4	16.4	8.5		24.0		
Green Extension Time (g_e), s		4.0	0.4	4.7		0.0		
Phase Call Probability		1.00	1.00	1.00		1.00		
Max Out Probability		0.12	0.00	0.00		1.00		

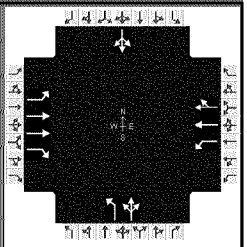
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2		7		14			
Adjusted Flow Rate (*v*), veh/h	0	989	229	297	591		205		1138			
Adjusted Saturation Flow Rate (*s*), veh/h/ln	839	1668	1544	1735	1668		1620					
Queue Service Time (g_s), s	0.0	24.4	6.3	14.4	6.5		5.3					
Cycle Queue Clearance Time (g_c), s	0.0	24.4	6.3	14.4	6.5		5.3					
Green Ratio (*g/C*)	0.42	0.42	0.64	0.30	0.70		0.22					
Capacity (*c*), veh/h	72	1401	988	521	2335		713					
Volume-to-Capacity Ratio (*X*)	0.000	0.706	0.231	0.570	0.253		0.288					
Back of Queue (*Q*), ft/ln (95 th percentile)	0	379	84.5	263.8	83.7		96.9					
Back of Queue (*Q*), veh/ln (95 th percentile)	0.0	14.0	3.1	9.8	3.1		3.6					
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.08	0.59	0.00		0.00					
Uniform Delay (d_1), s/veh	0.0	23.9	7.6	29.6	5.8		32.5					
Incremental Delay (d_2), s/veh	0.0	1.4	0.0	1.0	0.0		0.1					
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0					
Control Delay (*d*), s/veh	0.0	25.3	7.6	30.5	5.8		32.6		0.0			
Level of Service (LOS)		C	A	C	A		C		A			
Approach Delay, s/veh / LOS	22.0	C		14.1	B		5.0	A		0.0		
Intersection Delay, s/veh / LOS	13.3						B					

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

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HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.90
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 6:15
Intersection	US 40 & Spesutia Road	File Name	US 40 & Spesutia - Fu AM +Co Imp - Split-phase…		
Project Description	3762				

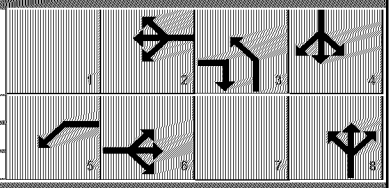


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	1061	781	34	466	3	274	0	19	0	0	8

Signal Information			
Cycle, s	135.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



	EB			WB			NB			SB		
Green	8.0	55.0		8.0	40.0		0.0		0.0			
Yellow	4.0	5.0		4.0	4.0		0.0		0.0			
Red	1.0	2.0		2.0	2.0		0.0		0.0			



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	1061	781	34	466	3	274	0	19	0	0	8
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	0	0	10		0	0			0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	11.0	12.0	15.0	12.0	12.0		10.0	11.0			12.0	
Turn Bay Length, ft	300	0	300	400	0		300	0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	30	30	30	30	30	30

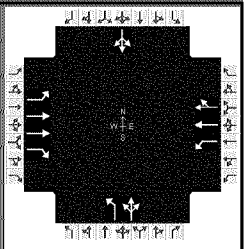
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		55.0	8.0	63.0	40.0	40.0		8.0
Yellow Change Interval (*Y*), s		5.0	4.0	0.0	4.0	4.0		4.0
Red Clearance Interval (R_c), s		2.0	1.0	0.0	2.0	2.0		2.0
Minimum Green (G_{min}), s		25	5	25	6	5		5
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0	2.0	2.0	2.0	2.0		2.0
Recall Mode		Min	Off	Min	Off	Off		Off
Dual Entry		Yes	No	Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.90
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 6:15
Intersection	US 40 & Spesutia Road	File Name	US 40 & Spesutia - Fu AM +Co Imp - Split-phase…		
Project Description	3762				

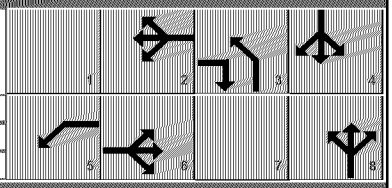


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	1061	781	34	466	3	274	0	19	0	0	8

Signal Information			
Cycle, s	135.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	8.0	55.0	8.0	40.0	0.0	0.0
Yellow	4.0	5.0	4.0	4.0	0.0	0.0
Red	1.0	2.0	2.0	2.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6	5	2		8		4
Case Number		5.3	1.0	4.0		10.0		12.0
Phase Duration, s		62.0	13.0	75.0		46.0		14.0
Change Period, (*Y+R c*), s		7.0	5.0	7.0		6.0		6.0
Max Allow Headway (*MAH*), s		3.0	2.9	3.0		3.3		3.4
Queue Clearance Time (*g s*), s		44.6	3.4	13.4		14.8		2.7
Green Extension Time (*g e*), s		5.1	0.0	7.6		0.7		0.0
Phase Call Probability		1.00	1.00	1.00		1.00		1.00
Max Out Probability		0.48	0.04	0.01		0.00		0.01

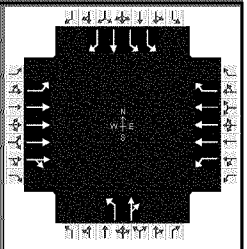
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	3	1179	868	38	261	260	152	173			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	825	1668	1675	1810	1752	1748	1810	1785			0	
Queue Service Time (*g s*), s	0.3	42.6	38.7	1.4	11.4	11.4	8.5	12.8			0.0	
Cycle Queue Clearance Time (*g c*), s	0.3	42.6	38.7	1.4	11.4	11.4	8.5	12.8			0.0	
Green Ratio (*g/C*)	0.42	0.42	0.73	0.51	0.52	0.52	0.31	0.31				
Capacity (*c*), veh/h	402	1408	1228	239	908	906	563	555				
Volume-to-Capacity Ratio (*X*)	0.008	0.837	0.707	0.158	0.287	0.287	0.270	0.312			0.000	
Back of Queue (*Q*), ft/ln (95 th percentile)	2.9	639.8	421.8	25.1	208.9	196.3	172.1	259.9			0	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.1	23.7	16.9	1.0	7.7	7.7	6.9	10.4			0.0	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.01	0.00	1.41	0.06	0.00	0.00	0.57	0.00			0.00	
Uniform Delay (*d 1*), s/veh	22.6	34.9	10.0	24.5	18.9	18.4	35.0	50.9				
Incremental Delay (*d 2*), s/veh	0.0	4.3	1.6	0.1	0.1	0.1	0.1	0.1			0.0	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh	22.6	39.2	11.6	24.6	18.9	18.5	35.1	51.0				
Level of Service (LOS)	C	D	B	C	B	B	D	D				
Approach Delay, s/veh / LOS	27.5	C		19.1	B		43.5	D		58.3	E	
Intersection Delay, s/veh / LOS	27.8						C					

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

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HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Apr 27, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.96
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 7:15
Intersection	US 40 at MD 7/MD 159	File Name	US 40 at MD 7 - Fu AM.xus		
Project Description	3762				

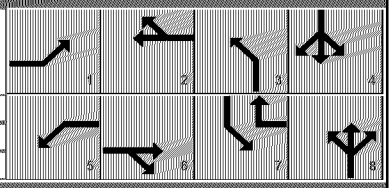


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	14	1152	228	32	667	374	67	71	12	667	123	26

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.0	43.0	30.0	12.0	0.0	0.0						
Yellow	4.0	5.0	4.0	4.0	0.0	0.0						
Red	1.0	2.0	2.0	2.0	0.0	0.0						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	14	1152	228	32	667	374	67	71	12	667	123	26
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10		10	10	2	10	10		10	10	10
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	11.0		12.0	12.0	12.0
Turn Bay Length, ft	350	0		300	0	0	400	0		775	0	600
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	40	40	40	40	40	40

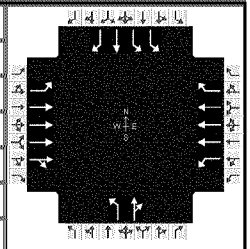
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	11.0	43.0	11.0	43.0	12.0	12.0	30.0	30.0
Yellow Change Interval (*Y*), s	4.0	5.0	4.0	5.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s	1.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s	5	30	5	30	5	10	5	10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Apr 27, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.96
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 7:15
Intersection	US 40 at MD 7/MD 159	File Name	US 40 at MD 7 - Fu AM.xus		
Project Description	3762				

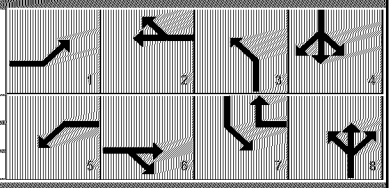


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	14	1152	228	32	667	374	67	71	12	667	123	26

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	11.0	43.0	30.0	12.0	0.0	0.0
Yellow	4.0	5.0	4.0	4.0	0.0	0.0
Red	1.0	2.0	2.0	2.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		8		4
Case Number	2.0	4.0	2.0	3.0		10.0		9.0
Phase Duration, s	16.0	50.0	16.0	50.0		18.0		36.0
Change Period, (*Y+R c*), s	5.0	7.0	5.0	7.0		6.0		6.0
Max Allow Headway (*MAH*), s	2.9	2.9	2.9	2.9		3.0		3.1
Queue Clearance Time (*g s*), s	2.9	22.2	4.2	16.0		7.7		26.0
Green Extension Time (*g e*), s	0.0	6.6	0.0	7.0		0.1		1.0
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	0.00	0.12	0.00	0.06		0.22		0.66

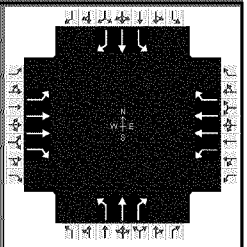
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	15	1108	330	33	695	390	70	86		695	128	27
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1752	1551	1668	1591		1668	1707		1620	1752	1485
Queue Service Time (*g s*), s	0.9	20.0	20.2	2.2	12.8		4.6	5.7		24.0	6.9	1.6
Cycle Queue Clearance Time (*g c*), s	0.9	20.0	20.2	2.2	12.8		4.6	5.7		24.0	6.9	1.6
Green Ratio (*g/C*)	0.11	0.38	0.38	0.11	0.38		0.12	0.12		0.27	0.27	0.27
Capacity (*c*), veh/h	181	1971	581	181	1789		195	199		864	467	396
Volume-to-Capacity Ratio (*X*)	0.081	0.562	0.567	0.184	0.388		0.359	0.434		0.804	0.274	0.068
Back of Queue (*Q*), ft/ln (95 th percentile)	18.5	338.1	293.4	42.9	218		93.5	116.9		408.1	142.4	28.4
Back of Queue (*Q*), veh/ln (95 th percentile)	0.7	12.5	11.6	1.6	8.1		3.5	4.3		15.1	5.3	1.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.05	0.00	0.00	0.14	0.00		0.23	0.00		0.53	0.00	0.05
Uniform Delay (*d 1*), s/veh	48.1	30.4	29.8	48.7	28.1		48.9	49.3		41.1	34.8	32.9
Incremental Delay (*d 2*), s/veh	0.1	0.2	0.8	0.2	0.1		0.4	0.6		5.2	0.1	0.0
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (*d*), s/veh	48.2	30.6	30.6	48.9	28.1	10.0	49.3	49.9		46.2	34.9	32.9
Level of Service (LOS)	D	C	C	D	C	A	D	D		D	C	C
Approach Delay, s/veh / LOS	30.8	C		22.4	C		49.6	D		44.1	D	
Intersection Delay, s/veh / LOS	32.2						C					

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

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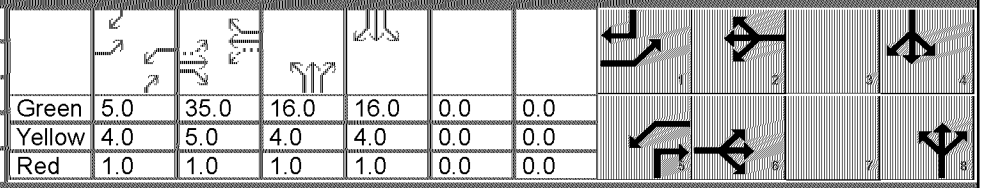
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.98
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 7:00
Intersection	US 40 at MD 132	File Name	US 40 at MD 132 - Fu AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	123	528	25	16	937	50	86	27	51	76	21	194

Signal Information			
Cycle, s	98.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.0	35.0	16.0	16.0	0.0	0.0						
Yellow	4.0	5.0	4.0	4.0	0.0	0.0						
Red	1.0	1.0	1.0	1.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	123	528	25	16	937	50	86	27	51	76	21	194
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	10	10	10	10	10	10	10	10	10	10
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	10.0	12.0	11.0	10.0	12.0	11.0	11.0	11.0	15.0	10.0	10.0	10.0
Turn Bay Length, ft	200	0	425	185	0	170	100	0	0	50	50	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	40	40	40	40	40	40

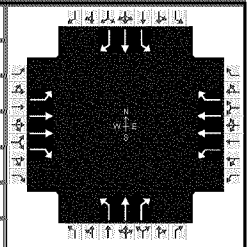
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	10.0	40.0	5.0	35.0		16.0		16.0
Yellow Change Interval (*Y*), s	4.0	5.0	4.0	5.0		4.0		4.0
Red Clearance Interval (R_c), s	1.0	1.0	1.0	1.0		1.0		1.0
Minimum Green (G_{min}), s	5	20	5	20		8		8
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s	2.0	2.0	2.0	2.0		2.0		2.0
Recall Mode	Off	Min	Off	Min		Off		Off
Dual Entry	No	Yes	No	Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

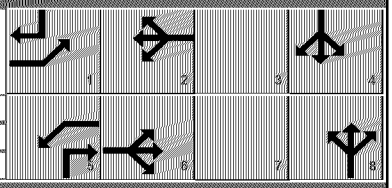
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.98
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 7:00
Intersection	US 40 at MD 132	File Name	US 40 at MD 132 - Fu AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	123	528	25	16	937	50	86	27	51	76	21	194

Signal Information			
Cycle, s	98.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	5.0	35.0	16.0	16.0	0.0	0.0	
Yellow	4.0	5.0	4.0	4.0	0.0	0.0	
Red	1.0	1.0	1.0	1.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		9.0
Phase Duration, s	15.0	46.0	10.0	41.0		21.0		21.0
Change Period, (*Y+R c*), s	5.0	6.0	5.0	6.0		5.0		5.0
Max Allow Headway (*MAH*), s	2.9	2.9	2.9	2.9		3.1		3.2
Queue Clearance Time (*g s*), s	5.8	12.8	2.5	26.5		6.4		12.5
Green Extension Time (*g e*), s	0.1	3.6	0.0	2.7		0.2		0.2
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	0.20	0.00	1.00	0.22		0.00		0.78

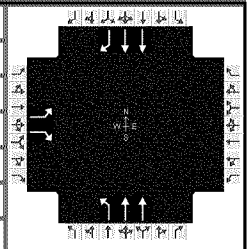
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	126	539	26	16	956	51	88	28	52	78	21	198
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1668	1485	1668	1668	1485	1668	1752	1544	1668	1752	1485
Queue Service Time (*g s*), s	3.8	10.8	1.0	0.5	24.5	2.2	4.4	1.3	2.5	3.9	1.0	10.5
Cycle Queue Clearance Time (*g c*), s	3.8	10.8	1.0	0.5	24.5	2.2	4.4	1.3	2.5	3.9	1.0	10.5
Green Ratio (*g/C*)	0.52	0.43	0.43	0.45	0.38	0.38	0.18	0.18	0.26	0.18	0.18	0.31
Capacity (*c*), veh/h	348	1429	636	418	1259	561	306	322	394	306	322	454
Volume-to-Capacity Ratio (*X*)	0.361	0.377	0.040	0.039	0.759	0.091	0.286	0.086	0.132	0.253	0.067	0.436
Back of Queue (*Q*), ft/ln (95 th percentile)	60.4	180.6	14.6	8.8	378.9	33.3	85.6	25.8	44.6	75.3	20	174.1
Back of Queue (*Q*), veh/ln (95 th percentile)	2.2	6.7	0.5	0.3	14.0	1.2	3.2	1.0	1.7	2.8	0.7	6.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.30	0.00	0.03	0.05	0.00	0.20	0.86	0.00	0.00	1.51	0.40	3.48
Uniform Delay (*d 1*), s/veh	16.8	19.7	16.3	15.5	27.4	19.7	34.5	33.2	28.1	34.2	33.1	27.2
Incremental Delay (*d 2*), s/veh	0.2	0.1	0.0	0.0	2.5	0.0	0.2	0.0	0.1	0.2	0.0	0.2
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	17.1	19.7	16.3	15.5	29.9	19.7	34.7	33.2	28.2	34.4	33.1	27.5
Level of Service (LOS)	B	B	B	B	C	B	C	C	C	C	C	C
Approach Delay, s/veh / LOS	19.1	B		29.1	C		32.4	C		29.7	C	
Intersection Delay, s/veh / LOS	26.3						C					

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

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HCS7 Signalized Intersection Input Data

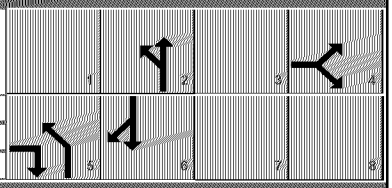
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 7:15
Intersection	US 40 EB & MD 22 Sign…	File Name	md 22 & us 40 EB - Fu AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	136		116				69	251			1244	261

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.0	50.0	15.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.0	1.0	1.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	136		116				69	251			1244	261
Initial Queue (Q_b), veh/h	0		0				0	0			0	0
Base Saturation Flow Rate (s_o), veh/h	1900		1900				1900	1900			1900	1900
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	10		2				10	10			10	10
Ped / Bike / RTOR, /h	0	0		0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3				3	3			3	3
Upstream Filtering (*I*)	1.00		1.00				1.00	1.00			1.00	1.00
Lane Width (*W*), ft	12.0		12.0				11.0	12.0			12.0	12.0
Turn Bay Length, ft	0		0				215	0			0	220
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	50		50				50	50			50	50

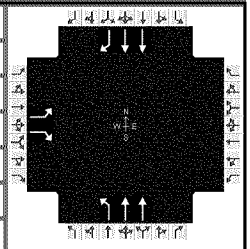
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		15.0			18.0	65.0		50.0
Yellow Change Interval (*Y*), s		4.0			4.0	5.0		5.0
Red Clearance Interval (R_c), s		1.0			2.0	1.0		1.0
Minimum Green (G_{min}), s		5			5	25		25
Start-Up Lost Time (*l*t), s	2.0				2.0	2.0		2.0
Extension of Effective Green (*e*), s	4.0				4.0	4.0		4.0
Passage (*PT*), s		2.0			2.0	2.0		2.0
Recall Mode		Off			Off	Min		Min
Dual Entry		Yes			No	Yes		Yes
Walk (*Walk*), s		0.0		0.0				0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				0.0

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

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HCS7 Signalized Intersection Results Summary

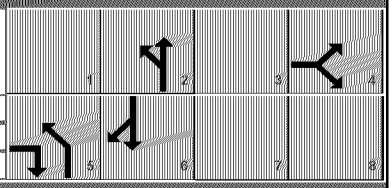
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 7:15
Intersection	US 40 EB & MD 22 Sign…	File Name	md 22 & us 40 EB - Fu AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	136		116				69	251			1244	261

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.0	50.0	15.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.0	1.0	1.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		20.0			24.0	80.0		56.0
Change Period, ($Y+R_c$), s		5.0			6.0	6.0		6.0
Max Allow Headway (*MAH*), s		3.1			3.0	2.9		2.9
Queue Clearance Time (g_s), s		10.2			3.2	4.2		35.3
Green Extension Time (g_e), s		0.2			0.1	5.3		4.5
Phase Call Probability		1.00			1.00	1.00		1.00
Max Out Probability		0.22			0.00	0.00		0.12

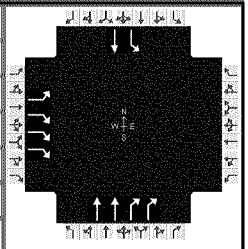
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (*v*), veh/h	149		127				76	276			1367	287
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668						1668	1668			1668	1485
Queue Service Time (g_s), s	8.2						1.2	2.2			33.3	11.5
Cycle Queue Clearance Time (g_c), s	8.2						1.2	2.2			33.3	11.5
Green Ratio (*g/C*)	0.17						0.74	0.76			0.52	0.52
Capacity (*c*), veh/h	284						475	2535			1734	772
Volume-to-Capacity Ratio (*X*)	0.527						0.160	0.109			0.788	0.372
Back of Queue (*Q*), ft/ln (95 th percentile)	157						28.2	21.3			464.2	166.1
Back of Queue (*Q*), veh/ln (95 th percentile)	5.8						1.0	0.8			17.2	6.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00						0.13	0.00			0.00	0.75
Uniform Delay (d_1), s/veh	37.8						11.4	3.4			19.5	14.3
Incremental Delay (d_2), s/veh	0.9						0.1	0.0			2.3	0.1
Initial Queue Delay (d_3), s/veh	0.0						0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh	38.7		0.0				11.4	3.4			21.8	14.4
Level of Service (LOS)	D		A				B	A			C	B
Approach Delay, s/veh / LOS	20.9	C		0.0			5.1	A		20.5	C	
Intersection Delay, s/veh / LOS	18.2						B					

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

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HCS7 Signalized Intersection Input Data

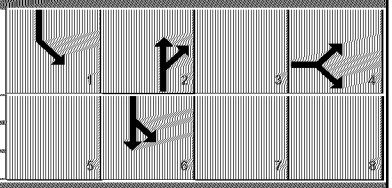
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 7:15
Intersection	MD 715 at US 40 EB Ra…	File Name	md 715 & us 40 EB - Fu AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	71		811					161	77	29	197	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	55.0	18.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	1.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	71		811					161	77	29	197	
Initial Queue (Q_b), veh/h	0		0					0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h	1900		1900					1900	1900	1900	1900	
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	10		2					10	0	10	10	
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3					3	3	3	3	
Upstream Filtering (*I*)	1.00		1.00					1.00	1.00	1.00	1.00	
Lane Width (*W*), ft	15.0		12.0					12.0	12.0	12.0	12.0	
Turn Bay Length, ft	300		0					0	0	150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	50		50					40	40	40	40	

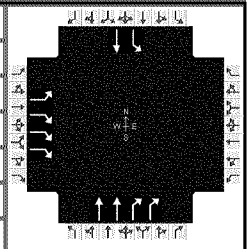
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		18.0				55.0	10.0	65.0
Yellow Change Interval (*Y*), s		4.0				5.0	4.0	5.0
Red Clearance Interval (R_c), s		1.0				2.0	1.0	2.0
Minimum Green (G_{min}), s		8				25	5	25
Start-Up Lost Time (*l*t), s	2.0					2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0					4.0	4.0	4.0
Passage (*PT*), s		2.0				2.0	2.0	2.0
Recall Mode		Off				Min	Off	Min
Dual Entry		Yes				Yes	No	Yes
Walk (*Walk*), s		0.0		0.0				0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				0.0

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

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HCS7 Signalized Intersection Results Summary

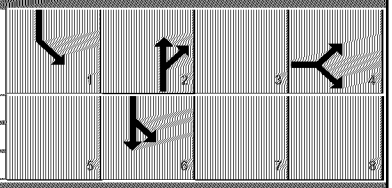
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	AM Peak	PHF	0.91
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 7:15
Intersection	MD 715 at US 40 EB Ra…	File Name	md 715 & us 40 EB - Fu AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	71		811					161	77	29	197	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	55.0	18.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	1.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		9.0				7.3	1.0	4.0
Phase Duration, s		23.0				62.0	15.0	77.0
Change Period, (*Y+R c*), s		5.0				7.0	5.0	7.0
Max Allow Headway (*MAH*), s		3.2				3.0	3.1	3.0
Queue Clearance Time (*g s*), s		22.0				4.4	2.6	5.9
Green Extension Time (*g e*), s		0.0				1.0	0.0	1.0
Phase Call Probability		1.00				1.00	1.00	1.00
Max Out Probability		1.00				0.00	0.00	0.00

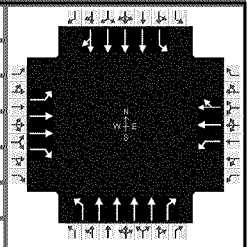
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2	12	1	6	
Adjusted Flow Rate (*v*), veh/h	78		891					177	85	32	216	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1735							1668		1668	1752	
Queue Service Time (*g s*), s	3.8							2.4		0.6	3.9	
Cycle Queue Clearance Time (*g c*), s	3.8							2.4		0.6	3.9	
Green Ratio (*g/C*)	0.20							0.57		0.71	0.72	
Capacity (*c*), veh/h	347							1901		890	1261	
Volume-to-Capacity Ratio (*X*)	0.225							0.093		0.036	0.172	
Back of Queue (*Q*), ft/ln (95 th percentile)	73.7							39.2		7.5	53.9	
Back of Queue (*Q*), veh/ln (95 th percentile)	2.7							1.5		0.3	2.0	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.25							0.00		0.05	0.00	
Uniform Delay (*d 1*), s/veh	33.5							9.8		4.4	4.8	
Incremental Delay (*d 2*), s/veh	0.1							0.0		0.0	0.0	
Initial Queue Delay (*d 3*), s/veh	0.0							0.0		0.0	0.0	
Control Delay (*d*), s/veh	33.6		0.0					9.8	0.0	4.4	4.8	
Level of Service (LOS)	C		A					A	A	A	A	
Approach Delay, s/veh / LOS	2.7	A		0.0			6.6	A		4.7	A	
Intersection Delay, s/veh / LOS	3.7						A					

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

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HCS7 Signalized Intersection Input Data

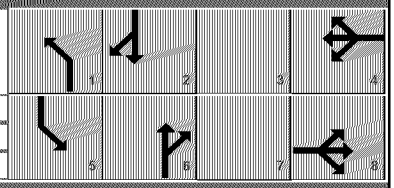
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.93
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 7:15
Intersection	MD 715 at Old Philadelp…	File Name	MD 715 at Old Phil - Fu AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	62	161	42	119	327	30	4	66	16	13	695	126

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.0	45.0	20.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.5	1.5	3.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	62	161	42	119	327	30	4	66	16	13	695	126
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	10	10	10		10	10	10	10	10	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	11.0	12.0	12.0	10.0	10.0		12.0	12.0	12.0	11.0	12.0	
Turn Bay Length, ft	200	0	375	300	0		275	0	275	60	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	30	30	30	35	35	35	45	45	45	45	45	45

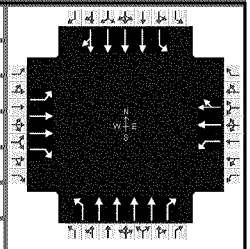
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		20.0		20.0	15.0	45.0	15.0	45.0
Yellow Change Interval (*Y*), s		4.0		4.0	4.0	5.0	4.0	5.0
Red Clearance Interval (R_c), s		3.0		3.0	2.5	1.5	2.5	1.5
Minimum Green (G_{min}), s		8		8	5	20	5	20
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0		2.0	2.0	2.0	2.0	2.0
Recall Mode		Off		Off	Off	Min	Off	Min
Dual Entry		Yes		Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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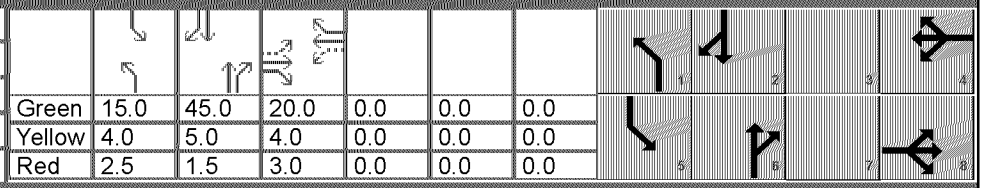
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.93
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 7:15
Intersection	MD 715 at Old Philadelp…	File Name	MD 715 at Old Phil - Fu AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	62	161	42	119	327	30	4	66	16	13	695	126

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	15.0	45.0	20.0	0.0	0.0	0.0						
Yellow	4.0	5.0	4.0	0.0	0.0	0.0						
Red	2.5	1.5	3.0	0.0	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		5.0		6.0	2.0	3.0	2.0	4.0
Phase Duration, s		27.0		27.0	21.5	51.5	21.5	51.5
Change Period, (*Y+R c*), s		7.0		7.0	6.5	6.5	6.5	6.5
Max Allow Headway (*MAH*), s		3.3		3.3	3.0	3.0	3.0	3.0
Queue Clearance Time (*g s*), s		18.6		16.7	2.2	2.6	2.7	10.1
Green Extension Time (*g e*), s		0.4		0.8	0.0	2.2	0.0	2.2
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		1.00		1.00	0.00	0.00	0.00	0.00

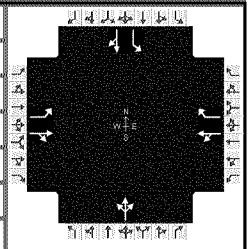
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	67	173	45	128	194	190	4	71	17	14	675	208
Adjusted Saturation Flow Rate (*s*), veh/h/ln	936	1668	1485	1135	1752	1700	1668	1591	1485	1668	1752	1568
Queue Service Time (*g s*), s	6.7	4.3	2.4	10.5	9.7	9.8	0.2	0.6	0.6	0.7	7.8	8.1
Cycle Queue Clearance Time (*g c*), s	16.6	4.3	2.4	14.7	9.7	9.8	0.2	0.6	0.6	0.7	7.8	8.1
Green Ratio (*g/C*)	0.22	0.22	0.22	0.22	0.22	0.22	0.17	0.47	0.47	0.17	0.47	0.47
Capacity (*c*), veh/h	186	734	327	273	385	374	284	2990	698	284	2470	737
Volume-to-Capacity Ratio (*X*)	0.358	0.236	0.138	0.468	0.503	0.508	0.015	0.024	0.025	0.049	0.273	0.282
Back of Queue (*Q*), ft/ln (95 th percentile)	76.1	83.6	42.8	140.1	198.6	183.8	4.1	9.7	9.5	13.4	140	122.7
Back of Queue (*Q*), veh/ln (95 th percentile)	2.8	3.1	1.6	5.2	7.4	7.2	0.2	0.4	0.4	0.5	5.2	4.8
Queue Storage Ratio (*RQ*) (95 th percentile)	0.38	0.00	0.11	0.47	0.00	0.00	0.01	0.00	0.03	0.22	0.00	0.00
Uniform Delay (*d 1*), s/veh	41.5	32.1	31.4	38.1	34.2	34.3	34.5	14.7	14.2	34.7	16.7	16.2
Incremental Delay (*d 2*), s/veh	0.4	0.1	0.1	0.5	0.4	0.5	0.0	0.0	0.0	0.0	0.0	0.1
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	42.0	32.1	31.4	38.6	34.6	34.7	34.5	14.7	14.2	34.8	16.7	16.3
Level of Service (LOS)	D	C	C	D	C	C	C	B	B	C	B	B
Approach Delay, s/veh / LOS	34.3	C		35.7	D		15.6	B		16.9	B	
Intersection Delay, s/veh / LOS	25.0						C					

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

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HCS7 Signalized Intersection Input Data

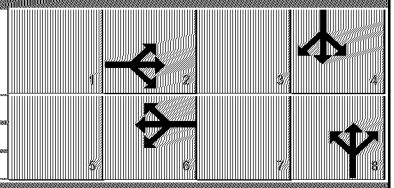
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	5/12/2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.97
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 7:15
Intersection	MD 7 at Stepney Rd	File Name	md 7 at stepney - Fu AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	84	616	0	0	470	37	1	0	0	68	1	136

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On





	EB			WB			NB			SB		
Green	70.0	20.0		0.0	0.0		0.0	0.0				
Yellow	4.0	4.0		0.0	0.0		0.0	0.0				
Red	1.0	1.0		0.0	0.0		0.0	0.0				

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	84	616	0	0	470	37	1	0	0	68	1	136
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	5	5			5	5		5		5	5	
Ped / Bike / RTOR, /h	0	0		0	0	0	0	0		0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	10.0	12.0			12.0	10.0		12.0		10.0	10.0	
Turn Bay Length, ft	200	0			0	250		0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	35	35	35

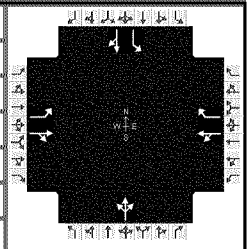
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		70.0		70.0		20.0		20.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		1.0		1.0		1.0		1.0
Minimum Green (G_{min}), s		20		20		8		8
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Min		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

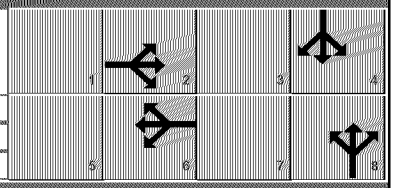
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	5/12/2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	AM Peak	PHF	0.97
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 7:15
Intersection	MD 7 at Stepney Rd	File Name	md 7 at stepney - Fu AM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	84	616	0	0	470	37	1	0	0	68	1	136

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On





	EB		WB			
Green	70.0	20.0	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Red	1.0	1.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		7.0		8.0		6.0
Phase Duration, s		75.0		75.0		25.0		25.0
Change Period, (*Y+R c*), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		3.1		3.1		3.3		3.3
Queue Clearance Time (*g s*), s		16.9		12.1		9.9		13.5
Green Extension Time (*g e*), s		2.8		2.8		0.3		0.2
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.05

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	87	0			0	38		1		70	141	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	889	0			0	1547		785		1739	1549	
Queue Service Time (*g s*), s	4.1	0.0			0.0	0.7		0.1		3.6	7.8	
Cycle Queue Clearance Time (*g c*), s	14.2	0.0			0.0	0.7		7.9		11.5	7.8	
Green Ratio (*g/C*)	0.72					0.72		0.22		0.22	0.22	
Capacity (*c*), veh/h	622					1114		245		317	341	
Volume-to-Capacity Ratio (*X*)	0.139	0.000			0.000	0.034		0.004		0.221	0.414	
Back of Queue (*Q*), ft/ln (95 th percentile)	34	0			0	8.6		0.9		71.4	136.3	
Back of Queue (*Q*), veh/ln (95 th percentile)	1.3	0.0			0.0	0.3		0.0		2.7	5.2	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.17	0.00			0.00	0.03		0.00		0.48	0.00	
Uniform Delay (*d 1*), s/veh	8.0					4.0		36.8		38.4	33.5	
Incremental Delay (*d 2*), s/veh	0.0	0.0			0.0	0.0		0.0		0.1	0.3	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Control Delay (*d*), s/veh	8.1					4.0		36.8		38.6	33.8	
Level of Service (LOS)	A					A		D		D	C	
Approach Delay, s/veh / LOS	6.3	A		5.3	A		36.8	D		35.4	D	
Intersection Delay, s/veh / LOS	10.2						B					

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

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HCS7 Two-Way Stop-Control Report

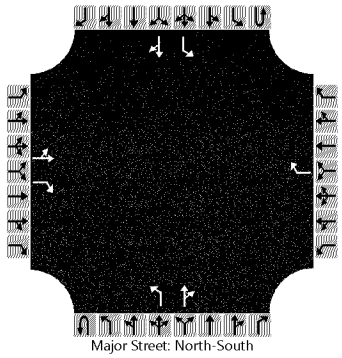
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	4/18/21
Analysis Year	Fu
Time Analyzed	Future AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Spesutia Rd
Jurisdiction	Harford Co, MD
East/West Street	Spesutia Rd-Access
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	1		0	0	1	0	1	1	0	0	1	1	0
Configuration		LT		R				R		L		TR		L		TR
Volume (veh/h)		52	12	800				14		225	210	0		26	598	24
Percent Heavy Vehicles (%)		0	0	0				15		0				15		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				Yes											
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2				6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20				6.35		4.10				4.25		
Base Follow-Up Headway (sec)		3.5	4.0	3.3				3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30				3.44		2.20				2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		71		889				16		250				29		
Capacity, c (veh/h)		81		456				775		913				1261		
v/c Ratio		0.88		1.95				0.02		0.27				0.02		
95% Queue Length, Q_{95} (veh)		4.6		59.7				0.1		1.1				0.1		
Control Delay (s/veh)		157.2		456.1				9.7		10.4				7.9		
Level of Service (LOS)		F		F				A		B				A		
Approach Delay (s/veh)	433.9				9.7				5.4				0.3			
Approach LOS	F				A											

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HCS7 Two-Way Stop-Control Report

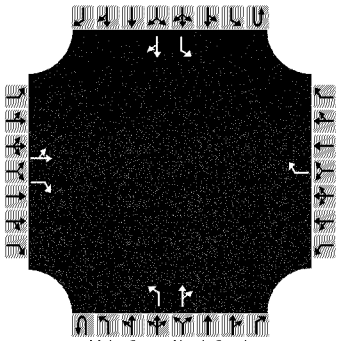
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	4/18/21
Analysis Year	Fu
Time Analyzed	Future AM + Developer Improvements
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Spesutia Rd
Jurisdiction	Harford Co, MD
East/West Street	Spesutia Rd-Access
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	1		0	0	1	0	1	1	0	0	1	1	0
Configuration		LT		R				R		L		TR		L		TR
Volume (veh/h)		52	12	800				14		225	210	0		26	598	24
Percent Heavy Vehicles (%)		0	0	0				15		0				15		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	Yes				Yes											
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	2.0				6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	2.00				6.35		4.10				4.25		
Base Follow-Up Headway (sec)		3.5	4.0	3.3				3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30				3.44		2.20				2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		71		889				16		250				29		
Capacity, c (veh/h)		81		1005				775		913				1261		
v/c Ratio		0.88		0.88				0.02		0.27				0.02		
95% Queue Length, Q_{95} (veh)		4.6		12.4				0.1		1.1				0.1		
Control Delay (s/veh)		157.2		28.4				9.7		10.4				7.9		
Level of Service (LOS)		F		D				A		B				A		
Approach Delay (s/veh)	38.0				9.7				5.4				0.3			
Approach LOS	E				A											

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HCS7 Two-Way Stop-Control Report

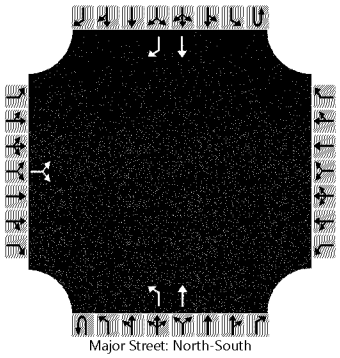
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/9/2022
Analysis Year	Futu
Time Analyzed	Future AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Chelsea Rd
Jurisdiction	Harford Co, MD
East/West Street	MD 159
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	1	1	0	0	0	1	1
Configuration			LR							L	T				T	R
Volume (veh/h)		19		1						1	413				1356	30
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			22							1						
Capacity, c (veh/h)			69							423						
v/c Ratio			0.32							0.00						
95% Queue Length, Q_{95} (veh)			1.2							0.0						
Control Delay (s/veh)			79.7							13.5						
Level of Service (LOS)			F							B						
Approach Delay (s/veh)	79.7								0.0							
Approach LOS	F															

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HCS7 Two-Way Stop-Control Report

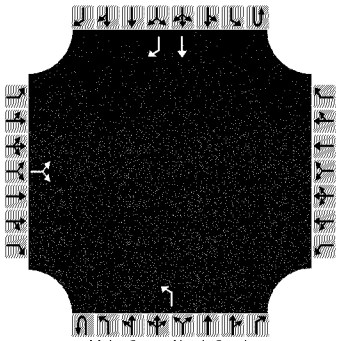
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/9/2022
Analysis Year	Fu-I
Time Analyzed	Future AM + MD T
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Chelsea Rd
Jurisdiction	Harford Co, MD
East/West Street	MD 159
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	1	0	0	0	0	1	1
Configuration			LR							L					T	R
Volume (veh/h)		19		1						1					1356	30
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized													No			
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			22							1						
Capacity, c (veh/h)			175							423						
v/c Ratio			0.13							0.00						
95% Queue Length, Q_{95} (veh)			0.4							0.0						
Control Delay (s/veh)			28.5							13.5						
Level of Service (LOS)			D							B						
Approach Delay (s/veh)	28.5								13.5							
Approach LOS	D															

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HCS7 Two-Way Stop-Control Report

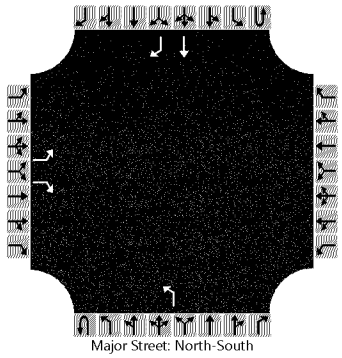
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	4/24/2022
Analysis Year	2026
Time Analyzed	Future AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	Chelsea at Canning House
Jurisdiction	Harford Co, MD
East/West Street	Canning House Ext
North/South Street	Chelsea Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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		1	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration		L		R						L					T	R
Volume (veh/h)		239		0						0					585	632
Percent Heavy Vehicles (%)		15		0						0						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No												No			
Median Type | Storage	Left Only								2							

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.55		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.64		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		266		0						0						
Capacity, c (veh/h)		469		473						515						
v/c Ratio		0.57		0.00						0.00						
95% Queue Length, Q_{95} (veh)		3.4		0.0						0.0						
Control Delay (s/veh)		22.2		12.6						12.0						
Level of Service (LOS)		C		B						B						
Approach Delay (s/veh)	22.2															
Approach LOS	C															

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HCS7 Two-Way Stop-Control Report

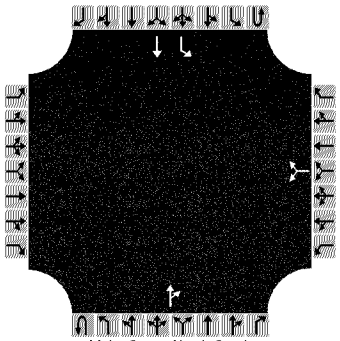
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/9/2022
Analysis Year	FU
Time Analyzed	Future AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	Chelsea Rd at Woodley Rd
Jurisdiction	Harford Co, MD
East/West Street	Woodley Rd
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	0		0	1	0	0	0	1	0	0	1	1	0
Configuration							LR					TR		L	T	
Volume (veh/h)						1		43			67	3		277	308	
Percent Heavy Vehicles (%)						15		15						15		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.55		6.35						4.25		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.64		3.44						2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							49							308		
Capacity, c (veh/h)							871							1442		
v/c Ratio							0.06							0.21		
95% Queue Length, Q_{95} (veh)							0.2							0.8		
Control Delay (s/veh)							9.4							8.2		
Level of Service (LOS)							A							A		
Approach Delay (s/veh)						9.4								3.9		
Approach LOS						A										

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HCS7 Two-Way Stop-Control Report

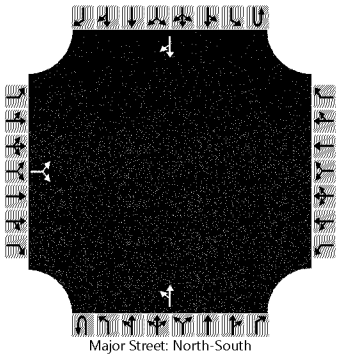
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/2022
Analysis Year	2026
Time Analyzed	Future AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Fords Lane
Jurisdiction	Harford Co, MD
East/West Street	Fords Lane
North/South Street	MD 159
Peak Hour Factor	0.95
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		4		0						0	48				35	0
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			4							0						
Capacity, c (veh/h)			906							1555						
v/c Ratio			0.00							0.00						
95% Queue Length, Q_{95} (veh)			0.0							0.0						
Control Delay (s/veh)			9.0							7.3						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.0								0.0						
Approach LOS		A														

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HCS7 Two-Way Stop-Control Report

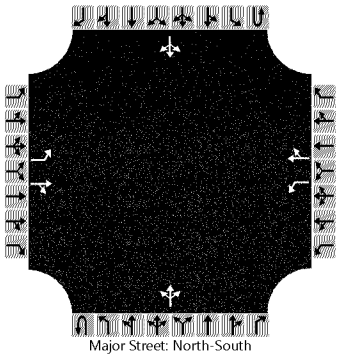
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/22
Analysis Year	2026
Time Analyzed	Future AM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Canning House
Jurisdiction	Harford Co, MD
East/West Street	Canning House Relocated
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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		1	1	0		1	1	0	0	0	1	0	0	0	1	0
Configuration		L		TR		L		TR			LTR				LTR	
Volume (veh/h)		15	178	1		1	632	1		0	31	61		0	23	12
Percent Heavy Vehicles (%)		5	15	5		5	15	5		5				5		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.15	6.65	6.25		7.15	6.65	6.25		4.15				4.15		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.55	4.14	3.35		3.55	4.14	3.35		2.25				2.25		

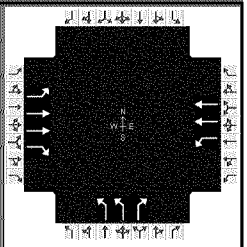
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		17		199		1		703		0				0		
Capacity, c (veh/h)		97		1033		595		987		1552				1471		
v/c Ratio		0.17		0.19		0.00		0.71		0.00				0.00		
95% Queue Length, Q_{95} (veh)		0.6		0.7		0.0		6.3		0.0				0.0		
Control Delay (s/veh)		49.9		9.3		11.1		17.2		7.3				7.4		
Level of Service (LOS)		E		A		B		C		A				A		
Approach Delay (s/veh)	12.5				17.1				0.0				0.0			
Approach LOS	B				C											

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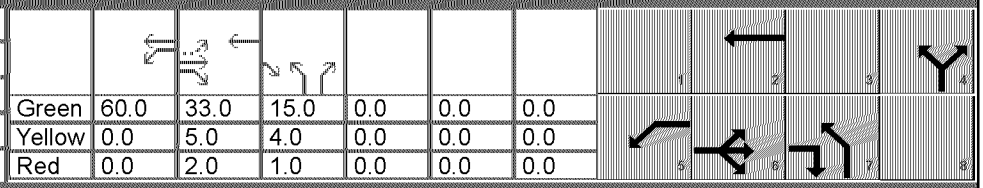
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Apr 27, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.92
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 3:45
Intersection	US 40 & MD 543	File Name	us 40 & md 543 - Fu PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	796	310	649	1079		271		586			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	60.0	33.0	15.0	0.0	0.0	0.0						
Yellow	0.0	5.0	4.0	0.0	0.0	0.0						
Red	0.0	2.0	1.0	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	796	310	649	1079		271		586			
Initial Queue (Q_b), veh/h	0	0	0	0	0		0		0			
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900		1900		1900			
Parking (N_m), man/h		None			None			None				
Heavy Vehicles (P_{HV}), %	10	10	2	10	10		10		0			
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0		0	0	
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0			
Arrival Type (*AT*)	3	3	3	3	3		3		3			
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00		1.00		1.00			
Lane Width (*W*), ft	11.0	12.0	13.0	13.0	12.0		10.0		12.0			
Turn Bay Length, ft	200	0	1035	450	0		0		0			
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	45	45	45	45	45		45		45			

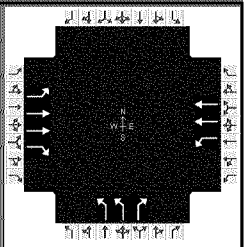
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		33.0	60.0	93.0	15.0	15.0		
Yellow Change Interval (*Y*), s		5.0	0.0	5.0	4.0	4.0		
Red Clearance Interval (R_c), s		2.0	0.0	2.0	2.0	1.0		
Minimum Green (G_{min}), s		25	10	25	5	5		
Start-Up Lost Time (*l1*), s	2.0	2.0	2.0	2.0	2.0			
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0			
Passage (*PT*), s		2.0	2.0	2.0	2.0	2.0		
Recall Mode		Min	Off	Min	Off	Off		
Dual Entry		Yes	No	Yes	No	Yes		
Walk (*Walk*), s		0.0				0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0				0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

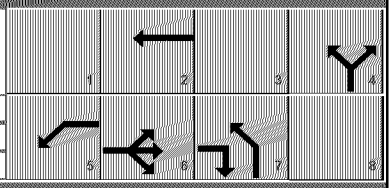
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Apr 27, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.92
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 3:45
Intersection	US 40 & MD 543	File Name	us 40 & md 543 - Fu PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	0	796	310	649	1079		271		586			

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	60.0	33.0	15.0	0.0	0.0	0.0	
Yellow	0.0	5.0	4.0	0.0	0.0	0.0	
Red	0.0	2.0	1.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6	5	2		4		
Case Number		5.3	2.0	4.0		9.0		
Phase Duration, s		40.0	60.0	100.0		20.0		
Change Period, (*Y+R c*), s		7.0	0.0	7.0		5.0		
Max Allow Headway (*MAH*), s		3.0	3.0	3.0		3.2		
Queue Clearance Time (*g s*), s		31.8	41.7	15.6		19.0		
Green Extension Time (*g e*), s		0.9	1.4	7.3		0.0		
Phase Call Probability		1.00	1.00	1.00		1.00		
Max Out Probability		1.00	0.00	0.00		1.00		

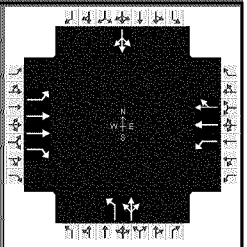
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2		7		14			
Adjusted Flow Rate (*v*), veh/h	0	865	337	705	1173		295		637			
Adjusted Saturation Flow Rate (*s*), veh/h/ln	448	1668		1735	1668		1620					
Queue Service Time (*g s*), s	0.0	29.8		39.7	13.6		10.3					
Cycle Queue Clearance Time (*g c*), s	0.0	29.8		39.7	13.6		10.3					
Green Ratio (*g/C*)	0.29	0.29		0.52	0.79		0.14					
Capacity (*c*), veh/h	60	973		896	2641		459					
Volume-to-Capacity Ratio (*X*)	0.000	0.889		0.787	0.444		0.642					
Back of Queue (*Q*), ft/ln (95 th percentile)	0	511.6		608	148.8		204.5					
Back of Queue (*Q*), veh/ln (95 th percentile)	0.0	18.9		22.5	5.5		7.6					
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		1.35	0.00		0.00					
Uniform Delay (*d 1*), s/veh	0.0	40.6		23.6	4.2		48.6					
Incremental Delay (*d 2*), s/veh	0.0	9.9		4.3	0.0		2.4					
Initial Queue Delay (*d 3*), s/veh	0.0	0.0		0.0	0.0		0.0					
Control Delay (*d*), s/veh	0.0	50.5	0.0	27.9	4.3		51.0		0.0			
Level of Service (LOS)		D	A	C	A		D		A			
Approach Delay, s/veh / LOS	36.4	D		13.2	B		16.1	B		0.0		
Intersection Delay, s/veh / LOS	20.8						C					

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

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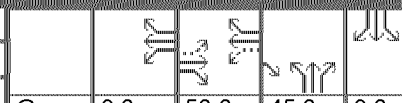
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.93
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:45
Intersection	US 40 & Spesutia Road	File Name	US 40 & Spesutia - Fu PM + cO Imp - Split-phase...		
Project Description	3762				

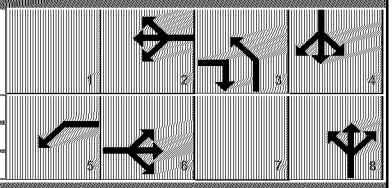


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	8	864	417	59	972	0	623	0	34	4	0	1

Signal Information			
Cycle, s	135.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



	EB			WB			NB			SB		
Green	8.0	50.0		45.0	8.0		0.0	0.0				
Yellow	4.0	5.0		4.0	4.0		0.0	0.0				
Red	1.0	2.0		2.0	2.0		0.0	0.0				



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	8	864	417	59	972	0	623	0	34	4	0	1
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	0	0	10		0	0			10	
Ped / Bike / RTOR, /h	0	0	0	0	0		0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	11.0	12.0	15.0	12.0	12.0		10.0	11.0			12.0	
Turn Bay Length, ft	350	0	300	400	0		300	0			0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	30	30	30	30	30	30

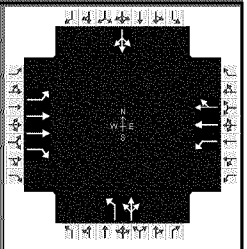
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		50.0	8.0	58.0	45.0	45.0		8.0
Yellow Change Interval (*Y*), s		5.0	4.0	0.0	4.0	4.0		4.0
Red Clearance Interval (R_c), s		2.0	1.0	0.0	2.0	2.0		2.0
Minimum Green (G_{min}), s		25	5	25	6	5		5
Start-Up Lost Time (*l1*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0	2.0	2.0	2.0	2.0		2.0
Recall Mode		Min	Off	Min	Off	Off		Off
Dual Entry		Yes	No	Yes	No	Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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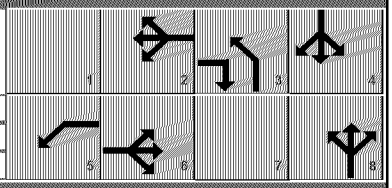
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.93
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:45
Intersection	US 40 & Spesutia Road	File Name	US 40 & Spesutia - Fu PM + cO Imp - Split-phase...		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	8	864	417	59	972	0	623	0	34	4	0	1

Signal Information					EB		WB				
Cycle, s	135.0	Reference Phase	2								
Offset, s	0	Reference Point	End	Green	8.0	50.0	45.0	8.0	0.0	0.0	
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	5.0	4.0	4.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	2.0	2.0	2.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6	5	2		8		4
Case Number		5.3	1.0	4.0		10.0		12.0
Phase Duration, s		57.0	13.0	70.0		51.0		14.0
Change Period, (*Y+R c*), s		7.0	5.0	7.0		6.0		6.0
Max Allow Headway (*MAH*), s		2.9	2.9	2.9		3.3		3.2
Queue Clearance Time (*g s*), s		34.0	4.6	31.8		34.7		2.4
Green Extension Time (*g e*), s		5.8	0.0	6.6		1.4		0.0
Phase Call Probability		1.00	1.00	1.00		1.00		1.00
Max Out Probability		0.19	0.45	0.05		0.06		0.00

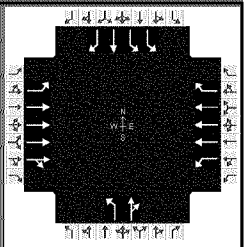
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	9	929	448	63	1045	0	268	438			5	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	506	1668	1675	1810	1752	0	1810	1793			1628	
Queue Service Time (*g s*), s	1.7	32.0	13.2	2.6	29.8	0.0	15.3	32.7			0.4	
Cycle Queue Clearance Time (*g c*), s	18.5	32.0	13.2	2.6	29.8	0.0	15.3	32.7			0.4	
Green Ratio (*g/C*)	0.39	0.39	0.73	0.47	0.48		0.35	0.35			0.07	
Capacity (*c*), veh/h	185	1285	1228	278	1687		630	624			121	
Volume-to-Capacity Ratio (*X*)	0.046	0.723	0.365	0.228	0.620	0.000	0.425	0.702			0.045	
Back of Queue (*Q*), ft/ln (95 th percentile)	10.2	496.5	165.8	46.9	464.6	0	277	585.5			8.4	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.4	18.4	6.6	1.9	17.2	0.0	11.1	23.4			0.3	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.03	0.00	0.55	0.12	0.00	0.00	0.92	0.00			0.00	
Uniform Delay (*d 1*), s/veh	37.5	35.4	6.6	24.1	26.5		33.7	58.6			58.1	
Incremental Delay (*d 2*), s/veh	0.0	1.8	0.1	0.2	0.5	0.0	0.2	3.0			0.1	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (*d*), s/veh	37.5	37.1	6.6	24.3	27.0		33.8	61.6			58.1	
Level of Service (LOS)	D	D	A	C	C		C	E			E	
Approach Delay, s/veh / LOS	27.3	C		26.9	C		51.1	D		58.1	E	
Intersection Delay, s/veh / LOS	32.4						C					

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

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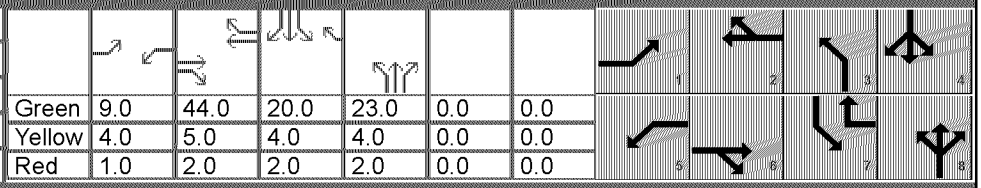
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.97
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 3:45
Intersection	US 40 at MD 7-MD 159	File Name	US 40 at MD 7 - Fu PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	41	954	124	40	1120	1087	185	159	22	363	88	28

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.0	44.0	20.0	23.0	0.0	0.0
Yellow	4.0	5.0	4.0	4.0	0.0	0.0
Red	1.0	2.0	2.0	2.0	0.0	0.0

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	41	954	124	40	1120	1087	185	159	22	363	88	28
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		R	0		None			None			None	
Heavy Vehicles (P_{HV}), %	10	10		10	10	2	10	10		10	10	10
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	12.0	12.0		12.0	12.0	12.0	12.0	11.0		12.0	12.0	12.0
Turn Bay Length, ft	350	0		300	0	0	400	0		775	0	600
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	40	40	40	40	40	40

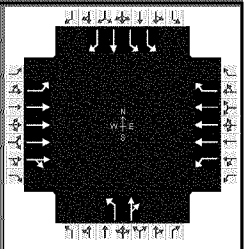
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	9.0	44.0	9.0	44.0	23.0	23.0	20.0	20.0
Yellow Change Interval (*Y*), s	4.0	5.0	4.0	5.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s	1.0	2.0	1.0	2.0	2.0	2.0	2.0	2.0
Minimum Green (G_{min}), s	5	30	5	30	5	10	5	10
Start-Up Lost Time (*lt*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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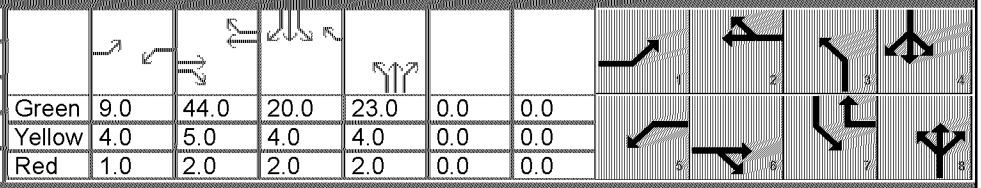
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.97
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 3:45
Intersection	US 40 at MD 7-MD 159	File Name	US 40 at MD 7 - Fu PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	41	954	124	40	1120	1087	185	159	22	363	88	28

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.0	44.0	20.0	23.0	0.0	0.0
Yellow	4.0	5.0	4.0	4.0	0.0	0.0
Red	1.0	2.0	2.0	2.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		8		4
Case Number	2.0	4.0	2.0	3.0		10.0		9.0
Phase Duration, s	14.0	51.0	14.0	51.0		29.0		26.0
Change Period, ($Y+R_c$), s	5.0	7.0	5.0	7.0		6.0		6.0
Max Allow Headway (*MAH*), s	2.9	3.0	2.9	3.0		3.0		3.1
Queue Clearance Time (g_s), s	4.8	17.0	4.8	48.0		14.3		14.8
Green Extension Time (g_e), s	0.0	12.1	0.0	0.0		0.5		0.6
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	0.10	0.31	0.09	1.00		0.01		0.23

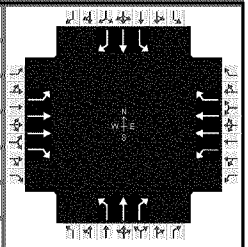
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	42	869	242	41	1155	1121	191	187		374	91	29
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1752	1440	1668	1591		1668	1714		1620	1752	1485
Queue Service Time (g_s), s	2.8	14.7	15.0	2.8	23.6		12.3	11.6		12.8	5.4	1.9
Cycle Queue Clearance Time (g_c), s	2.8	14.7	15.0	2.8	23.6		12.3	11.6		12.8	5.4	1.9
Green Ratio (*g/C*)	0.09	0.38	0.38	0.09	0.38		0.21	0.21		0.18	0.18	0.18
Capacity (*c*), veh/h	153	2015	552	153	1829		348	357		594	321	272
Volume-to-Capacity Ratio (*X*)	0.276	0.432	0.439	0.270	0.631		0.549	0.522		0.630	0.282	0.106
Back of Queue (*Q*), ft/ln (95 th percentile)	56	261.7	214.5	54.6	358		236.5	230		240.7	111.6	34.4
Back of Queue (*Q*), veh/ln (95 th percentile)	2.1	9.7	8.4	2.0	13.3		8.8	8.5		8.9	4.1	1.3
Queue Storage Ratio (*RQ*) (95 th percentile)	0.16	0.00	0.00	0.18	0.00		0.59	0.00		0.31	0.00	0.06
Uniform Delay (d_1), s/veh	50.8	28.0	27.4	50.8	30.8		42.5	42.2		45.2	42.2	40.8
Incremental Delay (d_2), s/veh	0.4	0.1	0.2	0.3	0.5		1.1	0.7		1.6	0.2	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (*d*), s/veh	51.2	28.1	27.6	51.1	31.4	35.0	43.5	42.9		46.9	42.4	40.9
Level of Service (LOS)	D	C	C	D	C	C	D	D		D	D	D
Approach Delay, s/veh / LOS	28.8	C		33.5	C		43.2	D		45.7	D	
Intersection Delay, s/veh / LOS	34.5						C					

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

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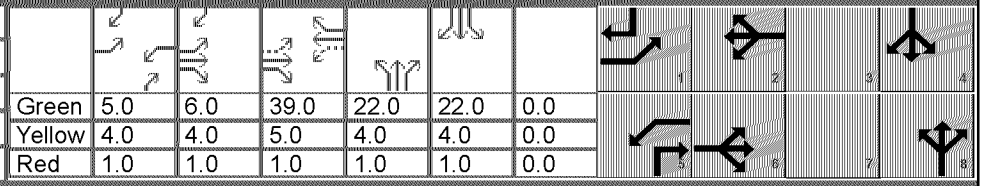
HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.98
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:15
Intersection	US 40 at MD 132	File Name	US 40 at MD 132 - Fu PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	251	1160	78	20	933	81	96	40	23	165	68	319

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.0	6.0	39.0	22.0	22.0	0.0	
Yellow	4.0	4.0	5.0	4.0	4.0	0.0	
Red	1.0	1.0	1.0	1.0	1.0	0.0	

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	251	1160	78	20	933	81	96	40	23	165	68	319
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	10	10	10	10	10	10	10	10	10	10
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	10.0	12.0	11.0	10.0	12.0	11.0	11.0	11.0	15.0	10.0	10.0	10.0
Turn Bay Length, ft	200	0	425	185	0	170	100	0	0	50	50	0
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	55	55	55	55	55	55	40	40	40	40	40	40

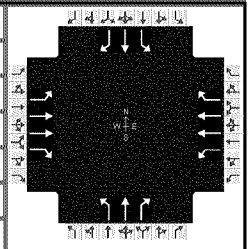
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	16.0	50.0	5.0	39.0		22.0		22.0
Yellow Change Interval (*Y*), s	4.0	5.0	4.0	5.0		4.0		4.0
Red Clearance Interval (R_c), s	1.0	1.0	1.0	1.0		1.0		1.0
Minimum Green (G_{min}), s	5	20	5	20		8		10
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s	2.0	2.0	2.0	2.0		2.0		2.0
Recall Mode	Off	Min	Off	Min		Off		Off
Dual Entry	No	Yes	No	Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.98
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:15
Intersection	US 40 at MD 132	File Name	US 40 at MD 132 - Fu PM.xus		
Project Description	3762				

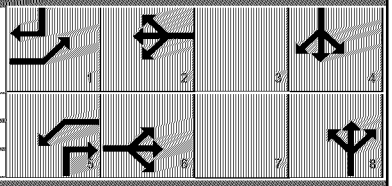


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	251	1160	78	20	933	81	96	40	23	165	68	319

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	5.0	6.0	39.0	22.0	22.0	0.0	
Yellow	4.0	4.0	5.0	4.0	4.0	0.0	
Red	1.0	1.0	1.0	1.0	1.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		8		4
Case Number	1.1	3.0	1.1	3.0		9.0		9.0
Phase Duration, s	21.0	56.0	10.0	45.0		27.0		27.0
Change Period, ($Y+R_c$), s	5.0	6.0	5.0	6.0		5.0		5.0
Max Allow Headway (*MAH*), s	2.9	2.9	2.9	2.9		3.1		3.2
Queue Clearance Time (g_s), s	12.7	39.4	2.9	33.6		8.0		23.9
Green Extension Time (g_e), s	0.1	4.6	0.0	3.0		0.2		0.0
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	0.70	0.32	1.00	0.68		0.00		1.00

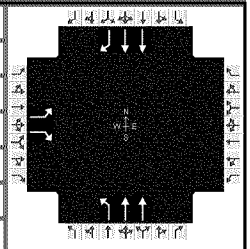
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	256	1184	80	20	952	83	98	41	23	168	69	326
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1668	1485	1668	1668	1485	1668	1752	1544	1668	1752	1485
Queue Service Time (g_s), s	10.7	37.4	3.9	0.9	31.6	4.7	6.0	2.3	1.4	10.8	4.0	21.9
Cycle Queue Clearance Time (g_c), s	10.7	37.4	3.9	0.9	31.6	4.7	6.0	2.3	1.4	10.8	4.0	21.9
Green Ratio (*g/C*)	0.51	0.43	0.43	0.40	0.34	0.34	0.20	0.20	0.26	0.20	0.20	0.35
Capacity (*c*), veh/h	354	1445	643	196	1140	507	334	350	399	334	350	520
Volume-to-Capacity Ratio (*X*)	0.724	0.819	0.124	0.104	0.835	0.163	0.294	0.116	0.059	0.505	0.198	0.626
Back of Queue (*Q*), ft/ln (95 th percentile)	209.6	555.2	61	16.2	503.4	76.6	118.8	47.6	24.9	212	82.4	337.8
Back of Queue (*Q*), veh/ln (95 th percentile)	7.8	20.6	2.3	0.6	18.6	2.8	4.4	1.8	0.9	7.9	3.1	12.5
Queue Storage Ratio (*RQ*) (95 th percentile)	1.05	0.00	0.14	0.09	0.00	0.45	1.19	0.00	0.00	4.24	1.65	6.76
Uniform Delay (d_1), s/veh	24.0	30.7	20.4	25.9	37.3	27.5	40.8	39.3	33.5	42.7	40.0	32.5
Incremental Delay (d_2), s/veh	6.3	3.6	0.0	0.1	5.2	0.1	0.2	0.1	0.0	0.5	0.1	1.8
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	30.3	34.3	20.4	26.0	42.5	27.6	41.0	39.4	33.5	43.2	40.1	34.3
Level of Service (LOS)	C	C	C	C	D	C	D	D	C	D	D	C
Approach Delay, s/veh / LOS	32.9	C		41.0	D		39.5	D		37.7	D	
Intersection Delay, s/veh / LOS	36.6						D					

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

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HCS7 Signalized Intersection Input Data

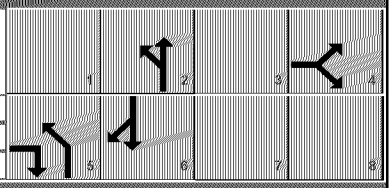
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.94
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:00
Intersection	US 40 EB & MD 22 Sign…	File Name	md 22 & us 40 EB - Fu PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	342		84				115	1209			651	267

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.0	40.0	25.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.0	1.0	1.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	342		84				115	1209			651	267
Initial Queue (Q_b), veh/h	0		0				0	0			0	0
Base Saturation Flow Rate (s_o), veh/h	1900		1900				1900	1900			1900	1900
Parking (N_m), man/h		None						None			None	
Heavy Vehicles (P_{HV}), %	10		2				10	10			10	10
Ped / Bike / RTOR, /h	0	0		0	0		0	0		0	0	0
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3				3	3			3	3
Upstream Filtering (*I*)	1.00		1.00				1.00	1.00			1.00	1.00
Lane Width (*W*), ft	12.0		12.0				11.0	12.0			12.0	12.0
Turn Bay Length, ft	0		0				215	0			0	220
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	50		50				50	50			50	50

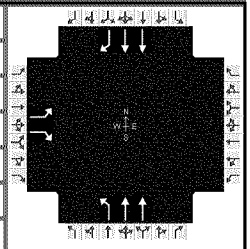
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		25.0			18.0	58.0		40.0
Yellow Change Interval (*Y*), s		4.0			4.0	5.0		5.0
Red Clearance Interval (R_c), s		1.0			2.0	1.0		1.0
Minimum Green (G_{min}), s		5			5	25		25
Start-Up Lost Time (*l*t), s	2.0				2.0	2.0		2.0
Extension of Effective Green (*e*), s	4.0				4.0	4.0		4.0
Passage (*PT*), s		2.0			2.0	2.0		2.0
Recall Mode		Off			Off	Min		Min
Dual Entry		Yes			No	Yes		Yes
Walk (*Walk*), s		0.0		0.0				0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				0.0

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

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HCS7 Signalized Intersection Results Summary

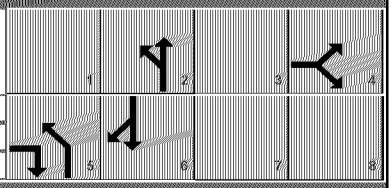
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	Oct 15, 2021	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.94
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:00
Intersection	US 40 EB & MD 22 Sign…	File Name	md 22 & us 40 EB - Fu PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	342		84				115	1209			651	267

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	18.0	40.0	25.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	2.0	1.0	1.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		30.0			24.0	70.0		46.0
Change Period, ($Y+R_c$), s		5.0			6.0	6.0		6.0
Max Allow Headway (*MAH*), s		3.0			3.0	2.9		2.9
Queue Clearance Time (g_s), s		22.4			4.8	23.3		17.2
Green Extension Time (g_e), s		0.3			0.1	6.4		6.1
Phase Call Probability		1.00			1.00	1.00		1.00
Max Out Probability		1.00			0.00	0.01		0.06

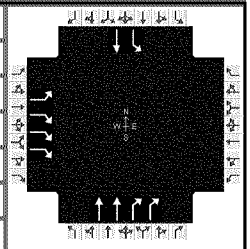
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (*v*), veh/h	364		89				122	1286			693	284
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668						1668	1668			1668	1485
Queue Service Time (g_s), s	20.4						2.8	21.3			15.2	13.7
Cycle Queue Clearance Time (g_c), s	20.4						2.8	21.3			15.2	13.7
Green Ratio (*g/C*)	0.27						0.64	0.66			0.42	0.42
Capacity (*c*), veh/h	450						594	2201			1401	624
Volume-to-Capacity Ratio (*X*)	0.808						0.206	0.584			0.494	0.456
Back of Queue (*Q*), ft/ln (95 th percentile)	372.1						40.1	271.6			248.9	210.4
Back of Queue (*Q*), veh/ln (95 th percentile)	13.8						1.5	10.1			9.2	7.8
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00						0.19	0.00			0.00	0.96
Uniform Delay (d_1), s/veh	34.1						8.8	9.8			21.2	20.8
Incremental Delay (d_2), s/veh	9.7						0.1	0.3			0.1	0.2
Initial Queue Delay (d_3), s/veh	0.0						0.0	0.0			0.0	0.0
Control Delay (*d*), s/veh	43.8		0.0				8.8	10.1			21.3	21.0
Level of Service (LOS)	D		A				A	B			C	C
Approach Delay, s/veh / LOS	35.2	D		0.0			10.0	A		21.2	C	
Intersection Delay, s/veh / LOS	17.9						B					

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

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HCS7 Signalized Intersection Input Data

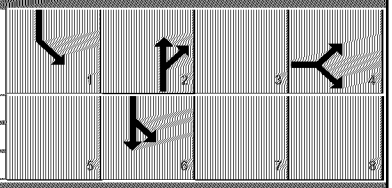
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.93
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:00
Intersection	MD 715 at US 40 EB Ra…	File Name	md 715 & us 40 EB - Fu PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	19		111					1053	160	41	76	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	55.0	18.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	1.0	0.0	0.0	0.0	



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	19		111					1053	160	41	76	
Initial Queue (Q_b), veh/h	0		0					0	0	0	0	
Base Saturation Flow Rate (s_o), veh/h	1900		1900					1900	1900	1900	1900	
Parking (N_m), man/h		None					0	L + R	0		None	
Heavy Vehicles (P_{HV}), %	10		2					10	0	10	10	
Ped / Bike / RTOR, /h	0	0		0	0		0	0	0	0	0	
Buses (N_b), buses/h	0	0	0				0	0	0	0	0	0
Arrival Type (*AT*)	3		3					3	3	3	3	
Upstream Filtering (*I*)	1.00		1.00					1.00	1.00	1.00	1.00	
Lane Width (*W*), ft	15.0		12.0					12.0	12.0	12.0	12.0	
Turn Bay Length, ft	300		0					0	0	0	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	50		50					40	40	40	40	

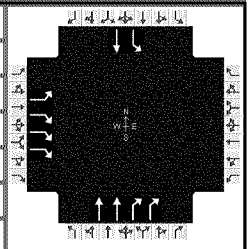
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		18.0				55.0	10.0	65.0
Yellow Change Interval (*Y*), s		4.0				5.0	4.0	5.0
Red Clearance Interval (R_c), s		1.0				2.0	1.0	2.0
Minimum Green (G_{min}), s		8				25	5	25
Start-Up Lost Time (*l*t), s	2.0					2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0					4.0	4.0	4.0
Passage (*PT*), s		2.0				2.0	2.0	2.0
Recall Mode		Off				Min	Off	Min
Dual Entry		Yes				Yes	No	Yes
Walk (*Walk*), s		0.0		0.0				0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0				0.0

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

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HCS7 Signalized Intersection Results Summary

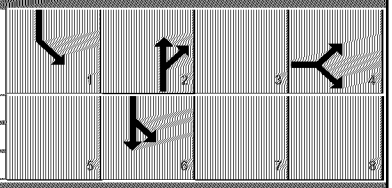
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford County, MD	Time Period	PM Peak	PHF	0.93
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:00
Intersection	MD 715 at US 40 EB Ra…	File Name	md 715 & us 40 EB - Fu PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	19		111					1053	160	41	76	

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	55.0	18.0	0.0	0.0	0.0	
Yellow	4.0	5.0	4.0	0.0	0.0	0.0	
Red	1.0	2.0	1.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2	1	6
Case Number		9.0				7.3	1.0	4.0
Phase Duration, s		23.0				62.0	15.0	77.0
Change Period, (*Y+R c*), s		5.0				7.0	5.0	7.0
Max Allow Headway (*MAH*), s		3.2				3.0	3.1	3.0
Queue Clearance Time (*g s*), s		4.3				24.1	2.8	3.4
Green Extension Time (*g e*), s		0.2				3.7	0.0	3.7
Phase Call Probability		1.00				1.00	1.00	1.00
Max Out Probability		0.00				0.00	0.00	0.00

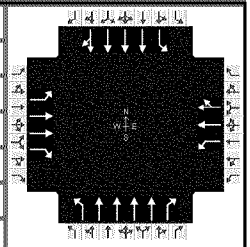
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2	12	1	6	
Adjusted Flow Rate (*v*), veh/h	20		119					1132	172	44	82	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1735							1668		1668	1752	
Queue Service Time (*g s*), s	1.0							22.1		0.8	1.4	
Cycle Queue Clearance Time (*g c*), s	1.0							22.1		0.8	1.4	
Green Ratio (*g/C*)	0.20							0.57		0.71	0.72	
Capacity (*c*), veh/h	347							1901		435	1261	
Volume-to-Capacity Ratio (*X*)	0.059							0.596		0.101	0.065	
Back of Queue (*Q*), ft/ln (95 th percentile)	18.6							322.1		10.5	18.6	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.7							11.9		0.4	0.7	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.06							0.00		0.00	0.00	
Uniform Delay (*d 1*), s/veh	32.4							14.0		7.5	4.4	
Incremental Delay (*d 2*), s/veh	0.0							0.4		0.0	0.0	
Initial Queue Delay (*d 3*), s/veh	0.0							0.0		0.0	0.0	
Control Delay (*d*), s/veh	32.4		0.0					14.4	0.0	7.6	4.4	
Level of Service (LOS)	C		A					B	A	A	A	
Approach Delay, s/veh / LOS	4.7	A		0.0			12.5	B		5.5	A	
Intersection Delay, s/veh / LOS	11.2						B					

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

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HCS7 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.92
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:00
Intersection	MD 715 at Old Philadelp…	File Name	MD 715 at Old Phil - Fu PM.xus		
Project Description	3762				

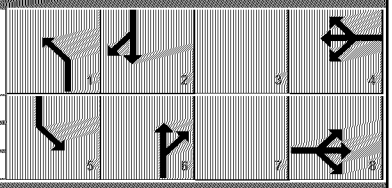


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	116	220	6	28	166	61	28	1019	124	16	111	67

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	15.0	45.0	20.0	0.0	0.0	0.0						
Yellow	4.0	5.0	4.0	0.0	0.0	0.0						
Red	2.5	1.5	3.0	0.0	0.0	0.0						



Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	116	220	6	28	166	61	28	1019	124	16	111	67
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	10	10	10	10	10		10	10	10	10	10	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	11.0	12.0	12.0	10.0	10.0		12.0	12.0	12.0	11.0	12.0	
Turn Bay Length, ft	200	0	375	300	0		275	0	275	60	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	30	30	30	35	35	35	45	45	45	45	45	45

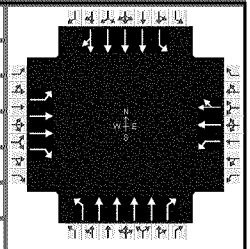
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		20.0		20.0	15.0	45.0	15.0	45.0
Yellow Change Interval (*Y*), s		4.0		4.0	4.0	5.0	4.0	5.0
Red Clearance Interval (R_c), s		3.0		3.0	2.5	1.5	2.5	1.5
Minimum Green (G_{min}), s		8		8	5	20	5	20
Start-Up Lost Time (*l*t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0		2.0	2.0	2.0	2.0	2.0
Recall Mode		Off		Off	Off	Min	Off	Min
Dual Entry		Yes		Yes	No	Yes	No	Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	May 14, 2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.92
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:00
Intersection	MD 715 at Old Philadelp…	File Name	MD 715 at Old Phil - Fu PM.xus		
Project Description	3762				

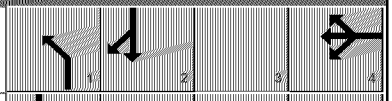


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	116	220	6	28	166	61	28	1019	124	16	111	67

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	15.0	45.0	20.0	0.0	0.0	0.0						
Yellow	4.0	5.0	4.0	0.0	0.0	0.0						
Red	2.5	1.5	3.0	0.0	0.0	0.0						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		5.0		6.0	2.0	3.0	2.0	4.0
Phase Duration, s		27.0		27.0	21.5	51.5	21.5	51.5
Change Period, (*Y+R c*), s		7.0		7.0	6.5	6.5	6.5	6.5
Max Allow Headway (*MAH*), s		3.3		3.3	3.0	3.0	3.0	3.0
Queue Clearance Time (*g s*), s		19.8		10.5	3.5	13.2	2.9	4.7
Green Extension Time (*g e*), s		0.1		1.2	0.0	3.7	0.0	3.7
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		1.00		0.05	0.00	0.00	0.00	0.00

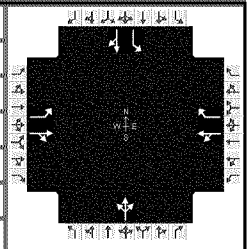
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (*v*), veh/h	126	239	7	30	126	121	30	1108	135	17	121	73
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1061	1668	1485	1069	1752	1594	1668	1591	1485	1668	1752	1485
Queue Service Time (*g s*), s	11.4	6.0	0.3	2.5	6.0	6.4	1.5	11.2	5.3	0.9	1.2	2.7
Cycle Queue Clearance Time (*g c*), s	17.8	6.0	0.3	8.5	6.0	6.4	1.5	11.2	5.3	0.9	1.2	2.7
Green Ratio (*g/C*)	0.22	0.22	0.22	0.22	0.22	0.22	0.17	0.47	0.47	0.17	0.47	0.47
Capacity (*c*), veh/h	238	734	327	243	385	351	284	2990	698	284	2470	698
Volume-to-Capacity Ratio (*X*)	0.531	0.326	0.020	0.125	0.327	0.344	0.107	0.370	0.193	0.061	0.049	0.104
Back of Queue (*Q*), ft/ln (95 th percentile)	146.5	118	6	31.1	123.3	111.7	29.6	181.6	80.9	16.7	22.3	39.2
Back of Queue (*Q*), veh/ln (95 th percentile)	5.4	4.4	0.2	1.2	4.6	4.4	1.1	6.7	3.0	0.6	0.8	1.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.73	0.00	0.02	0.10	0.00	0.00	0.11	0.00	0.29	0.28	0.00	0.00
Uniform Delay (*d 1*), s/veh	40.4	32.8	30.6	36.3	32.8	32.9	35.1	17.6	15.4	34.8	14.9	14.8
Incremental Delay (*d 2*), s/veh	1.2	0.1	0.0	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	41.6	32.9	30.6	36.4	33.0	33.1	35.1	17.6	15.5	34.8	14.9	14.8
Level of Service (LOS)	D	C	C	D	C	C	D	B	B	C	B	B
Approach Delay, s/veh / LOS	35.8	D		33.4	C		17.8	B		16.5	B	
Intersection Delay, s/veh / LOS	22.8						C					

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

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HCS7 Signalized Intersection Input Data

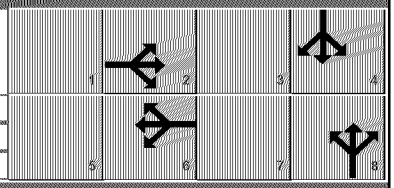
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	5/12/2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.97
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:00
Intersection	MD 7 at Stepney Rd	File Name	md 7 at stepney - Future PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	141	445	1	1	1094	132	1	1	1	42	0	130

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On





Green	90.0	20.0	0.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	1.0	1.0	0.0	0.0	0.0	0.0						

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	141	445	1	1	1094	132	1	1	1	42	0	130
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h		None			None			None			None	
Heavy Vehicles (P_{HV}), %	5	5			5	5		5		5	5	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (*AT*)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (*I*)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (*W*), ft	10.0	12.0			12.0	10.0		12.0		10.0	10.0	
Turn Bay Length, ft	200	0			0	250		0		150	0	
Grade (*Pg*), %		0			0			0			0	
Speed Limit, mi/h	35	35	35	35	35	35	35	35	35	35	35	35

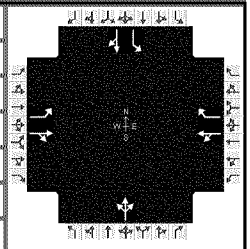
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s		90.0		90.0		20.0		20.0
Yellow Change Interval (*Y*), s		4.0		4.0		4.0		4.0
Red Clearance Interval (R_c), s		1.0		1.0		1.0		1.0
Minimum Green (G_{min}), s		20		20		8		8
Start-Up Lost Time (*l1*), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (*e*), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Passage (*PT*), s		2.0		2.0		2.0		2.0
Recall Mode		Min		Min		Off		Off
Dual Entry		Yes		Yes		Yes		Yes
Walk (*Walk*), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (*PC*), s		0.0		0.0		0.0		0.0

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

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HCS7 Signalized Intersection Results Summary

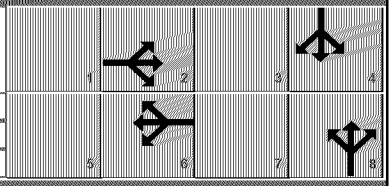
General Information				Intersection Information	
Agency	Traffic Concepts, Inc.			Duration, h	0.250
Analyst	J. Carey	Analysis Date	5/12/2022	Area Type	Other
Jurisdiction	Harford Co, MD	Time Period	PM Peak	PHF	0.97
Urban Street		Analysis Year	Future Condition	Analysis Period	1> 4:00
Intersection	MD 7 at Stepney Rd	File Name	md 7 at stepney - Future PM.xus		
Project Description	3762				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	141	445	1	1	1094	132	1	1	1	42	0	130

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On





Green	90.0	20.0	0.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	1.0	1.0	0.0	0.0	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		7.0		8.0		6.0
Phase Duration, s		95.0		95.0		25.0		25.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		3.4		3.4		3.3		3.3
Queue Clearance Time (g_s), s		78.5		47.3		11.3		14.8
Green Extension Time (g_e), s		4.9		7.0		0.2		0.2
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.42		0.02		0.01		0.15

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	145	460			1129	136		3		43	134	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	487	1825			1826	1547		1172		1381	1547	
Queue Service Time (g_s), s	31.2	9.4			0.0	2.7		0.0		3.5	9.3	
Cycle Queue Clearance Time (g_c), s	76.5	9.4			45.3	2.7		9.3		12.8	9.3	
Green Ratio (*g/C*)	0.77	0.77			0.77	0.77		0.18		0.18	0.18	
Capacity (*c*), veh/h	249	1399			1430	1186		255		206	284	
Volume-to-Capacity Ratio (*X*)	0.583	0.329			0.790	0.115		0.012		0.210	0.472	
Back of Queue (*Q*), ft/ln (95 th percentile)	174.9	134.8			552.4	32.8		3.5		56.4	167.2	
Back of Queue (*Q*), veh/ln (95 th percentile)	6.7	5.2			21.2	1.3		0.1		2.2	6.4	
Queue Storage Ratio (*RQ*) (95 th percentile)	0.87	0.00			0.00	0.13		0.00		0.38	0.00	
Uniform Delay (d_1), s/veh	31.9	4.4			8.6	3.6		40.2		49.5	43.8	
Incremental Delay (d_2), s/veh	2.3	0.1			2.8	0.0		0.0		0.2	0.5	
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Control Delay (*d*), s/veh	34.3	4.4			11.4	3.6		40.2		49.7	44.3	
Level of Service (LOS)	C	A			B	A		D		D	D	
Approach Delay, s/veh / LOS	11.6	B		10.5	B		40.2	D		45.6	D	
Intersection Delay, s/veh / LOS	13.9						B					

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

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HCS7 Two-Way Stop-Control Report

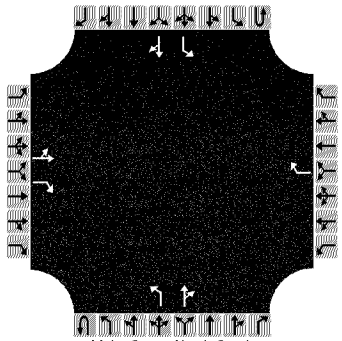
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	4/18/22
Analysis Year	Fu
Time Analyzed	Future PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Spesutia Rd
Jurisdiction	Harford Co, MD
East/West Street	Spesutia Rd-Access
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	1		0	0	1	0	1	1	0	0	1	1	0
Configuration		LT		R				R		L		TR		L		TR
Volume (veh/h)		10	2	409				32		562	522	0		24	336	47
Percent Heavy Vehicles (%)		0	0	0				15		0				15		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	No				Yes											
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2				6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20				6.35		4.10				4.25		
Base Follow-Up Headway (sec)		3.5	4.0	3.3				3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30				3.44		2.20				2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13		454				36		624				27		
Capacity, c (veh/h)		15		655				491		1145				933		
v/c Ratio		0.91		0.69				0.07		0.55				0.03		
95% Queue Length, Q_{95} (veh)		2.2		5.6				0.2		3.4				0.1		
Control Delay (s/veh)		545.7		22.0				12.9		11.9				9.0		
Level of Service (LOS)		F		C				B		B				A		
Approach Delay (s/veh)	36.9				12.9				6.1				0.5			
Approach LOS	E				B											

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HCS7 Two-Way Stop-Control Report

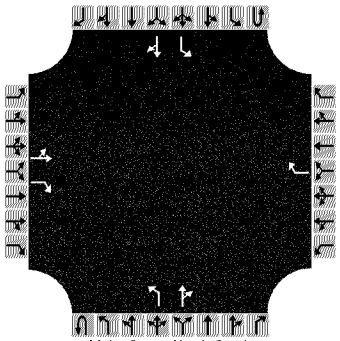
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	4/18/22
Analysis Year	Fu
Time Analyzed	Future PM + Developer Improvements
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Spesutia Rd
Jurisdiction	Harford Co, MD
East/West Street	Spesutia Rd-Access
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	1		0	0	1	0	1	1	0	0	1	1	0
Configuration		LT		R				R		L		TR		L		TR
Volume (veh/h)		10	2	409				32		562	522	0		24	336	47
Percent Heavy Vehicles (%)		0	0	0				15		0				15		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized	Yes				Yes											
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	2.0				6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	2.00				6.35		4.10				4.25		
Base Follow-Up Headway (sec)		3.5	4.0	3.3				3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30				3.44		2.20				2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13		454				36		624				27		
Capacity, c (veh/h)		15		1044				491		1145				933		
v/c Ratio		0.91		0.44				0.07		0.55				0.03		
95% Queue Length, Q_{95} (veh)		2.2		2.2				0.2		3.4				0.1		
Control Delay (s/veh)		545.7		11.1				12.9		11.9				9.0		
Level of Service (LOS)		F		B				B		B				A		
Approach Delay (s/veh)	26.3				12.9				6.1				0.5			
Approach LOS	D				B											

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HCS7 Two-Way Stop-Control Report

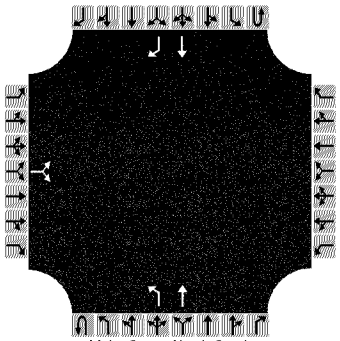
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/9/2022
Analysis Year	FU
Time Analyzed	Future PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Chelsea Rd
Jurisdiction	Harford Co, MD
East/West Street	MD 159
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	1	1	0	0	0	1	1
Configuration			LR							L	T				T	R
Volume (veh/h)		35		1						1	1060				616	133
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized													No			
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			40							1						
Capacity, c (veh/h)			80							788						
v/c Ratio			0.50							0.00						
95% Queue Length, Q_{95} (veh)			2.1							0.0						
Control Delay (s/veh)			87.9							9.6						
Level of Service (LOS)			F							A						
Approach Delay (s/veh)	87.9								0.0							
Approach LOS	F															

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HCS7 Two-Way Stop-Control Report

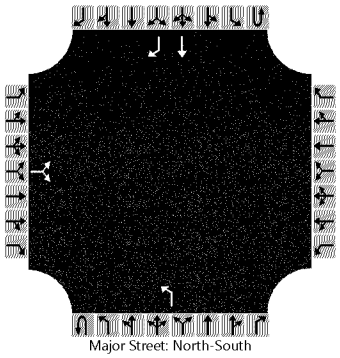
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/9/2022
Analysis Year	FU-I
Time Analyzed	Future PM + MD T
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Chelsea Rd
Jurisdiction	Harford Co, MD
East/West Street	MD 159
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	1	0	0	0	0	1	1
Configuration			LR							L					T	R
Volume (veh/h)		35		1						1					616	133
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized													No			
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			40							1						
Capacity, c (veh/h)			442							788						
v/c Ratio			0.09							0.00						
95% Queue Length, Q_{95} (veh)			0.3							0.0						
Control Delay (s/veh)			13.9							9.6						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)	13.9								9.6							
Approach LOS	B															

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HCS7 Two-Way Stop-Control Report

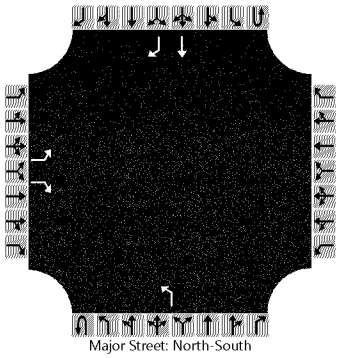
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	4/24/2022
Analysis Year	2026
Time Analyzed	Future PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	Chelsea at Canning House
Jurisdiction	Harford Co, MD
East/West Street	Canning House Ext
North/South Street	Chelsea Road
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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		1	0	1		0	0	0	0	1	0	0	0	0	1	1
Configuration		L		R						L					T	R
Volume (veh/h)		560		0						0					235	324
Percent Heavy Vehicles (%)		15		0						0						
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No												No			
Median Type | Storage	Left Only								2							

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.55		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.64		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		622		0						0						
Capacity, c (veh/h)		714		782						969						
v/c Ratio		0.87		0.00						0.00						
95% Queue Length, Q_{95} (veh)		10.6		0.0						0.0						
Control Delay (s/veh)		34.2		9.6						8.7						
Level of Service (LOS)		D		A						A						
Approach Delay (s/veh)	34.2															
Approach LOS	D															

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HCS7 Two-Way Stop-Control Report

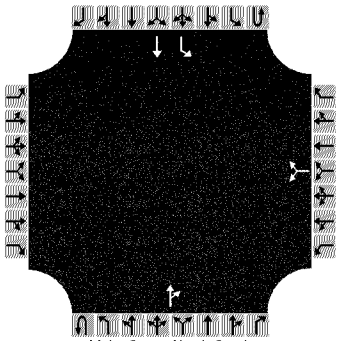
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	9/9/2022
Analysis Year	FU
Time Analyzed	Future PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	Chelsea Rd at Woodley Rd
Jurisdiction	Harford Co, MD
East/West Street	Woodley Rd
North/South Street	Chelsea Rd
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	0		0	1	0	0	0	1	0	0	1	1	0
Configuration							LR					TR		L	T	
Volume (veh/h)						1		218			204	1		146	89	
Percent Heavy Vehicles (%)						15		15						15		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.55		6.35						4.25		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.64		3.44						2.34		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							243							162		
Capacity, c (veh/h)							777							1267		
v/c Ratio							0.31							0.13		
95% Queue Length, Q_{95} (veh)							1.3							0.4		
Control Delay (s/veh)							11.7							8.3		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						11.7								5.1		
Approach LOS						B										

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HCS7 Two-Way Stop-Control Report

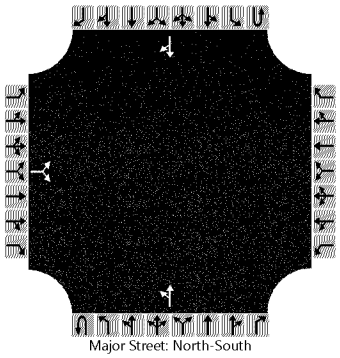
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/2022
Analysis Year	2026
Time Analyzed	Future PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Fords Lane
Jurisdiction	Harford Co, MD
East/West Street	Fords Lane
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		3		0						0	33				154	2
Percent Heavy Vehicles (%)		5		5						5						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.45		6.25						4.15						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.55		3.35						2.25						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			3							0						
Capacity, c (veh/h)			773							1385						
v/c Ratio			0.00							0.00						
95% Queue Length, Q_{95} (veh)			0.0							0.0						
Control Delay (s/veh)			9.7							7.6						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.7								0.0						
Approach LOS		A														

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HCS7 Two-Way Stop-Control Report

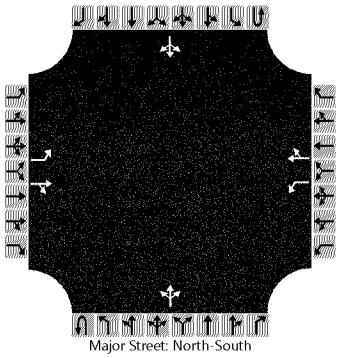
General Information

Analyst	J. Carey
Agency/Co.	Traffic Concepts, Inc.
Date Performed	5/14/22
Analysis Year	2026
Time Analyzed	Future PM
Intersection Orientation	North-South
Project Description	3762

Site Information

Intersection	MD 159 at Canning House
Jurisdiction	Harford Co, MD
East/West Street	Canning House Relocated
North/South Street	MD 159
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

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		1	1	0		1	1	0	0	0	1	0	0	0	1	0
Configuration		L		TR		L		TR			LTR				LTR	
Volume (veh/h)		8	523	1		1	234	1		0	18	37		0	92	51
Percent Heavy Vehicles (%)		5	15	5		5	15	5		5				5		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.15	6.65	6.25		7.15	6.65	6.25		4.15				4.15		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.55	4.14	3.35		3.55	4.14	3.35		2.25				2.25		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		9		582		1		261		0				0		
Capacity, c (veh/h)		451		911		140		1022		1402				1523		
v/c Ratio		0.02		0.64		0.01		0.26		0.00				0.00		
95% Queue Length, Q_{95} (veh)		0.1		4.8		0.0		1.0		0.0				0.0		
Control Delay (s/veh)		13.2		15.7		30.9		9.7		7.6				7.4		
Level of Service (LOS)		B		C		D		A		A				A		
Approach Delay (s/veh)	15.6				9.8				0.0				0.0			
Approach LOS	C				A											

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APPENDIX I-C

HCM 2000 REPORTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	146	2	42	667	439	0	0	553	380
Future Volume (vph)	0	0	0	146	2	42	667	439	0	0	553	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	3.5	3.5	4.0			4.0	4.0
Lane Util. Factor					1.00	1.00	1.00	0.95			0.95	1.00
Frt					1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1617	1442	1612	3223			3223	1442
Flt Permitted					0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1617	1442	1612	3223			3223	1442
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	155	2	45	710	467	0	0	588	404
RTOR Reduction (vph)	0	0	0	0	0	37	0	0	0	0	0	304
Lane Group Flow (vph)	0	0	0	0	157	8	710	467	0	0	588	100
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				4	4		1	6			2	
Permitted Phases						4						2
Actuated Green, G (s)					15.9	15.9	45.3	73.6			23.3	23.3
Effective Green, g (s)					17.4	17.4	46.8	75.1			24.8	24.8
Actuated g/C Ratio					0.17	0.17	0.47	0.75			0.25	0.25
Clearance Time (s)					5.0	5.0	5.0	5.5			5.5	5.5
Vehicle Extension (s)					4.0	4.0	5.0	5.0			5.0	5.0
Lane Grp Cap (vph)					281	250	754	2420			799	357
v/s Ratio Prot					c0.10		c0.44	0.14			c0.18	
v/s Ratio Perm						0.01						0.07
v/c Ratio					0.56	0.03	0.94	0.19			0.74	0.28
Uniform Delay, d1					37.8	34.3	25.3	3.6			34.6	30.4
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					3.0	0.1	20.4	0.1			4.3	0.9
Delay (s)					40.7	34.4	45.7	3.7			38.9	31.3
Level of Service					D	C	D	A			D	C
Approach Delay (s)		0.0			39.3			29.0			35.8	
Approach LOS		A			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	203	8	161	0	0	0	0	864	89	62	550	0
Future Volume (vph)	203	8	161	0	0	0	0	864	89	62	550	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5					4.0	4.0	3.5	4.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1531	1540	1442					3223	1442	1612	3223	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1531	1540	1442					3223	1442	1612	3223	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	209	8	166	0	0	0	0	891	92	64	567	0
RTOR Reduction (vph)	0	0	141	0	0	0	0	0	36	0	0	0
Lane Group Flow (vph)	109	108	25	0	0	0	0	891	56	64	567	0
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type	Split	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	4	4						6		5	2	
Permitted Phases			4						6			
Actuated Green, G (s)	10.0	10.0	10.0					44.2	44.2	5.3	54.5	
Effective Green, g (s)	11.5	11.5	11.5					45.7	45.7	6.8	56.0	
Actuated g/C Ratio	0.15	0.15	0.15					0.61	0.61	0.09	0.75	
Clearance Time (s)	5.0	5.0	5.0					5.5	5.5	5.0	5.5	
Vehicle Extension (s)	4.0	4.0	4.0					7.0	7.0	3.0	7.0	
Lane Grp Cap (vph)	234	236	221					1963	878	146	2406	
v/s Ratio Prot	c0.07	0.07						c0.28		c0.04	0.18	
v/s Ratio Perm			0.02						0.04			
v/c Ratio	0.47	0.46	0.12					0.45	0.06	0.44	0.24	
Uniform Delay, d1	28.9	28.9	27.4					7.9	6.0	32.3	2.9	
Progression Factor	1.00	1.00	1.00					0.85	1.62	1.00	1.00	
Incremental Delay, d2	2.0	1.9	0.3					0.7	0.1	2.1	0.2	
Delay (s)	30.9	30.8	27.7					7.4	9.8	34.4	3.2	
Level of Service	C	C	C					A	A	C	A	
Approach Delay (s)		29.5			0.0			7.6			6.3	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	173	65	36	116	359	43	451	42	362	776	55
Future Volume (vph)	131	173	65	36	116	359	43	451	42	362	776	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5	2.5	3.5	4.5	2.5	3.5	4.5	2.5	3.5	4.5	2.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3127	3223	1442	1612	3223	1442	1612	3223	1442	3127	3223	1442
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3127	3223	1442	1612	3223	1442	1612	3223	1442	3127	3223	1442
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	138	182	68	38	122	378	45	475	44	381	817	58
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	138	182	68	38	122	378	45	475	44	381	817	58
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			Free			Free			Free			Free
Actuated Green, G (s)	11.5	13.4	150.0	8.5	10.4	150.0	8.0	81.9	150.0	24.2	98.1	150.0
Effective Green, g (s)	13.0	14.9	150.0	10.0	11.9	150.0	9.5	83.4	150.0	25.7	99.6	150.0
Actuated g/C Ratio	0.09	0.10	1.00	0.07	0.08	1.00	0.06	0.56	1.00	0.17	0.66	1.00
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	5.0		3.5	5.0	
Lane Grp Cap (vph)	271	320	1442	107	255	1442	102	1791	1442	535	2140	1442
v/s Ratio Prot	c0.04	c0.06		0.02	0.04		0.03	0.15		c0.12	c0.25	
v/s Ratio Perm			0.05			c0.26			0.03			0.04
v/c Ratio	0.51	0.57	0.05	0.36	0.48	0.26	0.44	0.27	0.03	0.71	0.38	0.04
Uniform Delay, d1	65.5	64.5	0.0	66.9	66.1	0.0	67.7	17.3	0.0	58.7	11.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.90	1.00
Incremental Delay, d2	1.1	2.3	0.1	1.5	1.4	0.4	2.2	0.4	0.0	4.5	0.5	0.1
Delay (s)	66.5	66.8	0.1	68.4	67.5	0.4	69.9	17.7	0.0	60.9	10.7	0.1
Level of Service	E	E	A	E	E	A	E	B	A	E	B	A
Approach Delay (s)		55.0			20.4			20.5			25.5	
Approach LOS		E			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	682	122	169	438	100	652
Future Volume (vph)	682	122	169	438	100	652
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	11
Total Lost time (s)	5.5	5.5	4.0	5.5	4.5	2.5
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3282	1468	1641	3282	2971	1419
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3282	1468	1641	3282	2971	1419
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	758	136	188	487	111	724
RTOR Reduction (vph)	0	78	0	0	0	0
Lane Group Flow (vph)	758	58	188	487	111	724
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Turn Type	NA	Perm	Prot	NA	Prot	Free
Protected Phases	6		5	2	4	
Permitted Phases		6				Free
Actuated Green, G (s)	27.3	27.3	15.1	47.9	7.1	68.0
Effective Green, g (s)	28.8	28.8	16.6	49.4	8.6	68.0
Actuated g/C Ratio	0.42	0.42	0.24	0.73	0.13	1.00
Clearance Time (s)	7.0	7.0	5.5	7.0	6.0	
Vehicle Extension (s)	6.0	6.0	4.0	6.0	3.5	
Lane Grp Cap (vph)	1390	621	400	2384	375	1419
v/s Ratio Prot	0.23		0.11	0.15	0.04	
v/s Ratio Perm		0.04				c0.51
v/c Ratio	0.55	0.09	0.47	0.20	0.30	0.51
Uniform Delay, d1	14.7	11.8	21.9	3.0	27.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.2	1.2	0.1	0.5	1.3
Delay (s)	15.7	11.9	23.1	3.1	27.5	1.3
Level of Service	B	B	C	A	C	A
Approach Delay (s)	15.1			8.7	4.8	
Approach LOS	B			A	A	

Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

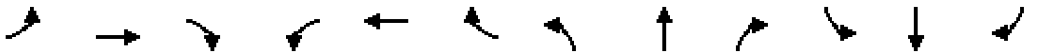
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	792	510	34	357	3	210	0	19	0	0	8
Future Volume (vph)	3	792	510	34	357	3	210	0	19	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	12	12	12	12	12
Total Lost time (s)	5.5	5.5	5.5	3.5	5.5		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1641	3282	1468	1641	3277		1532	1468			1494	
Flt Permitted	0.49	1.00	1.00	0.20	1.00		0.75	1.00			1.00	
Satd. Flow (perm)	854	3282	1468	350	3277		1211	1468			1494	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	4	978	630	42	441	4	259	0	23	0	0	10
RTOR Reduction (vph)	0	0	305	0	1	0	0	17	0	0	7	0
Lane Group Flow (vph)	4	978	325	42	444	0	259	6	0	0	3	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA			NA	
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2			8			4		
Actuated Green, G (s)	45.4	45.4	45.4	54.5	54.5		23.3	23.3			23.3	
Effective Green, g (s)	46.9	46.9	46.9	56.0	56.0		24.8	24.8			24.8	
Actuated g/C Ratio	0.52	0.52	0.52	0.62	0.62		0.27	0.27			0.27	
Clearance Time (s)	7.0	7.0	7.0	5.0	7.0		6.0	6.0			6.0	
Vehicle Extension (s)	5.0	5.0	5.0	3.0	5.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	441	1695	758	295	2021		330	400			408	
v/s Ratio Prot		c0.30		0.01	c0.14			0.00			0.00	
v/s Ratio Perm	0.00		0.22	0.08			c0.21					
v/c Ratio	0.01	0.58	0.43	0.14	0.22		0.78	0.02			0.01	
Uniform Delay, d1	10.7	15.1	13.6	8.3	7.7		30.5	24.1			24.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.0	1.4	1.8	0.2	0.3		11.6	0.0			0.0	
Delay (s)	10.7	16.6	15.4	8.5	8.0		42.1	24.1			24.0	
Level of Service	B	B	B	A	A		D	C			C	
Approach Delay (s)		16.1			8.0			40.6			24.0	
Approach LOS		B			A			D			C	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	90.8	Sum of lost time (s)	13.5
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

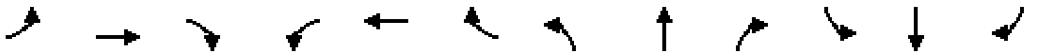
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1007	71	29	569	301	29	39	12	554	37	26
Future Volume (vph)	13	1007	71	29	569	301	29	39	12	554	37	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	10	10	12	12	12
Total Lost time (s)	3.5	5.5		3.5	5.5	5.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	0.86		1.00	0.91	1.00	1.00	1.00		0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1641	5883		1641	4715	1468	1641	1554		3183	1727	1468
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1641	5883		1641	4715	1468	1641	1554		3183	1727	1468
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	14	1049	74	30	593	314	30	41	12	577	39	27
RTOR Reduction (vph)	0	6	0	0	0	191	0	8	0	0	0	20
Lane Group Flow (vph)	14	1117	0	30	593	123	30	46	0	577	39	7
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases						2						4
Actuated Green, G (s)	2.5	34.2		4.5	36.2	36.2	8.5	8.5		25.3	25.3	25.3
Effective Green, g (s)	4.0	35.7		6.0	37.7	37.7	10.0	10.0		26.8	26.8	26.8
Actuated g/C Ratio	0.04	0.37		0.06	0.39	0.39	0.10	0.10		0.28	0.28	0.28
Clearance Time (s)	5.0	7.0		5.0	7.0	7.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	5.0	5.0		4.0	4.0	4.0
Lane Grp Cap (vph)	68	2176		102	1842	573	170	161		883	479	407
v/s Ratio Prot	0.01	c0.19		c0.02	0.13		0.02	c0.03		c0.18	0.02	
v/s Ratio Perm						0.08						0.01
v/c Ratio	0.21	0.51		0.29	0.32	0.21	0.18	0.29		0.65	0.08	0.02
Uniform Delay, d1	44.7	23.6		43.2	20.5	19.5	39.5	39.9		30.8	25.8	25.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.5	0.4		1.6	0.2	0.4	1.0	2.0		1.9	0.1	0.0
Delay (s)	46.2	24.1		44.8	20.7	19.9	40.5	42.0		32.7	25.9	25.3
Level of Service	D	C		D	C	B	D	D		C	C	C
Approach Delay (s)		24.3			21.2			41.5			32.0	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	96.5	Sum of lost time (s)	18.0	
Intersection Capacity Utilization	55.8%	ICU Level of Service	B	
Analysis Period (min)	15			

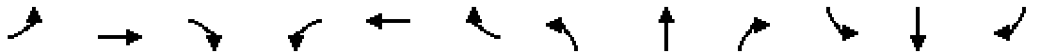
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	19	174	77	24	46	110	406	22	16	657	45
Future Volume (vph)	68	19	174	77	24	46	110	406	22	16	657	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	12	11	11	12	11
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.5	4.5	3.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1532	1612	1370	1641	1727	1468	1586	3282	1419	1586	3282	1419
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.27	1.00	1.00	0.51	1.00	1.00
Satd. Flow (perm)	1532	1612	1370	1641	1727	1468	454	3282	1419	851	3282	1419
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	69	19	178	79	24	47	112	414	22	16	670	46
RTOR Reduction (vph)	0	0	151	0	0	41	0	0	11	0	0	28
Lane Group Flow (vph)	69	19	27	79	24	6	112	414	11	16	670	18
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases			4			3	6		6	2		2
Actuated Green, G (s)	9.9	9.9	9.9	7.8	7.8	7.8	40.5	34.4	34.4	28.2	27.1	27.1
Effective Green, g (s)	11.4	11.4	11.4	9.3	9.3	9.3	42.0	35.9	35.9	31.2	28.6	28.6
Actuated g/C Ratio	0.15	0.15	0.15	0.13	0.13	0.13	0.57	0.48	0.48	0.42	0.39	0.39
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	235	247	210	205	216	183	408	1587	686	383	1265	546
v/s Ratio Prot	c0.05	0.01		c0.05	0.01		c0.04	0.13		0.00	c0.20	
v/s Ratio Perm			0.02			0.00	0.12		0.01	0.02		0.01
v/c Ratio	0.29	0.08	0.13	0.39	0.11	0.03	0.27	0.26	0.02	0.04	0.53	0.03
Uniform Delay, d1	27.8	26.9	27.1	29.8	28.8	28.5	8.3	11.3	10.0	12.6	17.6	14.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1	0.3	1.2	0.2	0.1	0.4	0.2	0.0	0.0	0.8	0.1
Delay (s)	28.5	27.0	27.4	31.0	29.0	28.6	8.7	11.5	10.0	12.6	18.4	14.2
Level of Service	C	C	C	C	C	C	A	B	A	B	B	B
Approach Delay (s)		27.7			29.9			10.9			18.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	74.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	0	104	0	0	325	62	225	0	0	1116	172
Future Volume (vph)	102	0	104	0	0	325	62	225	0	0	1116	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	11	12	12	12	12	12
Total Lost time (s)	4.5		2.5			2.5	3.5	5.0			5.0	2.5
Lane Util. Factor	1.00		1.00			1.00	1.00	0.95			0.95	1.00
Frt	1.00		0.85			0.86	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00			1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1586		1468			1494	1586	3282			3282	1468
Flt Permitted	0.95		1.00			1.00	0.12	1.00			1.00	1.00
Satd. Flow (perm)	1586		1468			1494	203	3282			3282	1468
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	120	0	122	0	0	382	73	265	0	0	1313	202
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	120	0	122	0	0	382	73	265	0	0	1313	202
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm		Free			Free	pm+pt	NA			NA	Free
Protected Phases							5	2			6	
Permitted Phases	4		Free			Free	2					Free
Actuated Green, G (s)	12.7		82.3			82.3	57.1	57.1			44.9	82.3
Effective Green, g (s)	14.2		82.3			82.3	58.6	58.6			46.4	82.3
Actuated g/C Ratio	0.17		1.00			1.00	0.71	0.71			0.56	1.00
Clearance Time (s)	6.0						5.0	6.5			6.5	
Vehicle Extension (s)	3.0						3.0	5.0			5.0	
Lane Grp Cap (vph)	273		1468			1494	290	2336			1850	1468
v/s Ratio Prot							0.03	0.08			c0.40	
v/s Ratio Perm	c0.08		0.08			c0.26	0.15					0.14
v/c Ratio	0.44		0.08			0.26	0.25	0.11			0.71	0.14
Uniform Delay, d1	30.5		0.0			0.0	6.9	3.7			13.1	0.0
Progression Factor	1.00		1.00			1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	1.1		0.1			0.4	0.5	0.0			1.6	0.2
Delay (s)	31.6		0.1			0.4	7.4	3.8			14.7	0.2
Level of Service	C		A			A	A	A			B	A
Approach Delay (s)		15.7			0.4			4.5			12.7	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	82.3	Sum of lost time (s)	14.5
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



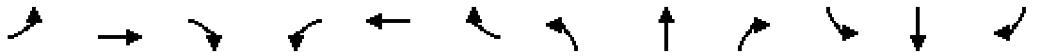
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	NBR2	SWL	SWR
Lane Configurations											
Traffic Volume (vph)	26	96	0	0	141	0	64	0	718	0	0
Future Volume (vph)	26	96	0	0	141	0	64	0	718	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.5			5.5		4.5		2.5		
Lane Util. Factor	1.00	1.00			0.95		1.00		0.76		
Frt	1.00	1.00			1.00		1.00		0.85		
Flt Protected	0.95	1.00			1.00		0.95		1.00		
Satd. Flow (prot)	1641	1727			3282		1641		3347		
Flt Permitted	0.57	1.00			1.00		0.95		1.00		
Satd. Flow (perm)	983	1727			3282		1641		3347		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	100	0	0	147	0	67	0	748	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	27	100	0	0	147	0	67	0	748	0	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt	NA			NA		Prot		Free		
Protected Phases	5	2			6		4				
Permitted Phases	2								Free		
Actuated Green, G (s)	34.1	34.1			27.0		5.0		52.1		
Effective Green, g (s)	35.6	35.6			28.5		6.5		52.1		
Actuated g/C Ratio	0.68	0.68			0.55		0.12		1.00		
Clearance Time (s)	6.0	7.0			7.0		6.0				
Vehicle Extension (s)	3.0	5.0			5.0		3.0				
Lane Grp Cap (vph)	704	1180			1795		204		3347		
v/s Ratio Prot	0.00	0.06			0.04		0.04				
v/s Ratio Perm	0.02								c0.22		
v/c Ratio	0.04	0.08			0.08		0.33		0.22		
Uniform Delay, d1	2.9	2.8			5.6		20.8		0.0		
Progression Factor	1.00	1.00			1.00		1.00		1.00		
Incremental Delay, d2	0.0	0.1			0.0		0.9		0.2		
Delay (s)	2.9	2.8			5.6		21.8		0.2		
Level of Service	A	A			A		C		A		
Approach Delay (s)		2.8			5.6		1.9			0.0	
Approach LOS		A			A		A			A	

Intersection Summary			
HCM 2000 Control Delay	2.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	52.1	Sum of lost time (s)	14.5
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	623	26	4	59	14	32	128	38	107	222	27
Future Volume (vph)	13	623	26	4	59	14	32	128	38	107	222	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	11	11	11
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.5	5.5	5.5	5.5	5.5	
Lane Util. Factor	1.00	0.86		1.00	*0.51	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1662	6187		1719	3691	1538	1719	3438	1538	1662	3269	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.58	1.00	1.00	0.66	1.00	
Satd. Flow (perm)	1662	6187		1719	3691	1538	1043	3438	1538	1152	3269	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	15	716	30	5	68	16	37	147	44	123	255	31
RTOR Reduction (vph)	0	4	0	0	0	9	0	0	33	0	8	0
Lane Group Flow (vph)	15	742	0	5	68	7	37	147	11	123	278	0
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases						6	4		4	8		
Actuated Green, G (s)	1.1	20.6		1.1	20.6	20.6	12.3	12.3	12.3	12.3	12.3	
Effective Green, g (s)	2.6	22.1		2.6	22.1	22.1	13.8	13.8	13.8	13.8	13.8	
Actuated g/C Ratio	0.05	0.41		0.05	0.41	0.41	0.26	0.26	0.26	0.26	0.26	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	80	2532		82	1510	629	266	878	393	294	835	
v/s Ratio Prot	0.01	c0.12		0.00	c0.02			0.04			0.08	
v/s Ratio Perm						0.00	0.04		0.01	c0.11		
v/c Ratio	0.19	0.29		0.06	0.05	0.01	0.14	0.17	0.03	0.42	0.33	
Uniform Delay, d1	24.7	10.7		24.5	9.6	9.5	15.5	15.6	15.1	16.8	16.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.1		0.3	0.0	0.0	0.3	0.1	0.0	1.3	0.3	
Delay (s)	25.8	10.8		24.8	9.6	9.5	15.8	15.8	15.1	18.1	16.7	
Level of Service	C	B		C	A	A	B	B	B	B	B	
Approach Delay (s)		11.1			10.5			15.6			17.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	43.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



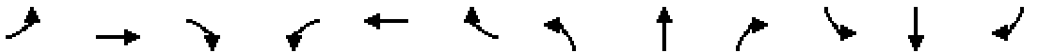
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	163	1	57	749	1028	0	0	315	119
Future Volume (vph)	0	0	0	163	1	57	749	1028	0	0	315	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					3.5	3.5	3.5	4.0			4.0	4.0
Lane Util. Factor					1.00	1.00	1.00	0.95			0.95	1.00
Frt					1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1616	1442	1612	3223			3223	1442
Flt Permitted					0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1616	1442	1612	3223			3223	1442
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	166	1	58	764	1049	0	0	321	121
RTOR Reduction (vph)	0	0	0	0	0	49	0	0	0	0	0	96
Lane Group Flow (vph)	0	0	0	0	167	9	764	1049	0	0	321	25
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				4	4		1 9	6			2	
Permitted Phases						4						2
Actuated Green, G (s)					20.2	20.2	67.3	71.3			26.5	26.5
Effective Green, g (s)					21.7	21.7	70.3	72.8			28.0	28.0
Actuated g/C Ratio					0.16	0.16	0.52	0.54			0.21	0.21
Clearance Time (s)					5.0	5.0		5.5			5.5	5.5
Vehicle Extension (s)					4.0	4.0		5.0			5.0	5.0
Lane Grp Cap (vph)					259	231	839	1738			668	299
v/s Ratio Prot					c0.10		c0.47	c0.33			0.10	
v/s Ratio Perm						0.01						0.02
v/c Ratio					0.64	0.04	0.91	0.60			0.48	0.08
Uniform Delay, d1					53.0	47.9	29.5	21.2			47.1	43.2
Progression Factor					1.00	1.00	1.43	0.70			1.00	1.00
Incremental Delay, d2					6.0	0.1	12.1	1.3			2.5	0.6
Delay (s)					59.1	48.0	54.3	16.1			49.6	43.7
Level of Service					E	D	D	B			D	D
Approach Delay (s)		0.0			56.2			32.2			48.0	
Approach LOS		A			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



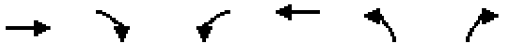
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	435	1	134	0	0	0	0	1350	184	57	390	0
Future Volume (vph)	435	1	134	0	0	0	0	1350	184	57	390	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5					4.0	4.0	3.5	4.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1531	1535	1442					3223	1442	1612	3223	
Flt Permitted	0.95	0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1531	1535	1442					3223	1442	1612	3223	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	444	1	137	0	0	0	0	1378	188	58	398	0
RTOR Reduction (vph)	0	0	106	0	0	0	0	0	60	0	0	0
Lane Group Flow (vph)	222	223	31	0	0	0	0	1378	128	58	398	0
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type	Split	NA	Perm					NA	Perm	Prot	NA	
Protected Phases	4	4						6		5	2	
Permitted Phases			4						6			
Actuated Green, G (s)	28.9	28.9	28.9					81.9	81.9	8.7	95.6	
Effective Green, g (s)	30.4	30.4	30.4					83.4	83.4	10.2	97.1	
Actuated g/C Ratio	0.23	0.23	0.23					0.62	0.62	0.08	0.72	
Clearance Time (s)	5.0	5.0	5.0					5.5	5.5	5.0	5.5	
Vehicle Extension (s)	4.0	4.0	4.0					7.0	7.0	3.0	7.0	
Lane Grp Cap (vph)	344	345	324					1991	890	121	2318	
v/s Ratio Prot	0.15	c0.15						c0.43		c0.04	0.12	
v/s Ratio Perm			0.02						0.09			
v/c Ratio	0.65	0.65	0.10					0.69	0.14	0.48	0.17	
Uniform Delay, d1	47.4	47.4	41.4					17.2	10.8	59.9	6.1	
Progression Factor	1.00	1.00	1.00					0.54	0.03	0.60	0.08	
Incremental Delay, d2	4.6	4.6	0.2					1.8	0.3	2.7	0.1	
Delay (s)	52.0	52.0	41.6					11.2	0.6	38.4	0.6	
Level of Service	D	D	D					B	A	D	A	
Approach Delay (s)		49.6			0.0			9.9			5.4	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	165	60	32	319	721	153	673	71	316	553	68
Future Volume (vph)	155	165	60	32	319	721	153	673	71	316	553	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5	2.5	3.5	4.5	2.5	3.5	4.5	2.5	3.5	4.5	2.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3127	3223	1442	1612	3223	1442	1612	3223	1442	3127	3223	1442
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3127	3223	1442	1612	3223	1442	1612	3223	1442	3127	3223	1442
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	157	167	61	32	322	728	155	680	72	319	559	69
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	157	167	61	32	322	728	155	680	72	319	559	69
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			Free			Free			Free			Free
Actuated Green, G (s)	11.2	19.6	135.0	7.7	16.1	135.0	17.8	66.3	135.0	19.4	67.9	135.0
Effective Green, g (s)	12.7	21.1	135.0	9.2	17.6	135.0	19.3	67.8	135.0	20.9	69.4	135.0
Actuated g/C Ratio	0.09	0.16	1.00	0.07	0.13	1.00	0.14	0.50	1.00	0.15	0.51	1.00
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	5.0		3.5	5.0	
Lane Grp Cap (vph)	294	503	1442	109	420	1442	230	1618	1442	484	1656	1442
v/s Ratio Prot	0.05	0.05		0.02	c0.10		0.10	0.21		c0.10	0.17	
v/s Ratio Perm			0.04			c0.50			0.05			0.05
v/c Ratio	0.53	0.33	0.04	0.29	0.77	0.50	0.67	0.42	0.05	0.66	0.34	0.05
Uniform Delay, d1	58.3	50.7	0.0	59.8	56.7	0.0	54.9	21.2	0.0	53.7	19.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.93	1.00	1.21	0.95	1.00
Incremental Delay, d2	1.4	0.4	0.1	1.1	8.2	1.3	6.1	0.7	0.1	3.3	0.6	0.1
Delay (s)	59.8	51.1	0.1	60.9	64.9	1.3	58.7	20.4	0.1	68.5	18.8	0.1
Level of Service	E	D	A	E	E	A	E	C	A	E	B	A
Approach Delay (s)		46.5			22.0			25.3			34.2	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	634	212	355	856	178	376
Future Volume (vph)	634	212	355	856	178	376
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	11
Total Lost time (s)	5.5	5.5	4.0	5.5	4.5	2.5
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3282	1468	1641	3282	2971	1419
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3282	1468	1641	3282	2971	1419
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	689	230	386	930	193	409
RTOR Reduction (vph)	0	150	0	0	0	0
Lane Group Flow (vph)	689	80	386	930	193	409
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Turn Type	NA	Perm	Prot	NA	Prot	Free
Protected Phases	6		5	2	4	
Permitted Phases		6				Free
Actuated Green, G (s)	28.3	28.3	26.6	60.4	12.1	85.5
Effective Green, g (s)	29.8	29.8	28.1	61.9	13.6	85.5
Actuated g/C Ratio	0.35	0.35	0.33	0.72	0.16	1.00
Clearance Time (s)	7.0	7.0	5.5	7.0	6.0	
Vehicle Extension (s)	6.0	6.0	4.0	6.0	3.5	
Lane Grp Cap (vph)	1143	511	539	2376	472	1419
v/s Ratio Prot	c0.21		c0.24	0.28	c0.06	
v/s Ratio Perm		0.05				0.29
v/c Ratio	0.60	0.16	0.72	0.39	0.41	0.29
Uniform Delay, d1	23.0	19.2	25.2	4.5	32.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6	0.4	4.8	0.3	0.7	0.5
Delay (s)	24.6	19.6	30.0	4.8	33.0	0.5
Level of Service	C	B	C	A	C	A
Approach Delay (s)	23.3			12.2	10.9	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	85.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

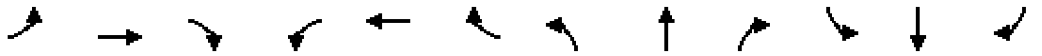
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	670	278	59	728	0	405	0	34	4	0	1
Future Volume (vph)	8	670	278	59	728	0	405	0	34	4	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	12	12	12	12	12
Total Lost time (s)	5.5	5.5	5.5	3.5	5.5		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85			0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00			0.96	
Satd. Flow (prot)	1641	3282	1468	1641	3282		1532	1468			1616	
Flt Permitted	0.36	1.00	1.00	0.30	1.00		0.75	1.00			0.90	
Satd. Flow (perm)	614	3282	1468	513	3282		1216	1468			1507	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	9	720	299	63	783	0	435	0	37	4	0	1
RTOR Reduction (vph)	0	0	151	0	0	0	0	27	0	0	4	0
Lane Group Flow (vph)	9	720	148	63	783	0	435	10	0	0	1	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		6		5	2			8			4	
Permitted Phases	6		6	2			8			4		
Actuated Green, G (s)	45.2	45.2	45.2	56.3	56.3		25.1	25.1			25.1	
Effective Green, g (s)	46.7	46.7	46.7	57.8	57.8		26.6	26.6			26.6	
Actuated g/C Ratio	0.49	0.49	0.49	0.61	0.61		0.28	0.28			0.28	
Clearance Time (s)	7.0	7.0	7.0	5.0	7.0		6.0	6.0			6.0	
Vehicle Extension (s)	5.0	5.0	5.0	3.0	5.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	303	1623	726	404	2009		342	413			424	
v/s Ratio Prot		c0.22		0.01	c0.24			0.01				
v/s Ratio Perm	0.01		0.10	0.08			c0.36				0.00	
v/c Ratio	0.03	0.44	0.20	0.16	0.39		1.27	0.03			0.00	
Uniform Delay, d1	12.2	15.4	13.4	8.1	9.3		33.9	24.5			24.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.2	0.9	0.6	0.2	0.6		143.4	0.0			0.0	
Delay (s)	12.4	16.3	14.0	8.2	9.9		177.3	24.5			24.4	
Level of Service	B	B	B	A	A		F	C			C	
Approach Delay (s)		15.6			9.8			165.3			24.4	
Approach LOS		B			A			F			C	

Intersection Summary			
HCM 2000 Control Delay	43.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	94.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

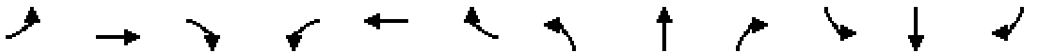
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	820	42	36	970	928	57	76	22	287	35	28
Future Volume (vph)	37	820	42	36	970	928	57	76	22	287	35	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	10	10	12	12	12
Total Lost time (s)	3.5	5.5		3.5	5.5	5.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	0.86		1.00	0.91	1.00	1.00	1.00		0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1641	5898		1641	4715	1468	1641	1559		3183	1727	1468
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1641	5898		1641	4715	1468	1641	1559		3183	1727	1468
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	38	837	43	37	990	947	58	78	22	293	36	29
RTOR Reduction (vph)	0	3	0	0	0	496	0	7	0	0	0	24
Lane Group Flow (vph)	38	877	0	37	990	451	58	93	0	293	36	5
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases						2						4
Actuated Green, G (s)	4.9	42.1		4.9	42.1	42.1	14.2	14.2		16.8	16.8	16.8
Effective Green, g (s)	6.4	43.6		6.4	43.6	43.6	15.7	15.7		18.3	18.3	18.3
Actuated g/C Ratio	0.06	0.43		0.06	0.43	0.43	0.15	0.15		0.18	0.18	0.18
Clearance Time (s)	5.0	7.0		5.0	7.0	7.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	5.0	5.0		4.0	4.0	4.0
Lane Grp Cap (vph)	102	2521		102	2015	627	252	239		571	309	263
v/s Ratio Prot	c0.02	0.15		0.02	0.21		0.04	c0.06		c0.09	0.02	
v/s Ratio Perm						c0.31						0.00
v/c Ratio	0.37	0.35		0.36	0.49	0.72	0.23	0.39		0.51	0.12	0.02
Uniform Delay, d1	45.9	19.6		45.8	21.2	24.1	37.8	38.8		37.8	35.1	34.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.3	0.2		2.2	0.4	4.9	1.0	2.2		1.0	0.2	0.0
Delay (s)	48.2	19.8		48.0	21.6	29.0	38.8	41.0		38.9	35.3	34.5
Level of Service	D	B		D	C	C	D	D		D	D	C
Approach Delay (s)		21.0			25.6			40.2			38.2	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

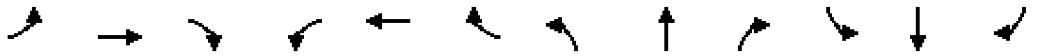
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	61	286	86	36	21	225	876	70	20	716	73
Future Volume (vph)	148	61	286	86	36	21	225	876	70	20	716	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	12	11	11	12	11
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.5	4.5	3.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1532	1612	1370	1641	1727	1468	1586	3282	1419	1586	3282	1419
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.20	1.00	1.00	0.29	1.00	1.00
Satd. Flow (perm)	1532	1612	1370	1641	1727	1468	336	3282	1419	478	3282	1419
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	161	66	311	93	39	23	245	952	76	22	778	79
RTOR Reduction (vph)	0	0	251	0	0	20	0	0	38	0	0	50
Lane Group Flow (vph)	161	66	60	93	39	3	245	952	38	22	778	29
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases			4			3	6		6	2		2
Actuated Green, G (s)	17.2	17.2	17.2	9.4	9.4	9.4	53.6	46.3	46.3	36.1	33.8	33.8
Effective Green, g (s)	18.7	18.7	18.7	10.9	10.9	10.9	55.1	47.8	47.8	39.1	35.3	35.3
Actuated g/C Ratio	0.19	0.19	0.19	0.11	0.11	0.11	0.57	0.50	0.50	0.41	0.37	0.37
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	297	313	266	185	195	166	404	1630	705	238	1204	520
v/s Ratio Prot	c0.11	0.04		c0.06	0.02		c0.10	0.29		0.00	0.24	
v/s Ratio Perm			0.04			0.00	c0.24		0.03	0.03		0.02
v/c Ratio	0.54	0.21	0.23	0.50	0.20	0.02	0.61	0.58	0.05	0.09	0.65	0.06
Uniform Delay, d1	34.9	32.6	32.7	40.1	38.7	37.9	12.9	17.2	12.5	17.2	25.3	19.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.3	0.4	2.1	0.5	0.0	2.6	0.8	0.1	0.2	1.6	0.1
Delay (s)	36.9	32.9	33.1	42.2	39.2	37.9	15.5	18.0	12.6	17.4	26.9	19.8
Level of Service	D	C	C	D	D	D	B	B	B	B	C	B
Approach Delay (s)		34.2			40.8			17.2			26.0	
Approach LOS		C			D			B			C	

Intersection Summary				
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	96.2	Sum of lost time (s)	15.0	
Intersection Capacity Utilization	57.5%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	253	0	75	0	0	376	103	1084	0	0	584	200
Future Volume (vph)	253	0	75	0	0	376	103	1084	0	0	584	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	11	12	12	12	12	12
Total Lost time (s)	4.5		2.5			2.5	3.5	5.0			5.0	2.5
Lane Util. Factor	1.00		1.00			1.00	1.00	0.95			0.95	1.00
Frt	1.00		0.85			0.86	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00			1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1586		1468			1494	1586	3282			3282	1468
Flt Permitted	0.95		1.00			1.00	0.31	1.00			1.00	1.00
Satd. Flow (perm)	1586		1468			1494	517	3282			3282	1468
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	264	0	78	0	0	392	107	1129	0	0	608	208
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	264	0	78	0	0	392	107	1129	0	0	608	208
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm		Free			Free	pm+pt	NA			NA	Free
Protected Phases							5	2			6	
Permitted Phases	4		Free			Free	2					Free
Actuated Green, G (s)	19.4		72.6			72.6	40.7	40.7			26.0	72.6
Effective Green, g (s)	20.9		72.6			72.6	42.2	42.2			27.5	72.6
Actuated g/C Ratio	0.29		1.00			1.00	0.58	0.58			0.38	1.00
Clearance Time (s)	6.0						5.0	6.5			6.5	
Vehicle Extension (s)	3.0						3.0	5.0			5.0	
Lane Grp Cap (vph)	456		1468			1494	465	1907			1243	1468
v/s Ratio Prot							0.04	c0.34			0.19	
v/s Ratio Perm	c0.17		0.05			0.26	0.10					0.14
v/c Ratio	0.58		0.05			0.26	0.23	0.59			0.49	0.14
Uniform Delay, d1	22.1		0.0			0.0	7.4	9.7			17.2	0.0
Progression Factor	1.00		1.00			1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	1.8		0.1			0.4	0.3	0.8			0.6	0.2
Delay (s)	23.9		0.1			0.4	7.6	10.5			17.8	0.2
Level of Service	C		A			A	A	B			B	A
Approach Delay (s)		18.4			0.4			10.2			13.3	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	72.6	Sum of lost time (s)	14.5
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



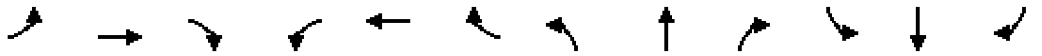
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	NBR2	SWL	SWR
Lane Configurations											
Traffic Volume (vph)	37	25	0	0	934	0	17	0	93	0	0
Future Volume (vph)	37	25	0	0	934	0	17	0	93	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.5			5.5		4.5		2.5		
Lane Util. Factor	1.00	1.00			0.95		1.00		0.76		
Frt	1.00	1.00			1.00		1.00		0.85		
Flt Protected	0.95	1.00			1.00		0.95		1.00		
Satd. Flow (prot)	1641	1727			3282		1641		3347		
Flt Permitted	0.21	1.00			1.00		0.95		1.00		
Satd. Flow (perm)	363	1727			3282		1641		3347		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	42	28	0	0	1049	0	19	0	104	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	42	28	0	0	1049	0	19	0	104	0	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt	NA			NA		Prot		Free		
Protected Phases	5	2			6		4				
Permitted Phases	2								Free		
Actuated Green, G (s)	44.3	44.3			33.9		1.2		58.5		
Effective Green, g (s)	45.8	45.8			35.4		2.7		58.5		
Actuated g/C Ratio	0.78	0.78			0.61		0.05		1.00		
Clearance Time (s)	6.0	7.0			7.0		6.0				
Vehicle Extension (s)	3.0	5.0			5.0		3.0				
Lane Grp Cap (vph)	413	1352			1986		75		3347		
v/s Ratio Prot	c0.01	0.02			c0.32		c0.01				
v/s Ratio Perm	0.07								0.03		
v/c Ratio	0.10	0.02			0.53		0.25		0.03		
Uniform Delay, d1	2.2	1.4			6.7		26.9		0.0		
Progression Factor	1.00	1.00			1.00		1.00		1.00		
Incremental Delay, d2	0.1	0.0			0.5		1.8		0.0		
Delay (s)	2.3	1.4			7.2		28.7		0.0		
Level of Service	A	A			A		C		A		
Approach Delay (s)		2.0			7.2		4.4			0.0	
Approach LOS		A			A		A			A	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	14.5
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	100	12	28	914	111	26	140	5	25	113	55
Future Volume (vph)	16	100	12	28	914	111	26	140	5	25	113	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	11	11	11
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.5	5.5	5.5	5.5	5.5	
Lane Util. Factor	1.00	0.86		1.00	*0.51	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1662	6125		1719	3691	1538	1719	3438	1538	1662	3160	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.64	1.00	1.00	0.66	1.00	
Satd. Flow (perm)	1662	6125		1719	3691	1538	1152	3438	1538	1147	3160	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	109	13	30	993	121	28	152	5	27	123	60
RTOR Reduction (vph)	0	7	0	0	0	66	0	0	4	0	48	0
Lane Group Flow (vph)	17	115	0	30	993	55	28	152	1	27	135	0
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases						6	4		4	8		
Actuated Green, G (s)	1.1	21.8		2.5	23.2	23.2	9.7	9.7	9.7	9.7	9.7	
Effective Green, g (s)	2.6	23.3		4.0	24.7	24.7	11.2	11.2	11.2	11.2	11.2	
Actuated g/C Ratio	0.05	0.43		0.07	0.46	0.46	0.21	0.21	0.21	0.21	0.21	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	80	2642		127	1688	703	238	713	318	237	655	
v/s Ratio Prot	c0.01	0.02		0.02	c0.27			c0.04			0.04	
v/s Ratio Perm						0.04	0.02		0.00	0.02		
v/c Ratio	0.21	0.04		0.24	0.59	0.08	0.12	0.21	0.00	0.11	0.21	
Uniform Delay, d1	24.7	8.9		23.6	10.9	8.2	17.4	17.7	17.0	17.4	17.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.3	0.0		1.0	0.8	0.1	0.3	0.2	0.0	0.3	0.2	
Delay (s)	26.0	8.9		24.5	11.7	8.3	17.7	18.0	17.0	17.7	17.9	
Level of Service	C	A		C	B	A	B	B	B	B	B	
Approach Delay (s)		11.0			11.7			17.9			17.9	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	54.0	Sum of lost time (s)	15.5
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



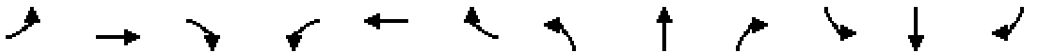
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	194	2	147	804	833	0	0	896	570
Future Volume (vph)	0	0	0	194	2	147	804	833	0	0	896	570
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				3.5	3.5	3.5	3.5	4.0			4.0	4.0
Lane Util. Factor				0.95	0.95	1.00	0.97	0.95			0.95	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1531	1536	1442	3127	3223			3223	1442
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1531	1536	1442	3127	3223			3223	1442
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	206	2	156	855	886	0	0	953	606
RTOR Reduction (vph)	0	0	0	0	0	132	0	0	0	0	0	257
Lane Group Flow (vph)	0	0	0	103	105	24	855	886	0	0	953	349
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				4	4		1	6			2	
Permitted Phases						4						2
Actuated Green, G (s)				14.3	14.3	14.3	37.4	79.9			37.5	37.5
Effective Green, g (s)				15.8	15.8	15.8	38.9	81.4			39.0	39.0
Actuated g/C Ratio				0.15	0.15	0.15	0.37	0.78			0.37	0.37
Clearance Time (s)				5.0	5.0	5.0	5.0	5.5			5.5	5.5
Vehicle Extension (s)				4.0	4.0	4.0	5.0	5.0			5.0	5.0
Lane Grp Cap (vph)				231	231	217	1161	2505			1200	537
v/s Ratio Prot				0.07	c0.07		c0.27	0.27			c0.30	
v/s Ratio Perm						0.02						0.24
v/c Ratio				0.45	0.45	0.11	0.74	0.35			0.79	0.65
Uniform Delay, d1				40.5	40.5	38.4	28.5	3.6			29.3	27.2
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				1.9	1.9	0.3	3.0	0.2			4.3	3.8
Delay (s)				42.3	42.5	38.7	31.5	3.8			33.5	31.0
Level of Service				D	D	D	C	A			C	C
Approach Delay (s)		0.0			40.8			17.4			32.5	
Approach LOS		A			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	104.7	Sum of lost time (s)	11.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	375	8	192	0	0	0	0	1218	136	169	823	0
Future Volume (vph)	375	8	192	0	0	0	0	1218	136	169	823	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5					4.0		3.5	4.0	
Lane Util. Factor	0.95	0.95	1.00					0.91		1.00	0.95	
Frt	1.00	1.00	0.85					0.98		1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1531	1538	1442					4562		1612	3223	
Flt Permitted	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1531	1538	1442					4562		1612	3223	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	387	8	198	0	0	0	0	1256	140	174	848	0
RTOR Reduction (vph)	0	0	168	0	0	0	0	18	0	0	0	0
Lane Group Flow (vph)	197	198	30	0	0	0	0	1378	0	174	848	0
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type	Split	NA	Perm					NA		Prot	NA	
Protected Phases	4	4						6		5	2	
Permitted Phases			4									
Actuated Green, G (s)	10.0	10.0	10.0					40.5		9.0	54.5	
Effective Green, g (s)	11.5	11.5	11.5					42.0		10.5	56.0	
Actuated g/C Ratio	0.15	0.15	0.15					0.56		0.14	0.75	
Clearance Time (s)	5.0	5.0	5.0					5.5		5.0	5.5	
Vehicle Extension (s)	4.0	4.0	4.0					7.0		3.0	7.0	
Lane Grp Cap (vph)	234	235	221					2554		225	2406	
v/s Ratio Prot	0.13	c0.13						c0.30		c0.11	0.26	
v/s Ratio Perm			0.02									
v/c Ratio	0.84	0.84	0.14					0.54		0.77	0.35	
Uniform Delay, d1	30.9	30.9	27.5					10.4		31.1	3.3	
Progression Factor	1.00	1.00	1.00					1.61		1.00	1.00	
Incremental Delay, d2	23.8	23.8	0.4					0.8		15.2	0.4	
Delay (s)	54.7	54.7	27.8					17.5		46.3	3.7	
Level of Service	D	D	C					B		D	A	
Approach Delay (s)		45.7			0.0			17.5			10.9	
Approach LOS		D			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	218	72	70	166	583	48	585	69	550	952	87
Future Volume (vph)	173	218	72	70	166	583	48	585	69	550	952	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5	2.5	3.5	4.5	2.5	3.5	4.5	2.5	3.5	4.5	2.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3127	3223	1442	1612	3223	1442	1612	3223	1442	3127	3223	1442
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3127	3223	1442	1612	3223	1442	1612	3223	1442	3127	3223	1442
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	182	229	76	74	175	614	51	616	73	579	1002	92
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	182	229	76	74	175	614	51	616	73	579	1002	92
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			Free			Free			Free			Free
Actuated Green, G (s)	13.6	14.2	150.0	11.7	12.3	150.0	8.5	58.5	150.0	43.6	93.6	150.0
Effective Green, g (s)	15.1	15.7	150.0	13.2	13.8	150.0	10.0	60.0	150.0	45.1	95.1	150.0
Actuated g/C Ratio	0.10	0.10	1.00	0.09	0.09	1.00	0.07	0.40	1.00	0.30	0.63	1.00
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	5.0		3.5	5.0	
Lane Grp Cap (vph)	314	337	1442	141	296	1442	107	1289	1442	940	2043	1442
v/s Ratio Prot	c0.06	c0.07		0.05	0.05		0.03	0.19		c0.19	c0.31	
v/s Ratio Perm			0.05			c0.43			0.05			0.06
v/c Ratio	0.58	0.68	0.05	0.52	0.59	0.43	0.48	0.48	0.05	0.62	0.49	0.06
Uniform Delay, d1	64.4	64.7	0.0	65.4	65.4	0.0	67.5	33.4	0.0	45.0	14.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.87	1.00
Incremental Delay, d2	2.1	5.4	0.1	2.7	3.1	0.9	2.4	1.3	0.1	1.2	0.8	0.1
Delay (s)	66.5	70.1	0.1	68.1	68.5	0.9	69.9	34.7	0.1	44.0	13.6	0.1
Level of Service	E	E	A	E	E	A	E	C	A	D	B	A
Approach Delay (s)		57.8			20.4			33.7			23.4	
Approach LOS		E			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	556	0	0	456	37	1	0	0	68	1	136
Future Volume (vph)	84	556	0	0	456	37	1	0	0	68	1	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	12	12	10	12	12	12	10	10	10
Total Lost time (s)	3.5	3.5			3.5	3.5		3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Frt	1.00	1.00			1.00	0.85		1.00		1.00	0.85	
Flt Protected	0.95	1.00			1.00	1.00		0.95		0.95	1.00	
Satd. Flow (prot)	1604	1749			1810	1436		1719		1604	1437	
Flt Permitted	0.29	1.00			1.00	1.00		0.65		0.76	1.00	
Satd. Flow (perm)	492	1749			1810	1436		1176		1279	1437	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	604	0	0	496	40	1	0	0	74	1	148
RTOR Reduction (vph)	0	0	0	0	0	22	0	0	0	0	117	0
Lane Group Flow (vph)	91	604	0	0	496	18	0	1	0	74	32	0
Turn Type	pm+pt	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		
Actuated Green, G (s)	32.5	32.5			22.1	22.1		9.3		9.3	9.3	
Effective Green, g (s)	34.0	34.0			23.6	23.6		10.8		10.8	10.8	
Actuated g/C Ratio	0.66	0.66			0.46	0.46		0.21		0.21	0.21	
Clearance Time (s)	5.0	5.0			5.0	5.0		5.0		5.0	5.0	
Vehicle Extension (s)	3.0	5.0			5.0	5.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	471	1147			824	654		245		266	299	
v/s Ratio Prot	0.03	c0.35			c0.27						0.02	
v/s Ratio Perm	0.10					0.01		0.00		c0.06		
v/c Ratio	0.19	0.53			0.60	0.03		0.00		0.28	0.11	
Uniform Delay, d1	4.5	4.7			10.6	7.8		16.2		17.2	16.6	
Progression Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.8			1.8	0.0		0.0		0.6	0.2	
Delay (s)	4.7	5.5			12.4	7.8		16.2		17.8	16.8	
Level of Service	A	A			B	A		B		B	B	
Approach Delay (s)		5.4			12.1			16.2			17.1	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	10.5
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	774	208	203	508	187	749
Future Volume (vph)	774	208	203	508	187	749
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	11
Total Lost time (s)	5.5	5.5	4.0	5.5	4.5	2.5
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3282	1468	1641	3282	2971	1419
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3282	1468	1641	3282	2971	1419
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	860	231	226	564	208	832
RTOR Reduction (vph)	0	138	0	0	0	0
Lane Group Flow (vph)	860	93	226	564	208	832
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Turn Type	NA	Perm	Prot	NA	Prot	Free
Protected Phases	6		5	2	4	
Permitted Phases		6				Free
Actuated Green, G (s)	30.3	30.3	18.1	53.9	12.1	79.0
Effective Green, g (s)	31.8	31.8	19.6	55.4	13.6	79.0
Actuated g/C Ratio	0.40	0.40	0.25	0.70	0.17	1.00
Clearance Time (s)	7.0	7.0	5.5	7.0	6.0	
Vehicle Extension (s)	6.0	6.0	4.0	6.0	3.5	
Lane Grp Cap (vph)	1321	590	407	2301	511	1419
v/s Ratio Prot	0.26		0.14	0.17	0.07	
v/s Ratio Perm		0.06				c0.59
v/c Ratio	0.65	0.16	0.56	0.25	0.41	0.59
Uniform Delay, d1	19.1	15.1	25.9	4.3	29.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.4	2.0	0.2	0.6	1.8
Delay (s)	21.0	15.4	27.9	4.4	29.7	1.8
Level of Service	C	B	C	A	C	A
Approach Delay (s)	19.8			11.1	7.4	
Approach LOS	B			B	A	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	79.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

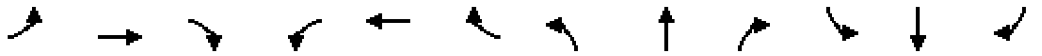
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	919	510	34	433	3	210	0	19	0	0	8
Future Volume (vph)	3	919	510	34	433	3	210	0	19	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	5.5	5.5	5.5	3.5	5.5		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.98			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96			1.00	
Satd. Flow (prot)	1641	3282	1468	1641	3278		1455	1434			1494	
Flt Permitted	0.45	1.00	1.00	0.16	1.00		0.95	0.96			1.00	
Satd. Flow (perm)	779	3282	1468	278	3278		1455	1434			1494	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	4	1135	630	42	535	4	259	0	23	0	0	10
RTOR Reduction (vph)	0	0	230	0	0	0	0	95	0	0	10	0
Lane Group Flow (vph)	4	1135	400	42	539	0	142	45	0	0	0	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	pm+pt	NA		Split	NA			NA	
Protected Phases		6		5	2		4	4		3	3	
Permitted Phases	6		6	2								
Actuated Green, G (s)	46.2	46.2	46.2	55.2	55.2		13.5	13.5			0.9	
Effective Green, g (s)	47.7	47.7	47.7	56.7	56.7		15.0	15.0			2.4	
Actuated g/C Ratio	0.54	0.54	0.54	0.64	0.64		0.17	0.17			0.03	
Clearance Time (s)	7.0	7.0	7.0	5.0	7.0		6.0	6.0			6.0	
Vehicle Extension (s)	5.0	5.0	5.0	3.0	5.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	419	1766	790	262	2097		246	242			40	
v/s Ratio Prot		c0.35		0.01	c0.16		c0.10	0.03			c0.00	
v/s Ratio Perm	0.01		0.27	0.09								
v/c Ratio	0.01	0.64	0.51	0.16	0.26		0.58	0.19			0.01	
Uniform Delay, d1	9.5	14.4	13.0	8.0	6.9		33.9	31.6			41.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.0	1.8	2.3	0.3	0.3		3.3	0.4			0.1	
Delay (s)	9.5	16.2	15.3	8.3	7.2		37.1	31.9			42.0	
Level of Service	A	B	B	A	A		D	C			D	
Approach Delay (s)		15.9			7.2			34.6			42.0	
Approach LOS		B			A			C			D	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	88.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

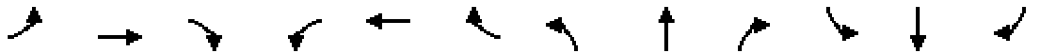
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1152	86	32	667	374	34	57	12	667	63	26
Future Volume (vph)	14	1152	86	32	667	374	34	57	12	667	63	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	10	10	12	12	12
Total Lost time (s)	3.5	5.5		3.5	5.5	5.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	0.86		1.00	0.91	1.00	1.00	1.00		0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1641	5880		1641	4715	1468	1641	1568		3183	1727	1468
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1641	5880		1641	4715	1468	1641	1568		3183	1727	1468
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	15	1200	90	33	695	390	35	59	12	695	66	27
RTOR Reduction (vph)	0	7	0	0	0	248	0	5	0	0	0	18
Lane Group Flow (vph)	15	1283	0	33	695	142	35	67	0	695	66	9
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases						2						4
Actuated Green, G (s)	2.7	36.9		4.9	39.1	39.1	10.2	10.2		35.8	35.8	35.8
Effective Green, g (s)	4.2	38.4		6.4	40.6	40.6	11.7	11.7		37.3	37.3	37.3
Actuated g/C Ratio	0.04	0.34		0.06	0.36	0.36	0.10	0.10		0.33	0.33	0.33
Clearance Time (s)	5.0	7.0		5.0	7.0	7.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	5.0	5.0		4.0	4.0	4.0
Lane Grp Cap (vph)	61	2019		93	1712	533	171	164		1061	576	489
v/s Ratio Prot	0.01	c0.22		c0.02	0.15		0.02	c0.04		c0.22	0.04	
v/s Ratio Perm						0.10						0.01
v/c Ratio	0.25	0.64		0.35	0.41	0.27	0.20	0.41		0.66	0.11	0.02
Uniform Delay, d1	52.3	30.8		50.7	26.6	25.1	45.8	46.8		31.8	25.8	25.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.1	0.9		2.3	0.3	0.6	1.2	3.4		1.6	0.1	0.0
Delay (s)	54.4	31.7		53.0	26.9	25.7	47.0	50.2		33.4	25.9	25.0
Level of Service	D	C		D	C	C	D	D		C	C	C
Approach Delay (s)		32.0			27.3			49.2			32.5	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	111.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

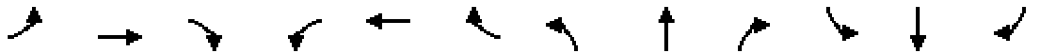
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	21	194	86	27	51	123	491	25	16	778	50
Future Volume (vph)	76	21	194	86	27	51	123	491	25	16	778	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	12	11	11	12	11
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.5	4.5	3.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1532	1612	1370	1641	1727	1468	1586	3282	1419	1586	3282	1419
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.22	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)	1532	1612	1370	1641	1727	1468	359	3282	1419	782	3282	1419
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	78	21	198	88	28	52	126	501	26	16	794	51
RTOR Reduction (vph)	0	0	167	0	0	45	0	0	13	0	0	31
Lane Group Flow (vph)	78	21	31	88	28	7	126	501	13	16	794	20
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases			4			3	6		6	2		2
Actuated Green, G (s)	10.7	10.7	10.7	8.5	8.5	8.5	43.6	36.4	36.4	31.8	29.6	29.6
Effective Green, g (s)	12.2	12.2	12.2	10.0	10.0	10.0	45.1	37.9	37.9	34.8	31.1	31.1
Actuated g/C Ratio	0.15	0.15	0.15	0.13	0.13	0.13	0.57	0.48	0.48	0.44	0.39	0.39
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	237	249	212	208	219	186	368	1578	682	383	1295	560
v/s Ratio Prot	c0.05	0.01		c0.05	0.02		c0.05	0.15		0.00	c0.24	
v/s Ratio Perm			0.02			0.00	0.15		0.01	0.02		0.01
v/c Ratio	0.33	0.08	0.14	0.42	0.13	0.04	0.34	0.32	0.02	0.04	0.61	0.04
Uniform Delay, d1	29.7	28.5	28.8	31.7	30.5	30.2	9.3	12.5	10.7	12.4	19.0	14.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.1	0.3	1.4	0.3	0.1	0.6	0.2	0.0	0.0	1.3	0.1
Delay (s)	30.5	28.7	29.1	33.1	30.8	30.2	9.8	12.8	10.7	12.5	20.3	14.7
Level of Service	C	C	C	C	C	C	A	B	B	B	C	B
Approach Delay (s)		29.4			31.8			12.1			19.8	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	78.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	0	116	0	0	362	69	251	0	0	1244	198
Future Volume (vph)	122	0	116	0	0	362	69	251	0	0	1244	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	11	12	12	12	12	12
Total Lost time (s)	4.5		2.5			2.5	3.5	5.0			5.0	2.5
Lane Util. Factor	1.00		1.00			1.00	1.00	0.95			0.95	1.00
Frt	1.00		0.85			0.86	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00			1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1586		1468			1494	1586	3282			3282	1468
Flt Permitted	0.95		1.00			1.00	0.11	1.00			1.00	1.00
Satd. Flow (perm)	1586		1468			1494	176	3282			3282	1468
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	144	0	136	0	0	426	81	295	0	0	1464	233
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	144	0	136	0	0	426	81	295	0	0	1464	233
Heavy Vehicles (%)	10%	5%	10%	5%	5%	10%	10%	10%	5%	5%	10%	10%
Turn Type	Perm		Free			Free	pm+pt	NA			NA	Free
Protected Phases							5	2			6	
Permitted Phases	4		Free			Free	2					Free
Actuated Green, G (s)	14.2		100.5			100.5	73.8	73.8			60.7	100.5
Effective Green, g (s)	15.7		100.5			100.5	75.3	75.3			62.2	100.5
Actuated g/C Ratio	0.16		1.00			1.00	0.75	0.75			0.62	1.00
Clearance Time (s)	6.0						5.0	6.5			6.5	
Vehicle Extension (s)	3.0						3.0	5.0			5.0	
Lane Grp Cap (vph)	247		1468			1494	266	2459			2031	1468
v/s Ratio Prot							0.03	0.09			c0.45	
v/s Ratio Perm	c0.09		0.09			c0.29	0.20					0.16
v/c Ratio	0.58		0.09			0.29	0.30	0.12			0.72	0.16
Uniform Delay, d1	39.4		0.0			0.0	8.4	3.5			13.2	0.0
Progression Factor	1.00		1.00			1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	3.5		0.1			0.5	0.7	0.0			1.6	0.2
Delay (s)	42.8		0.1			0.5	9.0	3.5			14.8	0.2
Level of Service	D		A			A	A	A			B	A
Approach Delay (s)		22.1			0.5			4.7			12.8	
Approach LOS		C			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.5	Sum of lost time (s)	14.5
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



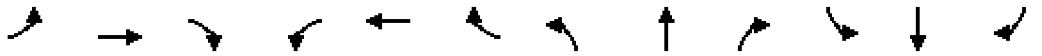
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	NBR2	SWL	SWR
Lane Configurations											
Traffic Volume (vph)	29	117	0	0	161	0	71	0	811	0	0
Future Volume (vph)	29	117	0	0	161	0	71	0	811	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.5			5.5		4.5		2.5		
Lane Util. Factor	1.00	1.00			0.95		1.00		0.76		
Frt	1.00	1.00			1.00		1.00		0.85		
Flt Protected	0.95	1.00			1.00		0.95		1.00		
Satd. Flow (prot)	1641	1727			3282		1641		3347		
Flt Permitted	0.56	1.00			1.00		0.95		1.00		
Satd. Flow (perm)	961	1727			3282		1641		3347		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	30	122	0	0	168	0	74	0	845	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	30	122	0	0	168	0	74	0	845	0	0
Heavy Vehicles (%)	10%	10%	5%	5%	10%	5%	10%	5%	10%	5%	5%
Turn Type	pm+pt	NA			NA		Prot		Free		
Protected Phases	5	2			6		4				
Permitted Phases	2								Free		
Actuated Green, G (s)	33.7	33.7			26.6		5.1		51.8		
Effective Green, g (s)	35.2	35.2			28.1		6.6		51.8		
Actuated g/C Ratio	0.68	0.68			0.54		0.13		1.00		
Clearance Time (s)	6.0	7.0			7.0		6.0				
Vehicle Extension (s)	3.0	5.0			5.0		3.0				
Lane Grp Cap (vph)	687	1173			1780		209		3347		
v/s Ratio Prot	0.00	0.07			0.05		0.05				
v/s Ratio Perm	0.03								c0.25		
v/c Ratio	0.04	0.10			0.09		0.35		0.25		
Uniform Delay, d1	2.9	2.9			5.7		20.7		0.0		
Progression Factor	1.00	1.00			1.00		1.00		1.00		
Incremental Delay, d2	0.0	0.1			0.0		1.0		0.2		
Delay (s)	2.9	2.9			5.8		21.7		0.2		
Level of Service	A	A			A		C		A		
Approach Delay (s)		2.9			5.8		1.9			0.0	
Approach LOS		A			A		A			A	

Intersection Summary			
HCM 2000 Control Delay	2.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	14.5
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	695	46	4	66	16	43	143	42	119	248	30
Future Volume (vph)	13	695	46	4	66	16	43	143	42	119	248	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	11	11	11
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.5	5.5	5.5	5.5	5.5	
Lane Util. Factor	1.00	0.86		1.00	*0.51	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1662	6167		1719	3691	1538	1719	3438	1538	1662	3270	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.56	1.00	1.00	0.65	1.00	
Satd. Flow (perm)	1662	6167		1719	3691	1538	1010	3438	1538	1134	3270	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	15	799	53	5	76	18	49	164	48	137	285	34
RTOR Reduction (vph)	0	7	0	0	0	11	0	0	35	0	7	0
Lane Group Flow (vph)	15	845	0	5	76	7	49	164	13	137	312	0
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases						6	4		4	8		
Actuated Green, G (s)	1.1	20.6		1.1	20.6	20.6	13.4	13.4	13.4	13.4	13.4	
Effective Green, g (s)	2.6	22.1		2.6	22.1	22.1	14.9	14.9	14.9	14.9	14.9	
Actuated g/C Ratio	0.05	0.40		0.05	0.40	0.40	0.27	0.27	0.27	0.27	0.27	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	78	2473		81	1480	616	273	929	415	306	884	
v/s Ratio Prot	0.01	c0.14		0.00	c0.02			0.05			0.10	
v/s Ratio Perm						0.00	0.05		0.01	c0.12		
v/c Ratio	0.19	0.34		0.06	0.05	0.01	0.18	0.18	0.03	0.45	0.35	
Uniform Delay, d1	25.2	11.5		25.1	10.1	9.9	15.4	15.4	14.8	16.7	16.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	0.2		0.3	0.0	0.0	0.4	0.1	0.0	1.4	0.3	
Delay (s)	26.4	11.6		25.4	10.1	9.9	15.8	15.5	14.8	18.1	16.5	
Level of Service	C	B		C	B	A	B	B	B	B	B	
Approach Delay (s)		11.9			10.9			15.5			17.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	15.5
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



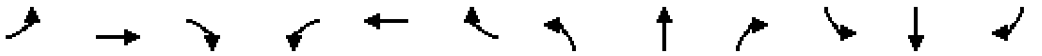
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	223	1	153	895	1456	0	0	613	270
Future Volume (vph)	0	0	0	223	1	153	895	1456	0	0	613	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				3.5	3.5	3.5	3.5	4.0			4.0	4.0
Lane Util. Factor				0.95	0.95	1.00	0.97	0.95			0.95	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1531	1535	1442	3127	3223			3223	1442
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1531	1535	1442	3127	3223			3223	1442
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	228	1	156	913	1486	0	0	626	276
RTOR Reduction (vph)	0	0	0	0	0	135	0	0	0	0	0	195
Lane Group Flow (vph)	0	0	0	114	115	21	913	1486	0	0	626	81
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				4	4		1 9	6			2	
Permitted Phases						4						2
Actuated Green, G (s)				16.6	16.6	16.6	59.3	74.9			38.1	38.1
Effective Green, g (s)				18.1	18.1	18.1	62.3	76.4			39.6	39.6
Actuated g/C Ratio				0.13	0.13	0.13	0.46	0.57			0.29	0.29
Clearance Time (s)				5.0	5.0	5.0		5.5			5.5	5.5
Vehicle Extension (s)				4.0	4.0	4.0		5.0			5.0	5.0
Lane Grp Cap (vph)				205	205	193	1443	1823			945	422
v/s Ratio Prot				0.07	c0.07		c0.29	c0.46			0.19	
v/s Ratio Perm						0.01						0.06
v/c Ratio				0.56	0.56	0.11	0.63	0.82			0.66	0.19
Uniform Delay, d1				54.7	54.7	51.4	27.6	23.6			41.8	35.7
Progression Factor				1.00	1.00	1.00	1.07	0.58			1.00	1.00
Incremental Delay, d2				4.0	4.2	0.3	1.0	2.6			3.7	1.0
Delay (s)				58.7	58.9	51.7	30.6	16.3			45.5	36.7
Level of Service				E	E	D	C	B			D	D
Approach Delay (s)		0.0			55.9			21.8			42.8	
Approach LOS		A			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	625	1	167	0	0	0	0	1735	244	160	642	0
Future Volume (vph)	625	1	167	0	0	0	0	1735	244	160	642	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5					4.0		3.5	4.0	
Lane Util. Factor	0.95	0.95	1.00					0.91		1.00	0.95	
Frt	1.00	1.00	0.85					0.98		1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1531	1535	1442					4546		1612	3223	
Flt Permitted	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1531	1535	1442					4546		1612	3223	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	638	1	170	0	0	0	0	1770	249	163	655	0
RTOR Reduction (vph)	0	0	123	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	319	320	47	0	0	0	0	2006	0	163	655	0
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type	Split	NA	Perm					NA		Prot	NA	
Protected Phases	4	4						6		5	2	
Permitted Phases			4									
Actuated Green, G (s)	35.7	35.7	35.7					69.4		14.4	88.8	
Effective Green, g (s)	37.2	37.2	37.2					70.9		15.9	90.3	
Actuated g/C Ratio	0.28	0.28	0.28					0.53		0.12	0.67	
Clearance Time (s)	5.0	5.0	5.0					5.5		5.0	5.5	
Vehicle Extension (s)	4.0	4.0	4.0					7.0		3.0	7.0	
Lane Grp Cap (vph)	421	422	397					2387		189	2155	
v/s Ratio Prot	0.21	c0.21						c0.44		c0.10	0.20	
v/s Ratio Perm			0.03									
v/c Ratio	0.76	0.76	0.12					0.84		0.86	0.30	
Uniform Delay, d1	44.8	44.8	36.6					27.2		58.5	9.3	
Progression Factor	1.00	1.00	1.00					0.51		0.45	0.60	
Incremental Delay, d2	8.1	8.1	0.2					2.9		24.7	0.3	
Delay (s)	52.9	52.9	36.8					16.7		51.0	5.8	
Level of Service	D	D	D					B		D	A	
Approach Delay (s)		49.5			0.0			16.7			14.8	
Approach LOS		D			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	223	67	58	386	967	171	832	110	532	693	98
Future Volume (vph)	197	223	67	58	386	967	171	832	110	532	693	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5	2.5	3.5	4.5	2.5	3.5	4.5	2.5	3.5	4.5	2.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3127	3223	1442	1612	3223	1442	1612	3223	1442	3127	3223	1442
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3127	3223	1442	1612	3223	1442	1612	3223	1442	3127	3223	1442
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	199	225	68	59	390	977	173	840	111	537	700	99
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	199	225	68	59	390	977	173	840	111	537	700	99
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			Free			Free			Free			Free
Actuated Green, G (s)	12.0	21.5	135.0	9.6	19.1	135.0	19.2	52.8	135.0	29.1	62.7	135.0
Effective Green, g (s)	13.5	23.0	135.0	11.1	20.6	135.0	20.7	54.3	135.0	30.6	64.2	135.0
Actuated g/C Ratio	0.10	0.17	1.00	0.08	0.15	1.00	0.15	0.40	1.00	0.23	0.48	1.00
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	5.0		3.5	5.0	
Lane Grp Cap (vph)	312	549	1442	132	491	1442	247	1296	1442	708	1532	1442
v/s Ratio Prot	0.06	0.07		0.04	0.12		0.11	0.26		c0.17	0.22	
v/s Ratio Perm			0.05			c0.68			0.08			0.07
v/c Ratio	0.64	0.41	0.05	0.45	0.79	0.68	0.70	0.65	0.08	0.76	0.46	0.07
Uniform Delay, d1	58.4	49.9	0.0	59.0	55.2	0.0	54.2	32.6	0.0	48.7	23.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.48	0.91	1.00
Incremental Delay, d2	3.7	0.5	0.1	1.8	8.6	2.6	6.4	2.0	0.1	4.7	1.0	0.1
Delay (s)	62.1	50.4	0.1	60.8	63.8	2.6	59.3	34.6	0.1	76.9	22.6	0.1
Level of Service	E	D	A	E	E	A	E	C	A	E	C	A
Approach Delay (s)		48.2			21.7			35.0			42.7	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	34.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	414	1	1	1045	132	1	1	1	42	0	130
Future Volume (vph)	141	414	1	1	1045	132	1	1	1	42	0	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	12	12	10	12	12	12	10	10	10
Total Lost time (s)	3.5	3.5			3.5	3.5		3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Frt	1.00	1.00			1.00	0.85		0.95		1.00	0.85	
Flt Protected	0.95	1.00			1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1604	1749			1809	1436		1700		1604	1436	
Flt Permitted	0.08	1.00			1.00	1.00		0.92		0.76	1.00	
Satd. Flow (perm)	140	1749			1809	1436		1585		1277	1436	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	145	427	1	1	1077	136	1	1	1	43	0	134
RTOR Reduction (vph)	0	0	0	0	0	32	0	1	0	0	119	0
Lane Group Flow (vph)	145	428	0	0	1078	104	0	2	0	43	15	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		
Actuated Green, G (s)	83.8	83.8			68.0	68.0		10.1		10.1	10.1	
Effective Green, g (s)	85.3	85.3			69.5	69.5		11.6		11.6	11.6	
Actuated g/C Ratio	0.82	0.82			0.67	0.67		0.11		0.11	0.11	
Clearance Time (s)	5.0	5.0			5.0	5.0		5.0		5.0	5.0	
Vehicle Extension (s)	3.0	5.0			5.0	5.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	288	1435			1210	960		176		142	160	
v/s Ratio Prot	c0.06	0.24									0.01	
v/s Ratio Perm	0.35				0.60	0.07		0.00		c0.03		
v/c Ratio	0.50	0.30			0.89	0.11		0.01		0.30	0.09	
Uniform Delay, d1	20.6	2.2			14.1	6.1		41.1		42.4	41.4	
Progression Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	1.4	0.2			9.1	0.1		0.0		1.2	0.3	
Delay (s)	22.0	2.4			23.2	6.2		41.1		43.6	41.7	
Level of Service	C	A			C	A		D		D	D	
Approach Delay (s)		7.4			21.3			41.1			42.2	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	103.9	Sum of lost time (s)	10.5
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	732	310	418	978	271	438
Future Volume (vph)	732	310	418	978	271	438
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	11
Total Lost time (s)	5.5	5.5	4.0	5.5	4.5	2.5
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3282	1468	1641	3282	2971	1419
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3282	1468	1641	3282	2971	1419
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	796	337	454	1063	295	476
RTOR Reduction (vph)	0	224	0	0	0	0
Lane Group Flow (vph)	796	113	454	1063	295	476
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Turn Type	NA	Perm	Prot	NA	Prot	Free
Protected Phases	6		5	2	4	
Permitted Phases		6				Free
Actuated Green, G (s)	32.3	32.3	33.4	71.2	16.4	100.6
Effective Green, g (s)	33.8	33.8	34.9	72.7	17.9	100.6
Actuated g/C Ratio	0.34	0.34	0.35	0.72	0.18	1.00
Clearance Time (s)	7.0	7.0	5.5	7.0	6.0	
Vehicle Extension (s)	6.0	6.0	4.0	6.0	3.5	
Lane Grp Cap (vph)	1102	493	569	2371	528	1419
v/s Ratio Prot	c0.24		c0.28	0.32	c0.10	
v/s Ratio Perm		0.08				0.34
v/c Ratio	0.72	0.23	0.80	0.45	0.56	0.34
Uniform Delay, d1	29.3	24.0	29.7	5.7	37.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.7	8.1	0.4	1.4	0.6
Delay (s)	32.6	24.7	37.8	6.1	39.2	0.6
Level of Service	C	C	D	A	D	A
Approach Delay (s)	30.3			15.6	15.4	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

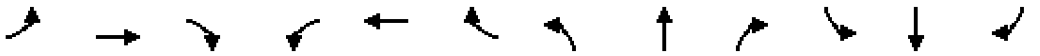
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	791	278	59	858	0	405	0	34	4	0	1
Future Volume (vph)	8	791	278	59	858	0	405	0	34	4	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	5.5	5.5	5.5	3.5	5.5		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.98			0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96			0.96	
Satd. Flow (prot)	1641	3282	1468	1641	3282		1455	1435			1616	
Flt Permitted	0.31	1.00	1.00	0.23	1.00		0.95	0.96			0.96	
Satd. Flow (perm)	534	3282	1468	406	3282		1455	1435			1616	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	9	851	299	63	923	0	435	0	37	4	0	1
RTOR Reduction (vph)	0	0	155	0	0	0	0	87	0	0	5	0
Lane Group Flow (vph)	9	851	144	63	923	0	239	146	0	0	0	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases		6		5	2		4	4		3	3	
Permitted Phases	6		6	2								
Actuated Green, G (s)	45.8	45.8	45.8	56.9	56.9		21.5	21.5			0.9	
Effective Green, g (s)	47.3	47.3	47.3	58.4	58.4		23.0	23.0			2.4	
Actuated g/C Ratio	0.48	0.48	0.48	0.59	0.59		0.23	0.23			0.02	
Clearance Time (s)	7.0	7.0	7.0	5.0	7.0		6.0	6.0			6.0	
Vehicle Extension (s)	5.0	5.0	5.0	3.0	5.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	256	1579	706	336	1949		340	335			39	
v/s Ratio Prot		c0.26		0.01	c0.28		c0.16	0.10			c0.00	
v/s Ratio Perm	0.02		0.10	0.10								
v/c Ratio	0.04	0.54	0.20	0.19	0.47		0.70	0.43			0.00	
Uniform Delay, d1	13.5	17.9	14.7	9.7	11.3		34.5	32.1			46.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.3	1.3	0.7	0.3	0.8		6.5	0.9			0.0	
Delay (s)	13.7	19.2	15.3	10.0	12.1		41.0	33.0			46.8	
Level of Service	B	B	B	A	B		D	C			D	
Approach Delay (s)		18.1			12.0			37.0			46.8	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		

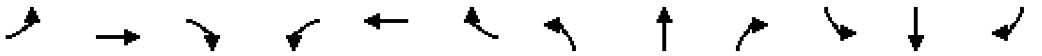
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	954	51	40	1120	1087	71	110	22	363	57	28
Future Volume (vph)	41	954	51	40	1120	1087	71	110	22	363	57	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	10	10	12	12	12
Total Lost time (s)	3.5	5.5		3.5	5.5	5.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	0.86		1.00	0.91	1.00	1.00	1.00		0.97	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1641	5897		1641	4715	1468	1641	1572		3183	1727	1468
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1641	5897		1641	4715	1468	1641	1572		3183	1727	1468
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	42	973	52	41	1143	1109	72	112	22	370	58	29
RTOR Reduction (vph)	0	3	0	0	0	458	0	4	0	0	0	24
Lane Group Flow (vph)	42	1022	0	41	1143	651	72	130	0	370	58	5
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases						2						4
Actuated Green, G (s)	7.2	51.0		7.1	50.9	50.9	17.4	17.4		20.6	20.6	20.6
Effective Green, g (s)	8.7	52.5		8.6	52.4	52.4	18.9	18.9		22.1	22.1	22.1
Actuated g/C Ratio	0.07	0.44		0.07	0.44	0.44	0.16	0.16		0.18	0.18	0.18
Clearance Time (s)	5.0	7.0		5.0	7.0	7.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	5.0	5.0		4.0	4.0	4.0
Lane Grp Cap (vph)	118	2577		117	2057	640	258	247		585	317	270
v/s Ratio Prot	c0.03	0.17		0.02	0.24		0.04	c0.08		c0.12	0.03	
v/s Ratio Perm						c0.44						0.00
v/c Ratio	0.36	0.40		0.35	0.56	1.02	0.28	0.53		0.63	0.18	0.02
Uniform Delay, d1	53.0	23.0		53.1	25.2	33.8	44.6	46.5		45.2	41.4	40.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.8	0.2		1.8	0.6	39.8	1.2	3.8		2.5	0.4	0.0
Delay (s)	54.9	23.2		54.9	25.7	73.7	45.8	50.3		47.8	41.8	40.2
Level of Service	D	C		D	C	E	D	D		D	D	D
Approach Delay (s)		24.5			49.5			48.7			46.5	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

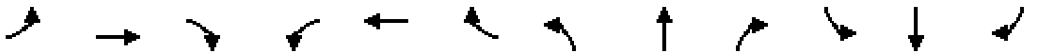
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	68	319	96	40	23	251	1033	78	20	852	81
Future Volume (vph)	165	68	319	96	40	23	251	1033	78	20	852	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	12	11	11	12	11
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.5	4.5	3.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1532	1612	1370	1641	1727	1468	1586	3282	1419	1586	3282	1419
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.13	1.00	1.00	0.21	1.00	1.00
Satd. Flow (perm)	1532	1612	1370	1641	1727	1468	213	3282	1419	353	3282	1419
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	74	347	104	43	25	273	1123	85	22	926	88
RTOR Reduction (vph)	0	0	281	0	0	22	0	0	42	0	0	56
Lane Group Flow (vph)	179	74	66	104	43	3	273	1123	43	22	926	32
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases			4			3	6		6	2		2
Actuated Green, G (s)	19.8	19.8	19.8	12.9	12.9	12.9	63.7	55.0	55.0	42.6	38.9	38.9
Effective Green, g (s)	21.3	21.3	21.3	14.4	14.4	14.4	65.2	56.5	56.5	45.6	40.4	40.4
Actuated g/C Ratio	0.19	0.19	0.19	0.13	0.13	0.13	0.58	0.50	0.50	0.41	0.36	0.36
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	290	305	259	210	221	188	383	1649	713	200	1179	510
v/s Ratio Prot	c0.12	0.05		c0.06	0.02		c0.13	0.34		0.01	c0.28	
v/s Ratio Perm			0.05			0.00	0.28		0.03	0.04		0.02
v/c Ratio	0.62	0.24	0.25	0.50	0.19	0.02	0.71	0.68	0.06	0.11	0.79	0.06
Uniform Delay, d1	41.8	38.7	38.8	45.6	43.8	42.8	22.7	21.1	14.3	20.3	32.1	23.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.9	0.4	0.5	1.8	0.4	0.0	6.2	1.5	0.1	0.2	4.1	0.1
Delay (s)	45.7	39.1	39.3	47.5	44.2	42.9	28.9	22.6	14.4	20.6	36.2	23.7
Level of Service	D	D	D	D	D	D	C	C	B	C	D	C
Approach Delay (s)		41.2			46.0			23.3			34.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	112.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	291	0	84	0	0	419	115	1209	0	0	651	234
Future Volume (vph)	291	0	84	0	0	419	115	1209	0	0	651	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	11	12	12	12	12	12
Total Lost time (s)	4.5		2.5			2.5	3.5	5.0			5.0	2.5
Lane Util. Factor	1.00		1.00			1.00	1.00	0.95			0.95	1.00
Frt	1.00		0.85			0.86	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00			1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1586		1468			1494	1586	3282			3282	1468
Flt Permitted	0.95		1.00			1.00	0.27	1.00			1.00	1.00
Satd. Flow (perm)	1586		1468			1494	447	3282			3282	1468
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	303	0	88	0	0	436	120	1259	0	0	678	244
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	303	0	88	0	0	436	120	1259	0	0	678	244
Heavy Vehicles (%)	10%	5%	10%	5%	5%	10%	10%	10%	5%	5%	10%	10%
Turn Type	Perm		Free			Free	pm+pt	NA			NA	Free
Protected Phases							5	2			6	
Permitted Phases	4		Free			Free	2					Free
Actuated Green, G (s)	23.3		79.5			79.5	43.7	43.7			28.5	79.5
Effective Green, g (s)	24.8		79.5			79.5	45.2	45.2			30.0	79.5
Actuated g/C Ratio	0.31		1.00			1.00	0.57	0.57			0.38	1.00
Clearance Time (s)	6.0						5.0	6.5			6.5	
Vehicle Extension (s)	3.0						3.0	5.0			5.0	
Lane Grp Cap (vph)	494		1468			1494	421	1865			1238	1468
v/s Ratio Prot							0.04	c0.38			0.21	
v/s Ratio Perm	c0.19		0.06			0.29	0.12					0.17
v/c Ratio	0.61		0.06			0.29	0.29	0.68			0.55	0.17
Uniform Delay, d1	23.3		0.0			0.0	8.9	12.0			19.4	0.0
Progression Factor	1.00		1.00			1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	2.3		0.1			0.5	0.4	1.3			0.9	0.2
Delay (s)	25.5		0.1			0.5	9.3	13.3			20.3	0.2
Level of Service	C		A			A	A	B			C	A
Approach Delay (s)		19.8			0.5			12.9			15.0	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	14.5
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



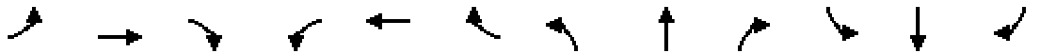
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	NBR2	SWL	SWR
Lane Configurations											
Traffic Volume (vph)	41	35	0	0	1053	0	19	0	111	0	0
Future Volume (vph)	41	35	0	0	1053	0	19	0	111	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.5			5.5		4.5		2.5		
Lane Util. Factor	1.00	1.00			0.95		1.00		0.76		
Frt	1.00	1.00			1.00		1.00		0.85		
Flt Protected	0.95	1.00			1.00		0.95		1.00		
Satd. Flow (prot)	1641	1727			3282		1641		3347		
Flt Permitted	0.17	1.00			1.00		0.95		1.00		
Satd. Flow (perm)	297	1727			3282		1641		3347		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	46	39	0	0	1183	0	21	0	125	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	46	39	0	0	1183	0	21	0	125	0	0
Heavy Vehicles (%)	10%	10%	5%	5%	10%	5%	10%	5%	10%	5%	5%
Turn Type	pm+pt	NA			NA		Prot		Free		
Protected Phases	5	2			6		4				
Permitted Phases	2								Free		
Actuated Green, G (s)	46.8	46.8			36.4		2.5		62.3		
Effective Green, g (s)	48.3	48.3			37.9		4.0		62.3		
Actuated g/C Ratio	0.78	0.78			0.61		0.06		1.00		
Clearance Time (s)	6.0	7.0			7.0		6.0				
Vehicle Extension (s)	3.0	5.0			5.0		3.0				
Lane Grp Cap (vph)	357	1338			1996		105		3347		
v/s Ratio Prot	c0.01	0.02			c0.36		c0.01				
v/s Ratio Perm	0.09								0.04		
v/c Ratio	0.13	0.03			0.59		0.20		0.04		
Uniform Delay, d1	2.9	1.6			7.5		27.6		0.0		
Progression Factor	1.00	1.00			1.00		1.00		1.00		
Incremental Delay, d2	0.2	0.0			0.7		0.9		0.0		
Delay (s)	3.1	1.6			8.2		28.6		0.0		
Level of Service	A	A			A		C		A		
Approach Delay (s)		2.4			8.2		4.1			0.0	
Approach LOS		A			A		A			A	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	62.3	Sum of lost time (s)	14.5
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	111	26	28	1019	124	54	156	6	28	126	61
Future Volume (vph)	16	111	26	28	1019	124	54	156	6	28	126	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	11	11	11
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.5	5.5	5.5	5.5	5.5	
Lane Util. Factor	1.00	0.86		1.00	*0.51	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1662	6049		1719	3691	1538	1719	3438	1538	1662	3161	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.62	1.00	1.00	0.64	1.00	
Satd. Flow (perm)	1662	6049		1719	3691	1538	1130	3438	1538	1127	3161	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	121	28	30	1108	135	59	170	7	30	137	66
RTOR Reduction (vph)	0	16	0	0	0	72	0	0	5	0	51	0
Lane Group Flow (vph)	17	133	0	30	1108	63	59	170	2	30	152	0
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases						6	4		4	8		
Actuated Green, G (s)	1.0	23.1		3.3	25.4	25.4	10.8	10.8	10.8	10.8	10.8	
Effective Green, g (s)	2.5	24.6		4.8	26.9	26.9	12.3	12.3	12.3	12.3	12.3	
Actuated g/C Ratio	0.04	0.43		0.08	0.47	0.47	0.22	0.22	0.22	0.22	0.22	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	72	2601		144	1735	723	242	739	330	242	679	
v/s Ratio Prot	c0.01	0.02		0.02	c0.30			0.05			0.05	
v/s Ratio Perm						0.04	c0.05		0.00	0.03		
v/c Ratio	0.24	0.05		0.21	0.64	0.09	0.24	0.23	0.00	0.12	0.22	
Uniform Delay, d1	26.4	9.5		24.4	11.5	8.4	18.6	18.5	17.6	18.1	18.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.7	0.0		0.7	1.1	0.1	0.7	0.2	0.0	0.3	0.2	
Delay (s)	28.1	9.5		25.2	12.6	8.5	19.3	18.8	17.6	18.4	18.7	
Level of Service	C	A		C	B	A	B	B	B	B	B	
Approach Delay (s)		11.4			12.4			18.9			18.7	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	57.2	Sum of lost time (s)	15.5
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



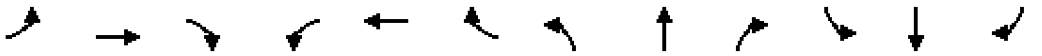
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	288	2	147	841	847	0	0	959	570
Future Volume (vph)	0	0	0	288	2	147	841	847	0	0	959	570
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				3.5	3.5	3.5	3.5	4.0			4.0	4.0
Lane Util. Factor				0.95	0.95	1.00	0.97	0.95			0.95	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1531	1536	1442	3127	3223			3223	1442
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1531	1536	1442	3127	3223			3223	1442
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	0	0	306	2	156	895	901	0	0	1020	606
RTOR Reduction (vph)	0	0	0	0	0	129	0	0	0	0	0	253
Lane Group Flow (vph)	0	0	0	153	155	27	895	901	0	0	1020	353
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				4	4		1	6			2	
Permitted Phases						4						2
Actuated Green, G (s)				18.5	18.5	18.5	40.3	87.4			42.1	42.1
Effective Green, g (s)				20.0	20.0	20.0	41.8	88.9			43.6	43.6
Actuated g/C Ratio				0.17	0.17	0.17	0.36	0.76			0.37	0.37
Clearance Time (s)				5.0	5.0	5.0	5.0	5.5			5.5	5.5
Vehicle Extension (s)				4.0	4.0	4.0	5.0	5.0			5.0	5.0
Lane Grp Cap (vph)				263	263	247	1122	2461			1207	540
v/s Ratio Prot				0.10	c0.10		c0.29	0.28			c0.32	
v/s Ratio Perm						0.02						0.24
v/c Ratio				0.58	0.59	0.11	0.80	0.37			0.85	0.65
Uniform Delay, d1				44.4	44.4	40.7	33.5	4.5			33.3	30.1
Progression Factor				1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2				3.8	4.0	0.3	4.6	0.2			6.2	3.8
Delay (s)				48.2	48.4	40.9	38.1	4.7			39.5	33.9
Level of Service				D	D	D	D	A			D	C
Approach Delay (s)		0.0			45.8			21.4			37.4	
Approach LOS		A			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	116.4	Sum of lost time (s)	11.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	375	8	219	0	0	0	0	1269	159	169	980	0
Future Volume (vph)	375	8	219	0	0	0	0	1269	159	169	980	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5					4.0		3.5	4.0	
Lane Util. Factor	0.95	0.95	1.00					0.91		1.00	0.95	
Frt	1.00	1.00	0.85					0.98		1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1531	1538	1442					4554		1612	3223	
Flt Permitted	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1531	1538	1442					4554		1612	3223	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	387	8	226	0	0	0	0	1308	164	174	1010	0
RTOR Reduction (vph)	0	0	157	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	197	198	69	0	0	0	0	1451	0	174	1010	0
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type	Split	NA	Perm					NA		Prot	NA	
Protected Phases	4	4						6		5	2	
Permitted Phases			4									
Actuated Green, G (s)	10.0	10.0	10.0					40.5		9.0	54.5	
Effective Green, g (s)	11.5	11.5	11.5					42.0		10.5	56.0	
Actuated g/C Ratio	0.15	0.15	0.15					0.56		0.14	0.75	
Clearance Time (s)	5.0	5.0	5.0					5.5		5.0	5.5	
Vehicle Extension (s)	4.0	4.0	4.0					7.0		3.0	7.0	
Lane Grp Cap (vph)	234	235	221					2550		225	2406	
v/s Ratio Prot	0.13	c0.13						c0.32		c0.11	0.31	
v/s Ratio Perm			0.05									
v/c Ratio	0.84	0.84	0.31					0.57		0.77	0.42	
Uniform Delay, d1	30.9	30.9	28.2					10.7		31.1	3.5	
Progression Factor	1.00	1.00	1.00					1.52		1.00	1.00	
Incremental Delay, d2	23.8	23.8	1.1					0.8		15.2	0.5	
Delay (s)	54.7	54.7	29.4					17.1		46.3	4.0	
Level of Service	D	D	C					B		D	A	
Approach Delay (s)		45.5			0.0			17.1			10.2	
Approach LOS		D			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	223	98	70	167	596	54	646	69	605	1213	87
Future Volume (vph)	173	223	98	70	167	596	54	646	69	605	1213	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5	2.5	3.5	4.5	2.5	3.5	4.5	2.5	3.5	4.5	2.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3127	3223	1442	1612	3223	1442	1612	3223	1442	3127	3223	1442
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3127	3223	1442	1612	3223	1442	1612	3223	1442	3127	3223	1442
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	182	235	103	74	176	627	57	680	73	637	1277	92
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	182	235	103	74	176	627	57	680	73	637	1277	92
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			Free			Free			Free			Free
Actuated Green, G (s)	13.6	14.4	150.0	11.7	12.5	150.0	9.0	55.0	150.0	46.9	92.9	150.0
Effective Green, g (s)	15.1	15.9	150.0	13.2	14.0	150.0	10.5	56.5	150.0	48.4	94.4	150.0
Actuated g/C Ratio	0.10	0.11	1.00	0.09	0.09	1.00	0.07	0.38	1.00	0.32	0.63	1.00
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	5.0		3.5	5.0	
Lane Grp Cap (vph)	314	341	1442	141	300	1442	112	1213	1442	1008	2028	1442
v/s Ratio Prot	c0.06	c0.07		0.05	0.05		0.04	0.21		c0.20	c0.40	
v/s Ratio Perm			0.07			c0.43			0.05			0.06
v/c Ratio	0.58	0.69	0.07	0.52	0.59	0.43	0.51	0.56	0.05	0.63	0.63	0.06
Uniform Delay, d1	64.4	64.7	0.0	65.4	65.2	0.0	67.3	36.9	0.0	43.2	17.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.83	1.00
Incremental Delay, d2	2.1	5.7	0.1	2.7	2.9	1.0	2.6	1.9	0.1	1.2	1.5	0.1
Delay (s)	66.5	70.4	0.1	68.1	68.1	1.0	69.9	38.8	0.1	42.3	15.6	0.1
Level of Service	E	E	A	E	E	A	E	D	A	D	B	A
Approach Delay (s)		55.1			20.1			37.5			23.4	
Approach LOS		E			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	616	0	0	470	37	1	0	0	68	1	136
Future Volume (vph)	84	616	0	0	470	37	1	0	0	68	1	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	12	12	10	12	12	12	10	10	10
Total Lost time (s)	3.5	3.5			3.5	3.5		3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Frt	1.00	1.00			1.00	0.85		1.00		1.00	0.85	
Flt Protected	0.95	1.00			1.00	1.00		0.95		0.95	1.00	
Satd. Flow (prot)	1604	1749			1810	1436		1719		1604	1437	
Flt Permitted	0.28	1.00			1.00	1.00		0.65		0.76	1.00	
Satd. Flow (perm)	474	1749			1810	1436		1172		1279	1437	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	670	0	0	511	40	1	0	0	74	1	148
RTOR Reduction (vph)	0	0	0	0	0	22	0	0	0	0	117	0
Lane Group Flow (vph)	91	670	0	0	511	18	0	1	0	74	32	0
Turn Type	pm+pt	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		
Actuated Green, G (s)	33.0	33.0			22.6	22.6		9.6		9.6	9.6	
Effective Green, g (s)	34.5	34.5			24.1	24.1		11.1		11.1	11.1	
Actuated g/C Ratio	0.66	0.66			0.46	0.46		0.21		0.21	0.21	
Clearance Time (s)	5.0	5.0			5.0	5.0		5.0		5.0	5.0	
Vehicle Extension (s)	3.0	5.0			5.0	5.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	459	1147			829	657		247		269	303	
v/s Ratio Prot	0.03	c0.38			0.28						0.02	
v/s Ratio Perm	0.10					0.01		0.00		c0.06		
v/c Ratio	0.20	0.58			0.62	0.03		0.00		0.28	0.11	
Uniform Delay, d1	4.7	5.0			10.8	7.8		16.4		17.4	16.7	
Progression Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.2	1.2			2.0	0.0		0.0		0.6	0.2	
Delay (s)	4.9	6.2			12.7	7.9		16.4		17.9	16.9	
Level of Service	A	A			B	A		B		B	B	
Approach Delay (s)		6.1			12.4			16.4			17.2	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	52.6	Sum of lost time (s)	10.5
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	900	208	270	538	187	1036
Future Volume (vph)	900	208	270	538	187	1036
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	11
Total Lost time (s)	5.5	5.5	4.0	5.5	4.5	2.5
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3282	1468	1641	3282	2971	1419
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3282	1468	1641	3282	2971	1419
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1000	231	300	598	208	1151
RTOR Reduction (vph)	0	117	0	0	0	0
Lane Group Flow (vph)	1000	114	300	598	208	1151
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Turn Type	NA	Perm	Prot	NA	Prot	Free
Protected Phases	6		5	2	4	
Permitted Phases		6				Free
Actuated Green, G (s)	35.8	35.8	23.2	64.5	12.7	90.2
Effective Green, g (s)	37.3	37.3	24.7	66.0	14.2	90.2
Actuated g/C Ratio	0.41	0.41	0.27	0.73	0.16	1.00
Clearance Time (s)	7.0	7.0	5.5	7.0	6.0	
Vehicle Extension (s)	6.0	6.0	4.0	6.0	3.5	
Lane Grp Cap (vph)	1357	607	449	2401	467	1419
v/s Ratio Prot	0.30		0.18	0.18	0.07	
v/s Ratio Perm		0.08				c0.81
v/c Ratio	0.74	0.19	0.67	0.25	0.45	0.81
Uniform Delay, d1	22.3	16.8	29.1	4.0	34.4	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	0.4	4.1	0.2	0.8	5.1
Delay (s)	25.2	17.2	33.2	4.1	35.2	5.1
Level of Service	C	B	C	A	D	A
Approach Delay (s)	23.7			13.8	9.7	
Approach LOS	C			B	A	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

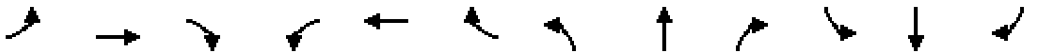
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	1061	781	34	466	3	274	0	19	0	0	8
Future Volume (vph)	3	1061	781	34	466	3	274	0	19	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	5.5	5.5	5.5	3.5	5.5		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.98			0.86	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96			1.00	
Satd. Flow (prot)	1641	3282	1468	1641	3278		1455	1439			1494	
Flt Permitted	0.43	1.00	1.00	0.11	1.00		0.95	0.96			1.00	
Satd. Flow (perm)	750	3282	1468	186	3278		1455	1439			1494	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	4	1310	964	42	575	4	338	0	23	0	0	10
RTOR Reduction (vph)	0	0	315	0	0	0	0	92	0	0	10	0
Lane Group Flow (vph)	4	1310	649	42	579	0	183	86	0	0	0	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	pm+pt	NA		Split	NA			NA	
Protected Phases		6		5	2		4	4		3	3	
Permitted Phases	6		6	2								
Actuated Green, G (s)	46.3	46.3	46.3	55.3	55.3		16.2	16.2			0.9	
Effective Green, g (s)	47.8	47.8	47.8	56.8	56.8		17.7	17.7			2.4	
Actuated g/C Ratio	0.52	0.52	0.52	0.62	0.62		0.19	0.19			0.03	
Clearance Time (s)	7.0	7.0	7.0	5.0	7.0		6.0	6.0			6.0	
Vehicle Extension (s)	5.0	5.0	5.0	3.0	5.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	392	1716	767	203	2037		281	278			39	
v/s Ratio Prot		0.40		0.01	c0.18		c0.13	0.06			c0.00	
v/s Ratio Perm	0.01		c0.44	0.12								
v/c Ratio	0.01	0.76	0.85	0.21	0.28		0.65	0.31			0.01	
Uniform Delay, d1	10.5	17.3	18.6	10.6	8.0		34.0	31.6			43.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.0	3.3	11.1	0.5	0.4		5.3	0.6			0.1	
Delay (s)	10.5	20.6	29.7	11.1	8.3		39.3	32.2			43.4	
Level of Service	B	C	C	B	A		D	C			D	
Approach Delay (s)		24.4			8.5			35.8			43.4	
Approach LOS		C			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	91.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

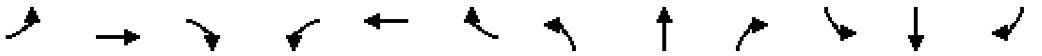
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1152	228	32	667	374	67	71	12	667	123	26
Future Volume (vph)	14	1152	228	32	667	374	67	71	12	667	123	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	10	10	12	12	12
Total Lost time (s)	3.5	5.5		3.5	5.5	5.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	0.86		1.00	0.91	1.00	1.00	1.00		0.97	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1641	5794		1641	4715	1468	1641	1576		3183	1727	1468
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1641	5794		1641	4715	1468	1641	1576		3183	1727	1468
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	15	1200	238	33	695	390	70	74	12	695	128	27
RTOR Reduction (vph)	0	19	0	0	0	244	0	4	0	0	0	19
Lane Group Flow (vph)	15	1419	0	33	695	146	70	83	0	695	128	8
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases						2						4
Actuated Green, G (s)	2.8	41.1		5.1	43.4	43.4	13.9	13.9		35.8	35.8	35.8
Effective Green, g (s)	4.3	42.6		6.6	44.9	44.9	15.4	15.4		37.3	37.3	37.3
Actuated g/C Ratio	0.04	0.36		0.06	0.37	0.37	0.13	0.13		0.31	0.31	0.31
Clearance Time (s)	5.0	7.0		5.0	7.0	7.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	5.0	5.0		4.0	4.0	4.0
Lane Grp Cap (vph)	58	2058		90	1765	549	210	202		990	537	456
v/s Ratio Prot	0.01	c0.24		c0.02	0.15		0.04	c0.05		c0.22	0.07	
v/s Ratio Perm						0.10						0.01
v/c Ratio	0.26	0.69		0.37	0.39	0.27	0.33	0.41		0.70	0.24	0.02
Uniform Delay, d1	56.2	33.0		54.6	27.5	26.1	47.6	48.1		36.4	30.7	28.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.4	1.3		2.5	0.3	0.5	2.0	2.8		2.4	0.3	0.0
Delay (s)	58.6	34.3		57.2	27.8	26.6	49.5	50.9		38.8	31.0	28.6
Level of Service	E	C		E	C	C	D	D		D	C	C
Approach Delay (s)		34.5			28.3			50.3			37.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	119.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

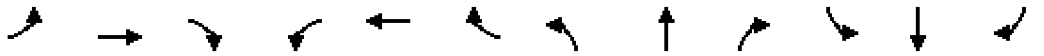
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	21	194	86	27	51	123	528	25	16	937	50
Future Volume (vph)	76	21	194	86	27	51	123	528	25	16	937	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	12	11	11	12	11
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.5	4.5	3.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1532	1612	1370	1641	1727	1468	1586	3282	1419	1586	3282	1419
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.17	1.00	1.00	0.45	1.00	1.00
Satd. Flow (perm)	1532	1612	1370	1641	1727	1468	284	3282	1419	753	3282	1419
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	78	21	198	88	28	52	126	539	26	16	956	51
RTOR Reduction (vph)	0	0	169	0	0	46	0	0	12	0	0	29
Lane Group Flow (vph)	78	21	29	88	28	6	126	539	14	16	956	22
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases			4			3	6		6	2		2
Actuated Green, G (s)	11.1	11.1	11.1	8.7	8.7	8.7	51.0	43.9	43.9	38.6	36.5	36.5
Effective Green, g (s)	12.6	12.6	12.6	10.2	10.2	10.2	52.5	45.4	45.4	41.6	38.0	38.0
Actuated g/C Ratio	0.15	0.15	0.15	0.12	0.12	0.12	0.60	0.52	0.52	0.48	0.44	0.44
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	222	234	198	192	202	172	336	1716	742	395	1436	621
v/s Ratio Prot	c0.05	0.01		c0.05	0.02		c0.05	0.16		0.00	c0.29	
v/s Ratio Perm			0.02			0.00	0.18		0.01	0.02		0.02
v/c Ratio	0.35	0.09	0.15	0.46	0.14	0.04	0.38	0.31	0.02	0.04	0.67	0.04
Uniform Delay, d1	33.4	32.1	32.4	35.7	34.4	33.9	9.8	11.8	10.0	11.9	19.4	13.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.2	0.3	1.7	0.3	0.1	0.7	0.2	0.0	0.0	1.6	0.0
Delay (s)	34.4	32.3	32.7	37.5	34.7	34.0	10.5	12.0	10.0	11.9	20.9	14.0
Level of Service	C	C	C	D	C	C	B	B	A	B	C	B
Approach Delay (s)		33.1			35.9			11.7			20.4	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	86.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	0	116	0	0	362	69	251	0	0	1244	261
Future Volume (vph)	136	0	116	0	0	362	69	251	0	0	1244	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	11	12	12	12	12	12
Total Lost time (s)	4.5		2.5			2.5	3.5	5.0			5.0	2.5
Lane Util. Factor	1.00		1.00			1.00	1.00	0.95			0.95	1.00
Frt	1.00		0.85			0.86	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00			1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1586		1468			1494	1586	3282			3282	1468
Flt Permitted	0.95		1.00			1.00	0.10	1.00			1.00	1.00
Satd. Flow (perm)	1586		1468			1494	172	3282			3282	1468
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	160	0	136	0	0	426	81	295	0	0	1464	307
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	160	0	136	0	0	426	81	295	0	0	1464	307
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm		Free			Free	pm+pt	NA			NA	Free
Protected Phases							5	2			6	
Permitted Phases	4		Free			Free	2					Free
Actuated Green, G (s)	15.3		101.6			101.6	73.8	73.8			60.7	101.6
Effective Green, g (s)	16.8		101.6			101.6	75.3	75.3			62.2	101.6
Actuated g/C Ratio	0.17		1.00			1.00	0.74	0.74			0.61	1.00
Clearance Time (s)	6.0						5.0	6.5			6.5	
Vehicle Extension (s)	3.0						3.0	5.0			5.0	
Lane Grp Cap (vph)	262		1468			1494	261	2432			2009	1468
v/s Ratio Prot							0.03	0.09			c0.45	
v/s Ratio Perm	c0.10		0.09			c0.29	0.20					0.21
v/c Ratio	0.61		0.09			0.29	0.31	0.12			0.73	0.21
Uniform Delay, d1	39.4		0.0			0.0	8.9	3.7			13.8	0.0
Progression Factor	1.00		1.00			1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	4.2		0.1			0.5	0.7	0.0			1.7	0.3
Delay (s)	43.5		0.1			0.5	9.5	3.8			15.5	0.3
Level of Service	D		A			A	A	A			B	A
Approach Delay (s)		23.6			0.5			5.0			12.8	
Approach LOS		C			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	14.5
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



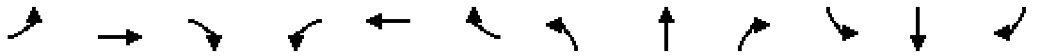
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	NBR2	SWL	SWR
Lane Configurations											
Traffic Volume (vph)	29	197	0	0	161	0	71	0	811	0	0
Future Volume (vph)	29	197	0	0	161	0	71	0	811	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.5			5.5		4.5		2.5		
Lane Util. Factor	1.00	1.00			0.95		1.00		0.76		
Frt	1.00	1.00			1.00		1.00		0.85		
Flt Protected	0.95	1.00			1.00		0.95		1.00		
Satd. Flow (prot)	1641	1727			3282		1641		3347		
Flt Permitted	0.56	1.00			1.00		0.95		1.00		
Satd. Flow (perm)	961	1727			3282		1641		3347		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	30	205	0	0	168	0	74	0	845	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	30	205	0	0	168	0	74	0	845	0	0
Heavy Vehicles (%)	10%	10%	5%	5%	10%	5%	10%	5%	10%	5%	5%
Turn Type	pm+pt	NA			NA		Prot		Free		
Protected Phases	5	2			6		4				
Permitted Phases	2								Free		
Actuated Green, G (s)	33.7	33.7			26.6		5.1		51.8		
Effective Green, g (s)	35.2	35.2			28.1		6.6		51.8		
Actuated g/C Ratio	0.68	0.68			0.54		0.13		1.00		
Clearance Time (s)	6.0	7.0			7.0		6.0				
Vehicle Extension (s)	3.0	5.0			5.0		3.0				
Lane Grp Cap (vph)	687	1173			1780		209		3347		
v/s Ratio Prot	0.00	0.12			0.05		0.05				
v/s Ratio Perm	0.03								c0.25		
v/c Ratio	0.04	0.17			0.09		0.35		0.25		
Uniform Delay, d1	2.9	3.0			5.7		20.7		0.0		
Progression Factor	1.00	1.00			1.00		1.00		1.00		
Incremental Delay, d2	0.0	0.1			0.0		1.0		0.2		
Delay (s)	2.9	3.2			5.8		21.7		0.2		
Level of Service	A	A			A		C		A		
Approach Delay (s)		3.1			5.8		1.9			0.0	
Approach LOS		A			A		A			A	

Intersection Summary			
HCM 2000 Control Delay	2.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	51.8	Sum of lost time (s)	14.5
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	695	126	4	66	16	62	161	42	119	327	30
Future Volume (vph)	13	695	126	4	66	16	62	161	42	119	327	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	11	11	11
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.5	5.5	5.5	5.5	5.5	
Lane Util. Factor	1.00	0.86		1.00	*0.51	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1662	6081		1719	3691	1538	1719	3438	1538	1662	3282	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.51	1.00	1.00	0.64	1.00	
Satd. Flow (perm)	1662	6081		1719	3691	1538	924	3438	1538	1111	3282	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	15	799	145	5	76	18	71	185	48	137	376	34
RTOR Reduction (vph)	0	25	0	0	0	11	0	0	34	0	6	0
Lane Group Flow (vph)	15	919	0	5	76	7	71	185	14	137	404	0
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases						6	4		4	8		
Actuated Green, G (s)	1.1	21.0		1.0	20.9	20.9	14.6	14.6	14.6	14.6	14.6	
Effective Green, g (s)	2.6	22.5		2.5	22.4	22.4	16.1	16.1	16.1	16.1	16.1	
Actuated g/C Ratio	0.05	0.40		0.04	0.40	0.40	0.28	0.28	0.28	0.28	0.28	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	76	2417		75	1460	608	262	977	437	316	933	
v/s Ratio Prot	0.01	c0.15		0.00	c0.02			0.05			0.12	
v/s Ratio Perm						0.00	0.08		0.01	c0.12		
v/c Ratio	0.20	0.38		0.07	0.05	0.01	0.27	0.19	0.03	0.43	0.43	
Uniform Delay, d1	26.0	12.1		25.9	10.5	10.4	15.7	15.3	14.6	16.5	16.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.3	0.2		0.4	0.0	0.0	0.8	0.1	0.0	1.3	0.4	
Delay (s)	27.3	12.3		26.3	10.6	10.4	16.5	15.4	14.7	17.8	17.0	
Level of Service	C	B		C	B	B	B	B	B	B	B	
Approach Delay (s)		12.5			11.3			15.6			17.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	56.6	Sum of lost time (s)	15.5
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



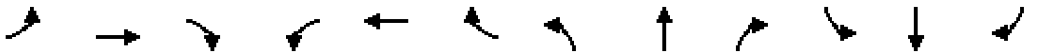
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	271	1	163	1022	1507	0	0	646	270
Future Volume (vph)	0	0	0	271	1	163	1022	1507	0	0	646	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				3.5	3.5	3.5	3.5	4.0			4.0	4.0
Lane Util. Factor				0.95	0.95	1.00	0.97	0.95			0.95	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1531	1535	1442	3127	3223			3223	1442
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)				1531	1535	1442	3127	3223			3223	1442
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	277	1	166	1043	1538	0	0	659	276
RTOR Reduction (vph)	0	0	0	0	0	141	0	0	0	0	0	206
Lane Group Flow (vph)	0	0	0	138	140	25	1043	1538	0	0	659	70
Heavy Vehicles (%)	5%	5%	5%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type				Split	NA	Perm	Prot	NA			NA	Perm
Protected Phases				4	4		1 9	6			2	
Permitted Phases						4						2
Actuated Green, G (s)				19.0	19.0	19.0	62.3	72.5			32.7	32.7
Effective Green, g (s)				20.5	20.5	20.5	65.3	74.0			34.2	34.2
Actuated g/C Ratio				0.15	0.15	0.15	0.48	0.55			0.25	0.25
Clearance Time (s)				5.0	5.0	5.0		5.5			5.5	5.5
Vehicle Extension (s)				4.0	4.0	4.0		5.0			5.0	5.0
Lane Grp Cap (vph)				232	233	218	1512	1766			816	365
v/s Ratio Prot				0.09	c0.09		c0.33	c0.48			0.20	
v/s Ratio Perm						0.02						0.05
v/c Ratio				0.59	0.60	0.12	0.69	0.87			0.81	0.19
Uniform Delay, d1				53.4	53.4	49.4	27.0	26.4			47.3	39.6
Progression Factor				1.00	1.00	1.00	1.38	0.59			1.00	1.00
Incremental Delay, d2				4.7	5.0	0.3	0.8	3.3			8.4	1.2
Delay (s)				58.1	58.4	49.7	38.1	18.9			55.7	40.7
Level of Service				E	E	D	D	B			E	D
Approach Delay (s)		0.0			55.1			26.7			51.3	
Approach LOS		A			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	625	1	181	0	0	0	0	1913	320	160	723	0
Future Volume (vph)	625	1	181	0	0	0	0	1913	320	160	723	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	3.5	3.5					4.0		3.5	4.0	
Lane Util. Factor	0.95	0.95	1.00					0.91		1.00	0.95	
Frt	1.00	1.00	0.85					0.98		1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1531	1535	1442					4532		1612	3223	
Flt Permitted	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1531	1535	1442					4532		1612	3223	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	638	1	185	0	0	0	0	1952	327	163	738	0
RTOR Reduction (vph)	0	0	134	0	0	0	0	17	0	0	0	0
Lane Group Flow (vph)	319	320	51	0	0	0	0	2262	0	163	738	0
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type	Split	NA	Perm					NA		Prot	NA	
Protected Phases	4	4						6		5	2	
Permitted Phases			4									
Actuated Green, G (s)	35.7	35.7	35.7					69.4		14.4	88.8	
Effective Green, g (s)	37.2	37.2	37.2					70.9		15.9	90.3	
Actuated g/C Ratio	0.28	0.28	0.28					0.53		0.12	0.67	
Clearance Time (s)	5.0	5.0	5.0					5.5		5.0	5.5	
Vehicle Extension (s)	4.0	4.0	4.0					7.0		3.0	7.0	
Lane Grp Cap (vph)	421	422	397					2380		189	2155	
v/s Ratio Prot	0.21	c0.21						c0.50		c0.10	0.23	
v/s Ratio Perm			0.04									
v/c Ratio	0.76	0.76	0.13					0.95		0.86	0.34	
Uniform Delay, d1	44.8	44.8	36.7					30.4		58.5	9.6	
Progression Factor	1.00	1.00	1.00					0.49		0.51	0.31	
Incremental Delay, d2	8.1	8.1	0.2					7.0		19.9	0.3	
Delay (s)	52.9	52.9	36.9					21.8		49.8	3.3	
Level of Service	D	D	D					C		D	A	
Approach Delay (s)		49.3			0.0			21.8			11.7	
Approach LOS		D			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	226	80	58	390	1012	193	1041	110	559	828	98
Future Volume (vph)	197	226	80	58	390	1012	193	1041	110	559	828	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5	2.5	3.5	4.5	2.5	3.5	4.5	2.5	3.5	4.5	2.5
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3127	3223	1442	1612	3223	1442	1612	3223	1442	3127	3223	1442
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3127	3223	1442	1612	3223	1442	1612	3223	1442	3127	3223	1442
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	199	228	81	59	394	1022	195	1052	111	565	836	99
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	199	228	81	59	394	1022	195	1052	111	565	836	99
Heavy Vehicles (%)	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases			Free			Free			Free			Free
Actuated Green, G (s)	12.0	21.7	135.0	9.6	19.3	135.0	21.0	50.8	135.0	30.9	60.7	135.0
Effective Green, g (s)	13.5	23.2	135.0	11.1	20.8	135.0	22.5	52.3	135.0	32.4	62.2	135.0
Actuated g/C Ratio	0.10	0.17	1.00	0.08	0.15	1.00	0.17	0.39	1.00	0.24	0.46	1.00
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	5.0		3.5	5.0	
Lane Grp Cap (vph)	312	553	1442	132	496	1442	268	1248	1442	750	1484	1442
v/s Ratio Prot	0.06	0.07		0.04	0.12		0.12	c0.33		0.18	0.26	
v/s Ratio Perm			0.06			c0.71			0.08			0.07
v/c Ratio	0.64	0.41	0.06	0.45	0.79	0.71	0.73	0.84	0.08	0.75	0.56	0.07
Uniform Delay, d1	58.4	49.8	0.0	59.0	55.0	0.0	53.3	37.6	0.0	47.6	26.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.03	1.00	1.47	0.90	1.00
Incremental Delay, d2	3.7	0.5	0.1	1.8	8.5	3.0	6.1	4.8	0.1	4.3	1.6	0.1
Delay (s)	62.1	50.3	0.1	60.8	63.6	3.0	58.7	43.8	0.1	74.1	25.3	0.1
Level of Service	E	D	A	E	E	A	E	D	A	E	C	A
Approach Delay (s)		46.9			21.5			42.3			42.0	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	445	1	1	1094	132	1	1	1	42	0	130
Future Volume (vph)	141	445	1	1	1094	132	1	1	1	42	0	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	12	12	10	12	12	12	10	10	10
Total Lost time (s)	3.5	3.5			3.5	3.5		3.5		3.5	3.5	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Frt	1.00	1.00			1.00	0.85		0.95		1.00	0.85	
Flt Protected	0.95	1.00			1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1604	1749			1809	1436		1700		1604	1436	
Flt Permitted	0.08	1.00			1.00	1.00		0.92		0.76	1.00	
Satd. Flow (perm)	136	1749			1809	1436		1582		1277	1436	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	145	459	1	1	1128	136	1	1	1	43	0	134
RTOR Reduction (vph)	0	0	0	0	0	28	0	1	0	0	120	0
Lane Group Flow (vph)	145	460	0	0	1129	108	0	2	0	43	14	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2		2	4			8		
Actuated Green, G (s)	93.2	93.2			77.4	77.4		9.9		9.9	9.9	
Effective Green, g (s)	94.7	94.7			78.9	78.9		11.4		11.4	11.4	
Actuated g/C Ratio	0.84	0.84			0.70	0.70		0.10		0.10	0.10	
Clearance Time (s)	5.0	5.0			5.0	5.0		5.0		5.0	5.0	
Vehicle Extension (s)	3.0	5.0			5.0	5.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	273	1464			1261	1001		159		128	144	
v/s Ratio Prot	c0.06	0.26									0.01	
v/s Ratio Perm	0.39				0.62	0.08		0.00		c0.03		
v/c Ratio	0.53	0.31			0.90	0.11		0.01		0.34	0.09	
Uniform Delay, d1	24.1	2.0			13.8	5.6		45.8		47.3	46.2	
Progression Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	2.0	0.3			9.1	0.1		0.0		1.6	0.3	
Delay (s)	26.1	2.3			22.9	5.7		45.8		48.9	46.4	
Level of Service	C	A			C	A		D		D	D	
Approach Delay (s)		8.0			21.0			45.8			47.0	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	113.1	Sum of lost time (s)	10.5
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	796	310	649	1079	271	586
Future Volume (vph)	796	310	649	1079	271	586
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	10	11
Total Lost time (s)	5.5	5.5	4.0	5.5	4.5	2.5
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3282	1468	1641	3282	2971	1419
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3282	1468	1641	3282	2971	1419
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	865	337	705	1173	295	637
RTOR Reduction (vph)	0	227	0	0	0	0
Lane Group Flow (vph)	865	110	705	1173	295	637
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%
Turn Type	NA	Perm	Prot	NA	Prot	Free
Protected Phases	6		5	2	4	
Permitted Phases		6				Free
Actuated Green, G (s)	34.2	34.2	40.3	80.0	16.8	109.8
Effective Green, g (s)	35.7	35.7	41.8	81.5	18.3	109.8
Actuated g/C Ratio	0.33	0.33	0.38	0.74	0.17	1.00
Clearance Time (s)	7.0	7.0	5.5	7.0	6.0	
Vehicle Extension (s)	6.0	6.0	4.0	6.0	3.5	
Lane Grp Cap (vph)	1067	477	624	2436	495	1419
v/s Ratio Prot	c0.26		c0.43	0.36	c0.10	
v/s Ratio Perm		0.07				0.45
v/c Ratio	0.81	0.23	1.13	0.48	0.60	0.45
Uniform Delay, d1	34.0	27.0	34.0	5.7	42.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.6	0.7	77.4	0.4	2.0	1.0
Delay (s)	39.6	27.7	111.4	6.1	44.4	1.0
Level of Service	D	C	F	A	D	A
Approach Delay (s)	36.3			45.6	14.7	
Approach LOS	D			D	B	

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	109.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

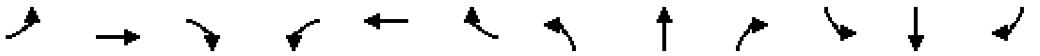
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	864	417	59	972	0	623	0	34	4	0	1
Future Volume (vph)	8	864	417	59	972	0	623	0	34	4	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	10	10	10	12	12	12
Total Lost time (s)	5.5	5.5	5.5	3.5	5.5		4.5	4.5			4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.95	0.95			1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.98			0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96			0.96	
Satd. Flow (prot)	1641	3282	1468	1641	3282		1455	1443			1616	
Flt Permitted	0.26	1.00	1.00	0.19	1.00		0.95	0.96			0.96	
Satd. Flow (perm)	448	3282	1468	336	3282		1455	1443			1616	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	9	929	448	63	1045	0	670	0	37	4	0	1
RTOR Reduction (vph)	0	0	234	0	0	0	0	84	0	0	5	0
Lane Group Flow (vph)	9	929	214	63	1045	0	355	268	0	0	0	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm	NA	Perm	pm+pt	NA		Split	NA		Split	NA	
Protected Phases		6		5	2		4	4		3	3	
Permitted Phases	6		6	2								
Actuated Green, G (s)	45.3	45.3	45.3	56.5	56.5		25.2	25.2			1.0	
Effective Green, g (s)	46.8	46.8	46.8	58.0	58.0		26.7	26.7			2.5	
Actuated g/C Ratio	0.46	0.46	0.46	0.57	0.57		0.26	0.26			0.02	
Clearance Time (s)	7.0	7.0	7.0	5.0	7.0		6.0	6.0			6.0	
Vehicle Extension (s)	5.0	5.0	5.0	3.0	5.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	206	1510	675	290	1871		381	378			39	
v/s Ratio Prot		c0.28		0.02	c0.32		c0.24	0.19			c0.00	
v/s Ratio Perm	0.02		0.15	0.11								
v/c Ratio	0.04	0.62	0.32	0.22	0.56		0.93	0.71			0.00	
Uniform Delay, d1	15.1	20.7	17.4	11.7	13.8		36.6	34.0			48.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.4	1.9	1.2	0.4	1.2		29.3	6.0			0.0	
Delay (s)	15.5	22.6	18.6	12.0	15.0		65.9	40.0			48.4	
Level of Service	B	C	B	B	B		E	D			D	
Approach Delay (s)		21.2			14.8			53.0			48.4	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	101.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

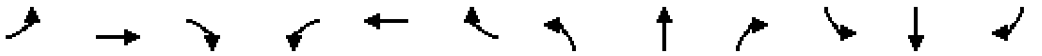
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	954	124	40	1120	1087	185	159	22	363	88	28
Future Volume (vph)	41	954	124	40	1120	1087	185	159	22	363	88	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	10	10	12	12	12
Total Lost time (s)	3.5	5.5		3.5	5.5	5.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	0.86		1.00	0.91	1.00	1.00	1.00		0.97	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1641	5839		1641	4715	1468	1641	1583		3183	1727	1468
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1641	5839		1641	4715	1468	1641	1583		3183	1727	1468
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	42	973	127	41	1143	1109	189	162	22	370	90	29
RTOR Reduction (vph)	0	12	0	0	0	444	0	3	0	0	0	24
Lane Group Flow (vph)	42	1088	0	41	1143	665	189	181	0	370	90	5
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	1	6		5	2		3	3		4	4	
Permitted Phases						2						4
Actuated Green, G (s)	7.4	51.2		7.3	51.1	51.1	22.6	22.6		21.8	21.8	21.8
Effective Green, g (s)	8.9	52.7		8.8	52.6	52.6	24.1	24.1		23.3	23.3	23.3
Actuated g/C Ratio	0.07	0.42		0.07	0.41	0.41	0.19	0.19		0.18	0.18	0.18
Clearance Time (s)	5.0	7.0		5.0	7.0	7.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	5.0	5.0		4.0	4.0	4.0
Lane Grp Cap (vph)	115	2424		113	1954	608	311	300		584	317	269
v/s Ratio Prot	c0.03	0.19		0.02	0.24		c0.12	0.11		c0.12	0.05	
v/s Ratio Perm						c0.45						0.00
v/c Ratio	0.37	0.45		0.36	0.58	1.09	0.61	0.60		0.63	0.28	0.02
Uniform Delay, d1	56.3	26.7		56.4	28.7	37.2	47.1	47.0		47.9	44.6	42.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.0	0.3		2.0	0.7	64.8	4.9	5.0		2.5	0.7	0.0
Delay (s)	58.3	26.9		58.4	29.4	102.0	52.0	52.0		50.4	45.3	42.5
Level of Service	E	C		E	C	F	D	D		D	D	D
Approach Delay (s)		28.1			65.0			52.0			49.0	
Approach LOS		C			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	52.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	126.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		

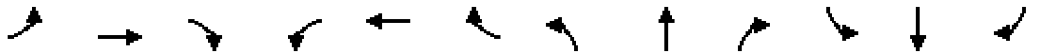
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	68	319	96	40	23	251	1160	78	20	933	81
Future Volume (vph)	165	68	319	96	40	23	251	1160	78	20	933	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	12	12	12	11	12	11	11	12	11
Total Lost time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.5	4.5	3.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1532	1612	1370	1641	1727	1468	1586	3282	1419	1586	3282	1419
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00	1.00	0.16	1.00	1.00
Satd. Flow (perm)	1532	1612	1370	1641	1727	1468	187	3282	1419	271	3282	1419
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	74	347	104	43	25	273	1261	85	22	1014	88
RTOR Reduction (vph)	0	0	283	0	0	22	0	0	41	0	0	54
Lane Group Flow (vph)	179	74	64	104	43	3	273	1261	44	22	1014	34
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Split	NA	Perm	Split	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases			4			3	6		6	2		2
Actuated Green, G (s)	20.1	20.1	20.1	12.9	12.9	12.9	68.9	60.2	60.2	47.6	43.9	43.9
Effective Green, g (s)	21.6	21.6	21.6	14.4	14.4	14.4	70.4	61.7	61.7	50.6	45.4	45.4
Actuated g/C Ratio	0.18	0.18	0.18	0.12	0.12	0.12	0.60	0.52	0.52	0.43	0.39	0.39
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Lane Grp Cap (vph)	280	295	250	200	210	179	366	1717	742	174	1263	546
v/s Ratio Prot	c0.12	0.05		c0.06	0.02		c0.14	0.38		0.01	c0.31	
v/s Ratio Perm			0.05			0.00	0.31		0.03	0.05		0.02
v/c Ratio	0.64	0.25	0.25	0.52	0.20	0.02	0.75	0.73	0.06	0.13	0.80	0.06
Uniform Delay, d1	44.5	41.2	41.3	48.5	46.6	45.5	26.7	21.8	13.8	20.1	32.3	22.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.7	0.4	0.5	2.4	0.5	0.0	8.0	2.0	0.1	0.3	4.3	0.1
Delay (s)	49.3	41.7	41.8	50.9	47.1	45.6	34.7	23.8	13.9	20.5	36.6	22.9
Level of Service	D	D	D	D	D	D	C	C	B	C	D	C
Approach Delay (s)		44.0			49.2			25.1			35.2	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	117.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	342	0	84	0	0	419	115	1209	0	0	651	267
Future Volume (vph)	342	0	84	0	0	419	115	1209	0	0	651	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	11	12	12	12	12	12
Total Lost time (s)	4.5		2.5			2.5	3.5	5.0			5.0	2.5
Lane Util. Factor	1.00		1.00			1.00	1.00	0.95			0.95	1.00
Frt	1.00		0.85			0.86	1.00	1.00			1.00	0.85
Flt Protected	0.95		1.00			1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	1586		1468			1494	1586	3282			3282	1468
Flt Permitted	0.95		1.00			1.00	0.25	1.00			1.00	1.00
Satd. Flow (perm)	1586		1468			1494	420	3282			3282	1468
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	356	0	88	0	0	436	120	1259	0	0	678	278
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	356	0	88	0	0	436	120	1259	0	0	678	278
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm		Free			Free	pm+pt	NA			NA	Free
Protected Phases							5	2			6	
Permitted Phases	4		Free			Free	2					Free
Actuated Green, G (s)	29.2		85.6			85.6	43.9	43.9			28.7	85.6
Effective Green, g (s)	30.7		85.6			85.6	45.4	45.4			30.2	85.6
Actuated g/C Ratio	0.36		1.00			1.00	0.53	0.53			0.35	1.00
Clearance Time (s)	6.0						5.0	6.5			6.5	
Vehicle Extension (s)	3.0						3.0	5.0			5.0	
Lane Grp Cap (vph)	568		1468			1494	382	1740			1157	1468
v/s Ratio Prot							0.04	c0.38			0.21	
v/s Ratio Perm	c0.22		0.06			0.29	0.12					0.19
v/c Ratio	0.63		0.06			0.29	0.31	0.72			0.59	0.19
Uniform Delay, d1	22.7		0.0			0.0	11.3	15.3			22.6	0.0
Progression Factor	1.00		1.00			1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2	2.2		0.1			0.5	0.5	1.9			1.2	0.3
Delay (s)	24.9		0.1			0.5	11.7	17.2			23.8	0.3
Level of Service	C		A			A	B	B			C	A
Approach Delay (s)		20.0			0.5			16.7			16.9	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	85.6	Sum of lost time (s)	14.5
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	NBR2	SWL	SWR
Lane Configurations											
Traffic Volume (vph)	41	76	0	0	1053	0	19	0	111	0	0
Future Volume (vph)	41	76	0	0	1053	0	19	0	111	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	5.5			5.5		4.5		2.5		
Lane Util. Factor	1.00	1.00			0.95		1.00		0.76		
Frt	1.00	1.00			1.00		1.00		0.85		
Flt Protected	0.95	1.00			1.00		0.95		1.00		
Satd. Flow (prot)	1641	1727			3282		1641		3347		
Flt Permitted	0.17	1.00			1.00		0.95		1.00		
Satd. Flow (perm)	297	1727			3282		1641		3347		
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	46	85	0	0	1183	0	21	0	125	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	46	85	0	0	1183	0	21	0	125	0	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt	NA			NA		Prot		Free		
Protected Phases	5	2			6		4				
Permitted Phases	2								Free		
Actuated Green, G (s)	46.8	46.8			36.4		2.5		62.3		
Effective Green, g (s)	48.3	48.3			37.9		4.0		62.3		
Actuated g/C Ratio	0.78	0.78			0.61		0.06		1.00		
Clearance Time (s)	6.0	7.0			7.0		6.0				
Vehicle Extension (s)	3.0	5.0			5.0		3.0				
Lane Grp Cap (vph)	357	1338			1996		105		3347		
v/s Ratio Prot	c0.01	0.05			c0.36		c0.01				
v/s Ratio Perm	0.09								0.04		
v/c Ratio	0.13	0.06			0.59		0.20		0.04		
Uniform Delay, d1	2.9	1.7			7.5		27.6		0.0		
Progression Factor	1.00	1.00			1.00		1.00		1.00		
Incremental Delay, d2	0.2	0.0			0.7		0.9		0.0		
Delay (s)	3.1	1.7			8.2		28.6		0.0		
Level of Service	A	A			A		C		A		
Approach Delay (s)		2.2			8.2		4.1			0.0	
Approach LOS		A			A		A			A	

Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	62.3	Sum of lost time (s)	14.5
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	111	67	28	1019	124	116	220	6	28	166	61
Future Volume (vph)	16	111	67	28	1019	124	116	220	6	28	166	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	12	12	12	12	12	11	11	11
Total Lost time (s)	5.0	5.0		5.0	5.0	5.0	5.5	5.5	5.5	5.5	5.5	
Lane Util. Factor	1.00	0.86		1.00	*0.51	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1662	5873		1719	3691	1538	1719	3438	1538	1662	3190	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.60	1.00	1.00	0.60	1.00	
Satd. Flow (perm)	1662	5873		1719	3691	1538	1084	3438	1538	1055	3190	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	121	73	30	1108	135	126	239	7	30	180	66
RTOR Reduction (vph)	0	46	0	0	0	75	0	0	5	0	32	0
Lane Group Flow (vph)	17	148	0	30	1108	60	126	239	2	30	214	0
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases						6	4		4	8		
Actuated Green, G (s)	2.2	23.1		7.7	28.6	28.6	16.4	16.4	16.4	16.4	16.4	
Effective Green, g (s)	3.7	24.6		9.2	30.1	30.1	17.9	17.9	17.9	17.9	17.9	
Actuated g/C Ratio	0.06	0.37		0.14	0.45	0.45	0.27	0.27	0.27	0.27	0.27	
Clearance Time (s)	6.5	6.5		6.5	6.5	6.5	7.0	7.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	5.0		3.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)	91	2149		235	1653	688	288	915	409	281	849	
v/s Ratio Prot	c0.01	0.03		0.02	c0.30			0.07			0.07	
v/s Ratio Perm						0.04	c0.12		0.00	0.03		
v/c Ratio	0.19	0.07		0.13	0.67	0.09	0.44	0.26	0.00	0.11	0.25	
Uniform Delay, d1	30.3	13.9		25.5	14.6	10.7	20.5	19.4	18.1	18.6	19.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	0.0		0.2	1.4	0.1	1.5	0.2	0.0	0.2	0.2	
Delay (s)	31.3	13.9		25.7	16.0	10.8	21.9	19.6	18.1	18.8	19.6	
Level of Service	C	B		C	B	B	C	B	B	B	B	
Approach Delay (s)		15.3			15.7			20.4			19.5	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	67.2	Sum of lost time (s)	15.5
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX I-D

SIMTRAFFIC REPORTS

Intersection: 1: MD 543 & I-95 SB Ramps

Movement	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	L	L	T	T	T	T	R
Maximum Queue (ft)	160	160	406	425	217	646	476	460	330
Average Queue (ft)	69	70	227	227	57	92	304	256	19
95th Queue (ft)	128	129	358	364	143	308	448	413	160
Link Distance (ft)		1014		837	837	837	496	496	496
Upstream Blk Time (%)						0	0	0	
Queuing Penalty (veh)						0	0	0	
Storage Bay Dist (ft)	335		800						
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 2: MD 543 & I-95 NB Ramps

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	297	259	173	409	438	266	315	304	174
Average Queue (ft)	182	145	66	230	152	104	158	96	52
95th Queue (ft)	267	239	123	346	298	191	303	216	124
Link Distance (ft)	1159			596	596	596		837	837
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)		750	750				575		
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: MD 543 & MD 7

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	T	L	T	T	L	T	T	L	L
Maximum Queue (ft)	230	257	259	228	188	210	193	195	326	346	362	385
Average Queue (ft)	92	116	135	105	79	117	73	56	162	152	224	239
95th Queue (ft)	174	213	240	205	154	183	160	134	284	279	340	354
Link Distance (ft)			939	939		995	995		597	597		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200	200			430			280			575	575
Storage Blk Time (%)	0	1	3						1			
Queuing Penalty (veh)	0	1	5						1			

Intersection: 3: MD 543 & MD 7

Movement	SB	SB
Directions Served	T	T
Maximum Queue (ft)	334	327
Average Queue (ft)	176	155
95th Queue (ft)	291	275
Link Distance (ft)	596	596
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Intersection: 4: Stepney Rd S. & MD 7

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	LT	R	LTR	L	TR
Maximum Queue (ft)	73	176	203	38	19	90	103
Average Queue (ft)	32	80	75	9	1	37	48
95th Queue (ft)	61	143	152	32	10	75	88
Link Distance (ft)		1458	1844		476	619	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	175			235			155
Storage Blk Time (%)		0	0			0	
Queuing Penalty (veh)		0	0			0	

Intersection: 5: MD 543 & US 40

Movement	EB	EB	WB	WB	WB	NB	NB	B70	B70
Directions Served	T	T	L	T	T	L	L	T	
Maximum Queue (ft)	253	209	238	143	110	117	123	486	488
Average Queue (ft)	135	101	117	45	41	56	62	228	169
95th Queue (ft)	215	181	199	106	92	96	109	498	458
Link Distance (ft)	1193	1193		493	493	747	747	501	501
Upstream Blk Time (%)								0	0
Queuing Penalty (veh)								0	1
Storage Bay Dist (ft)			460						
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 6: Spesutia Rd & US 40

Movement	EB	EB	EB	EB	B71	B71	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	T	T	L	T	TR	L	LTR	LTR
Maximum Queue (ft)	17	196	175	142	98	63	63	118	116	138	145	44
Average Queue (ft)	1	73	86	63	3	3	21	31	40	74	67	9
95th Queue (ft)	9	153	150	110	52	37	55	86	99	118	122	32
Link Distance (ft)		6937	6937		493	493		2747	2747	1019		259
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	400			295			360				450	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 7: MD 159/MD 7 & US 40

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	T	TR	L	T	T	T	L	TR	L
Maximum Queue (ft)	53	296	321	275	228	81	157	188	201	92	156	326
Average Queue (ft)	12	153	178	162	109	29	87	97	98	29	60	187
95th Queue (ft)	39	249	276	254	197	70	143	158	170	72	121	286
Link Distance (ft)		1094	1094	1094			3061	3061	3061	665		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	340				415	300					400	510
Storage Blk Time (%)		0										
Queuing Penalty (veh)		0										

Intersection: 7: MD 159/MD 7 & US 40

Movement	SB	SB
Directions Served	L	T
Maximum Queue (ft)	373	110
Average Queue (ft)	228	39
95th Queue (ft)	325	87
Link Distance (ft)	806	806
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: MD 159 & Old Philadelphia Rd

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	122	154	81
Average Queue (ft)	40	28	18
95th Queue (ft)	91	95	58
Link Distance (ft)	825	2938	715
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: US 40 & MD 132

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	T	R	L	T
Maximum Queue (ft)	168	171	119	114	85	20	156	187	186	58	134	326
Average Queue (ft)	50	26	65	50	24	1	65	74	91	11	16	150
95th Queue (ft)	106	94	109	95	66	14	116	143	155	38	75	257
Link Distance (ft)	487				436			2753	2753			1751
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		40	40	75		80	195			590	200	
Storage Blk Time (%)	16	3	19	5	1	0	0	0				3
Queuing Penalty (veh)	33	2	15	4	1	0	0	0				1

Intersection: 9: US 40 & MD 132

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	356	160
Average Queue (ft)	169	16
95th Queue (ft)	287	105
Link Distance (ft)	1751	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		140
Storage Blk Time (%)	13	
Queuing Penalty (veh)	7	

Intersection: 10: MD 22 & N. Rogers St

Movement	EB	NB	NB	NB	SB	SB
Directions Served	L	L	T	T	T	T
Maximum Queue (ft)	171	110	108	59	236	233
Average Queue (ft)	80	37	31	10	112	100
95th Queue (ft)	143	76	79	39	201	190
Link Distance (ft)	934		317	317	922	922
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		215				
Storage Blk Time (%)						0
Queuing Penalty (veh)						0

Intersection: 11: US 40 EB Ramps & MD 715

Movement	EB	EB	WB	WB	NB
Directions Served	L	T	T	T	L
Maximum Queue (ft)	65	80	64	64	91
Average Queue (ft)	12	18	19	12	42
95th Queue (ft)	41	57	52	44	77
Link Distance (ft)		627	337	337	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	150				305
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 12: Old Philadelphia Rd & MD 715

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	TR	L	T	T	T	L	T	T
Maximum Queue (ft)	52	96	89	107	126	33	61	12	35	70	50	59
Average Queue (ft)	11	35	44	50	54	4	17	0	7	19	18	14
95th Queue (ft)	37	75	78	94	113	21	46	6	28	50	40	41
Link Distance (ft)		543	543	543	543		586	586	586		532	532
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	80					260				200		
Storage Blk Time (%)	0	1										
Queuing Penalty (veh)	0	0										

Intersection: 12: Old Philadelphia Rd & MD 715

Movement	NB	SB	SB	SB
Directions Served	R	L	T	TR
Maximum Queue (ft)	33	145	137	89
Average Queue (ft)	3	67	72	36
95th Queue (ft)	16	116	119	72
Link Distance (ft)			488	488
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	425	305		
Storage Blk Time (%)				
Queuing Penalty (veh)				